

# Michigan Boone and Crockett Partners Professor's Report



January 1 to December 31, 2018

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## 2018 Summary

**Awards and Promotions:** 13 awards, 2 promotions

**Research Funding:** 16 projects totaling \$2,891,698

11 externally funded active research projects totaling \$2,281,229

4 internally funded active research projects totaling \$504,037

1 externally funded scholarship project totaling \$106,432

2 pending research proposals

**Publications:** 13 peer-reviewed publications, 2 books, 6 submitted manuscripts, 13 manuscripts in preparation, 2 popular articles, 5 technical reports

**Professional Presentations:** 15 invited talks, 22 oral presentations, 3 poster presentations

**Professional Mentoring:** 1 Assistant Professor, 2 Postdoctoral Scholars, 1 Research Administrator, 1 Research Assistant

**Student Advising:** 7 Ph.D. students, 2 M.S. students, 4 undergraduate students, 4 graduate committees

**Instruction:** 1 course, 8 guest lectures

**Professional Engagement:** 33 international/national activities, 8 regional activities, 7 state activities, 7 local activities, 8 university activities, 9 department activities, 15 press activities

**Professional Development:** 17 workshops attended

## Awards and Promotions

**Sonja Christensen** completed her PhD program and accepted a Postdoctoral Research Associate position in the Boone & Crockett Quantitative Wildlife Center.

**Steve Gurney** was awarded the Merrill "Pete" Petoskey Undergraduate Scholarship. This scholarship goes to a Fisheries and Wildlife student with evidence of leadership abilities.

**Kathryn Frens** was awarded a 2019 Knauss Marine Policy Fellowship. Kathryn will be finishing up her PhD program and moving to Washington, DC in February to receive hands-on experience transferring science to policy at the National Oceanic and Atmospheric Administration.

**Ashley Huinker** was awarded best oral presentation at the annual meeting of the Michigan Chapter of The Wildlife Society.

**Garrett Knowlton** was awarded a Justin S. Morrill Leadership Fellowship by the College of Agriculture and Natural Resources. Morrill Fellows represent MSU and the CANR to prospective students, alumni, industry partners, and community stakeholders.

**Garrett Knowlton** was awarded the Andy Ammann Chapter of the Ruffed Grouse Society Scholarship. This scholarship goes to a student who has demonstrated high scholarship, special interest in upland ecology and professional development, and potential in forest game bird management.

**Garrett Knowlton** was awarded an undergraduate academic scholarship from the Eastern Michigan Sportsmen Association.

**Bill Porter** was honored at the Michigan Natural Resources Commission meeting for his efforts as a member of the Michigan Chronic Wasting Disease working group.

**Leslie Skora** was promoted to Research Biologist with the National Park Service. Leslie's appointment allows her to continue her Master of Science program at MSU studying brown bears at Katmai National Park while working fulltime for NPS.

**Leslie Skora** was awarded best prospective research presentation at the 13th Annual Fisheries and Wildlife GSO Symposium at Michigan State University.

**Hunter Stanke** received an honorable mention for the Udall Scholarship. MSU nominates just two students annually for this nationally competitive award.

**Hunter Stanke** received an honorable mention for the Barry M. Goldwater Scholarship. Hunter was one of four MSU students nominated for this prestigious STEM research award.

**Hunter Stanke** received the Herbert Humphrey Endowed Scholarship award from the Department of Forestry.

**Rose Stewart** was named Support Staffer of the Month by MSU's College of Agriculture and Natural Resources Staff Advisory Committee.

**Jonathan Trudeau** received the Joseph G. Schotthoefter Memorial Student Award from the Safari Club International Michigan Involvement Committee.

## **Research and Scholarship**

### ***Active Research – Externally Funded***

Adaptation and resilience in habitat planning: Coupled human and natural systems models of oak management in a changing climate. Division of Wildlife, Michigan Department of Natural Resources. W. Porter. \$105,353. Supports Christopher Hoving.

American woodcock reproductive rates in relation to forest structure at local and landscape scales. Division of Wildlife, Michigan Department of Natural Resources. D. Williams, S. Winterstein, and D. Luukkonen. \$319,000. Supports Ashley Huinker.

Assessing drivers of spread and transmission of chronic wasting disease in Michigan deer. Division of Wildlife, Michigan Department of Natural Resources. D. Williams and W. Porter. \$502,736 plus \$114,222 supplement. Supports Jonathan Trudeau.

A coordinated survey and analysis of wild turkey abundance. National Wild Turkey Federation. W. Porter. \$45,000. Supports Joanne Crawford.

Delta WILD 4-H Club: Engaging youth in conservation through local wildlife monitoring. Michigan State University Extension, 4-H Participation Fee Grant. \$5,000. Supports J. Crawford's Delta WILD activities.

Evaluating the impacts of landscape-level changes on the abundance and distribution of record book white-tailed deer across a large geographic region. Division of Wildlife, Michigan Department of Natural Resources. W. Porter. \$125,968. Supports Rebecca Cain.

Evaluating the interaction of emerging diseases on white-tailed deer populations. The Hal and Jean Glassen Memorial Foundation. S. Christensen, W. Porter, and D. Williams. \$260,033. Supports Sonja Christensen.

