DISTINGUISHED PROFESSOR John A. Vucetich

(abbreviated CV)

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I. SCHOLARLY PURSUITS

conservation values, predation dynamics, population genetics, wolves and moose of Isle Royale

II. EDUCATION

1995 B.S., Biological Sciences, Michigan Technological University.
1999 Ph.D., Forest Sciences, Michigan Technological University.
(Dissertation topic: Demographic and genetic components of extinction risk.)

III. POSITIONS HELD

2019 – present: Distinguished Professor, School of Forest Resources & Environmental Sci., MTU
2018 – present: Fellow, Martin School, University of Oxford
2014 – 2019: Professor, SFRES, MTU
2011 – 2014: Associate Professor, SFRES, MTU
2006 – 2011: Assistant Professor, SFRES, MTU
1999 – 2006: Research Assistant Professor, SFRES, MTU
2004 – Visiting Scholar, Yellowstone National Park (Host: D. Smith)

IV. UNIVERSITY COURSES (current)

Ethics, Natural Resources and the Environment (FW3115), SFRES, MTU, 2013 – present.
Population Ecology (FW4260), SFRES, MTU, 2006 – present.

V. SCIENTIFIC PUBLICATIONS

I have authored or co-authored >120 peer-reviewed articles that have been collectively cited more than 2,800 (web of science) and 5,600 (Google Scholar). My H-index is 29 (Web of Science) and 44 (Google Scholar). I have also authored more than 30 book chapters and formal reports.

A. Selected papers on Conservation Values *(roughly ordered by significance)*

1. Vucetich JA, Burnham D, Johnson PJ, Loveridge AJ, Nelson MP, Bruskotter JT, and David W. Macdonald DW. 2019. The value of argument analysis for understanding ethical considerations pertaining to trophy hunting and lion conservation. Biological Conservation.
2. Bruskotter JT, Vucetich JA, Slagle KM, Berardo R, Singh AS, Wilson RS. Support for the US Endangered Species Act over time and space: controversial species do not weaken public support for protective legislation. Conservation Letters. 2018 Nov;11(6):e12595.
3. Vucetich JA, Burnham D, Macdonald EA, Bruskotter JT, Marchini S, Zimmermann A, Macdonald DW. 2018 Just conservation: What is it and should we pursue it?. Biol Conser. 221:23-33.
4. Vucetich JA, MP Nelson (2010). Sustainability: virtuous or vulgar? *Bioscience* 60, 539-544.
5. Vucetich, JA, JT Bruskotter, MP Nelson (2015). Evaluating whether nature's intrinsic value is an axiom of or anathema to conservation. *Conservation Biology 29*, 321-332.
6. Vucetich, JA, MP Nelson, MK Phillips (2006). The normative dimension & legal meaning of 'endangered' & 'recovery' within the United States' Endangered Species Act. *Conservation Biology* 20, 1383-1390.
7. Nelson, MP, JA Vucetich (2009). On Advocacy by Environmental Scientists: What, Whether, Why and How. *Conservation Biology* 23, 1090–1101.
8. Vucetich, JA, MP Nelson (2007). What are 60 warblers worth?: killing in the name of conservation. *Oikos* 116, 1267-1278.
9. Vucetich JA, JT Bruskotter, MP Nelson, RO Peterson, JK Bump (2016). Evaluating the principles of wildlife conservation: a case study of wolf (Canis lupus) hunting in Michigan, United States. *Journal of Mammalogy 98*, 53-64.
10. Vucetich, JA, MP Nelson, JT Bruskotter (2017). Triage falls short because conservation is not like emergency medicine. *Frontiers in Ecology and Evolution* 5,45.

11. Bruskotter JT, JA Vucetich, S Enzler, A Treves, and MP Nelson (2013). Removing protections for wolves and the future of the U.S. Endangered Species Act (1973). *Conservation Letters*. DOI: 10.1111/conl.12081

