

Jennifer Walsh

CURRICULUM VITAE

CORNELL LAB OF ORNITHOLOGY
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RESEARCH INTERESTS

Genomic approaches to understanding conservation, hybridization, adaptation, and behavior in birds

EDUCATION

University of New Hampshire, Durham, NH, Natural Resources and Earth Systems Science
Ph.D. awarded September 2015, M.S. awarded 2009

- Dissertation title: *Hybrid Zone Dynamics between Saltmarsh (*Ammodramus caudacutus*) and Nelson's (*Ammodramus nelsoni*) Sparrows*
- Advisor: Adrienne I. Kovach
- Committee Members: Kimberly Babbitt, Brian Olsen, Gregory Shriver, & Rebecca Rowe

University of New Hampshire, Durham, NH, Biology
B.S. awarded May 2007

PROFESSIONAL EXPERIENCE

Current Appointment

2016 – Present: **NSF Postdoctoral Fellow**, Cornell Lab of Ornithology, Cornell University
Using Museum Specimens to Evaluate Temporal Dynamics of an Avian Hybrid Zone (Advisor: Irby J. Lovette)

Previous Experience

2015 – 2016: **Researcher**, Genomics and bioinformatics. University of New Hampshire
2010 – 2015: **Dissertation Research**, University of New Hampshire
2010 – 2012: **Teaching Assistant**, University of New Hampshire
2010 (summer): **Field Technician**, Rachel Carson NWR, USFWS, Wells, ME

Field Experience

2016 (fall): Coordinator, mist netting/banding, Newport Bay, CA (2 days, ~10 captures)
2016 (summer): Mist netting/banding, Saskatchewan, Canada (4 days, ~15 captures)
2015 – 2016: Coordinator, mist netting/banding, New England (25 days, ~150 captures)
2011 – 2015: Coordinator, mist netting/banding, New England (160 days, ~1200 captures)
2009 – 2010: Field Assistant, nest searching, New England

PUBLICATIONS

Google Scholar Profile: <https://scholar.google.com/citations?user=aN007kwAAAAJ&hl=en>