Local-scale assessment and monitoring of deer populations following a major mortality event. Division of Wildlife, Michigan Department of Natural Resources. D. Williams, W. Porter, and A. Quinn. \$251,917. Supports Sonja Christensen.

Management of chronic wasting disease. Division of Wildlife, Michigan Department of Resources. W. Porter and D. Williams. \$250,000. Supports Noelle Thompson.

Management solutions for chronic wasting disease. Michigan State University, College of Agriculture and Natural Resources, AgBioResearch and MSU Extension. W. Porter, D. Williams, and S. Christensen. \$300,000. Supports Jonathan Cook.

Spatially-explicit analysis to quantify reporting rates of white-tailed deer entered in the Boone and Crockett records. MSU College of Agriculture and Natural Resources Undergraduate Research Program. D. Williams. \$2,000. Supports Garrett Knowlton.

### ***Active Research – Internally Funded***

Effects of land-use policy on wildlife conservation across northern forested landscapes. Boone and Crockett Endowment and Environmental Science and Policy Program Fellowship. \$201,741. Supports Kathryn Frens.

Potential wolf expansion into the Northern Lower Peninsula of Michigan – Impacts on cervid ecology and local economies. Boone and Crockett Endowment. \$192,031. Supports Nick Jaffe.

Population dynamics of brown bears in Katmai National Park and Preserve, Alaska. Boone and Crockett Endowment. \$59,461. Supports Leslie Skora.

Role of density-dependence on movement and resource selection of black bears in the Northern Lower Peninsula of Michigan. Boone and Crockett Endowment. \$50,804. Supports Jennifer Smith.

### ***Scholarship – Externally Funded***

Research and biometrics consultation and support to Wildlife Division via the Boone and Crockett Quantitative Wildlife Center at Michigan State University. Division of Wildlife, Michigan Department of Natural Resources. W. Porter and D. Williams. \$106,432. Supports David Williams.

### ***Pending Research Proposals***

A new paradigm for developing effective management strategies for infectious wildlife diseases. Submitted to USDA CARE Program. \$300,000. D. Ortega, S. Christensen, E. Pomeranz, and W. Porter.

Projecting the impacts of wolf recolonization on Michigan elk. Submitted to Rocky Mountain Elk Foundation. \$88,923. W. Porter and N. Jaffe.

### ***Undergraduate Research***

**Garrett Knowlton**, a senior working in the QWC as part of the CANR Undergraduate Research Program, is interested in wildlife management, spatial ecology, and science communication. He is assisting Rebecca Cain with a project evaluating whether reporting bias affects spatial patterning of record-book white-tailed deer at the time of harvest.

**Hunter Stanke**, a senior working in the QWC, is interested in spatial ecology and deer ecology and management. He is working with the Michigan Deer Disease Initiative.

**Kai Vue**, a sophomore volunteering in the QWC, is assisting Joanne Crawford as a student facilitator for the Delta WILD 4-H Club.

### ***Publications (Peer-reviewed)***

**Crawford, J.C., A.C. Dechen Quinn, D.M. Williams, B.A. Rudolph, K.T. Scribner, and W.F. Porter.** 2018. Fine-scale spatial genetic structure of deer in a suburban landscape. *Journal of Wildlife Management* 82(3): 596-607.

**Crawford, J.C., E. Schaubert, and C. Nielsen.** 2018. Survival and habitat use of sympatric lagomorphs in bottomland hardwood forests. *Canadian Journal of Zoology* 96: 713-722.

**Crosby, A.D. and W.F. Porter.** 2018. A spatially-explicit, multi-scale occupancy model for large-scale population monitoring. *Journal of Wildlife Management* 82(6): 1300-1310.

Hillard, E.M., A.C. Edmund, **J.C. Crawford**, C.K. Nielsen, E.M. Schaubert, and J.W. Groninger. Winter snow cover increases swamp rabbit (*Sylvilagus aquaticus*) mortality rate at the northern extent of their range. *Mammalian Biology* 93: 93-96.

**Jarzyna M.A.**, V.L. Atkin Dahm, B. Zuckerberg, and **W.F. Porter**. Consequences of climate change for wildlife. In: Koprowski, J.L. and Krausman, P.R., editors. International wildlife: Contemporary challenges in a changing world. The Wildlife Society and Johns Hopkins University Press. In Press.

Peach, M., J. Cohen, J. Frair, P. Sullivan, **W. Porter**, and C. Lang. The value of protected areas to avian persistence across 20 years of climate and land use change. Conservation Biology. In Press.

**Porter, W.F.** Foreword in deCalesta, D., Eckley, M. and Pierson, T., editors. Deer management for forest landowners and managers. Taylor & Francis Publishers. 680 pp. In Press.

**Porter, W.F.** and **K. Frens**. The landscape conservation movement. In: Mahoney, S., and V. Geist, editors. The North American model of wildlife conservation. Johns Hopkins University Press. In Press.

**Porter, W.**, R. Mason, and **K. Frens**. 2018. The protection acts. In: Leopold, B., Cummins, J. and Kessler, W., editors. North American wildlife policy and law. Boone and Crockett Club. Pages 193-208.

Rossi, A., F. Parada, **R. Stewart**, C. Barwell, G. Demas, and C. Allen. 2018. Hormonal correlates of exploratory and play-soliciting behavior in domestic dogs. Frontiers in Psychology 9: Article 1559.