B. Selected papers on Ecology

1. Vucetich, JA, RO Peterson, & CL Schaefer (2002). The effect of prey and predator densities on wolf predation. *Ecology* 83, 3003-3013.
2. Vucetich JA, Hebblewhite M, Smith DW, Peterson RO (2011). Predicting Prey population dynamics from kill rate, predation rate and predator-prey ratios in three wolf- ungulate systems. *Journal of Animal Ecology* 80, 1236-1245.
3. Vucetich, JA; Smith, DW; Stahler, DR (2005). Influence of harvest, climate, and wolf predation on Yellowstone elk, 1961-2004. *Oikos* 111, 259-270.
4. Vucetich, JA & RO Peterson (2004). The influence of top-down, bottom-up, & abiotic factors on the moose (Alces alces) population of Isle Royale. *Proc Roy Soc Lond, B* 271, 183-189.
5. Wilmers, CC, ES Post, RO Peterson, & JA Vucetich (2006). Predator disease out-break modulates top-down, bottom-up and climatic effects on herbivore population dynamics. *Ecol Letters* 9, 383-389.
6. Peterson R, Vucetich JA, Bump J, Smith DW. (Invited paper) (2014). Trophic cascades in a multi-causal world: Isle Royale and Yellowstone. *Annual Review of Ecology and Systematics*. DOI: 10.1146/annurev-ecolsys-120213-091634.
7. Vucetich, JA, Waite, TA (2003). Spatial patterns of demography and genetic processes across the species' range: Null hypotheses for landscape conservation genetics. *Conserv Genetics* 4, 639-645.
8. Vucetich, JA, Waite, TA, Nunney, L (1997). Fluctuating population size and the ratio of effective to census population size (Ne/N). *Evolution* 51, 2017-2021.
9. Vucetich, JA, & TA Waite (1999). Erosion of heterozygosity in fluctuating populations. *Conservation Biology* 13, 860-868.
10. Adams JR, LM Vucetich, PW Hedrick, RO Peterson, JA Vucetich (2011). Genomic sweep and potential genetic rescue during limiting environmental conditions in an isolated wolf population. *Proceedings Royal Soc B* 278, 3336-3344.
11. Vucetich, JA, TA Waite L Qvarnemark, S Ibarguen (2000). Population variability and extinction risk. *Conservation Biology* 14, 1704-1714.
12. Vucetich, JA, RO Peterson, & TA Waite (2004). Raven scavenging favours group foraging in wolves. *Animal Behaviour* 67, 1117-1126.
13. Vucetich JA, Vucetich LM, Peterson, RO (2012). The causes and consequences of partial prey consumption by wolves preying on moose. *Behavioral Ecology and Sociobiology* 66, 295-303.
14. Bump JK, RO Peterson, JA Vucetich (2009). Wolves modulate soil nutrient heterogeneity and foliar nitrogen by configuring the distribution of ungulate carcasses. *Ecology* 90, 3159 –3167.
15. Peterson, RO, JA Vucetich, G Fenton, TD Drummer, CS Larsen (2010). The ecology of arthritis. *Ecology Letters* 13, 1124-1128.
16. Vucetich JA, PM Outridge, RO Peterson, R Eide, & R Isrennd (2009). Mercury, lead and lead isotope ratios in the teeth of moose (Alces alces) from Isle Royale, U.S. Upper Midwest, from 1952 to 2002. *Journal of Environmental Monitoring* 11, 1352 – 1359.

VI. POPULAR WRITINGS (selected)

1. *The New York Times:*
   - Vucetich JA & MP Nelson. *Conservation, or curation*? 20 Aug 2014.
   - Vucetich JA, RO Peterson, MP Nelson. *Predator and prey, a delicate balance*. 8 May 2013.
   - Vuceitch JA. *Scientist at Work*. Regular entries between Jan and Mar 2012.
2. *Natural History*:
   - Vucetich, J (2016) Should humans intervene when climate change threatens an island's ecology? *124*(7), 20-23.
3. *Huffington Post*:
   -Vucetich JA, MP Nelson. Should we conserve nature for nature's sake or our own?. 20 Feb 2015.
   -Nelson, MP & JA Vucetich. The Future of conservation and the tragedy of triage. 23 Sept 2014.
4. *The Ecologist*:

-Nelson, MP & Vucetich, JA. True sustainability needs an ethical revolution. Dec 31, 2009.
-Nelson MP & Vucetich JA. Abandon Hope. 2009

5. *The Conversation*:
   - Bruskotter, J, JA Vucetich, R Wilson. Of bears and biases: scientific judgment and the fate of Yellowstone's grizzlies. June 21st, 2016
   - Nelson MP, JT Bruskotter, JA Vucetich. 2015. Does nature have value beyond what it provides humans? *The Conversation*. 2015.
6. *Chronicle of Higher Education*:
   - Vucetich JA and MP Nelson. 2010. The Moral Obligations of Scientists.

VII. Othe Selected Impacts, Accolades and Distinctions

• Witness, U.S. House of Representatives, written & oral testimony on wolf management (Oct 2016).

• Witness, U. S. Senate (Committee on Environment & Public Works), written & oral testimony on wolf management (July 2017).

• U.S. Congressional Record, Senator Carl Levin, formal statement of gratitude for my contributions to the Isle Royale wolf-moose project, 21 July 2008

• *Conservaton Ethics Workshops* – I lead 3-day workshops for academics and professionals on conservation ethics. I have led more than a dozen workshops at venues including WildCRU of Oxford University, Oregon State University, University of Montana, and University of Puerto Rico.

