

GEMMA CLUCAS

Atkinson Center for a Sustainable Future and Rose Postdoctoral Fellow
Cornell Lab of Ornithology
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EDUCATION

- 2016** **Ph.D., Gene flow and glacial history: investigating the processes shaping the population structure of penguins in the Southern Ocean.**
Ocean & Earth Sciences, University of Southampton and
Department of Zoology, University of Oxford.
Advisor: Dr. Tom Hart.
- 2012** **M.Res., Ocean Sciences**
Ocean & Earth Sciences, University of Southampton.
Advisor: Dr. Tom Hart.
- 2010** **M.A., Natural Sciences**
Trinity Hall, University of Cambridge.

PROFESSIONAL EXPERIENCE

- Present** **Atkinson Center and Rose Postdoctoral Fellow**
Cornell Lab of Ornithology, Cornell University, USA.
Advisors: Dr. Amanda Rodewald and Dr. Irby Lovette
- 2017 – 2019** **Postdoctoral Research Associate**
Department of Natural Resources and the Environment, University of New
Hampshire, USA.
Advisor: Dr. Adrienne Kovach
- 2012 – 2016** **Ph.D.**
- 2012** **Research Assistant**
Institute of Zoology, Zoological Society of London, UK.
Advisor: Dr. Patricia Brekke. Duration: 3 months.
- 2011 – 2012** **M.Res.**
- 2011** **Research Assistant**
Institute of Zoology, Zoological Society of London, UK.
Advisors: Dr. Patricia Brekke (2 months) and Dr. Tom Hart (8 months).
- 2010** **Research Assistant**
Zoology & Entomology, University of Pretoria, South Africa.
Advisor: Dr. Nichola Raihani & Prof. Nigel Bennet (3 months)

PUBLICATIONS

- In revision.** Clucas G, Lou RN, Overgaard-Therkildsen N, and Kovach AI. Novel signals of adaptive genetic variation in northwestern Atlantic cod revealed by whole genome sequencing. *Evolutionary Applications*.
- In revision.** Clucas G, Kerr LA, Cadrin SX, Zemeckis DR, Sherwood GD, Goethel D, Whitener Z, and Kovach AI. Adaptive Genetic Variation Underlies Biocomplexity of Atlantic Cod in the Gulf of Maine and on Georges Bank. *PLoS ONE*.
- In prep.** Walsh J*, Clucas G*, MacManes M, and Kovach A. Divergent selection and drift shape the genomes of two avian sister species spanning a saline-freshwater ecotone. *bioRxiv 344614*; doi: <https://doi.org/10.1101/344614>.
- 2018.** Clucas G*, Younger J*, Kao D, Emmerson L, Southwell C, Wienecke B, Rogers AD, Bost CA, Miller GD, Polito MJ, Lelliot P, Handley J, Crofts S, Phillips A, Dunn MJ, Miller KJ, and Hart T. Comparative population genomics reveals key barriers to dispersal in Southern Ocean penguins. *Molecular Ecology*.
- 2018.** Borowicz A, McDowall P, Youngflesh C, Sayre-McCord T, Clucas G, Herman R, Forrest S, Rider M, Schwaller M, Hart T, and Jenouvrier S. Multi-modal survey of Adélie penguin mega-colonies reveals the Danger Islands as a seabird hotspot. *Scientific reports*, 8(1):3926.
- 2017.** Younger J*, Clucas G*, Kao D, Rogers AD, Gharbi K, Hart T, and Miller K. The challenges of detecting subtle population structure and its importance for the conservation of emperor penguins. *Molecular Ecology*, 26(15): 3883 – 3897.
- 2016.** Clucas G*, Younger J*, Kao D, Rogers AD, Handley J, Miller G, Jouventin P, Nolan P, Gharbi K, Miller KJ, and Hart T. Dispersal in the sub-Antarctic: King penguins show a remarkable lack of population genetic differentiation across their range. *BMC Evolutionary Biology*, 16: 211.
- 2016.** Levy H*, Clucas G*, Rogers AD, Polito MJ, Lynch H, Emslie SD, and Hart T. Population structure and phylogeography of the Gentoo Penguin (*Pygoscelis papua*) across the Scotia Arc. *Ecology & Evolution*, 6: 1834–1853.
- 2015.** Younger J*, Clucas G*, Kooyman G, Wienecke B, Rogers A, Trathan P, Hart T, and Miller K. Too much of a good thing: sea ice extent may have forced emperor penguins into refugia during the last glacial maximum. *Global Change Biology*, 21(6): 2215-2226.
- 2015.** Brekke P, Ewen J, Clucas G, and Santure A. Determinants of male floating behavior and floater reproduction in a threatened population of the hihi (*Notiomystis cincta*). *Evolutionary Applications*, 8(8), 796-806.
- 2015.** Freer JJ, Mable BK, Clucas G, Rogers AD, Polito MJ, Dunn M, Naveen R, Levy H, and Hart T. High-levels of connectivity and limited genetic differentiation among chinstrap penguin (*Pygoscelis antarctica*) populations in the Scotia Arc. *Polar Biology*, 38(9), 1493-1502.
- 2014.** Clucas G, Dunn MJ, Dyke G, Emslie SD, Naveen R, Polito MJ, Pybus O, Rogers AD, and Hart T. A reversal of fortunes: climate change ‘winners’ and ‘losers’ in Antarctic Peninsula penguins. *Scientific Reports*, 4: 5024.
- 2012.** Polito MJ, Clucas G, Hart T, and Trivelpiece WZ. A simplified method of determining the sex of *Pygoscelis* penguins using bill measurements. *Marine Ornithology*, 40: 89 – 94.