- Walsh, J.**, V. Winder, I.J. Lovette, C.S. Elphick, B.J. Olsen, W.G. Shriver, and A.I. Kovach. In review. Subspecies delineation amid phenotypic, geographic, and genetic discordance in a song bird. *Molecular Ecology*. In press.
- Walsh, J.**, W.G. Shriver, M.D. Correll, B.J. Olsen, C.S. Elphick, T.P. Hodgman, R.J. Rowe, K.M. O'Brien, and A.I. Kovach. Temporal Shifts in the Saltmarsh-Nelson's Sparrow Hybrid Zone Revealed by Replicated Demographic and Genetic Surveys. *Conservation Genetics*. In press.
- Field, C., K. Ruskin, B. Benvenuti, A. Borowske, J. Cohen, L. Garey, T. Hodgman, R. Kern, E. King, A. Kocek, A. Kovach, K. O'Brien, B. Olsen, N. Pau, S. Roberts, E. Shelly, W. Shriver, **J. Walsh**, and C. Elphick. In review. Quantifying the importance of geographic replication and representativeness when estimating demographic rates. *Ecography*. In press
- Ruskin, K.J., M.A. Etterson, T.P. Hodgman, A. Borowske, J.B. Cohen, C.S. Elphick, C.R. Field, R.A. Kern, E. King, A.R. Kocek, A.I. Kovach, K.M. O'Brien, N. Pau, W.G. Shriver, **J. Walsh**, and B.J. Olsen. In press. Seasonal fecundity is not related to geographic position across a species' global range despite a central peak in abundance. *Oecologia*. In press
- Walsh, J.**, B.J. Olsen, K.J. Ruskin, W.G. Shriver, K.M. O'Brien, and A.I. Kovach. 2016. Extrinsic and Intrinsic Factors Influence Fitness in an Avian Hybrid Zone. *Biological Journal of the Linnean Society*. 119:890-903
- Walsh, J.**, W.G. Shriver, B.J. Olsen, and A.I. Kovach. 2016. Differential Introgression and the Maintenance of Species Boundaries in an Advanced Generation Avian Hybrid Zone. *BMC Evolutionary Biology*. 16:65.
- Walsh, J.**, R.J. Rowe, B.J. Olsen, W.G. Shriver, and A.I. Kovach. 2015. Genotype-Environment Associations Support a Mosaic Hybrid Zone Between Two Tidal Marsh Birds. *Ecology & Evolution*. 6(1):279-294.
- Berlinsky, D.L., M.A. DiMaggio, T.S. Breton, **J. Walsh**, and A.I. Kovach. 2015. Peritoneal Pigmentation in Purebred and Hybrid River Herring. *Transactions of the American Fisheries Society*. 144: 717-723.
- Kovach, A.I., **J. Walsh**, K. Thomas, and J. Ramsdell. 2015. Development of diagnostic microsatellite markers from whole genome sequences of *Ammodramus* sparrows for assessing admixture in a hybrid zone. *Ecology and Evolution*. 5(11): 2267-2283.
- Walsh, J.**, W.G. Shriver, B.J. Olsen, K.M. O'Brien, and A.I. Kovach. 2015. Relationship of phenotypic variation and genetic admixture in the Saltmarsh-Nelson's sparrow hybrid Zone. *The Auk*. 132(3): 704-716.
- Popular Press about this research: Auk & Condor Updates -**
<http://aoucospubsblog.org/2015/06/17/species-lines-blur-between-two-sparrows-in-new-englands-tidal-marshes/>
- Hill, J.M., **J. Walsh**, A.I. Kovach, and C. S. Elphick. 2013. Male-skewed nestling sex ratio in Saltmarsh Sparrows. *Condor*. 115(2): 411-420.
- Walsh, J.**, A. I. Kovach, K. J. Babbitt, and K.M. O'Brien. 2012. Fine-scale population structure and asymmetrical dispersal in an obligate salt marsh passerine, the Saltmarsh Sparrow (*Ammodramus caudacutus*). *The Auk*. 129 (2): 247-258.

Walsh, J., A.I. Kovach, O.P. Lane, K.M. O'Brien, and K.J. Babbitt. 2011. Genetic barcode RFLP analysis of the Nelson's and Saltmarsh Sparrow Hybrid Zone. *Wilson Journal of Ornithology*. 123(2): 316-322

In Review:

Ruskin, K.J., M.A. Etterson, T.P. Hodgman, A. Borowske, J.B. Cohen, C.S. Elphick, C.R. Field, R.A. Kern, E. King, A.R. Kocek, A.I. Kovach, K.M. O'Brien, N. Pau, W.G. Shriver, **J. Walsh**, and B.J. Olsen. In review. Demographic analysis demonstrates systematic but independent spatial variation in abiotic and biotic stressors across a species range. *The Auk*

In Preparation (manuscripts available upon request):

Walsh, J., L.M. Maxwell, and A.I. Kovach. The role of mating strategy, reproductive success, and compatibility in maintaining species boundaries across an avian hybrid zone. In prep for *Evolution*

Ruskin, K.J., J.L. Froehly, A.C. Borowske, C.S. Elphick, C.R. Field, A.R. Kocek, A.I. Kovach, R.A. Longenecker, **J. Walsh**, and B.J. Olsen. An Illustrative Exception to the Greenberg-Tattersall Corollary: sexual selection predicts geographic patterns of bill size in tidal marsh Emberizidae. In prep for *The Auk*.

Benvenuti, B., **J. Walsh**, K.M. O'Brien, and A.I. Kovach. Plasticity in nesting adaptations of a tidal-marsh endemic. In prep for *The Auk*.

