

Dr. Sarah E. Gutowsky

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CURRENT POSITION

Mitacs Accelerate Postdoc Intern, Ducks Unlimited Canada & ECCC *Feb 2021-Feb 2024*

- research program addressing declines in sea ducks in Atlantic Canada over past 50 years
- using various survey data from federal and provincial government monitoring, non-governmental organizations (e.g., Ducks Unlimited Canada, Birds Canada), as well as directed social science research with stakeholder groups (Indigenous, hunter, conservation, land owner) to examine changes in bird use of marine regions through time, changes in habitat quality due to anthropogenic activities, and perspectives from stakeholders on what has enhanced or detracted from the value of these habitats
- results will help direct future, multi-stakeholder marine policy and long-term planning for bird management and conservation in Atlantic Canada

Adjunct Research Associate, Dalhousie University

Sep 2019-Sep 2023

EDUCATION & FELLOWSHIPS

W. Garfield Weston Postdoc Research Fellow, Acadia University

Sep 2018-Sep 2020

PhD (Biology), Dalhousie University

Jan 2013-May 2016

MSc (Biology), Dalhousie University (transferred to PhD)

Sep 2011-Dec 2012

BSc (Honour's, Biology), University of Guelph

Sep 2005-Dec 2009

ANALYTICAL SKILLS

- extensive experience programming, modelling and producing data visualizations (graphical and spatial, static and animated) in R, Matlab and ArcGIS
- accomplished with advanced statistical and machine learning quantitative methods for analyzing large and diverse ecological datasets including modelling with Frequentist and Bayesian inferential approaches
- competent with MARK-based analyses for estimating survival rates from CMR data
- managed, processed and analyzed biologging data from a wide variety of device types including archival geolocators, immersion state sensors, GPS, and satellite PTT transmitters
- adept with sourcing and extracting spatiotemporally-matched environmental data
- highly proficient in Microsoft Applications and database management

FIELD SKILLS

- extensive experience with various capture/handling techniques (mist net, bow net, walk-in traps, Heligoland traps, noose carpet, grubbing, on-foot and boat-based pursuit, etc.) for banding/sampling diverse birds (passerines, gulls, waterfowl, shorebirds, owls, seabirds)
- proficient with banding, blood and feather sampling, biologging device deployment and recovery, reproductive monitoring, population surveying
- comfortable and competent leading field crews in all environments from polar to tropical
- skilled with small boat handling and remote emergency response
- worked with numerous species at risk from multiple taxonomic groups

PEER-REVIEWED SCIENTIFIC WRITING

Gutowsky, S.E., Davis, S.E., Maftai, M., Mallory, M.L. 2021 Flexibility in migratory strategy contrasts with reliance on restricted staging and overwintering grounds for Sabine's gulls from the Canadian High Arctic. *Animal Migration*. (accepted for Special Issue on Arctic migrations in a changing world)

Gutowsky, S.E., Studholme, K.R., Ronconi, R.A., Allard, K.A., Shlepr, K., Diamond, A.W., McIntyre, J., Craik, S.R., Mallory, M.L. 2021. The influence of multiple industries on the behaviour of breeding gulls from four colonies across the eastern Gulf of Maine, Canada. *Wildlife Biology*. 2021:wlb.00804

Gutowsky, S.E., Gutowsky, L.F.G., Milton, G.R., M.L. Mallory. 2020. Insights from five decades of monitoring habitat and breeding populations of American woodcock. *Ecological Solutions and Evidence*. 1:e12016.

Gutowsky, S.E., Hipfner, J.M, Maftai, M., Boyd, S., Auger-Methe, M., Yurkowski, D.J., Mallory, M.L. 2019. First insights into Thayer's Gull migratory and overwinter patterns along the Northeast Pacific coast. *Marine Ornithology*. 48: 9-16.

