

# MICHELLE A. LARUE

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## EDUCATION

- 2011–2014: Ph.D. Conservation Biology, University of Minnesota, St. Paul, MN  
DISSERTATION: *Using high-resolution satellite imagery to assess animal populations in Antarctica*  
ADVISORS: Donald Siniff and James L. David Smith  
Graduated Summa Cum Laude; awarded University of Minnesota Regent's Scholarship
- 2005–2007: M.S. Wildlife Ecology, Southern Illinois University Carbondale, Carbondale, IL  
THESIS: *Predicting potential habitat and dispersal corridors for cougars in midwestern North America*  
Graduated Summa Cum Laude
- 2001–2005: B.S. Ecology, Minnesota State University Mankato, Mankato, MN  
Graduated Magna Cum Laude

## RESEARCH & ACADEMIC EXPERIENCE

- 2018–present: **Lecturer**, Te Kura Aronukurangi, Te Whare Wānanga o Waitaha (University of Canterbury)  
*Projects (PI)*: Crabeater seal populations & habitat in the Weddell Sea; *Co-I*, eDNA in Antarctica  
Supervising: Dr. Mia Wege (post-doc), Rose Foster (PhD), Alexa Hasselman (PhD), Lucy Howell (MS), Arek Aspinwall (MS)
- 2014–present: **Research Associate**, Department of Earth & Environmental Science, University of Minnesota  
*Projects (PI)*: Citizen science for Weddell seal ecology, Emperor penguin population trends  
Supervising: Dr. Sara Labrousse (post-doc), David Ortega (undergraduate research assistant)
- 2017–present: **Adjunct Assistant Scientist**, Southern Illinois University Carbondale  
*Projects (PI)*: Social media engagement and cougar research
- 2013–2018: **Research Associate**, Office Vice President for Research, University of Minnesota  
*Projects*: Evaluation of the MnDRIVE state-wide program  
Supervisors: Dr. Frances Lawrenz
- 2007–2013: **Research Fellow**, Polar Geospatial Center, University of Minnesota  
*Projects*: Remote sensing and GIS in polar ecology (penguins, seals, polar bears)  
Supervisor: Paul Morin
- 2007: **Faculty Research Assistant**, UMCES Laboratory, University of Maryland  
*Projects*: Remote sensing of nitrogen in grasslands, stream burial in Chesapeake Bay watershed  
Supervisor: Dr. Andrew Elmore

## PROFESSIONAL EXPERIENCE

2014–present: Executive Director, The Cougar Network ([www.cougarnet.org](http://www.cougarnet.org))

- Lead research nonprofit focusing on tracking cougar range expansion
- Human attitudes & outreach, habitat suitability, population viability of cougars in the Midwest
- Expanded reach through social media (>1,900 Twitter followers via @Cougar\_Network), increased donations by more than seven times over the average annual amount since 2005

2008–present: Ecological & Science Communication Consultant

- Provide ecological, science communication, and grant-writing expertise to organizations including ImageTree Corporation (Morgantown, WV), The Bailey Group (Minneapolis, MN), Brighton Agency (St. Louis, MO), The Mill (London, UK), and the Minnesota Department of Natural Resources

## PEER-REVIEWED PUBLICATIONS (1,161 CITATIONS; H-INDEX=17; I10-INDEX=19); \*DENOTES TRAINEE AUTHOR

30. \*Greenspan, E., **M.A. LaRue**, C.K. Nielsen. 2020. Attitudes of social media users toward mountain lions in North America. *Wildlife Society Bulletin*, *in press*.

29. Wege, M.\*, L. Salas, **M.A. LaRue**. Satellite imagery and citizen science reveal the ecology of crabeater seal distribution in the Weddell Sea. *Diversity and Distributions* <https://doi.org/10.1111/ddi.13120>.

28. Santora, J., **M.A. LaRue**, D. Ainley. Geographic structuring of Antarctic penguin populations. *Global Ecology and Biogeography* DOI: 10.1111/geb.13144

27. Ainley, D.G., P.A. Cziko, N. Nur, J.J. Rotella, J.T. Eastman, **M.A. LaRue**, P.A. Abrams. Antarctic toothfish: no match for hungry Weddell seals. *In press at Antarctic Science*.

26. Jenouvrier, S., D. Iles, S. Labrousse, L. Landrum, J. Garnier, H. Caswell, C. Barbraud, H. Weimerskirch, **M.A. LaRue**, M. Holland. 2019. Future declines of emperor penguins. *Global Change Biology* 26:1170–1184.

25. Trathan, P.N., B. Wienecke, C. Barbraud, S. Jenouvrier, G. Kooyman, C. Le Bohec, D.G. Ainley, A. Ancel, D.P. Zitterbart, S.L. Chown, **M.A. LaRue**, R. Cristofari, J. Younger, G. Clucas, C.A. Bost, J.A. Brown, H.J. Gillett, and P.T. Fretwell. 2019. The emperor penguin – vulnerable to projected rates of warming and sea ice loss. *Biological Conservation* 241:108216.

24. **LaRue, M.A.**, D.G. Ainley, L. Salas, S.S. Stammerjohn, M. Dozier, K. Stamatiou, J. Saints, J. Pennycook, N. Nur, L. Barrington. 2019. Engaging “the crowd” in remote sensing to learn about habitat affinity of the Weddell seal in Antarctica. *Remote Sensing in Ecology and Conservation* 6:70–78.

23. **LaRue, M.A.**, C.K. Nielsen, B. Pease. 2019. Increased presence of Midwestern cougars despite hunting in a source population. *Journal of Wildlife Management* 83:1306–1313.

22. **LaRue, M.A.**, D. Iles, S. Labrousse\*, L. Salas, D.G. Ainley, G. Ballard, B. Saenz. 2019. A possible subcolony of Adélie penguins on fast ice near Cape Crozier, Antarctica. *Antarctic Science* 31:189–194.