• According to the ISI Web of Science, I am the third most productive and cited scholar in the world with respect to the ecology of wolves for the period 1997-present (the period of time covering my professional career).

• The Isle Royale wolf-moose project, which I have led since 2000, was inducted into the Michigan Environmental Hall of Fame in April 2014.

• I was fictionalized as the main character in *Winter Study* (Putnam, 2008), a novel by Nevada Barr on the winter field season that I lead. In April 2008, *Winter Study* made the New York Best-Sellers list at #10 for hard-cover fiction.

• *Documentary Films* in which I am featured:
  – *Fortunate Wilderness* (2008) is a feature-length film by George Desort that describes the Isle Royale wolf-moose project. Shown at >20 venues throughout the Midwest and Canada (more than 2500 in attendance) and broadcast on >30 different public TV stations, with an estimated, total audience of 10,000.
  – *Alces alces: uncut* (2009) is a short film by George Desort on the natural history of moose. I wrote the script and narrated the film, which has been shown at film festivals, art galleries, and nature centers in Houghton (MI), Ann Arbor (MI), Washburn (WI), and Duluth (MN).
  – *Counting Wolves* (2015) by G. Desort, *41 North Film Festival* (November 2016), Detroit Institute of Art (2015)
  – *The Fight for Isle Royale Wolves* (2016) by B. Kaufman, *41 North Film Festival* (November 2016), Detroit Institute of Art (2015)

• Member of the Mexican wolf recovery team (USFWS) since 2001.

• Served as a scientific peer-reviewer at the request of the USFWS for *The Wyoming Wolf Management Plan* and the USFWS *Proposed Rule To Delist The Wolf In Wyoming*, September 2011 - April 2012. On 23 Sept 2014, the Washington, D.C. Federal District Court judged that the USFWS had acted arbitrarily and capriciously in their decision to remove Wyoming wolves from the list of US Endangered Species. The basis for that decision was my peer-review of Wyoming's plan.

• Invited to be a scientific peer-reviewer for the USFWS plan to delist wolves in August 2013. I was subsequently uninvited after officials came to believe that I might be critical of the plan. The episode led to a Service-wide review of their peer-review policy and eventually a *mea culpa*. The event was reported in The New York Times.

• Founder and President of the Michigan Technological University, Chapter of the Society for Conservation Biology, 1997-1998.

• *Presentations to general public* – > 50 presentations to > 5000 people over the past 15 years.

- *The Wolves and Moose of Isle Royale* webpage (www.isleroyalewolf.org) is aimed at a general audience and continues to be visited by >10k people annually. More than 4600 people signed-up to receive occasional research updates via email. I designed and maintain this site.
- *Sonifying the wolves and moose of Isle Royale: transforming data into music.* – In 2016, I led an interdisciplinary team of students and faculty through this web-based application that represents the integration of science and art. The project was covered by the *Detroit Free Press, Michigan Radio*, and the *Marquette Mining Journal* and can be found at www.isleroyalewolf.org.
- *Citizen science*. – I organize (with R. Peterson) week-long research expeditions, where members of the general public work with the Isle Royale wolf-moose project. Participants learn about the Isle Royale wolf-moose project and help us collect vital data. In the past five years (2011-2016), 184 people (including teachers and students) have participated in the expeditions.
- *Art Exhibit*. – In 2008, I led the development of an art exhibit, *Thinking like an Island*, featuring 38 still images depicting the Isle Royale wolf-moose project from an artistic perspective. The exhibit has been on display at four different venues (Omphale Gallery [Calumet, MI], Michigan State University, The International Wolf Center, and a portion of this exhibit was also shown at *The Gallery Project* [Ann Arbor, MI, Oct 2008]) and viewed by more than 25,000 people.
- *Science Museum Exhibit*. – In 2007, I led development of a 1000 ft^2 exhibit featuring the project's scientific discoveries. The exhibit has been viewed by more than 5000 people during 12 months of display at three different venues (Carnegie Museum, Houghton, MI; Library of Univ. MN, Duluth; Hartley Nature Center, Duluth, MN; International Wolf Center, Ely, MN).
- Subject Editor for *Oikos,* handling 91 papers (August 2006 - Sept 2010).
- *What is an endangered species*? – The United States Endangered Species Act provides powerful legal protection for species meeting the legal definition of endangered species. The normative vagueness of that legal definition highlights our inability to answer the question, What is an endangered species?. I have been a leading voice in addressing this topic. See especially my piece in *Conservation Biology* (2006, #5 on p.2), which was reprinted in a special edition of that journal in 2010*,* recognizing the 14 most important papers in conservation social science. The ideas in this paper have influenced the outcome of several important legal cases in the United States.
- *Climate change in protected areas*. – In 2011 wolves in Isle Royale National Park ceased peforming their ecosystem function (regulating moose abundance) as an indirect result of climate warming. My scholarship – a synthesis of ecology and ethics – has became an influential perspective on policies pertaining to the juxtsposition of climate change, ecosystem health, and wilderness.
- *Wolf hunting*. – My scholarship – a synthesis of ecology and ethics – has been an influential perspective on the appropriateness of wolf hunting and an opportunity to reflected more broadly on the interrelationship between ecology, ethics, and governance as it pertains to the management of natural resources.
- Non-*anthropocentrism* – Should we conserve nature only to the extent that doing so serves human needs? Conservation professionals appear to be divided over the appropriateness of anthropocentrism – the notion that only humans possess intrinsic value. I have been a leading voice for explaining the adverse consequences of that position and for explaining the rationale of the counterveiling perspective, i.e., non-anthropocentrism which acknowledges that humans and at least some portion of the non-human world possesses intrinsic value.