**Snow N.P.**, Z. Zhang, A.O. Finley, B.A. Rudolph, **W.F. Porter**, **D.M. Williams**, and S.R. Winterstein. 2018. Regional-based mitigation approaches to reduce wildlife-vehicle collisions at large scales. Journal of Wildlife Management 82(4): 756-765.

**Thompson, N.E.**, E.W. Lankau, and G.M. Rogall. 2018. Snake fungal disease in North America: U.S. Geological Survey updates. Fact Sheet 2017–3064.

Whitman, B.J., **W.F. Porter**, **A.C. Dechen Quinn**, **D.M. Williams**, J. Frair, B. Underwood, and **J.C. Crawford**. 2018. Movement behavior preceding autumn mortality for white-tailed deer in central New York. Journal of Mammalogy 99(3): 675-683.

### **Books**

**Porter, W.F.**, C.J. Parent, and **D. M. Williams**, editors. Wildlife and Landscapes: Principles and Applications for Broad-scale Management. Johns Hopkins University Press in affiliation with The Wildlife Society, Baltimore, MD, USA. In Preparation.

Schmitt Olabisi, L., M. McNall, **W. Porter**, and J. Zhao, editors. Innovations in Collaborative Modeling. Michigan State University Press, East Lansing, MI, USA. In Press.

### **Popular Articles**

**Cain, R. L.** 2018. Cracking the monster buck mystery: An update on record-book white-tailed deer research at Michigan State University. *Wisconsin's Whitetail Classic*.

**Smith, J.B.** and **D.M. Williams**. 2018. Bears on an edge. *Fair Chase Magazine*. Winter 2018.

### ***Technical Reports***

**Cain, R., D. Williams, and W. Porter.** Findings from APR research in the northwest 12 counties of Michigan. Technical Report to the Michigan Department of Natural Resources.

**Christensen, S.A., W.F. Porter, and D.M. Williams.** 2018. Local-scale assessment and monitoring of deer populations following a major mortality event. Final Report to the Michigan Department of Natural Resources.

**Crawford, J.C. and W.F. Porter.** 2018. Midwest Wild Turkey Consortium: Insights, conclusions, and recommendations for the future. Final Report to the Midwest Wild Turkey Consortium.

**Williams, D.M.** 2018. Quantitative Wildlife Center research and biometric support for DNR-Wildlife Division. Final Report to the Michigan Department of Natural Resources.

**Williams, D.M. and W.F. Porter.** 2018. Black bear demographic parameters and spatially explicit capture-recapture estimation of abundance in Michigan's Northern Lower Peninsula. Final Report to the Michigan Department of Natural Resources.

### ***Submitted Manuscripts/Articles***

**Cain, R.L., N.P. Snow, J.C. Crawford, D.M. Williams, and W.F. Porter.** Regional factors associated with the harvest of record white-tailed deer. Submitted to Journal of Wildlife Management.

**Christensen, S.A., D.M. Williams, W.F. Porter, and B.A. Rudolph.** Spatial variation of white-tailed deer population impacts and recovery from epizootic hemorrhagic disease. Submitted to Journal of Wildlife Diseases.

**Crawford, J.C., J.L. Isabelle, and W.F. Porter.** Canary in the coalmine? Long-term productivity trends of Eastern wild turkeys in Missouri. Submitted to Journal of Wildlife Management.

**Gurney, S.M., J.B. Smith, D.R. Etter, and D.M. Williams.** American black bears and hair snares: a behavioral analysis. Submitted to Ursus.

**Manning, S. E., B.S. Stevens, and D.M. Williams.** Effects of multi-year regulation cycles on simulated performance of fall harvests for wild turkeys. In revision, Journal of Wildlife Management.

**Thompson, N.E., J.K. Trudeau, and J.D. Cook.** The challenges of communicating chronic wasting disease research in Michigan. Submitted to Spotlight Magazine.

### ***Manuscripts in Prep***

**Cain, R.L., B.A. Rudolph, D.M. Williams, and W.F. Porter.** Evaluating the effectiveness of antler point restrictions to achieve various white-tailed deer management goals. In prep.

**Christensen, S.A., D.M. Williams, and W.F. Porter.** Application of N-mixture models for aerial surveys of wildlife: A comparison study. In prep.

**Christensen, S.A.**, M. Ruder, **D.M. Williams**, **W. Porter**, and D. Stallknecht. The role of drought as a predictor of emergent hemorrhagic disease in the Eastern United States. In prep.

Clevinger, G.B., **J.K. Trudeau**, T.C. Carter, and J.C. Doll. Effect of urbanization on the survival and movements of localized populations of white-tailed deer in Southern Indiana. In prep.

**Crawford, J.C.**, **B.S. Stevens**, and **W.F. Porter**. Effects of simulated heterogeneity in catchability on population inferences for wild turkeys. In prep.

**Smith, J.B.**, **B.S. Stevens**, D. Etter, and **D.M. Williams**. 2018. Performance of repurposed mark-recapture data in spatial capture-recapture models. In prep.

**Smith, J.B.**, D. Etter, and **D.M. Williams**. 2018. Context matters: black bear use of agricultural landscapes. In prep for PLOS One.

**Stevens, B.S.**, J.R. Bence, D.R. Luukkonen, and **W.F. Porter**. A hierarchical framework for estimating abundance and population growth from replicated but imperfectly observed removal experiments. In prep.