21. **LaRue, M.A.**, L. Salas, N. Nur, D.G. Ainley, S. Stammerjohn, L. Barrington, K. Stamatiou, J. Pennycook, M. Dozier, J. Saints, H. Nakamura. 2019. Physical and ecological factors explain the distribution of Ross Sea Weddell seals during the breeding season. *Marine Ecology Progress Series* 612:193–208.

20. **LaRue, M.A.** and S. Stapleton. 2018. Estimating the abundance of polar bears on Wrangel Island during late summer using high-resolution satellite imagery: A pilot study. *Polar Biology* 41:2621–2626.
19. **LaRue, M.A.**, S. Stapleton, M. Anderson. 2017. Feasibility of using high-resolution satellite imagery for wildlife population assessment. *Conservation Biology* 31:213–220.
18. **LaRue, M.A.**, and C.K. Nielsen. 2016. Population viability of recolonizing cougars in the Midwest. *Ecological Modelling* 321:121–129.
17. **LaRue, M.A.**, S.S. Stapleton, C.C. Porter, T. Atwood, N. Lecomte, and S. Atkinson. 2015. Testing methods for using high-resolution satellite imagery to monitor polar bear abundance and distribution. *Wildlife Society Bulletin* 39:772–779.
16. Withrana, C., **M.A. LaRue**, and H.J. Lynch. 2015. Benchmarking of data fusion algorithms in support of earth observation based Antarctic wildlife monitoring. *Journal of Photogrammetry and Remote Sensing* 113:124–143.
15. Ainley, D.G., **M.A. LaRue**, S.E. Stammerjohn, I. Stirling, D.B. Siniff. 2015. Apparent decline of Weddell seal numbers along the Northern Victoria Land Coast. *Marine Mammal Science* 31:1338–1361.
14. **LaRue, M.A.** and J. Knight. 2014. Applications of very high resolution imagery in the study and conservation of predators in the Southern Ocean. *Conservation Biology* 28:1731–1735.
13. **LaRue, M.A.**, G. Kooyman, H.J. Lynch, and P.T. Fretwell. 2014. Emigration in emperor penguins: Implications for interpretation of long-term studies. *Ecography* 38:114–120.
12. Lynch, H.J. and **M.A. LaRue**. 2014. The first global census of the Adélie penguin. *The Auk* 31:457–466.
11. Stapleton, S., **M.A. LaRue**, N. Lecomte, S. Atkinson, D. Garshelis, C. Porter, T. Atwood. 2014. Polar bears from space: Assessing satellite imagery as a tool to monitor *Ursus maritimus*. *PLoS ONE* DOI: 10.1371/journal.pone.0101513.
10. **LaRue, M.A.**, H.J. Lynch, P. Lyver, K. Barton, D.G. Ainley, A.M. Pollard, G. Ballard. 2014. A method for estimating colony sizes of Adélie penguins using remote sensing imagery. *Polar Biology* 37:507–517.
9. **LaRue, M.A.**, D.G. Ainley, M. Swanson\*, P.O.B. Lyver, K.T. Dugger, G. Ballard, and K. Barton. 2013. Climate change winners: receding ice fields allow colony expansion and altered metapopulation dynamics among Adélie penguins in the southern Ross Sea. *PLoS ONE* 8(4): e60568. doi:10.1371/journal.pone.0060568.
8. **LaRue, M.A.**, C.K. Nielsen, M. Dowling, K. Miller, B. Wilson, H. Shaw, and C. Anderson. 2012. Cougars are recolonizing the Midwest: Analysis of cougar confirmations during 1990-2008. *Journal of Wildlife Management* 76:1364–1369.
7. Fretwell, P., **M.A. LaRue**, G.L. Kooyman, B. Wienecke, C. Porter, A.J. Fox, A.H. Fleming, N. Ratcliffe, P.J. Morin, and P.N. Trathan. 2012. The first global, synoptic survey of a species from space: emperor penguins. *PLoS ONE* 7(4): e33751. doi:10.1371/journal.pone.0033751.

6. **LaRue, M.A.**, J. Rotella, B. Garrott, D.B. Siniff, D.G. Ainley, G.E. Stauffer, C. Porter, and P.J. Morin. 2011. Satellite imagery can be used to detect variation in abundance of Weddell seals (*Leptonychotes weddellii*) in Erebus Bay, Antarctica. *Polar Biology* 34:1727–1737.
5. Henaux, V., L.A. Powell, K.A. Hobson, C.K. Nielsen, and **M.A. LaRue**. 2011. Tracking large carnivore dispersal using isotopic clues in claws: an application to cougars across the Great Plains. *Methods in Ecology and Evolution* 2:489–499.
4. **LaRue, M.A.**, and C.K. Nielsen. 2010. Modelling potential habitat for cougars in midwestern North America. *Ecological Modelling* 22:897–900.
3. **LaRue, M.A.**, and C.K. Nielsen. 2008. Modelling potential dispersal corridors for cougars in midwestern North American using least-cost path methods. *Ecological Modelling* 212:372–381.
2. **LaRue, M.A.**, C.K. Nielsen, and M.D. Grund. 2007. Using distance sampling to estimate densities of deer in south-central Minnesota. *The Prairie Naturalist* 39:57–68.
1. **LaRue, M.A.**, and C. K. Nielsen. 2006. Using expert-opinion surveys and GIS to model potential cougar habitat and corridors in Midwestern North America. *Endangered Species Update* 23:55–61.

PUBLICATIONS IN REVIEW/IN PREPARATION (N = 7); \*DENOTES TRAINEE AUTHOR

\*Howell, L., **M.A. LaRue**, S. Flanagan. A review of environmental DNA surveys in Antarctica and potential applications. *In revision at New Zealand Journal of Zoology*.

**LaRue, M.A.**, \*M. Wege, L. Salas, N. Gardiner, C. Brooks. Continent-wide monitoring of ecosystem function via ice-obligate predator populations is feasible. *In revision at Conservation Letters*.

Salas, L., **M.A. LaRue**, et al. How many seals do you see? Crowd-sourced method for estimating populations of animals on high-resolution satellite imagery. *In revision at Methods in Ecology and Evolution*.

