

TIFFANY KNIGHT

Washington University in St. Louis
Department of Biology
One Brookings Drive, Box 1137
St. Louis, MO 63130
Email: tknight@wustl.edu
phone: (314)-935-8282
fax: (314)-935-4432

Current Position (2005-present)

Assistant Professor, Washington University in St. Louis, Department of Biology

Associate Director, Environmental Studies Program, Washington University in St. Louis

Research Associate, Missouri Botanical Garden and Chicago Botanic Garden.

Professional Preparation

National Center for Ecological Analysis and Synthesis Postdoctoral Research Associate, 2004-2005

University of Florida Postdoctoral Research Associate, 2003-2004

University of Pittsburgh PhD in Ecology and Evolutionary Biology, 2003

Florida State University BS in Biology, 1997

Peer Reviewed Publications

Manuscripts in press

Farrington, S, R-M. Muzika, D. Drees, T.M. Knight. Interactive effects of harvest and deer herbivory on the population dynamics of American ginseng. In press, **Conservation Biology**.

Knight, T.M., J.L. Dunn, L.A. Smith, J.A. Davis, S. Kalisz. Exotic plant invasions are facilitated by deer overabundance in a Pennsylvania forest. In press, **Natural Areas Journal**.

Schutzenhofer, M.R., T.J. Valone and T.M. Knight. Herbivory and Population Dynamics of Invasive and Native Lespedeza. In press, **Oecologia**.

Burd, M., T.-L. Ashman, D.R Campbell, M.R. Dudash, M.O. Johnston, T.M.

- Knight, S.J Mazer, R.J. Mitchell, J.A. Steets, J.C. Vamosi. Ovule number per flower in a world of unpredictable pollination. In press, **American Journal of Botany**.
- 2009 Pardini, E.A., J. M. Drake, J. M. Chase, and T. M. Knight. Complex population dynamics and control of the invasive biennial, *Alliaria petiolata* (garlic mustard). **Ecological Applications** 19: 387-397.
- Knight, T.M., H. Caswell and S. Kalisz. 2009. Population growth rate of a common understory herb decreases non-linearly across a gradient of deer herbivory. **Forest Ecology and Management** 257: 1095-1103.
- Vitt, P., K. Havens, B. Kendall and T.M. Knight. 2009. Community-level management increases the viability of *Tomanthera auriculata*, a rare prairie annual. **Biological Conservation** 142: 798-805.
- 2008 Pardini, E.A., B.J. Teller, and T. M. Knight. Consequences of intraspecific competition for management of a stage-structured invasive plant (*Alliaria petiolata*). **American Midland Naturalist** 160:310-322.
- Morris, W. F., C. A. Pfister, S. Tuljapurkar, C. V. Haridas, C. Boggs, M. S. Boyce, E. M. Bruna, D. R. Church, T. Coulson, D. F. Doak, S. Forsyth, J-M. Gaillard, C. C. Horvitz, S. Kalisz, B. E. Kendall, T. M. Knight, C. T. Lee, E. S. Menges. 2008. Longevity can buffer plant and animal populations against changing climatic variability. **Ecology** 89: 19-25.
- Knight, T.M., M. Barfield, and R.D. Holt. 2008. Evolutionary dynamics as a component of population viability analysis (PVA): An example using a stage-structured population of *Trillium grandiflorum*. **American Naturalist** 172:375-392.
- Ramula, S., T.M. Knight, J.H. Burns, Y.M. Buckley. 2008. General guidelines for invasive plant management based on comparative demography of invasive and native plant populations. **Journal of Applied Ecology** 45: 1124-1133.
- 2007 Schutzenhofer, M.R. and T.M. Knight. 2007. Population-level effects of augmented herbivory on *Lespedeza cuneata*: Implications for biological control. **Ecological Applications** 17: 965-971.
- Steets, J.A., T.M. Knight and T.-L. Ashman. 2007. The interactive effects of herbivory and mixed mating for the population dynamics of *Impatiens capensis*. **American Naturalist** 170: 113-127.
- Landesman, W., B. Allan, B. Langerhans, T.M. Knight, and J. M. Chase. 2007. Inter-Annual Associations Between Precipitation and Human Incidence of West Nile Virus in the United States. **Vector-Borne and Zoonotic Diseases** 7: 337-

343.