Gutowsky, S.E., Ronconi, R.A, Gutowsky, L.F.G., Elderkin, M., Paquet, J, Mills, P.M., Mallory, M.L. 2019. Winter habitat associations of Purple Sandpiper (*Calidris maritimus*) and Harlequin Duck (*Histrionicus histrionicus*) in Atlantic Canada. *Estuarine, Coastal and Shelf Science*. 222: 214-225.

Belonovich, O.A., **Gutowsky, S.E.** 2017. Opportunistic cetacean observations in Northwestern Pacific and Sea of Okhotsk in May-June 2017. *Studies of aquatic biological resources of Kamchatka and north-west Pacific*. 47: 91-102.

Gutowsky, S.E. 2017. A Conceptual Framework For The Drivers Of Albatross Movement. *Marine Ornithology*. 45: 23-38.

Gutowsky, S.E., Leonard, M.L., Conners, M., Shaffer, S.A., and Jonsen, I.D. 2015. Individual-level variation and higher-level interpretations of space-use in wide-ranging species: An albatross case study of sampling effects. *Frontiers in Marine Science*. 2: 93.

Gutowsky, S.E., Gutowsky, L.F.G., Jonsen, I.D., Leonard, M.L., Naughton, M.B., Romano, M.D., and Shaffer, S.A. 2014. Daily activity budgets reveal a quasi-flightless stage during non-breeding in Hawaiian Albatrosses. *Movement Ecology*. 2: 23.

Gutowsky, S.E., Tremblay, Y., Kappes, M.A., Flint, E.N., Klavitter, J., Laniawe, L., Christenson, B., Costa, D.P., Shaffer, S. 2014. Divergent post-breeding distribution and habitat associations of fledgling and adult Black-footed Albatrosses in the North Pacific. *Ibis*. 156: 60-72.

Gutowsky, S.E., Janssen, M.H., Norris, D.R. 2010. The preformative molt of Marbled Murrelets. *Northwestern Naturalist*. 91: 333-336.

Gutowsky, S.E., Janssen, M.H., Arcese, P., Kyser, T.K., Ethier, D., Wunder, M.B., Bertram, D.F., McFarlane-Tranquilla, L., Loughheed, C., Norris, D.R. 2009. Concurrent declines in nestling diet quality and reproductive success of a threatened seabird over 150 years. *Endangered Species Research*. 9: 247-254.

SCIENTIFIC CONFERENCES & MEETINGS

Gutowsky, S.E., Gutowsky, F.G.G., Milton, G.R, M.L. Mallory. 2020. Insights from five decades of monitoring habitat and breeding populations of American woodcock. Atlantic Migratory Gamebird Technical Committee Meeting. Oral presentation, *Nov 2020*.

Gutowsky, S.E., J.M Hipfner, M. Maftei, S. Boyd, M. Auger-Methe, D.J. Yurkowski, M.L. Mallory. 2019. First insights into Thayer's Gull migratory and overwinter patterns along the Northeast Pacific coast. World Seabird Twitter Conference. "Oral" presentation, *May 2020*.

Gutowsky, S.E., Conners, M., Jonsen, I.D., Leonard, M.L., Shaffer, S.A. Individual-level variation and higher-level interpretations of space use: An albatross case study of sampling effects. World Seabird Conference, Cape Town, South Africa. Poster presentation, *October 2015*.

Gutowsky, S.E., Gutowsky, L.F.G., Jonsen, I.D., Leonard, M.L., and Shaffer, S.A. New approaches for investigating changing activity budgets at a daily time-step for seabirds. Pacific Seabird Group Meeting, San Jose California. Oral presentation, *February 2015*.

Gutowsky, S.E., Gutowsky, L.F.G., Jonsen, I.D., Leonard, M.L., Naughton, M.B., Romano, M.D., and Shaffer, S.A. 2014. Daily activity budgets reveal a quasi-flightless stage during non-breeding in Hawaiian Albatrosses. American Ornithologists' Union conference, Estes Park, CO. Oral presentation, *September 2014*.