\*Labrousse, S., D. Iles, L. Viollat, **M.A. LaRue**, P. Fretwell, P. Trathan, and S. Jenouvrier. Quantifying the causes and consequences of variation in satellite-derived population indices: a case study of emperor penguins. *In review at Remote Sensing in Ecology and Conservation*.

**LaRue, M.A.**, L. Salas, D.G. Ainley, N. Nur, S. Stammerjohn, J. Pennycook, M. Wege, J. Saints, M. Dozier, K. Stamatiou, D. Siniff, J. Rotella, L. Barrington. The first global census of Weddell seals: far fewer than expected. *In preparation for Science Advances*.

Ainley, D.G., V. Morandini, J.J. Rotella, **M.A. LaRue** et al. The return of the Anthropocene to the Ross Sea. *In preparation for Bioscience*.

\*Wege, M., L.S. Salas, and **M.A. LaRue**. A future for crabeater and Weddell seals in the Weddell Sea. *In preparation for Conservation Biology*.

## REPORTS AND BOOKS

2. **LaRue, M.A.**, and F. Lawrenz. 2019. Evaluation of the MnDRIVE program: connecting the state, the University, and industry to improve the lives of Minnesotans. Technical report submitted to Office of the Vice President for Research at University of Minnesota.

1. Harris, C.M., K. Lorenz, L.D.C Fishpool, B. Lascells, J. Cooper, N.R. Coria, J.P. Croxall, L.M. Emmerson, W.R. Fraser, R.C. Fijn, P. Jouventin, **M.A. LaRue**, Y. LeMaho, H.J. Lynch, R. Naveen, D.L. Patterson-Fraser, H.U. Peter, S. Poncet, R.A. Phillips, C.J. Southwell, J.A. van Franeker, H. Weimerskirch, B. Weinecke, and E.J. Woehler. 2015. Important bird areas in Antarctica 2015. *Birdlife International and Environmental Research and Assessment, Ltd. Cambridge.*

### GRANTS (\$1,405,728 USD SECURED; \$800,000 NZD PENDING)

17. (PI) **LaRue, M.A.** A metacommunity approach to ice-obligate predators in the Southern Ocean. Rutherford Discovery Fellowship, \$800,000 NZD, pending.

16. (Co-I) Hillard, L., R. Sutherland, C. Laporte, C. Nielsen, **M. LaRue** (via Cougar Network), and B. Winkel. 2020-22. Habitat connectivity and human dimensions of large carnivores in eastern North America. *Summerlee Foundation*, \$68,228.

15. (Co-I) Flanagan, S., and **M.A. LaRue**. 2019. Detecting the presence of Weddell seals and Adélie penguins using on-site analysis of environmental DNA. NZARI Early Career Researcher Seed Grant. \$10,000 NZD.

14. (PI) **LaRue, M.A.** 2018-2019. Understanding distribution and abundance of an important krill predator, the crabeater seal, in the inaccessible Weddell Sea. Pew Charitable Trusts. \$131,000 USD.

13. (PI) **LaRue, M.A.**, and S. Jenouvrier. 2018-2021. COLLABORATIVE RESEARCH: A multi-scale approach to understanding spatial and population variability in emperor penguins. *National Science Foundation*, \$507,111 USD.

12. (PI) **LaRue, M.A.** 2017-2018. Enhancing citizen science efforts to understand Weddell seal ecology across Antarctica. *Antarctic and Southern Ocean Coalition*, \$20,000 USD.

11. (PI) **LaRue, M.A.**, and C.K. Nielsen, via Cougar Network. 2016-2018. Attitudes of livestock owners toward recolonization of cougars in the Midwest. *Summerlee Foundation*, \$10,000 USD.

10. (PI) **LaRue, M.A.**, D.G. Ainley, L. Barrington, S.E. Stammerjohn, L. Salas. 2016-2019. Collaborative research: Determining factors affecting distribution and population variability of the ice-obligate Weddell seal. *National Science Foundation*, \$502,041 USD.

9. (PI) Anderson, M., S.S. Stapleton, and **M.A. LaRue**. 2015-2016. Detecting muskoxen with remote sensing. *Government of Nunavut*, \$18,000 USD.

8. (Co-I) Arnold, T., **M.A. LaRue** and S.S. Stapleton. 2015-2016. Polar bears on Wrangel Island. *United States Geological Survey*, \$14,536 USD.

7. (Co-I) Stapleton, S., **M.A. LaRue**, and T. Arnold. 2013-2015. Remote sensing of polar bears: developing a methodological framework for using high-resolution satellite imagery to monitor *Ursus maritimus* abundance and distribution. *World Wildlife Fund*, \$52,000 USD.

6. (Co-I) **LaRue, M.A.** 2012-2013. Using high-resolution imagery to assess biogeography and status of pygoscelis species in Antarctica. *National Science Foundation* (subcontract through University of Maryland), \$51,700 USD.
5. (PI) **LaRue, M.A.** 2012. Estimating abundance of Weddell seals in the Ross Sea, Antarctica. Conservation Biology Ph.D. Fellowship, *University of Minnesota*, \$4,500 USD.
4. (Co-I) Nielsen, C.K., and **M.A. LaRue**, via Cougar Network. 2008-2009. Modeling potential cougar recolonization in midwestern North America. *Summerlee Foundation*, \$13,000 USD.
3. (PI) **LaRue, M.A.**, L.I. Hajduk, S.M. Wakamiya, and E. C. Hellgren. 2007. Technology enhancement for graduate students in the Cooperative Wildlife Research Laboratory. *Southern Illinois University Carbondale*, \$5,381 USD.
2. (PI) **LaRue, M.A.**, and B.R. McMillan. 2004. Evaluation of distance sampling to estimate density of deer. *Minnesota State University Mankato*, \$250 USD.
1. (PI) **LaRue, M.A.**, and B.R. McMillan. 2003. Food habits of the hoary bat (*Lasiurus cinereus*) in southern Minnesota. *Minnesota State University Mankato*, \$1,000 USD.