Knight, T.M. Population-level consequences of herbivory timing in *Trillium grandiflorum*. **American Midland Naturalist** 157: 27-38.

Östman, Ö., N.W. Griffin, J.L. Strasburg, J.A. Brisson, A.R. Templeton, T.M. Knight, and J.M. Chase. 2007. Habitat area affects arthropod communities directly and indirectly through top predators. **Ecography** 30: 359-366.

2006 Knight, T.M., J.M. Chase, H. Hillebrand and R.D. Holt. Mutualisms dampen trophic cascades. **Ecology Letters** 9: 1173-1178.

Knight, T.M., J.A. Steets, and T.-L. Ashman. 2006. A quantitative synthesis of pollen supplementation experiments highlights the contribution of resource reallocation to estimates of pollen limitation. **American Journal of Botany** 92: 270-276.

Vamosi, J.C., T.M. Knight, J.A. Steets, S.J. Mazer, M. Burd, and T.-L. Ashman. Pollination decay in biodiversity hotspots. **Proceedings of the National Academy of Sciences** 103: 956-961.

Vellend, M., T.M. Knight, J.M. Drake. 2006. Antagonistic effects of seed dispersal and herbivory on plant migration. **Ecology Letters** 9:319-326.

Chase, J.M. and T.M. Knight. 2006. Effects of eutrophication and snails on Eurasian Watermilfoil (*Myriophyllum spicatum*) invasion. **Biological Invasions** 8: 1643-1649.

Boyce, M.S., C.V. Haridas, C. Lee, C.L. Boggs, E.M. Bruna, T. Coulson, D. Doak, J.M. Drake, J.-M. Gaillard, C.C. Horvitz, S. Kalisz, B.E. Kendall, T.M. Knight, E.S. Menges, W.F. Morris, C.A. Pfister, S.D. Tuljapurkar. 2006. Demography in an increasingly variable world. **Trends in Ecology and Evolution** 21:141-148.

2005 Knight, T.M., M.W. McCoy, J.M. Chase, K.A. McCoy and R.D. Holt. 2005. Trophic cascades across ecosystems. **Nature** 437: 880-883.

Knight, T.M., J.A. Steets, J.C. Vamosi, S.J. Mazer, M. Burd, D.R. Campbell, M.R. Dudash, M. Johnston, R.J. Mitchell, T.-L. Ashman. 2005. Pollen limitation of plant reproduction: Ecological and Evolutionary Causes and Consequences. **Annual Review of Ecology, Evolution and Systematics** 36: 467-497.

Knight, T.M. and R.D. Holt. 2005. Fire generates spatial gradients in herbivory: An example from a Florida sandhill ecosystem. **Ecology** 86: 587-593.