Book Chapters:

Toews, D.P.L., **J. Walsh**, L. Campagna. Genomics in Avian Evolutionary Biology and Conservation. Invited book chapter in Population Genomics: Wildlife, Springer

Popular Press:

Walsh, J. and A.I. Kovach. 2016. Identifying Hybrid Saltmarsh-Nelson's Sparrows: Appearances Aren't Everything. *New Hampshire Bird Records*.

Kovach, A.I. and **J. Walsh**. 2012. Interactions of two salt marsh-dwelling sparrows in New England: past, present and future. *Bird Observer*. 40 (1): 25-32.

FELLOWSHIPS, AWARDS, & GRANTS

Fellowships:

2015	NSF Postdoctoral Research Fellowship, Biological Collections (PRFB)	\$138,000
2014	University of New Hampshire – Dissertation Year Fellowship	\$17,000

Awards:

2015	Wilson's Ornithological Society Student Presentation Award	Membership
2014	American Ornithologist's Union Student Travel Award	\$500
2013	Natural Resources and Earth System Sciences Research Fund	\$1,000
2011	Natural Resources Farrington Travel Award	\$700
2011	Maine Association of Wetland Scientists Research Award	\$1,000
2011	Natural Resources and Earth System Sciences Research Fund	\$1,000

Research Grants:

2016	Cornell Center for Vertebrate Genomics – Seed Grant	\$12,000
2014	American Museum of Natural History – Frank M Chapman Fund	\$1,500
2012	American Ornithologist’s Union Research Grant	\$2,400

PRESENTATIONS

- Kovach, A., **J. Walsh**, J. Cohen, C. Elphick, T. Hodgman, K. O’Brien, B. Olsen, and W.G. Shriver. *Gene flow and adaptation in a tidal marsh specialist*. North American Ornithological Conference, August 2016, Washington D.C.
- Benvenuti, B, **J. Walsh**, D. Surrrell, K. O’Brien, and A.I. Kovach. *Nesting plasticity in a tidal marsh sparrow*. North American Ornithological Conference, August 2016, Washington D.C.
- Walsh, J.**, B.J. Olsen, K.J. Ruskin, L.M. Maxwell, W.G. Shriver, K.M. O’Brien, and A.I. Kovach. *Mate compatibility and fitness in a hybrid zone between saltmarsh and Nelson’s sparrows*. North American Ornithological Conference, August 2016, Washington D.C.
- Walsh, J.**, V. Winder, I.J. Lovette, C.S. Elphick, B.J. Olsen, W.G. Shriver, and A.I. Kovach. *Signals of Adaptive Variation in Fresh and Salt Water Populations of Ammodramus Sparrows: Defining Conservation Units Based on Evolutionary Potential*. Evolution, June, 2016, Austin, TX.
- Benvenuti, B, **J. Walsh**, K.M. O’Brien, A.I. Kovach. *Adaptive Manipulation of Offspring Sex Ratios in Saltmarsh Sparrows*. 72nd Annual Northeast Fish and Wildlife Conference, April 2016, Annapolis, MD.
- Ruskin, K.J., M.A. Etersson, T.P. Hodgman, A. Borowske, J.B. Cohen, C.S. Elphick, C.R. Field, R.A. Kern, E. King, A. Kocek, A.I. Kovach, K.M. O’Brien, N. Pau, W.G. Shriver, **J. Walsh**, B.J. Olsen. *Latitudinal trends in Saltmarsh Sparrow (Ammodramus caudacutus) fecundity across its global range*. Joint meeting of the Association of Field Ornithologists and Wilson Ornithological Society, July 2015, Wolfville, Nova Scotia.
- Walsh, J.**, W.G. Shriver, B.J. Olsen, R.J. Rowe, K.M. O’Brien, T.P. Hodgman, C.S. Elphick, and A.I. Kovach. *Dynamics of a hybrid zone between Nelson’s and Saltmarsh sparrows*. Joint meeting of the Association of Field Ornithologists and Wilson Ornithological Society, July 2015, Wolfville, Nova Scotia.
- Walsh, J.**, W.G. Shriver, B.J. Olsen, and A.I. Kovach. *Genetic Analysis of a hybrid zone between Saltmarsh and Nelson’s sparrows: implications for conservation*. 71st Annual Northeast Fish and Wildlife Conference, April 2015, Newport, RI.
- Walsh, J.**, A.I. Kovach, R.J. Rowe, B.J. Olsen, and W.G. Shriver. *Investigating Patterns of Exogenous Selection in an Avian Hybrid Zone*. Joint meeting of the Association of Field Ornithologists and Wilson Ornithological Society, May 2014, Newport, RI.
- Ruskin, K.J., M.A. Etersson, B.J. Olsen, T.P. Hodgman, C.S. Elphick, A.I. Kovach, W.G. Shriver, A. Borowske, C.R. Field, R.A. Kern, **J. Walsh**. *Latitudinal Trends in Saltmarsh Sparrow (Ammodramus caudacutus) Nest Failure from Competing Risks*. Joint meeting of the Association of Field Ornithologists and Wilson Ornithological Society, May 2014, Newport, RI.
- Ruskin, K.J., M.A. Etersson, B.J. Olsen, T.P. Hodgman, C.S. Elphick, A.I. Kovach, W.G. Shriver, A. Borowske, C.R. Field, R.A. Kern, **J. Walsh**. 2014. *Latitudinal Trends in*