Gutowsky, S.E., Y. Tremblay, M.A. Kappes, E.N. Flint, J. Klavitter, L. Laniawe, B. Christenson, D.P. Costa, S. Shaffer. Ageism at sea? Divergent distributions of adult and fledging Black-footed Albatrosses. Dalhousie Patrick Lett Research Symposium, Halifax, NS. Oral presentation, *April 2014*.

Gutowsky, S.E., Kress, S., and Shannon, P. Censusing puffins in rock habitat – A new model from Seal Island NWR. Gulf of Maine Seabird Working Group Annual Meeting, Maine. Oral presentation, *August 2011*.

Gutowsky, S.E., Arcese, P., and Norris, D.R. Concurrent declines in nestling diet quality and reproductive success of a threatened seabird over 150 years. University of British Columbia Rising Stars of Research National undergraduate poster competition, Vancouver, BC. Poster presentation, *August 2009*.

Gutowsky, S.E., Arcese, P., and Norris, D.R. Estimating historic productivity and nestling diet of Marbled Murrelets using age ratios and stable isotopes. Canadian Marbled Murrelet Recovery Team Annual Meeting, Victoria, BC. Oral presentation, *February 2008*.

CONSULTING

Nova Scotia Department of Lands & Forestry

December 2019-present

- Completed and published analyses of spatial patterns in long-term population trends and dynamic breeding habitat attributes for American Woodcock in Nova Scotia using a 50-year standardized Singing Ground Survey dataset
- Generated a Species Distribution Model and predictive map of relative abundance based on habitat associations to be used directly by managers and foresters for landscape planning

Environment and Climate Change Canada

*Oct 2013-Feb 2014, Oct 2016-Nov 2016,
Feb 2017-Apr 2017, Jun 2018-Oct 2018, Dec 2019-Mar 2020, present*

- Authored species accounts for 31 non-breeding seabird and shorebird species for the Environment Canada Status of Birds in Canada website (www.ec.gc.ca/soc-sbc/) including assessment of changes in population status over the past 40 years, summary of species' current designations, primary conservation and management concerns and strategies
- Conducted and published overwinter distribution and habitat modelling for Harlequin Duck and Purple Sandpiper from a decade of aerial survey data in Atlantic Canada
- Completed analysis of influence of anthropogenic landscapes on movements of breeding Herring Gulls in Nova Scotia and New Brunswick with GPS tracking data from four colonies
- Evaluated spatiotemporal changes in fall migratory phenology and distributions for six waterfowl species breeding in the Canadian Prairie provinces using band recovery data

Parks Canada and the Sable Island Institute

September 2018-March 2019

- Oversaw a multi-disciplinary team in producing a complex research proposal package for Parks Canada and the Sable Island Institute toward the development of a long-term project to better understand the ecological interactions between mammals, birds, insects, plants and dune dynamics on Sable Island, Nova Scotia (project successfully funded with a \$600,000 grant from the CoRe program)
- Arranged meetings with diverse stakeholders and experts to solicit input
- Coordinated drafting of documents between a team of five sub-contracted consultants
- Managed invoicing and payment for consultants

World Wildlife Fund Canada

December 2015-March 2016

- Developed species accounts for 76 seabird species in Canada for inclusion in an electronic multi-taxa identification app for cell phones or tablets intended for use in identifying and reporting of wildlife interactions and unintentional capture in fisheries operations
- Each account includes a physical description of the species in all plumages (by season, sex and age), photographs portraying physical traits, relevant linear measurements, range and habitat description, current COSEWIC status, and suspected or known fisheries interactions
- Created a key using a combination of seabird traits to narrow down identification options

Avian Surveys for Development & Conservation

May 2015-present

- Conduct on-site pre-construction and post-construction avian surveys for avian community composition, breeding activity, mortality, and habitat characteristics
- Familiarity with standardized surveying techniques and comprehensive report writing

FIELD RESEARCH

Iceland Bird Research

Spring 2019

- Population monitoring of bird communities on Flatey and surrounding islands and islets of Breiðafjörður in West Iceland
- Burrow occupancy checks and banding of Atlantic puffins
- Capture and banding of Northern fulmar, Arctic tern, Red-necked and Red phalarope, Common ringed plover, Black-tailed godwit, Common redshank, Common eider adults and ducklings, and passerines
- Deployed GLS devices on Common Snipe (also conducted analyses of non-breeding distribution from recovered GLS data, as well as estimation of survival rates from CMR data)