2012. Zieritz A, **Clucas G**, Axtmann L, and Aldridge D. Shell ecophenotype in the blue mussel (*Mytilus edulis*) determines the spatial pattern in foraging behaviour of an oystercatcher (*Haematopus ostralegus*) population. *Marine biology* 159: 863 – 872.

* Indicates joint first authorship.

AWARDS AND HONOURS

- 2018** Shoals Marine Laboratory Scientist in Residence Fellowship – \$8,700 for project: Assessing the diets of endangered seabirds using metabarcoding.
American Ornithological Society Hesse Research Award - \$2,142 for project: Multi-colony analysis of the diet of adult Atlantic puffins with novel DNA metabarcoding techniques.
American Ornithological Society travel awards - \$295 and \$558.
UNH School of Marine Science and Ocean Engineering travel award - \$582.
- 2017** UNH School of Marine Science and Ocean Engineering Seed Grant - \$5000 for project: Leveraging fecal DNA pilot data for the conservation management of seabirds, fisheries, and coastal ecosystems. [Co-writer of the application]
Nominated for ZSL Thomas Henry Huxley Award and Marsh Prize for the best doctoral thesis in the field of zoology.
- 2016** Best student presentation at the Seabird Group Conference, Edinburgh, UK.
Runner-up for best presentation in the World Seabird Twitter Conference.
American Ornithologist’s Union travel award - \$610.
Challenger Society for Marine Science travel award - £500.
Seabird Group travel award - £100.
Conference on Conservation Genomics travel award - €350.
- 2015** British Ecological Society travel award - £500.
Association for Polar Early Career Scientists travel award - 4375 NOK (c. \$525).
NERC funding to attend public outreach course - £150.
NERC funding to attend RADseq data analysis course - £200.
- 2014** NERC funding to attend course in UAV operation - £500.
- 2012** MRes commendation (equivalent to a distinction).
- 2009** Karen Thorne prize for Biological Sciences, Trinity Hall, Cambridge.

INVITED TALKS

- 2018** Shoals Marine Laboratory, Rock Talk: “*Making use of new technologies and genomic techniques to study Antarctic penguins.*”
- 2017** Woods Hole Oceanographic Institute, Biology Department seminar series: “*Life history and glacial history: the changing factors determining connectivity among Antarctic penguins.*”

CONFERENCE PAPERS & POSTERS PRESENTED

- 2018.** **Clucas G**, Seavey JR, Kovach AI, and Craig EC. Monitoring tern diets using DNA metabarcoding of faecal samples. International Ornithological Congress, Vancouver, Canada, 20th – 26th August 2018 (poster).
- 2018.** **Clucas G**, Walsh J, MacManes M, Thomas K, and Kovach A. Divergent selection and drift shape the genomes of two avian sister species spanning a saline-freshwater ecotone. American Ornithology Meeting, Tucson, AZ, USA, 9th – 14th April (presentation).