**Stevens, B.S.**, D. R. Luukkonen, C.A. Stewart, **W.F. Porter**, J.R. Bence, and M.L. Jones. Spatial-temporal dynamics of post-restoration wild turkey hunter effort in Michigan. In prep.

**Stevens, B. S.**, J.R. Bence, M. L. Jones, **W.F. Porter**, D.R. Luukkonen, C.A. Stewart, **C.J. Parent**, and **D.M. Williams**. Population dynamics and management of wild turkeys in Michigan: linking monitoring, assessment, and harvest-policy evaluation. In prep.

**Thompson, N.E.**, M.L. Green, M.O. Ruiz, M.G. Buhnerkempe, R.E. Warner, J.E. Novakofski, and N.E. Mateus-Pinilla. White-tailed deer removal affects habitat use and spatial clustering. In prep.

**Thompson, N.E.**, M.L. Green, C.M. Nixon, R.E. Warner, M.O. Ruiz, J.E. Novakofski and N.E. Mateus-Pinilla. White-tailed deer in an insular natural community within a Midwestern agricultural region: a review. In prep.

**Trudeau, J.K.**, G.B. Clevinger, and T.C. Carter. Comparison of seasonal and annual space use of white-tailed deer in urban and rural Southern Indiana. In prep.

### ***Professional Presentations***

**Cain, R.L.**, B.A. Rudolph, **W.F. Porter**, and **D.M. Williams**. Evaluating the effectiveness of antler point restrictions to achieve various white-tailed deer management goals. Oral Presentation at the *78th Midwest Fish & Wildlife Conference*, 30 January 2018. Milwaukee, WI.

**Cain, R.L.**, B.A. Rudolph, **W.F. Porter**, and **D.M. Williams**. Evaluating the effectiveness of antler point restrictions to achieve management goals. Oral Presentation at the *13th Annual Fisheries and Wildlife GSO Research Symposium*. 16 February 2018. East Lansing, MI.

**Cain, R.L., B. Rudolph, W.F. Porter, and D.M. Williams.** Evaluating the effectiveness of antler point restrictions to achieve management goals. Oral Presentation at the *41st Annual Meeting of the Southeast Deer Study Group*. 20 February 2018. Nashville, TN.

**Cain, R.L., B.A. Rudolph, W.F. Porter, and D.M. Williams.** Evaluating the effectiveness of antler point restrictions to achieve management goals. Oral Presentation at the *2018 Annual Meeting of the Michigan Chapter of The Wildlife Society*. 15 March 2018. Gaylord, MI.

**Cain, R.L., D.M. Williams, and W.F. Porter.** Antler point restriction research. Invited oral presentation at the *Chronic Wasting Disease Working Session and Natural Resources Commission Meeting*. 9 May 2018. Traverse City, MI.

**Cain, R. L., D.M. Williams, and W.F. Porter.** Regulations, restrictions, and habitat: How management shaped the distribution of trophy white-tailed deer in the Midwest. Poster presentation at the *25<sup>th</sup> Annual Conference of The Wildlife Society*. 11 October 2018. Cleveland, OH.

**Christensen, S.A. and W.F. Porter.** Michigan Deer Disease Initiative. Invited briefing to Senator Debbie Stabenow. 5 February 2018. Lansing, MI.

**Christensen, S.A., M. Ruder, D.M. Williams, W.F. Porter, J. Fischer, and D. Stallknecht.** The role of drought as a predictor of hemorrhagic disease in the Eastern United States. Oral presentation at the *41st Annual Meeting of the Southeast Deer Study Group*. 21 February 2018. Nashville, TN.

**Christensen, S. A., D.M. Williams, and W.F. Porter.** Application of N-mixture models for aerial surveys of wildlife: A comparison study. Oral presentation at the *9th International Deer Biology Congress*. 7 August 2018. Estes Park, CO.

**Christensen, S. A., D.M. Williams, and W.F. Porter.** Epizootic hemorrhagic disease affects abundance and distribution of free-ranging deer populations. Oral presentation at the *9th International Deer Biology Congress*. 9 August 2018. Estes Park, CO.

**Cook, J.D., D.M. Williams, and W.F. Porter.** Catching it early: Evaluating risk factors for chronic wasting disease in Michigan. Oral Presentation at the *13th Annual Fisheries and Wildlife GSO Research Symposium*. 16 February 2018. East Lansing, MI.

**Cook, J.D., S.A. Christensen, D.M. Williams, and W.F. Porter.** Learning from others: Modeling the growth and spread of chronic wasting disease in an emergent area. Oral presentation at the *9th International Deer Biology Congress*. 5 August 2018. Estes Park, CO.

**Cook, J.D., N.E. Thompson, J.K. Trudeau, S.A. Christensen, D.M. Williams, and W.F. Porter.** Innovative research applications for CWD in Michigan. Oral presentation at the *42<sup>nd</sup> Midwest Deer and Wild Turkey Study Group*. 28 August 2018. Little Falls, MN.

**Crawford, J.C., B.S. Stevens, and W.F. Porter.** Effects of heterogeneity in catchability on CPUE data for wild turkeys. Oral presentation at the *42<sup>nd</sup> Midwest Deer and Wild Turkey Study Group*. 28 August 2018. Little Falls, MN.