VIII. Graduate Students & Post Doctoral Researchers, Supervised

Dan MacNulty (Post doctoral researcher, Mar 2007 – Mar 2010)
- *Research*: The population ecology of Yellowstone wolves.
- *Current Position: Assistant Professor, Utah State University.*

Jennifer Adams (Post doctoral researcher, Sept 2007- Aug 2010)
- *Research*: The population genetics of Isle Royale wolves.
- *Current Position: Lab Manager, Lisette Waits Lab, Idaho State University.*

Sarah R. Hoy (Post doctoral researcher, Sept 2015- present)
- *Research*: The predation ecology of wolves in Isle Royale and Yellowstone National Parks.

Joseph Kaplan (graduated with M.S. in 2003)
- *Thesis*: Human recreation and loon productivity in a protected area, Isle Royale National Park.
- Kaplan's thesis was used to guide management decisions related to Isle Royale loons.
- *Current position*: Co-Director of Common Coast, a non-profit agency devoted to Loon research and Conservation.

Sarah Brodeur-Campbell (co-advised w/C.-J. Tsai, graduated with M.S. in 2004)
- *Thesis*: Insect herbivory on low-lignin transgenic aspen.
- Brodeur-Campbell's thesis resulted in Brodeur-Campbell et al. 2006. Environ. Entom. 35(6): 1696-1701.
- *Current position*: unknown.

Brett Huntzinger (co-advised w/Peterson, graduated with M.S. in 2006)
- *Thesis*: Sources of variation in wolf kill rates of white-tailed deer during winter in the U.P. Michigan.
- Huntzinger's thesis is the basis for a substantial portion of a manuscript that is currently in review at *Oecologia*: Vucetich, Huntzinger, Peterson, Hammill, Beyer. Intra-seasonal variation in kill rates and prey selection by wolves in Michigan. Oecologia.
- *Current position*: Field technician, U.S. Forest Service.

Melissa Watkins (graduated with M.S. in Dec 2009)
- Plan C, Course work degree.
- *Current position*: unknown.

Matt Metz (graduated with M.S. in April 2010)
- *Thesis*: Seasonal patterns in foraging and predation of gray wolves in Yellowstone National Park.
- Metz's thesis is the basis for a manuscript that was published in *Journal of Animal Ecology*: Metz, Vucetich, Smith, Stahler, Peterson. Effect of sociality and season on gray wolf foraging behavior: implications for estimating kill rate.
- *Current position*: Research Associate, Yellowstone Wolf Project.

Mark Romanksi (graduated with M.S. in April 2010)
- *Thesis*: Double-count surveys and unexpectedly misleading estimates of sightability for beaver colonies.
- Romanski's thesis is the basis for a manuscript that is currently in review at *Wildlife Biology*: Romanski, Vucetich, Peterson, Smith. Double-count surveys and unexpectedly misleading estimates of sightability for beaver colonies.
- *Current Position*: Lead Biotechnician, National Park Service.

Ben Betterly (graduated with M.S. in Aug 2011)
- *Thesis topic*: The life history of compensatory growth in male and female moose.

Alessia Uboni (graduated with PhD in Dec 2012)

- *Thesis topic*: Habitat preferences of Yellowstone wolves.

Grace Parikh (graduated with M.S. in April 2016, PhD in Aug 2019)

- *Thesis topic*: The influence of diet composition and diversity on the nutritional status of moose – a polyphagus herbivore.

Andy Von Duyke (PhD student, graduated Mar 2019)

- *Thesis topic*: The foraging behavior of Isle Royale moose.

John Henderson (PhD student, graduated Dec 2019)

- *Thesis topic*: Life history trade-offs and the foraging ecology of moose – a polyphagus herbivore.

Zachary Merrill (PhD student)

- *Thesis topic*: Dendrochornology and trophic cascades in a boreal forest