#### COURSES TAUGHT/GUEST LECTURES

18. ANTA201 (spring 2020) – course coordinator University of Canterbury
17. BIOL215 (fall 2020) – course contributor University of Canterbury
16. ANTA601-604 (summer 2019-2020) – field & course coordinator University of Canterbury
15. SCIE101 (2019) – Course contributor, Citizen science (2 lectures) University of Canterbury
14. ANTA103 (2019) – Course contributor, Marine biology (5 lectures) University of Canterbury
13. GIS406 (2019, 2020) – Course contributor (1 lecture) University of Canterbury
12. ANTA601 (summer 2018-2019) – Course contributor (5 lectures) University of Canterbury
11. ANTA101 (2018, 2019), Course contributor (4 lectures) University of Canterbury
10. “Telling Your Story”, Institute on Environment’s Boreas Leadership Program, University of Minnesota, Fall 2017.
9. “Your Life Online”, Institute on Environment’s Boreas Leadership Program, University of Minnesota, Fall 2017.
8. “Extreme-Weather Survivalists: The Wildlife of Antarctica”, College of Continuing Education short course, University of Minnesota, 2-16 November, 2016.
7. “Climate Change and Wildlife Management”, guest lecture of Principles of Wildlife Management, University of Minnesota, Spring 2016.
6. “Climate Change and Wildlife Management”, guest lecture for Principles of Wildlife Management, University of Minnesota, Spring 2014.

5. "America's large cat on the comeback: mountain lions in the Midwest", guest lecture for Conservation Biology, Vanderbilt University, Spring 2016.
4. "America's large cat on the comeback: mountain lions in the Midwest", guest lecture for Life Through Time, Vanderbilt University, Spring 2016.
3. "Remote sensing & ecological research at the poles", guest lecture for Introduction to Remote Sensing, University of Minnesota, Fall 2015.
2. "A tour of geospatial techniques and remote sensing in polar ecology", guest lecture for Introduction to Remote Sensing, University of Minnesota, Fall 2014.
1. "Wildlife research in Antarctica: an interdisciplinary approach", guest lecture for Wildlife Management, Itasca Community College, Spring 2013.

#### INVITED PRESENTATIONS

56. LaRue, M.A. 2020. Weddell seal population estimate. Antarctic Futures, Moscow, Russia – CANCELED DUE TO COVID-19.
55. LaRue, M.A. 2019. Using satellite imagery to study ecology of Southern Ocean predators. Antarctic Lecture Series, University of Canterbury, Christchurch, NZ.
54. LaRue, M.A. 2019. Satellites Over Seals: doing Antarctic research from the comfort of home. Antarctica After Dark. Christchurch, NZ.
53. LaRue, M.A. 2019. (Master of ceremonies) Science careers event. University of Canterbury, Christchurch, NZ.
52. LaRue, M.A. 2019. Demystifying emperor penguins and climate change. Pubcast at Smash Palace, Christchurch, NZ.
51. LaRue, M.A., 2019. Technology and citizen science for research on Southern Ocean predators. University of Canterbury Tech Week, Christchurch, NZ.
50. LaRue, M.A. 2019. Ross Sea dependency and a marine protected area. University of the 3<sup>rd</sup> Age, Christchurch, NZ.
49. LaRue, M.A. 2019. Satellites Over Seals: Empowering life-long learning through citizen science in Antarctica. National Science Teachers Association Annual Meeting, Cincinnati, OH.
48. LaRue, M.A. 2019. Panelist at World Science Festival Brisbane, Brisbane, Australia.
47. LaRue, M.A. 2018. A bird's eye view of Antarctica: emperor penguins and Weddell seals from space. Sunday Night Galley Lecture, McMurdo Station, Antarctica.
46. LaRue, M.A. 2018. Science communication as a tool in seabird conservation and research, World Seabird Twitter Conference, Minneapolis, MN.
45. LaRue, M.A. 2018. Issues in penguin conservation. Minnesota Zoo Adult's Night Out, Bloomington, MN.

44. LaRue, M.A. 2018. A birds' eye view: how satellite imagery is changing ecological research in the Southern Ocean. Biology Department Graduate Seminar, Kent State University, Kent, OH.
43. LaRue, M.A. 2018. Fireside Chat: Being an Antarctic researcher. One Ocean Expeditions, Falkland Islands.
42. LaRue, M.A. 2018. Spying on polar wildlife. One Ocean Expeditions, Punta Arenas, Chile.
41. LaRue, M.A. 2017. A tour of high-resolution imagery for studying Southern Ocean predators. National Institute of Water and Atmospheric Research, Wellington, NZ.
40. LaRue, M.A. 2017. America's large cat is coming back. Brainerd Area Audubon Society, Baxter, MN.
39. LaRue, M.A. 2017. Weddell seals and citizen science methods. International Marine Protected Areas Congress, Santiago, Chile.
38. LaRue, M.A. 2017. Cougars in the Midwest. Large Carnivore Seminar, Illinois Department of Natural Resources. Jo Daviess County, IL.
37. LaRue, M.A. (Keynote Speaker). 2017. Implications for the comeback of the cougar in the Midwest. Audubon Society, Chisago City, MN.
36. LaRue, M.A. (Keynote Speaker). 2017. Women in science and engineering. University of Minnesota College of Science and Engineering, Minneapolis, MN.
35. LaRue, M.A. (Keynote Speaker) 2017. The comeback of America's large cat. Moravian College, Bethlehem, PA.
34. LaRue, M.A. (Keynote Speaker) 2017. Cougar range expansion and its implications. Lehigh Valley Watershed Conference. Philadelphia, PA.
33. LaRue, M.A. (Keynote Speaker) 2017. Citizen science in Antarctica. Earth Optimism Summit, Smithsonian Institute, Washington, D.C.
32. LaRue, M.A. 2017. How satellite imagery is changing ecological research in polar regions. University of North Dakota, Grand Rapids, ND.
31. LaRue, M.A. 2017. A discussion about science in a post-truth era in the United States. Cape Fear Academy, Cape Fear, NC.
30. LaRue, M.A. (Keynote Speaker) 2017. America's large cat on the comeback: mountain lions in the Midwest. Zumbro Valley Audubon Society, Rochester, MN.
29. LaRue, M.A. (Keynote Speaker) 2016. Connections: Technology, citizen science, and Antarctic wildlife. Kentucky Science Teachers' Association. Lexington, KY.
28. LaRue, M.A. 2016. How satellite imagery is changing ecological research in the Southern Ocean. Environmental Speakers' Seminar Series, University of New Hampshire, Durham, NH.