**Crawford, J.C., and W.F. Porter.** Landscape changes in the Midwest and potential impacts on wild turkeys. Oral presentation at the *42<sup>nd</sup> Midwest Deer and Wild Turkey Study Group*. 28 August 2018. Little Falls, MN.

**Crawford, J.C., B.S. Stevens, and W.F. Porter.** Simulated effects of heterogeneity in catchability on population inferences for wild turkeys. Oral presentation at the *25<sup>th</sup> Annual Conference of The Wildlife Society*. 8 October 2018. Cleveland, OH.

**Crawford, J.C., and W.F. Porter.** Shifting the paradigm: New wave of wildlifers embrace public engagement. Invited oral presentation at the *25<sup>th</sup> Annual Conference of The Wildlife Society*. 10 October 2018. Cleveland, OH.

**Frens, K.M. and W.F. Porter.** Bird community diversity, development, and land protection in a mixed-use northern forest. Oral presentation at the *North American Congress for Conservation Biology*. 23 July 2018. Toronto, ON.

**Gurney, S., J.B. Smith, D.R. Etter, and D.M. Williams.** The American black bear and baited hair snares: a quantitative ethogram and behavioral analysis. Oral presentation at the *78th Midwest Fish & Wildlife Conference*, 29 January 2018. Milwaukee, WI.

**Knowlton, G.J., R.L. Cain, and D.M. Williams.** Spatially-explicit analysis to evaluate reporting rates of white-tailed deer entered in the Boone and Crockett records. Poster presentation at the *20th Annual University Undergraduate Research and Arts Forum*. 13 April 2018. East Lansing, MI.

**Knowlton, G. J., R. L. Cain, and D. M. Williams.** Spatially-explicit analysis of white-tailed deer reporting in the Boone and Crockett records. Poster presentation at the *25<sup>th</sup> Annual Conference of The Wildlife Society*. 11 October 2018. Cleveland, OH.

**Hoving, C.L., P. Lederle, and W.F. Porter.** An uncertain climate for deer wintering complexes: Scenario planning for complex adaptive systems. Oral presentation at the *Midwest Fish and Wildlife Conference*. 30 January 2018. Milwaukee, WI.

**Hoving, C.L.** Complexity and wildness. Invited oral presentation at the *Joint Professional Training of the Wildlife and Forest Divisions of the Michigan DNR*. 25 January 2018. Traverse City, MI.

**Hoving, C.L.** Vulnerability of Michigan wildlife to climate change. Oral presentation at the *Michigan Bird Conservation Initiative Conference*. 14 March 2018. Mackinaw City, MI.

**Hoving, C.L.** Resilience planning and Michigan's natural resources. Invited oral presentation and panel at the *Michigan Association of Planners Annual Conference*. 26 April 2018. Lansing, MI.

**Hoving, C.L.** Two approaches to adaptation: Systems and vulnerability analysis. Invited oral presentation at the Army National Guard Climate Adaptation Training. 28 August 2018. Augusta, MI.

**Hoving, C.L., P. Lederle, and W.F. Porter.** Generating greater wildness, biodiversity, and resilience: harnessing the power of complex adaptive systems to restore disturbance-dependent oak communities. Invited oral presentation at the *25<sup>th</sup> Annual Conference of The Wildlife Society*. 10 October 2018. Cleveland, OH.

**Huinker, A.E.,** D.R. Luukkonen, **D.M. Williams,** and S.R. Winterstein. Microhabitat selection and reproductive success of American woodcock in Michigan. Oral presentation at the *2018 Annual Meeting of the Michigan Chapter of The Wildlife Society*. 16 March 2018. Gaylord, MI.

**Jaffe, N.E.,** T.J. O'Connell, and M. Papes. Impacts of short-term temperature extremes on grassland avian abundance. Oral presentation at the *103<sup>rd</sup> Annual Meeting of the Ecological Society of America*. 10 August 2018. New Orleans, LA.

**Jaffe, N.E.,** and **W.F. Porter.** Predicting wolf recolonization at regional scales. Oral presentation at the *25<sup>th</sup> Annual Conference of The Wildlife Society*. 10 October 2018. Cleveland, OH.

**Skora, L.C., D.M. Williams,** and **W.F. Porter.** Monitoring brown bear abundance in Katmai National Park, Alaska. Oral presentation at the *13th Annual Fisheries and Wildlife GSO Research Symposium*. 16 February 2018. East Lansing, MI.

**Smith, J.B., D.M. Williams,** D.R. Etter, and **W.F. Porter.** Context matters: variation in black bear use of agricultural landscapes. Invited oral presentation at the *2018 Boone and Crockett Club Spring Meeting*. 29 March 2018. Norfolk, VA.

**Stanke, H.D., J. Cook, S.A. Christensen, W.F. Porter,** and **D.M. Williams.** Connecting the dots: A landscape approach for Michigan CWD. Oral presentation at the *2018 Annual Meeting of the Michigan Chapter of The Wildlife Society*. 16 March 2018. Gaylord, MI.

**Stevens, B.S.,** J.R. Bence, **W.F. Porter,** and M.L. Jones. Developing robust fall harvest targets for managing assessment-limited wild turkey populations. Invited oral presentation at the *2018 Southeast Association of Fish & Wildlife Agencies Wild Turkey Working Group Meeting*. 30 May 2018. Bismarck, AR.