- Saltmarsh Sparrow (Ammodramus caudacutus) Nest Failure from Competing Risks*. 70th Annual Northeast Fish and Wildlife Conference, April 2014, Portland, Maine.
- Walsh, J.**, A.I. Kovach, and W.G. Shriver. 2014. *Characterizing Patterns of Phenotypic Variation Across the Saltmarsh-Nelson's Hybrid Zone*. 70th Annual Northeast Fish and Wildlife Conference, April 2014, Portland, Maine.
- Walsh, J.** and A.I. Kovach. 2013. *Developing a Genetic Hybrid Index for Saltmarsh and Nelson's Sparrows*. Joint meeting of American Ornithologists' Union and Cooper Ornithological Society, August 2013, Chicago, Illinois
- Walsh, J.** and A.I. Kovach. 2012. *Introgression of Morphological Traits and Neutral Genetic Variation in an Avian Hybrid Zone*. 5th Annual North American Ornithological Conference, August 2012, Vancouver, Canada.
- Walsh, J.** and A.I. Kovach. 2011. *Comparative Landscape Genetics of Spotted Salamanders in Suburban and Forested Landscapes*. 67th Annual Northeast Fish and Wildlife Conference, April 2011, Manchester, NH.
- Papanastassiou, K*., **J. Walsh**, and A.I. Kovach. 2011. *The effects of Researcher Activity on the Nesting Success of Saltmarsh Sparrows*. 67th Annual Northeast Fish and Wildlife Conference, April 2011, Manchester, NH.
- Walsh, J.**, A.I. Kovach, K. J. Babbitt, and K.M. O'Brien. 2010. *Genetic Structure and Hybridization in Saltmarsh Sparrows*. Northeast Bird Conservation Conference, October 2010. Plymouth, MA
- Kovach, A.I., K.J. Babbitt, and **J. Walsh**. 2010. *Effects of Habitat Fragmentation on Genetic Connectivity of a Vernal Pool-breeding Amphibian*. 66th Annual Northeast Fish and Wildlife Conference, April 2010, Newton, MA.
- Walsh, J.**, A.I. Kovach, K.J. Babbitt, and K.M. O'Brien. 2010. *Patterns of Population Connectivity and Dispersal in a Threatened Avian Saltmarsh Obligate*. 66th Annual Northeast Fish and Wildlife Conference, April 2010. Newton, MA.
- Kovach, A.I., K.J. Babbitt, **J. Walsh**, and C. Gabrielsen. 2010. *Effects of Forest Fragmentation and Water Chemistry on Vernal Pool-breeding Amphibians: a Preliminary Overview*. 3rd Annual Lamprey River Symposium. Durham, NH January, 2010.
- Walsh, J.**, A. Kovach, and K. Babbitt. 2009. *Identification of Genetic Structure of Saltmarsh Sparrow Populations (Ammodramus caudacutus)*. Northeast Fish & Wildlife Conference, Lancaster, PA
- Schmitz, C*., **J. Walsh**, A. Kovach, and K. Babbitt. 2009. *Factors Influencing the Nesting Success of Saltmarsh Sharp-tailed Sparrows*. Northeast Fish & Wildlife Conference, Lancaster, PA
- *Indicates undergraduate author