27. LaRue, M.A. 2016. Extreme animals in Antarctica. Bold Endeavors: Learning Life's 2016 Sampler, St. Paul, MN.
26. LaRue, M.A. 2016. Satellites over seals: citizen science and Southern Ocean ecology. Remote Sensing of Vertebrates Action Group, Scientific Committee on Antarctic Research, Kuala Lumpur, Malaysia.
25. LaRue, M.A. (Keynote Speaker) 2016. Satellite imagery is changing research and conservation in our Southern Ocean. International Marine Conservation Congress. St. John's, Canada.
24. LaRue, M.A. 2016. America's large cat on the comeback: mountain lions in the Midwest. Biology Departmental Seminar, Minnesota State University Mankato, Mankato, MN.
23. LaRue, M.A. (Keynote Speaker) 2015. Cougars in the Midwest: the role of the Cougar Network. Timber Wolf Alliance Carnivore Tracking Workshop. Tomahawk, WI.
22. LaRue, M.A. 2015. Cougars are making a comeback: eastward range expansion of North America's largest cat. Minnesota Zoo, Burnsville, MN.
21. LaRue, M.A. 2015. Climate change and polar regions. Beaumont Middle School. Lexington, KY.
20. LaRue, M.A. 2015. Developing remote sensing methods for estimating populations of animals in the Antarctic. Soft Rock Lunch Series, University of Minnesota, Minneapolis, MN
19. LaRue, M.A. 2015. Issues in Antarctic conservation: can remote sensing solve the problem? Conservation Biology Seminar, University of Minnesota, St. Paul, MN.
18. LaRue, M.A. 2014. GIS, remote sensing, and polar ecology. GIS Day, University of Minnesota, Minneapolis, MN.
17. LaRue, M.A. 2014. Using GIS and remote sensing to study polar animals. GeoManitoba Annual General Meeting, Winnipeg, Manitoba.
16. LaRue, M.A. 2014. A new look at emperor penguins. ideacity (<http://www.ideacityonline.com/>), Toronto, Canada.
- LaRue, M.A. 2014. The decay of the polar ice caps and implications for planet Earth. Geological Society of Minnesota Seminar, Minneapolis, MN.
15. LaRue, M.A. 2013. Environmental change and impacts on Antarctic fauna: a tour. Zumbro Valley Audubon Society, Rochester, MN.
14. LaRue, M.A. 2013. A tour of research in Antarctica. Red Hatter Women's Group, River Falls, WI.
13. LaRue, M.A. 2013. How climate change is affecting Antarctica and its inhabitants. Itasca Community College, Grand Rapids, MN.
12. LaRue, M.A. 2013. Emperor penguins: the first ever census of a species from space. Cheeseman's Ecology Safaris, Antarctica In-Depth Cruise aboard the Ortelius.

11. LaRue, M.A., D.G. Ainley, M. Swanson, P.O.B. Lyver, K.T. Dugger, G. Ballard, and K. Barton. 2013. Climate change winners: receding ice fields allow colony expansion and altered metapopulation dynamics among Adélie penguins in the southern Ross Sea. Gordon Research Conference (Polar Marine Science), Ventura, CA.
10. LaRue, M.A. 2012. How to count emperor penguins without stepping in it. St. Paul Audubon Society, St. Paul, MN.
9. LaRue, M.A. 2012. The Polar Geospatial Center: what it is and how it can help you. Association for Polar Early Career Scientists workshop, Portland, OR.
8. LaRue, M.A. 2012. The importance of a birds' eye view in Antarctica. United States Fish and Wildlife Service Seminar, Bloomington, MN.
7. LaRue, M.A. 2012. Monitoring the Ross Sea from space: applications of high-resolution imagery. Ross Sea MPA Workshop, La Jolla, CA.
6. LaRue, M.A. 2011. Using high-resolution satellite imagery to monitor penguins on the Antarctic Peninsula. NOAA Southwest Fisheries and Science, La Jolla, CA.
5. LaRue, M.A. (Keynote Speaker) 2011. Lessons from Antarctica: How satellite imagery is redefining ecological research. 2<sup>nd</sup> Annual Minnesota Phenology Conference, Finland, MN.
4. LaRue, M.A. 2010. Mapping earth's newest continent. Minnesota Geological Society Seminar, Minneapolis, MN.
3. LaRue, M.A. 2009. Finding mummified seals and following the South Pole Traverse: a dual role in Antarctica. Association of Women Geologists Luncheon, St. Paul, MN.
2. LaRue, M.A. 2009. Antarctica: A land of no law, no logic, no God, and no maps. University of Minnesota Paleocology Student Seminar, St. Paul, MN
1. LaRue, M.A. 2006. Habitat suitability of cougars in the Midwest. Illinois Student Chapter of The Wildlife Society, Carbondale, IL.