Sub-Antarctic Seabird & Marine Mammal Field Research Team *November 2011-February 2012*

- Deployed and recovered various biologging devices on Black-browed and Wandering Albatrosses in the sub-Antarctic Kerguelen Archipelago with the French Polar Institute (IPEV)
- Monitored nest success and chick growth, captured, banded, deployed/retrieved biologging devices, blood and feather sampled for dietary analyses
- Assisted with capture and handling of King Penguins and sub-Antarctic Skuas, night mist-net capture of various petrel species, capture and device deployment/retrieval on Antarctic Fur and Elephant Seals

East Coast Seabird Colony Field Supervisor

April 2011-August 2011

- Monitored large breeding colony of Atlantic Puffins, Razorbills, Common and Arctic Terns, Black Guillemots and Common Eiders on Seal Island National Wildlife Refuge, Maine, with Project Puffin, National Audubon Society
- Trained and supervised a crew of 10 interns and volunteers living and working on a small, isolated island for 5 months
- Captured and banded adult and hatchling terns, puffins and guillemots, conducted diet studies and band reading for all species from blinds
- Deployed/retrieved GLS devices on puffins
- Maintained live-streaming Internet “puffin cam” equipment
- Performed predator control including gull egg and adult culling

Midway Atoll National Wildlife Refuge Volunteer

October 2010-February 2011

- Worked with US Fish & Wildlife Service on long-term monitoring and management program
- Banding and monitoring survivorship and reproductive success of Laysan and Black-footed albatross and Red-tailed Tropicbirds, color-band resights for critically endangered translocated Laysan Duck, remote camera monitoring of nesting Short-tailed Albatross
- Habitat restoration (invasive plant removal and native species propagation and out-planting) and marine debris beach plot removal and monitoring

Hilliardton Marsh Northern Saw-whet Owl Migration Monitoring *September 2010*

- Captured c. 150 migrating Northern Saw-whet Owls using mist-nets and play-back in New Liskeard, Ontario over 8 days
- Measured, aged and banded adult and hatch-year owls

Arctic Common Eider and Herring Gull Field Research Technician *May 2010-August 2010*

- Monitored breeding colony of 3000+ Common Eiders and 80+ Herring Gulls on East Bay Island, Nunavut, with Environment Canada
- Conducted long hours of observations from blinds in order to identify banded individuals and determine eider and gull breeding success
- Captured and banded adults and juveniles of both species with metal and coloured alphanumeric bands, took choanal/cloacal swabs for Avian Influenza and Cholera, deployed GLS on adult gulls, bled ducklings and nasal-tagged eider hens
- Worked under isolated conditions on small (400x800m) island without electricity or running water and limited fresh food for 3 months

Eastern Ontario Gray Jay Field Research Technician *January 2010-March 2010*

- Monitored 22 territories of Gray Jay pairs across Algonquin Provincial Park, Ontario with the Univ. of Guelph and Algonquin Wildlife Research Station
- Mist-netted, bled, and banded adults and nestlings
- Nest-finding in spruce bog habitat in winter/spring conditions, full days of snowshoeing, canoeing, snowmobiling, and ATVing

Southern Ontario Tree Swallow Field Research Technician *May 2009-August 2009*

- Monitored breeding population of Tree Swallows in Long Point, Ontario, with the University of Guelph and Long Point Bird Observatory
- Captured, measured, and banded approx. 200 adults and 400 nestlings

Southern Ontario Long Point Bird Observatory Migration Monitoring *May 2009-August 2009*

- Volunteered during spring migration at one of the most productive songbird banding stations in North America
- Mist-net extraction, species identification, ageing and sexing of a wide variety of species, from warblers and woodpeckers to shorebirds and gulls