- 2018. Clucas G**, Lou RN, Kerr L, Sherwood G, Cadrin S, Zemeckis D, Goethel D, Whitener Z, Overgaard-Therkildsen N, Kovach A. Population structure of Atlantic Cod in the Gulf of Maine. Population Group Conference, Bristol, UK, 3rd – 6th January (poster).
- 2017. Clucas G**, Walsh J, MacManes M, and Kovach A. Adaptation and demographic history of two tidal marsh birds inferred from whole genome sequencing. Evolution, Portland, OR, USA, 23rd – 27th June (poster).
- 2017. Clucas G**. King penguins: Long-distance dispersers in the sub-Antarctic. World Seabird Twitter Conference 12th – 14th April (twitter presentation).
- 2016. Clucas G**, Younger J, Miller K, and Hart T. Are penguins really all that philopatric? North American Ornithology Conference, Washington DC, USA, 16-20th August (presentation) and Seabird Group Conference, Edinburgh, UK, 6-9th September (presentation).
- 2016. Clucas G**, Younger J, Miller K, and Hart T. Population history and migration in the emperor penguin revealed using genomics. ConGenomics, Portugal, 3rd – 6th May (presentation).
- 2016. Clucas G**. Migration and dispersal in Emperor Penguins. World Seabird Twitter Conference, 13-15th April (presentation).
- 2015. Clucas G**, Younger J, Miller K, and Hart T. Genomic techniques reveal surprising patterns of population structure and migration in the emperor penguin. World Seabird Conference, Cape Town, South Africa, 26-30th October (presentation).
- 2013. Clucas G**, and Hart T. *A reversal of fortunes: climate change ‘winners’ and ‘losers’ in Antarctic Peninsula penguins*. International Penguin Conference, Bristol, UK, 2nd – 6th September (presentation).

TEACHING EXPERIENCE

- 2018** Mentored 10 undergraduate students for 10 weeks at Shoals Marine Laboratory for their summer internship projects and taught them R for statistics and data visualization.
- 2016** Teaching Assistant – Tree of life practical course, University of Oxford.
- 2016** Teaching Assistant – Rocky shore ecology field course, University of Oxford.

FIELD SKILLS & TRAINING

- Experienced in handling and trapping penguins and terns, taking blood samples and feather samples, morphometric measurements, and conducting seabird population surveys.
- Two seasons of fieldwork working in tern colonies in the Gulf of Maine.
- Six seasons of Antarctic and sub-Antarctic fieldwork in the Falkland Islands, South Georgia, South Sandwich Islands, South Shetland Islands, and the Antarctic Peninsula. This was conducted on a variety of vessels from small yachts to large ship operations.
- Two summers volunteering for warbler banding projects in New Hampshire and Massachusetts.
- Trained in wilderness medicine (Far From Help 1 and 2), sea survival, glacier travel, and RYA Powerboat Level 2.

MEDIA COVERAGE & OUTREACH

- 2014 – Present** Over 100 articles online and in press featuring my research and comments, including The Times newspaper, BBC News online, and The New York Times.
- 2019** Speaker at Piscataqua Science Café: Seabirds as Sentinels of Ocean Health.
Interview for Wrong-eared Owl winter edition: <https://www.wrongearedowl.com/>.
Interview for Rye Junior High School.
- 2016** Radio interview: BBC Inside Science, available at: <http://www.bbc.co.uk/programmes/b06yfjdp>
- 2014** Op-Ed: Penguins offer U.S. a lesson in addressing climate change - Los Angeles Times.

PROFESSIONAL SKILLS & TRAINING

- 2018** Eukaryotic metabarcoding Workshop – Physalia Courses, Université Laval.
- 2017** Science Communication Workshop - Alan Alda Centre for Communicating Science.
Conservation Genomics Workshop – UCLA and La Kretz Centre for California Conservation Science.
- 2016** Introduction to GIS using QGIS – University of Oxford.
- 2015** RADseq Workshop – NERC Biomolecular Analysis Facility.
- 2014** Introduction to Next Generation Sequencing – EMBL-EBI.
- 2013** Computational Molecular Evolution - Wellcome Trust & EMBL-EBI.

PROFESSIONAL MEMBERSHIPS

American Ornithologists' Union
Society for Conservation Biology
British Ecological Society
British Ornithologist's Union
The Seabird Group
Association for Polar Early Career Scientists

SERVICE

Manuscript reviews completed for Journal of Heredity, Scientific Reports, Ecology & Evolution, Marine Ecology Progress Series, Polar Biology, and Mitochondrial DNA Part A.