CONFERENCE PRESENTATIONS (\*DENOTES TRAINEE PRESENTATION)

45. LaRue, M.A., et al. 2020. Emperor penguin population trends over 10 years. Scientific Committee on Antarctic Research, Hobart, Australia (CANCELLED DUE TO COVID-19 – abstract only)
44. \*Foster, R., K. Goetz, R. Holser, M. Pinkerton, M.A. LaRue. 2020. Secret life of seals: using seal-mounted cameras to assess behavioural ecology of lactating female Weddell seals in McMurdo Sound, Antarctica. Scientific Committee on Antarctic Research, Hobart, Australia (CANCELLED DUE TO COVID-19 – abstract only)
43. \*Howell, L., M.A. LaRue, S. Flanagan. 2020. Environmental DNA as a tool for monitoring Antarctic vertebrates. Scientific Committee on Antarctic Research, Hobart, Australia (Online virtual display)
42. LaRue, M.A., et al. 2020. The first global census for the Weddell seal: far fewer than expected. Scientific Committee on Antarctic Research, Hobart, Australia (CANCELLED DUE TO COVID-19 – abstract only)

41. Winkel, B. M., C. K. Nielsen, L. M. Hillard, M. A. LaRue, R. Sutherland. 2020. Cougar recolonization of Eastern North America: habitat connectivity and human dimensions. 80th Midwest Fish and Wildlife Conference, Springfield, IL.
40. LaRue, M.A., \*M. Wege, L. Salas. 2019. Toward a standardized monitoring program for ice-obligate predators in the Southern Ocean. University of Canterbury Antarctic Research Conference, Christchurch, NZ.
39. \*Foster, R., Goetz, K., Pinkerton, M., and M.A. LaRue. 2020. Secret life of seals: Using Seal-mounted Cameras to Assess Behavioural Ecology of Lactating Female Weddell Seals in McMurdo Sound, Antarctica. University of Canterbury Antarctic Research Conference, Christchurch, NZ.
38. \*Wege, M., L. Salas, and M.A. LaRue. 2020. Satellite imagery and citizen science reveal the ecology of Crabeater seal distribution in the Weddell Sea. University of Canterbury Antarctic Research Conference, Christchurch, NZ.
37. \*Wege, M., L. Salas, and M.A. LaRue. 2019. (Lighting talk) Satellite imagery and citizen science reveal the ecology of crabeater seal distribution in the Weddell Sea. World Marine Mammal Conference, Barcelona, Spain.
36. Santora, J., M.A. LaRue, D.G. Ainley. 2019. Geographic structuring in Antarctic penguins. International Penguin Conference, Dunedin, NZ.
35. \*Foster, R., M.A. LaRue, S. Labrousse, D. Iles, S. Jenouvrier. 2019. Ross Sea emperor penguins over 15 years: population trends and habitat suitability. International Penguin Conference, Dunedin, NZ.
34. LaRue, M.A. 2019. Ross Sea ice-obligate predators: a review of technology and population status update. Antarctic Science Conference, Christchurch, NZ.
33. Salas, L., M.A. LaRue, N. Nur, K. Samatiou, J. Saints, D. Ainley, J. Rotella. 2018. Monitoring the distribution and abundance of Weddell seal populations using citizen scientist crowds. MEASO Conference, Hobart, Australia.
32. Santora, J., M.A. LaRue, and D.G. Ainley. 2018. Geographic structure of Adélie penguin colonies. Scientific Committee on Antarctic Research Conference, Davos, Switzerland.
31. LaRue, M.A., et al. 2018. Learning about Weddell seals: engaging citizen scientists with new technologies. Scientific Committee on Antarctic Research Conference, Davos, Switzerland.
30. LaRue, M.A., et al. 2018. Environmental factors influencing Weddell seal presence in the Ross Sea. Scientific Committee on Antarctic Research Conference, Davos, Switzerland.
29. LaRue, M.A., C.K. Nielsen. 2017. Spatial and temporal shifts in cougar presence in the Midwest in response to changing management regimes. Mountain Lion Workshops, Estes Park, CO.
28. LaRue, M.A., S.S. Stapleton, and M. Anderson. 2016. Feasibility of using high-resolution satellite imagery for wildlife ecology. The Wildlife Society, Raleigh, NC.

27. LaRue, M.A. 2016. Detecting diet of Adélie penguins using high-resolution satellite imagery. Scientific Committee on Antarctic Research, Kuala Lumpur, Malaysia.
26. Brakke, M., M.A. LaRue, F. Lawrenz. 2016. Understanding the low participation of underrepresented minority students in plant sciences. American Society for Plant Biology, Austin, TX.
25. LaRue, M.A., C.K. Nielsen. 2016. Dynamics of cougar recolonization in the Midwest: investigating trends in confirmations over 25 years. American Society of Mammalogists, Minneapolis, MN.
24. Nielsen, C.K., M.A. LaRue. 2016. Habitat suitability and population viability of recolonizing cougars in the midwestern U.S. American Society of Mammalogists, Minneapolis, MN.
23. Thompson, D.J., M.A. LaRue, J.A. Jenks, J.G. Clapp. 2015. Functionality of large carnivore range expansion: employing field data and modeling efforts to evaluate mountain lion recolonization. The Wildlife Society, WY.
22. Nielsen, C.K., and LaRue, M.A. 2015. Development of a multi-state study of carnivore occupancy in the Midwest: Lessons learned from large-scale research in Illinois. Midwest Furbearer Workshop, Nashville, IN.
21. LaRue, M.A., S.S. Stapleton, S. Atkinson, T. Atwood, T. Arnold, D. Garshelis, C.C. Porter. 2014. Automated methods for detecting and assessing abundance of polar bears using high-resolution satellite imagery. International Bear Association Conference, Thessaloniki, Greece.
20. Stapleton, S.S., M.A. LaRue, S. Atkinson, T. Atwood, M. Dyck, D. Garshelis, and C.C. Porter. 2014. High-resolution satellite imagery can provide an effective tool to monitor polar bear abundance and distribution. North American Congress for Conservation Biology Conference, Missoula, MT.
19. LaRue, M.A., and J. Knight. 2014. Applications of high-resolution imagery for sustainable resource use and conservation in the Southern Ocean. Scientific Committee on Antarctic Research International Conference, Auckland, New Zealand.
18. Pennycook, J., M.A. LaRue, B. Herried, and P.J. Morin. 2013. Using high-resolution satellite imagery to engage students in classroom experiences that meld research, the nature of science, and inquiry-based instruction. American Geophysical Union, San Francisco, CA.
17. Lynch, H.J., and M.A. LaRue. 2013. Emerging geospatial technologies for studying penguin biogeography. International Penguin Conference, Bristol, UK.
16. LaRue, M.A., H.J. Lynch, P. Lyver, K. Barton, D.G. Ainley, A.M. Pollard, G. Ballard. 2013. Establishing a method to estimate Adélie penguin populations using remotely-sensed imagery. Scientific Committee on Antarctic Research Biology Conference. Barcelona, Spain.
15. Stapleton, S., N. Lecomte, M.A. LaRue, S. Atkinson, T. Arnold, D. Garshelis, C. Porter. 2013. Evaluating satellite imagery as a tool to monitor *Ursus maritimus*. International Association Conference on Bear Research and Management, Provo, Utah.
14. LaRue, M.A., J. Rotella, B. Garrott, J. DeVoe, K. Banner, and D. Siniff. 2012. Using high-resolution satellite imagery to monitor population changes in Weddell seals in Ross Sea, Antarctica. Scientific Committee on Antarctic Research International Conference, Portland, OR.