Northeast Australia Herpetological Field Assistant *March 2009*

- Researched Chytridiomycosis pathogen in Waterfall frogs and Green-eyed tree frogs in the Wet Tropics region of Queensland, Australia
- Captured, PIT-tagged and swabbed frogs for pathogens in challenging remote waterfall terrain at night

West Coast Marbled Murrelet Field Research Technician *May 2007/8-August 2007/8*

- At-sea capture of threatened adult and juvenile Marbled Murrelets in Desolation Sound, British Columbia with the University of Guelph
- Drove zodiac, captured, bled, banded, measured c. 300 murrelets at night under challenging conditions, sampled and identified forage fish/plankton with beach-seine/plankton-tows

EXPEDITION GUIDING

Ornithologist, Naturalist & Expedition Guide *July 2013-present*

- Working as an 'Ornithologist Expedition Guide' with Adventure Canada, Fathom Expeditions, Heritage Expeditions, Eagle Eye Tours, Quark Expeditions, travel for periods of 10-70 days aboard small expedition vessels (50-200 passenger capacity) to remote destinations including the Northwest Passage of the Canadian Arctic, Baffin Island, Greenland, Labrador, Newfoundland, the Russian Far East, the Falkland Islands, South Georgia and the Antarctic Peninsula, the New Zealand Sub-Antarctic Islands and the Ross Sea, and the remote islands of the South Atlantic (Gough, Tristan, St. Helena, Ascension)
- Responsibilities include both interpretation (provide running commentary on natural history, primarily on birds, during shore landings and on-deck; present lectures on-board; maintain species sighted lists) and expedition duties (maintain and drive zodiacs; scout landings; lead hikes, carry firearms for bear safety during shore excursions; first aid emergency response)

TEACHING

Instructor, Ornithology (BIOL3622) *Spring 2014, 2016, 2017, 2018, 2019, 2020, 2021*

- Deliver a well-established spring field course over an intensive 2-week duration
- Spend 8 days 'in the field' at a semi-remote research station camping with 15 students, taking advantage of every opportunity (from dawn chorus surveys to owling under darkness) to teach bird identification skills (ID by both sight and sound) and study design
- Guide students in designing and implementing field projects, grade final research reports
- Select and supervise two Teaching Assistants
- In 2020 and 2021, successfully adapted the course for online delivery, catering each student's learning experience to focus on their local bird species

Instructor, Dalhousie Integrated Science Program (DISP, SCIE1505) *Summer 2015, Fall 2016*

- Delivered Ecology content for Biology section of DISP through traditional lecture format
- Organized and facilitated ecology field trip logistics and team activities for 75 first-year undergraduate science students, focused on dune succession, inter-tidal communities and anthropogenic impacts
- Developed complex auto-populating grading scheme spreadsheets for tabulating DISP student grade allocation to various disciplines and courses
- Developed materials for online testing of concepts for first-year Biology with quizzes
- Produced a step-by-step guide to developing and posting quizzes for future instructors

Instructor, Biologging in Ecology (MARI/BIOL4323)

Winter 2014, 2015, 2016, Fall 2016

- Developed and delivered a fourth-year marine biology course touching on all aspects of biologging science (using animal-attached electronics to study free-ranging animals) including the history and future of tagging technologies, study design, bias, ethics and data analysis
- Continuously direct all course content and exercises back to the overarching intention of the course: gaining universally-applicable practical skills in science (i.e. developing novel ideas, proposal writing and public speaking)
- Select and supervise one Teaching Assistant

Undergraduate Honour's Student Advisor *2012/2013, 2017/2018, 2019, 2020, 2021*

- Co-supervised three undergraduate Honour's students, primary supervisor to two more
- Provided feedback on proposal and report writing, encouraged time management
- Guided methodological approaches and remained available for advice at all times

Teaching Assistant, 11 contracts for 6 undergraduate ecology courses *2012-2014*

- Typical teaching assistant duties at Dalhousie University for semester long-courses (Communities & Ecosystems BIOL3061, Behavioural Ecology BIOL3062) and field courses (GIS in Ecology BIOL3633, Ornithology BIOL3622, Field Methods in Animal Behaviour BIOL3630, Marine Life of Nova Scotia BIOL2605)