Invited Presentations:

- Walsh, J.** 2016. *Adaptation, Behavior, and Conservation of Tidal Marsh Birds*. Cornell Lab of Ornithology Fall Board Meeting. November 2016, Ithaca, NY
- Walsh, J.** 2016. *How differences between fresh and salt water habitats drive adaptive variation in a songbird*. Ecology and Evolutionary Biology Departmental Seminar. October 2016, Ithaca, NY.

- Walsh, J.** 2016. *Signals of Adaptive Variation in Fresh and Salt Water Populations of Ammodramus Sparrows: Defining Conservation Units Based on Evolutionary Potential*. Cornell EvoGroup. October 2016, Ithaca, NY
- Walsh, J.** 2015. *Hybrid Zone Dynamics between Two Tidal Marsh Sparrows: Maintenance of Species Boundaries with Gene Flow*. Cornell Lab of Ornithology Seminar Series. October 2015, Ithaca, NY
- Walsh, J.** and A.I. Kovach. 2014. *Tidal Marsh Sparrows in New England: Life Histories, Conservation, Research Initiatives, and Future Directions*. New Hampshire Audubon Red Barn Lecture Series. August 2014, Hebron, NH.
- Walsh, J.** and A.I. Kovach. 2012. *Characterizing an Avian Hybrid Zone*. Maine Association of Wetland Scientists. Winter Conference. March 2012, Hallowell, Maine.
- Walsh, J.,** A.I. Kovach, K.J. Babbitt, and K.M. O'Brien. 2010. *Population Structure and Source/Sink Dynamics in a Saltmarsh Obligate*. USFWS Region 5 Science Seminar, March 2010. Hadley, MA.

TEACHING EXPERIENCE

Instructor:

- Spring Field Ornithology Course, Biology, Cornell University – 2017

Guest Lectures:

- Conservation Genetics Seminar (graduate student seminar) – March, 2016
- Conservation Biology (upper level undergraduate course) – February, 2013
- Conservation Genetic Seminar (graduate student seminar) – April, 2012

Field Courses:

- Galápagos Field Course, field instructor, Introduction to Evolutionary Biology and Diversity, Cornell University – 2017

Teaching Assistant:

- Genetics, Department of Molecular and Cellular Biology, University of New Hampshire – 2011
- Introduction to Forensic Sciences, University of New Hampshire – 2011

Educational Outreach:

- Expand Your Horizons: Motivating Young Women in Science & Mathematics – 2016

SERVICE AND OUTREACH

- **Reviewer:** *Journal of Herpetology, Axios, Avian Research, Biological Journal of the Linnean Society, The American Naturalist, Journal of Avian Biology*
- **Research Proposal Judge** – Sigma Xi Research Awards (Cornell Chapter) – 2016

- Volunteer, Parker River and Rachel Carson National Wildlife Refuges, Assist with fieldwork for refuge-based salt marsh research projects. 2010 – 2015
- Training undergraduates in both field and laboratory techniques – 20 students trained to date
- Demographic site manager, SHARP (Saltmarsh Habitat and Avian Research Program), 2011-2013

Professional Societies:

American Ornithologists' Union
Wilson's Ornithological Society
Coopers Ornithological Society