Morgan, M.T., Wilson, W.G. and T.M. Knight. 2005. Pollination and the

- persistence of plant populations: roles for pollinator preference and reproductive assurance. **American Naturalist** 166: 169-183.
- 2004 [Knight, T.M.](#) 2004. The effects of herbivory and pollen limitation on a declining population of *Trillium grandiflorum*. **Ecological Applications** 14: 915-928.
- [Knight, T.M.](#) and T.E. Miller. 2004. Local adaptation within a population of *Hydrocotyle bonariensis*. **Evolutionary Ecology Research** 6: 103-114.
- [Knight, T.M.](#), J.M. Chase, C.W. Goss and J.J. Knight. 2004. The role of interspecific competition, predation and their interaction on density and development time of larval *Anopheles quadrimaculatus*. **Journal of Vector Ecology** 29: 277-284.
- Ashman, T.-L., [T.M. Knight](#), J.A. Steets, P. Amarasekare, M. Burd, D.R. Campbell, M.R. Dudash, S.J. Mazer, M. Johnston, R.J. Mitchell, M.T. Morgan, and W.G. Wilson. 2004. Pollen limitation of plant reproduction: Ecological and Evolutionary Causes and Consequences. **Ecology** 85: 2408-2421.
- Holt, R.D., [T.M. Knight](#) and M. Barfield. 2004. Allee effects, immigration and the evolution of species' niches. **American Naturalist** 163: 153-262.
- 2003 [Knight, T.M.](#) 2003. Floral density, pollen limitation and reproductive success in *Trillium grandiflorum*. **Oecologia** 137: 557-563.
- [Knight, T.M.](#) 2003. Effects of herbivory and its timing across populations of *Trillium grandiflorum* (Liliaceae). **American Journal of Botany** 90: 1207-1214.
- Chase, J.M. and [T.M. Knight](#). 2003. Drought-induced mosquito outbreaks in wetlands. **Ecology Letters** 6: 1017-1024. (Written up in Science "News of the Week"; Science 301: 904)
- Chase, J.M. and [T.M. Knight](#). 2003. Community genetics: Towards a synthesis. **Ecology** 84(3): 580-582.

Manuscripts in Review

- Harmon-Threatt, A., J.H. Burns, L.A. Shemyakina and [T.M. Knight](#). Breeding system and pollination ecology of introduced plants compared to their native relatives. In revision, **American Journal of Botany**.
- Powell, K.I. and [T.M. Knight](#). Effects of nutrient addition and competition on biomass of five *Cirsium* species (Asteraceae) including a serpentine endemic. In revision, **International Journal of Plant Sciences**.
- Burns, J.H., T.-L. Ashman, J.A. Steets, A. Harmon-Threatt and [T.M. Knight](#). A

phylogenetically controlled meta-analysis of the roles of reproductive traits and phylogenetic novelty in plant invasions. In review, **American Naturalist**.

Dangremond, E.M., E.A. Pardini and T.M. Knight. Apparent competition with an invasive plant accelerates the extinction of an endangered lupine. In review, **Ecology**.

Teaching Publications

Schutzenhofer, M.R. and T.M. Knight. Biocontrol: Predicting Effectiveness Using Matrix Models and Understanding Consequences. **Teaching Issues and Experiments in Ecology**.

http://tiee.ecoed.net/vol/v6/figure_sets/biocontrol/abstract.html

Other Publications

Knight, T.M. and J.M. Chase. 2005. Ecological succession: Out of the ash. Dispatch article in **Current Biology** 15: 926-927.

Teaching Experience at Washington University

Ecology and Environmental Sciences (Bio 524)

Seminar in Population Biology (Bio 580)

Population Ecology (Bio/EnSt 4170)

Practical Skills in Environmental Biology Research (EnSt 393)

Lectures in Environmental Studies (EnSt 181)

Environmental Issues (EnSt 110)

Coordination of Senior Honors Candidates in Environmental Studies (EnSt 498)

Funding

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| 2008 | NSF- Interactive roles of predation and hybridization on population dynamics of an endangered <i>Lupinus</i> species, co-PI E. Pardini. \$445,000. |
| 2005 | USDA- Population dynamics of density dependent garlic mustard populations, co-PIs J. Drake, J. Chase, K. McCue. \$190,069. |
| 2002 | NCEAS working group, Linking pollen limitation to plant population biology, co-PIs T-L Ashman, S. Mazer, M. Morgan. \$100,000. |
| 2001 | National Science Foundation (DDIG) co-PI S. Kalisz. \$7200 |

Academic and Professional Activities

Post-doctoral Associates Advised

Laura Burkle- current- PhD from Dartmouth College- Pollination ecology and biological invasions.