**Stevens, B.S.,** J.R. Bence, M.L. Jones, **W.F. Porter,** D.R. Luukkonen, C.A. Stewart, and **D.M. Williams.** Stakeholders, statistics, and structured decision making: building a foundation for adaptive management of wild turkey harvests in Michigan. Invited oral presentation at the *2018 Southeast Association of Fish and Wildlife Agencies Wild Turkey Working Group Meeting*. 31 May 2018. Bismarck, AR.

**Thompson, N.E.** Innovative research for CWD management. Invited oral presentation at the *6<sup>th</sup> Annual Joint Cervid Meeting*. 16 August 2018. Gaylord, MI.

**Trudeau, J.K.** Michigan State University deer movement study. Invited oral presentation at the *Michigan Department of Natural Resources Southwest Regional Meeting*. 19 July 2018. Mason, MI.

**Trudeau, J.K., S.A. Christensen, W.F. Porter, D.M. Williams.** The difficulties of communicating deer movement and chronic wasting disease research in Michigan. Invited oral presentation at *Michigan State University Extension Fall Conference Session*. 17 October 2018. Lansing, MI.

**Williams, D.M.** Getting our bearings: Reorienting black bear ecology with density and landscape context. Invited oral presentation at the *Fish and Wildlife of the Great Lakes Region Seminar Series, University of Wisconsin-Stevens Point*. 7 March 2018. Stevens Point, WI.

**Williams, D.M.** Michigan's deer disease initiative: A research response to EHD and CWD management needs. Invited oral presentation at the *Midwest Fish and Wildlife Health Committee Meeting*. 25 April 2018. Traverse City, MI.

## **Mentoring**

### ***Undergraduate Student Mentoring***

Steve Gurney: Fisheries and Wildlife Major, working with D. Williams and J. Smith  
Garrett Knowlton: Fisheries and Wildlife Major, working with D. Williams and R. Cain  
Hunter Stanke: Forestry Major, working with D. Williams, S. Christensen and J. Cook  
Kai Vue: Fisheries and Wildlife Major, working with J. Crawford

### ***Graduate Student/Postdoctoral Scholar Advising***

Rebecca Cain: Doctoral candidate  
Dr. Sonja Christensen: Postdoctoral Research Associate  
Jonathan Cook: Doctoral student  
Dr. Joanne Crawford: Postdoctoral Research Associate  
Kathryn Frens: Doctoral candidate  
Ashley Huinker: Master's student  
Chris Hoving: Doctoral candidate  
Nick Jaffe: Doctoral Student  
Leslie Skora: Master's student  
Noelle Thompson: Doctoral student  
Jonathan Trudeau: Doctoral student

### ***Student Committees***

Eric Clark: Doctoral Student of Gary Roloff (D. Williams, thesis steering committee)  
Talesha Dokes: Doctoral Student of Gary Roloff (D. Williams, thesis steering committee)  
Sarah Mayhew: Doctoral Student of Scott Winterstein (W. Porter, dissertation steering committee)  
Sean Sultaire: Doctoral Student of Gary Roloff (D. Williams, thesis steering committee)

### ***Faculty Mentoring***

Dr. David Williams: Assistant Professor (W. Porter, primary mentor)

### ***Staff Mentoring***

Jennifer Smith: Research Assistant (D. Williams, primary mentor; through June 2018)  
Dr. Rose Stewart: Research Administrator (W. Porter, primary mentor)

## **Instruction**

### ***Classes Taught***

MSU FW480. Sustaining South African Wildlife: Cash, Crime, Conflict and Conservation. Study abroad, Summer 2018. **D. Williams** and J. Schneider (Course instructors)

## ***Guest Lectures***

MSU FW 462. Fish and Wildlife Disease Ecology. 8 February 2018. "Effects of disease on populations of wild animals". S. Christensen

MSU FW/MC 481. Global Issues in Fisheries and Wildlife. 28 February 2018. "Emerging disease in deer populations". S. Christensen

MSU FW 101. Fundamentals of Fisheries and Wildlife. 22 March 2018. "Fish and wildlife disease ecology". S. Christensen

MSU FW 101. Fundamentals of Fisheries and Wildlife. 27 March 2018. "Applied research: Chronic wasting disease in Michigan white-tailed deer". J. Cook

MSU FW 101. Fundamentals of Fisheries and Wildlife. 12 April 2018. "Evaluating the effectiveness of antler point restrictions to achieve management goals". R. Cain

MSU FW 101. Fundamentals of Fisheries and Wildlife. 19 April 2018. "Social-ecological systems in wildlife biology". K. Frens

MSU FW 413. Wildlife Research & Management Techniques. 18 October 2018. "Mammalian capture techniques". J. Trudeau

MSU UGS 200H. Honors Seminar: Examining Coupled Human and Natural Systems to Address Complex Environmental Issues. "Modeling oak forests and managers as a complex adaptive system". C. Hoving

## **Outreach and Professional Engagement**

### ***International and National Activity***

Association of Fish and Wildlife Agencies, Climate Change Committee: C. Hoving

Association of Fish and Wildlife Agencies, Climate and Endangered Species Subcommittee: C. Hoving

Association of Fish and Wildlife Agencies, National Fish and Wildlife Health Initiative Steering Committee: S. Christensen, Assistant Coordinator