13. LaRue, M.A., P.J. Morin, S. Niebuhr, and B. Herried. 2011. The Polar Geospatial Center: Supporting science and logistics at the poles. Arctic LTER Meeting, Woods Hole, MA.
12. Herried, B., P.J. Morin, M.A. LaRue, C. Porter, and S. Niebuhr. 2010. The Antarctic Geospatial Information Center: Three years of supporting Antarctic Science and Operations. American Geophysical Union, San Francisco, CA.
11. LaRue, M.A., C.K. Nielsen, M. Dowling, B. Wilson, H. Shaw, C. Anderson. 2010. Cougar confirmations in the Midwest: 1990-2008. Midwest Fish and Wildlife Conference, Minneapolis, MN.
10. Niebuhr, S., M.A. LaRue, P. Morin, and K. Matsumoto. 2009. Change detection of melt-water lakes and glacial lobes in Taylor Valley, Antarctica using remote sensing: A 50-year comparison. American Geophysical Union, San Francisco, CA.
9. LaRue, M.A. and C.K. Nielsen. 2009. Predicting cougar potential in the Midwest. Midwest Fish and Wildlife Conference, Springfield, IL.
8. Henaux, V., L.A. Powell, K.A. Hobson, C.K. Nielsen, and M.A. LaRue. 2009. Tracking cougars in Midwestern North America: clues in claw isotope ratios. Defenders of Wildlife Carnivores Conference, Denver, CO.
7. LaRue, M.A., and C.K. Nielsen. 2009. Potential recolonization and population viability of cougars in the Midwest. Ecological Society of America Conference, Albuquerque, NM.
6. Nielsen, C.K. and M.A. LaRue. 2008. Potential habitat and dispersal corridors for cougars in the Midwest. 9th Mountain Lion Workshop, Sun Valley, ID.
5. LaRue, M.A. and C.K. Nielsen. 2007. Predicting potential dispersal corridors for cougars in the Midwest. The Wildlife Society Conference, Tuscon, AZ.
4. LaRue, M.A., and C.K. Nielsen. 2006. Predicting potential habitat for cougars in the Midwest. Defenders of Wildlife Carnivores Conference, St. Petersburg, FL.
3. LaRue, M.A., C.K. Nielsen, and M.D. Grund. 2005. Using distance sampling to determine densities of deer in south-central Minnesota. Midwest Fish and Wildlife Conference, Grand Rapids, MI.
2. LaRue, M.A., and J. Tardiff. 2004. Chronic wasting disease in Minnesota: status update and vulnerable populations. Undergraduate Research Conference, Minnesota State University, Mankato, MN.
1. LaRue, M.A., M. Perlik, and B.R. McMillan. 2003. Food habits of the hoary bat (*Lasiurus cinereus*) in southwestern Minnesota. Undergraduate Research Conference, Minnesota State University, Mankato, MN.

#### HONORS AND AWARDS

- College of Science's Emerging Researcher Award, University of Canterbury, 2019 (\$3,000 NZD)
- Gold EXCEL award, American Media and Publishing, "America's cat is on the comeback", published in American Scientist, 2019
- Maroon and Gold Award, "New study shows that emperor penguins may be adapting to climate change" press release, University of Minnesota Communications Forum, 2015

- International Travel Award, University of Minnesota, 2014 (\$1,500)
- SCAR Early Career Scientist Travel Award, 2014 (\$2,000)
- SCAR Biology Early Career Scientist Travel Award, 2013 (\$2,000)
- Regent's Scholarship, University of Minnesota, 2011-2014 (\$42,800)
- John Choe Scholarship, Minnesota State University Mankato, 2004-2005 (\$1,500)
- Dean's List, Minnesota State University Mankato, 2002-2005
- Outstanding Student Presentation, Undergraduate Research Conference, Minnesota State University, 2003

#### SERVICE

- SOOS Ross Sea Leadership Group (2020-present)
- SCAR Biology Symposium 2021 local organizing committee (2020-2021)
- Host & presenter, Antarctic Season Opening Ambassadors' Visit, University of Canterbury (2019)
- NZ Antarctic Science Conference local organizing committee (2019)
- Master's thesis examiner, University of Canterbury (2019 - present)
- Coordinator, University of Canterbury Antarctic Lecture Series (2019 - present)
- Advisory Board member, MarXiv Preprints, 2017 - present
- SCAR Remote Sensing of Vertebrates Action Group, 2013 - present
- Census of Antarctic Pack-ice Seals (CAPS) Group, Southern Ocean Observing System, 2014 - present
- Co-Chair & Convener, Remote Sensing of Vertebrates Session, SCAR Open Science Conference, 2018
- Co-Chair, Remote Sensing of Vertebrates Session, SCAR Open Science Conference, 2014, 2018
- Expert reviewer, Endangered Species Act (eastern cougar)
- International Penguin Early Career Scientists (IPECS) mentor
- NSF Polar Cyberinfrastructure Education Group, 2013
- NSF Polar Cyberinfrastructure Research Coordinated Network, 2016
- NSF Polar Cyberinfrastructure Hackathon Participant (advising two students), 2017
- External dissertation examiner, University of Cambridge, UK, 2017 - present
- Science-Student partnerships mentor and speaker (<http://scistupartner.weebly.com/>)
- Skype-A-Scientist volunteer
- Science Education Volunteer, Victoria Elementary School, Victoria, MN 2009-present
- Proposal reviewer for: North Pacific Research Board, Netherlands Organization for Scientific Research, University of Minnesota
- Manuscript reviewer for: Science Advances, Proceedings on the National Academy of Sciences, Proceedings on the Royal Academy of Sciences, Global Change Biology, Methods in Ecology and Evolution, Conservation Biology, Biological Conservation, Ecology, Remote Sensing in Ecology and Conservation Marine Ecological Progress Series, Landscape Ecology, Ecosphere, Journal of Animal Ecology, Journal of Applied Ecology, Ecological Modeling, Marine Mammal Science, PLoSOne, Polar Biology, Antarctic Science, Journal of Mammalogy, Journal of Wildlife Management, Wildlife Society Bulletin, International Journal of Remote Sensing, Molecular Ecology, Remote Sensing of the Environment, Science of the Total Environment, Diversity and Distributions