Eleanor Pardini- current- PhD from University of Georgia- Optimal management of density dependent garlic mustard populations

Jean Burns- 2006-2008- PhD from Florida State University- The role of phylogenetic distinctiveness in plant invasions- Currently a post-doctoral associate at the University of California Davis

Laura Beaton- 2005-2007- PhD from McMaster University- Role of allelopathy in the success of invasive plants- Currently an Assistant Professor at York College.

Michele Schutzenhofer- 2006-2007- PhD from Saint Louis University- The role of interspecific interactions on rarity and invasiveness of *Lespedeza* species. Currently an Assistant Professor at McKendree University.

Graduate Students Advised

Wayne Law- PhD in 2007 (co-advised with Jan Salick)- Population dynamics of rare snow lotus species in Tibet. Currently a postdoctoral associate at the New York Botanical Garden.

Nick Griffin- current PhD student (co-advised with Alan Templeton)- Effects of inbreeding on the competitive ability of *Mimulus*.

Steve Kroiss- current PhD student- Ecological niche modeling and demography across species ranges.

Kristin Powell- current PhD student- The effect of invasive species on species abundance distributions

Graduate Students Advised on Rotations

Lauren Woods- current- Spatial Population dynamics of invasive species

Melissa Simon- 2008- Plant population dynamics in corridors

Amber Burgett- 2007- Quantitative synthesis of amphibian population models

Kate Waselkov- 2007- Managers' perspectives on invasive plant control

Kyra Krakos- 2006- Pollination ecology of rare, common and invasive thistles

Nicole Miller- 2005- Global change and plant-pollinator interactions

Graduate Student Committees

Brian Allan- current- Washington University

Amber Burgett- current- Washington University

Kyra Krakos- Qualifying exam only- Washington University

Taina Matheson-Price- current- Washington University
Nicole Miller- Qualifying exam only- Washington University
Brad Oberle- current- Washington University
Wade Ryberg- current- Washington University
Guoqin Yu- current- Washington University
Ginger Allington- current- Saint Louis University
Humberto Dutra- current- University of Missouri, St. Louis
Andrea Loayza- current- University of Missouri, St. Louis
Alejandra Domic- current- Saint Louis University
Jennifer Neuwald- PhD in 2008- Washington University
Michele Schutzenhofer- PhD in 2006- Saint Louis University
Luke Harmon- PhD in 2005 from Washington University

Undergraduate students mentored on independent research projects (all at Wash U)

* indicates honors thesis

Student	Year Advised	Graduation year	Current position
Emily Dangremond*	2006-2008	2008	Graduate student in Ecology at the University of California, Berkeley
Britta Teller	2006-2008	2008	Graduate student in Ecology at Pennsylvania State University
Ania Truszczynski*	2006-2008	2008	Graduate student in Ecology at the University of California, Davis
Jocelyn Tsai	2006-2008	2008	Ecological technician in Taiwan
Kristin Powell*	2005-2007	2007	Graduate student in Ecology at Washington University
Luz Silverio	2005-2007	2007	Stanford School of Medicine
Brian Smeets	2006	2007	
Alona Banai*	2005-2006	2006	Graduate student in Ecology at Northwestern University
Carla Fresquez	2005-2006	2006	Graduate student in Ecology at University of California, Santa Cruz
Alexandra Harmon-Threatt*	2005-2006	2006	Graduate student in Ecology at the University of California, Berkeley
Aaron David*	2007	2009	
Dan Martin	2006	2009	
Zach Marine*	2008-2009	2009	
Lyudmila Shemyakina	2007	2009	
Shulun Zang	2008	2009	
Edward Erker	2008	2010	
Anny Chung	2008-current	2011	
Braden Sidoti	2009-current	2011	

Undergraduate honors thesis reader

Kaitlin Mattos- 2009
David Harris- 2008
Ruth Polland- 2008
Julia Buck- 2007
Anne Greenberg- 2007
Sonal Singhal- 2006
Jason Ladner- 2005
Crystal Yates-White- 2005

Outreach

Annual events

Workshops on Population Viability Analysis (2005-present)- day long workshop on population modeling techniques for conservation practitioners. Attendees include practitioners from the National Parks Service, Department of Defense, US Fish and Wildlife, Nature Conservancy, Center for Plant Conservation, and many USA botanical gardens.