Boone and Crockett Club Official Measurer: D. Williams and R. Cain

Boone and Crockett Conservation Grants Review committee: W. Porter, Member

Boone and Crockett University Programs Sub-committee: W. Porter, Deputy Chair

Boone and Crockett University Programs Retreat: W. Porter, R. Stewart, and D. Williams, Participants

Deer Management for Forest Landowners and Managers (Book): W. Porter, Reviewer

Ecology and Evolution: W. Porter, Reviewer

Fair Chase Magazine: J. Cook, Reviewer

Human-Bear Conflict Workshop, National Parks Biologists Working Group: L. Skora, Member

Journal of Wildlife Management: W. Porter, Reviewer

Karner Blue Butterfly Recovery Team: C. Hoving

National Wild Turkey Symposium: W. Porter, Steering Committee Member and Associate Editor

North American Interdisciplinary Chronic Wasting Disease Consortium (NCDC 234): S. Christensen, J.

Pedersen and W. Porter, Leaders  
Northeast Naturalist: S. Christensen, Guest Editor; R. Cain, Reviewer  
PLOS ONE: W. Porter, Reviewer  
Proceedings of the 11<sup>th</sup> American Woodcock Symposium: J. Cook and N. Thompson, Reviewers; D. Williams, Associate Editor  
Society for Conservation Biology North America, Equity, Inclusion, and Diversity Committee: K. Frens, Member  
Transactions of the Illinois State Academy of Sciences; J. Crawford, Reviewer  
Wildlife Biology: D. Williams, Reviewer  
Wildlife Society, Annual Conference: R. Cain, Registration Volunteer and Presentation Judge  
Wildlife Society, Biometrics Working Group: S. Christensen and D. Williams, Members  
Wildlife Society, Conservation, Education, and Outreach Working Group, J. Crawford, Member  
Wildlife Society, Early Career Professional Working Group: J. Trudeau, Secretary  
Wildlife Society, Ethnic and Gender Diversity Working Group: J. Smith and J. Crawford, Members  
Wildlife Society, Spatial Ecology and Telemetry Working Group: D. Williams, Member  
Wildlife Society, Student Development Working Group: J. Trudeau, Member  
Wildlife Society, Urban Wildlife Working Group, J. Crawford, Member  
Wildlife Society, Wildlife and Climate Change Working Group: C. Hoving, Past Chair  
Wildlife Society, Wildlife Disease Working Group: J. Cook, S. Christensen, N. Thompson, and D. Williams, Members  
Wildlife Society Bulletin: R. Cain and S. Christensen, Reviewers  
Wildlife Society Symposium: Challenges of Balancing Stakeholder Engagement and Scientific Decision-Making to Inform Wildlife Policy: G. D'Angelo and D. Williams, Symposium Organizers.

### ***Regional Activity***

Adirondack Research Consortium: W. Porter, Past-president and Board of Directors  
Great Lakes Integrated Science and Assessment Center, NOAA: Advisory Committee: C. Hoving  
Midwest Association of Fish and Wildlife Agencies Climate Change Technical Committee: C. Hoving  
Midwest Chronic Wasting Disease Research Collaboration Initiative: S. Christensen and D. Williams  
Midwest Deer and Turkey Technical Committee: W. Porter  
Shingle Shanty Preserve and Research Station: W. Porter, Board of Directors  
Structured Decision Making and Adaptive Harvest Management for Wild Turkeys Panel, 2018 Southeast Association of Fish and Wildlife Agencies Wild Turkey Working Group Meeting: B. Stevens, Invited Panelist  
USGS Northeast Climate Science Center Advisory Committee: C. Hoving

### ***State Activity***

Ann Arbor Deer Management Program Review, Michigan Department of Natural Resources, Wildlife Division: W. Porter, Panel Chair  
Antler Point Restrictions in the NW 12 Review, Michigan Department of Natural Resources, Wildlife Division: R. Cain, W. Porter, and D. Williams, Consultants  
Chronic Wasting Disease Symposium, Michigan Department of Natural Resources: W. Porter, Invited Working Group Member  
Michigan Chapter of The Wildlife Society:  
S. Christensen, President  
J. Cook, Conference Planning  
D. Williams, Past President  
Michigan Climate Coalition: C. Hoving, Member

Michigan Department of Natural Resources, Wildlife Division metrics working group: C. Hoving  
Michigan Department of Natural Resources, Wildlife Division research working group: C. Hoving

### **Local Activity**

Delta WILD 4-H Club: J. Crawford, Lead Program Coordinator and Facilitator, J. Trudeau, Assistant Facilitator  
East Lansing Gardening Club: J. Crawford, Guest speaker  
East Olive Quality Deer Management Association Co-op: J. Trudeau, Guest speaker  
Girls Math and Science Day: J. Trudeau and J. Crawford, Guest presenters  
Meridian Township Archery Program: J. Trudeau, Guest speaker  
Okemos Men's Group: W. Porter, Guest speaker  
Portal to the Public Scientific Outreach Program, Detroit Zoological Society: J. Smith, Participant