#### SELECTED MEDIA COVERAGE (N>800 OUTLETS WORLDWIDE)

On citizen science for Weddell & crabeater seals:

1. TV interview with TVNZ: <https://www.newsroom.co.nz/2019/03/07/474865/saving-seals-from-your-laptop>

2. Official press release on NSF website: [https://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=189397](https://www.nsf.gov/news/news_summ.jsp?cntn_id=189397)
3. Popular media on Quartz: <http://qz.com/743315/scientists-are-searching-for-antarctic-seals-using-satellite-imagery-and-you-can-help/>
4. Radio interview on Minnesota Public Radio: <http://www.mprnews.org/story/2016/07/27/university-weddell-seal-counting-project>
5. Radio interview on WTIP: <http://www.wtip.org/cool-count-seals-antarctica-comfort-your-couch>

#### On Emperor penguins:

1. TV interview with BBC (2019): [https://www.bbc.com/news/video\\_and\\_audio/headlines/48056833/thousands-of-emperor-penguin-chicks-drown](https://www.bbc.com/news/video_and_audio/headlines/48056833/thousands-of-emperor-penguin-chicks-drown)
2. Smithsonian article: <https://www.smithsonianmag.com/science-nature/antarctic-expedition-returns-mission-fix-population-emperor-penguins-180971324/>
3. Interview on NBC Nightly News with Brian Williams: <http://www.nbcnews.com/id/21134540/vp/47080146#47080146>
4. Radio interview with PRI: <http://www.pri.org/stories/2012-04-16/antarctica-penguin-population-double-previous-estimate>
5. Radio interview with Minnesota Public Radio: <http://www.mprnews.org/story/2012/04/13/emperor-penguin-count>
6. Wall Street Journal: <http://www.wsj.com/news/articles/SB10001424052702303624004577341852685773234>
7. Washington Post: <http://www.washingtonpost.com/news/morning-mix/wp/2014/06/24/study-march-of-the-penguins-may-be-wrong/>
8. National Geographic: <http://news.nationalgeographic.com/news/2012/04/120413-emperor-penguins-survey-antarctica-animals-space-science/>
9. TVNZ article (2020): <https://www.tvnz.co.nz/one-news/world/views-poo-space-reveal-previously-undiscovered-emperor-penguin-colonies>
10. Scientific American: <http://www.scientificamerican.com/article/penguins-from-space-a-census/>

#### On Adélie penguins:

1. Radio interview with Minnesota Public Radio: <http://www.mprnews.org/story/2013/04/11/environment/Adélie-penguins-benefitting-from-climate-change-u-of-m-research-says>
2. Interview with Slate's The Gist (Mike Pesca): <https://soundcloud.com/thegist/does-putin-know-when-to-fold-em>
3. Smithsonian Magazine: <http://www.smithsonianmag.com/smart-news/climate-change-means-more-Adélie-penguins-17008560/?no-ist>
4. Scientific American: <http://www.scientificamerican.com/podcast/episode/penguin-species-could-be-climate-wi-13-04-08/>
5. Wall Street Journal: <http://www.wsj.com/articles/Adélie-penguin-census-shows-seabirds-are-thriving-1405018917>
6. Live Science: <http://www.livescience.com/53715-missing-Adélie-penguins-are-probably-fine.html>

#### On Mountain lions:

1. Radio interview with Minnesota Public Radio: <http://www.mprnews.org/story/2012/06/14/environment/cougars-bounce-back>
2. Radio interview with Minnesota Public Radio: [https://www.mprnews.org/story/2015/12/23/research\\_weber\\_cougars\\_larue](https://www.mprnews.org/story/2015/12/23/research_weber_cougars_larue)
3. National Geographic: <http://news.nationalgeographic.com/2015/11/151110-mountain-lions-pumas-cougars-animals-science-nation/>
4. Smithsonian Magazine: <http://www.smithsonianmag.com/smart-news/cougars-are-returning-midwest-180957263/?no-ist>
5. USA Today: <http://usatoday30.usatoday.com/news/nation/story/2012-06-14/mountain-lions/55586994/1>
6. Scientific American: <http://www.scientificamerican.com/article/cougars-return-midwest-after-100-years/>
7. Outside Magazine: <http://www.outsideonline.com/blog/outdoor-adventure/cougars-increasing-in-the-midwest-by-the-numbers.html>
8. The Guardian: <http://www.theguardian.com/environment/2012/jun/14/return-of-the-cougar>

#### OTHER SKILLS

##### Field Experience:

- Team lead: USAP & Antarctica New Zealand: 2008-2013, 2018-2019
- Antarctic Peninsula cruises 2013, 2018
- Field crew lead: ImageTree Corp., 2007
- SIUC volunteer: rabbit, fox, weasel, deer projects, 2005-2007
- Field lead: distance sampling & chronic wasting disease, 2003-2005
- Wilderness First Responder, 2011-2014
- Qualitative research and interviewing techniques

##### Software Experience:

- ArcGIS 8.x, 9.x, 10.x
- ERDAS Imagine, LPS
- QGIS, GME
- SAS, R
- MARK, DISTANCE
- Qualtrics