EXTRA-CURRICULAR

Board Member, Harrison Lewis Coastal Discovery Centre *2015-2018*

- Participate on the Board of Directors for the Harrison Lewis Centre on the South Shore of Nova Scotia
- Our goal is to promote understanding and appreciation of rural and natural environments through public workshops and seminars, and through academic field courses and research collaborations

Vice President, Dalhousie University, Biology Organization of Graduate Students *2012/2013*

- Represented Dalhousie Biology graduate students on 3 university committees
- Prepared the "Graduate Student Survival Guide" for incoming students
- Website design and management

CERTIFICATIONS

Standard First Aid CPR/AED Level C	<i>Jan 2021</i>
Marine Emergency Duties with respect to STCW Basic Safety	<i>May 2017</i>
International Association of Antarctic Tour Operators (IAATO)	
Expedition Guide Assessment for Peninsula & South Georgia	<i>October 2019</i>
Seabird Observer Training – Canadian Wildlife Service Eastern Canada Seabirds At Sea Survey	
Protocols for Pelagic Seabird Surveys From Moving Platforms	<i>October 2015</i>
Wilderness Advanced First Aid Training	<i>April 2010, recertified Nov 2014</i>
Pleasure Craft Operator's License	<i>April 2012</i>
Canadian Firearms Possession & Acquisition License	<i>April 2012</i>
Canadian Firearms Safety Training	<i>April 2010</i>

SCHOLARSHIPS & AWARDS

Mitacs Accelerate Postdoctoral Internship Award \$135,000	<i>Winter 2021, 2022, 2023</i>
W. Garfield Weston Postdoctoral Fellowship Award \$120,000	<i>Fall 2018, 2019</i>
Student Travel Award, World Seabird Conference, South Africa \$2,400	<i>Fall 2015</i>
Fred Cooke Award, Society of Canadian Ornithologists \$1,000	<i>Spring 2015</i>
Student Travel Award, Pacific Seabird Group, California \$900	<i>Winter 2015</i>
NSERC Canada Graduate Scholarship (PhD Level) \$105,000	<i>Spring 2013-2016</i>
Student Travel Award, American Ornithologists' Union \$800	<i>Fall 2014</i>
Mewald-King Award, Cooper Ornithological Society \$1,000	<i>Spring 2013</i>
NSERC Canada Graduate Scholarship (MSc Level) \$17,500	<i>Fall 2011</i>
Ontario Graduate Scholarship \$15,000	<i>Fall 2011 (declined)</i>
Simon Fraser University Graduate Scholarship \$30,000	<i>Fall 2011 (declined)</i>
Rising Stars of Research Most Outstanding Poster \$500	<i>Summer 2009</i>
NSERC Undergraduate Research Award \$5625	<i>Summer 2007 & 2009</i>
R. Douglas and Kathleen Kennedy Scholarship \$1000	<i>Winter 2009</i>
OAC '54 International Study Scholarship \$1450	<i>Winter 2008</i>
OAC '55 Access Bursary \$500	<i>Winter 2007</i>
University of Guelph Entrance Scholarship \$1000	<i>Winter 2006</i>
Lorne Argent Memorial Award \$300	<i>Fall 2005</i>

REFERENCES

Dr. Mark Mallory, Canada Research Chair, Professor, Acadia University

Post-doctoral Fellowship advisor, mark.mallory@acadiau.ca

Dr. Andy Horn, Adjunct Research Associate, Dalhousie University

Colleague and mentor, aghorn@dal.ca

Dr. Marty Leonard, Dean, Faculty of Graduate Studies, Professor, Dalhousie University

PhD advisor, mleonard@dal.ca

Dr. Rob Ronconi, Wildlife Biologist, Canadian Wildlife Service, Environment Canada

Freelance employer, robert.ronconi@canada.ca