### **University Activity**

CANR Justin S. Morrill Leadership Fellowship Program: G. Knowlton  
CANR Promotion and Tenure Committee: W. Porter  
CANR Undergraduate Research Program Selection Committee: D. Williams  
Graduate Employees' Union: K. Frens, Vice President  
Innovations in Collaborative Modeling Conference: W. Porter, Planning Committee Co-Chair  
MSU Student Chapter of the Wildlife Disease Association: S. Christensen, Member and co-founder, N. Thompson, Treasurer  
Sustainable Michigan Endowed Project: W. Porter, Executive Committee Member  
Theodore Roosevelt Conservation and Environmental Leadership Fellowship: W. Porter, Coordinator

### **Department Activity**

FW Department Chair Search Committee: R. Stewart, Member  
FW Graduate Student Organization:  
    2018 Symposium Judging Panel, W. Porter and D. Williams  
    2018 Symposium Planning Committee, R. Cain and N. Jaffe  
    Faculty Meeting Representative, R. Cain  
    Graduate Committee Representative, J. Cook  
    Spotlight Editorial Committee, J. Cook and K. Frens  
    Safety Officer, L. Skora  
FW Social Committee: R. Stewart, Chair  
FW Quantitative Ecology Reading Group Data Analysis in R Workshop Series: J. Smith, Workshop Leader

### **Press**

[CWD study will track deer movement](#). Times Herald, January 2018. Featuring S. Christensen and D. Williams.  
Chronic wasting disease and the MSU movement study. Mike Avery Outdoor Magazine Radio Show, February 2018. D. Williams, Invited guest.  
[DNR & MSU to track deer in hopes of learning more about chronic wasting disease](#). Michigan Radio, February 2018. D. Williams interviewed by Steve Carmody.  
[Fear of Infection: Could chronic wasting disease make the jump to humans?](#) WWMT News 3, Kalamazoo, Michigan, February 2018. Print article and video featuring W. Porter.  
[Southeast Deer Study Group Day 1](#). QDMA, February 2018. Video featuring R. Cain.  
Chronic wasting disease and deer movement. Wolf Creek Productions, March 2018. Video featuring J. Trudeau for "Deer Week" on the Outdoor Channel.

[Katmai's Wildlife Biologist Leslie Joins Mike Fitz-Live Chat](#). July 2018. Video featuring L. Skora.

[Number of bears at Brooks Falls may depend on the size of the salmon run](#). KDLG Public Radio for Alaska's Bristol Bay, Dillingham, AK, August 2018. L. Skora interviewed by Mitch Borden.

[Wild turkeys in Suburban Detroit](#). Detroit News, August 2018. Featuring W. Porter.

[MSU Youth Program Seeks Future Wildlife Biologists](#). East Lansing Info, September 2018. Featuring J. Crawford.

[MSU researcher helps battle deadly deer disease](#). The Detroit News, September 2018. Print article and video featuring J. Trudeau.

[Whitetail patrol tactics](#). Outdoor Channel's "Wardens", September 2018. Featuring J. Trudeau.

Only one case of dreaded EHD turns up in Michigan this year. Michigan Outdoor News. Featuring S. Christensen.

Translocation of wildlife species for climate change. New York Times, pending. Featuring C. Hoving.

Deadly Deer Disease. Great Lakes Echo, pending. Featuring J. Trudeau.

## Professional Development

### *Workshops Attended*

Portal to the Public Scientific Communication Workshop, Detroit Zoological Society. Detroit, MI. 13 January 2018. J. Smith.

Midwest Fish & Wildlife Leadership Series. North Central Section of The Wildlife Society. Milwaukee, WI. 28 January 2018. R. Cain and C. Hoving.

5<sup>th</sup> International Human-Bear Conflicts Workshop. Gatlinburg, TN. 25 March 2018. L. Skora.

Research Mentor Training. Michigan State University. East Lansing, MI. 30 March 2018. R. Cain.

Ten Tactics for Powerful Business Writing. Michigan State University. East Lansing, MI. 1 May 2018. R. Stewart.

Crucial Conversations. Michigan State University. East Lansing, MI. 2-3 May 2018. R. Stewart.

Communicating and Influencing Up. Michigan State University. East Lansing, MI. 10 May 2018. R. Stewart.

Introduction to Bayesian Modeling with Stan. East Lansing, MI. 19 May 2018. J. Trudeau.

LANDIS-II Conference and Training. Madison, WI. 27-29 June 2018. C. Hoving.

Statistical Models for Animal Movement. International Statistical Ecology Conference. St. Andrews, Scotland. 2-6 July 2018. D. Williams.

Introduction to Agent-based Modeling. Michigan State University. East Lansing, MI. 12 July 2018. N. Thompson.

USGS Adaptive Capacity Workshop. Ft. Collins, CO. 1-3 Aug 2018. C. Hoving.

Wildlife Management and Climate Adaptation. Hal and Jean Glassen Shooting Education Center. Bath, MI. 27-28 September 2018. C. Hoving (Workshop Organizer and Facilitator).

Animal Trapping Techniques for Researchers and Managers. Nevada Department of Wildlife. Cleveland, OH. 7 October 2018. R. Cain.

Wildlife Conservation and Urban Restoration Workshop. The Wildlife Society Annual Meeting. Cleveland, OH. 7 October 2018. J. Crawford.

Manuscript Writing Workshop. The Wildlife Society Annual Meeting. Cleveland, OH. 7 October 2018. S. Christensen.

UGA Student Workshop on Conservation Medicine, One Health, and Wildlife Diseases. Athens, GA. 2-4 November 2018. N. Thompson.