Women in Science Day at Washington University (2007-present)- I give the keynote address and run a population ecology activity for ~50 High School students from St. Louis Schools.

Invasive species outreach program (2007-present)- invasive species outreach program which provides a 1/2 day workshop to students on Washington University's campus, and then a day-long field experience in which they manage a locally invasive plant species. In the 1/2 day workshop, I teach students about population modeling of rare plant species using a dice game to simulate environmental stochasticity. This activity includes ~40 high school students from St. Louis Schools.

Other activities

Biology Middle School Science Camp at Washington University- 2007- I gave a lecture about women in science and ran an Ecology of Invasive Species activity at Tyson Research Center

Young Scientists Program- 2007- lecture to participants on invasive plants

Reviewer for Journals/Books

I review approximately 2 papers per month, and have served as a reviewer at least once for the following journals and book publishers: American Naturalist, American Midland Naturalist, Annals of Botany, Applied Vegetative Science, Biological Conservation, Ecological Applications, Ecology, Ecology Letters, Ecoscience, Evolution, Functional Ecology, International Journal of Plant Sciences, Journal of Applied Ecology, Journal of Ecology, Journal of Plant Interactions, Journal of the Torrey Botanical Society, Madroño, Natural Areas

Journal, Oecologia, Plant Species Biology, PNAS, University of Chicago Press

Department Committees

Ecology faculty search committee- Fall 2005
 Qualifying exam committee- Fall 2005
 Graduate student steering committee- 2005-present

University Committees

Chemical engineering faculty search committee- Spring 2006
 Environmental Studies Curriculum review committee- Spring 2008
 Environmental Studies advisory committee- Spring 2008-present

Other Service

Associate Editor, Oikos- 2007-present
 NSF population biology panelist- 2008
 Chair, plant population section of the Ecological Society of America-2007
 Vice-Chair, plant population section of the Ecological Society of America-2006
 Scientific Advisory Board member for The Center for Plant Conservation- 2006
 Scientific Advisory Board member for the Missouri Prairie Foundation- 2006

Awards

- 2008 Nomination for College of Arts and Sciences Faculty Teaching Award
- 2007 Nomination for College of Arts and Sciences Faculty Teaching Award
- Special Recognition for Outstanding Mentoring from the Graduate Student Senate and the Dean of the Graduate School of Arts and Sciences
- 2006 College of Arts and Sciences Faculty Teaching Award

Presentations

Invited seminars

- 2009 SUNY Stony Brook, Ohio State, Indiana State, University of Akron, Colorado College, Trinity University, Wright State
- 2008 North Carolina State University, Virginia Commonwealth University
- 2007 University of Nebraska, Southern Illinois University in Edwardsville, Chicago Botanic Garden, Lindenwood University
- 2006 University of Minnesota, Murray State University, Missouri State University, Bodega Bay Marine Laboratory, Point Reyes National Seashore, University of California Berkeley, University of Illinois Champagne-Urbana
- 2005 University of South Florida, Point Reyes National Seashore

- 2004 University of California Irvine, Saint Louis University, Washington University in St. Louis, University of Florida, National Center for Ecological Analysis and Synthesis
- 2003 University of Missouri, Washington University in St. Louis, Southern Illinois University Edwardsville, University of Missouri St. Louis, Florida State University
- 2002 University of Florida

Scientific meetings

- 2008 Ecological Society of America (Milwaukee, WI)
- 2007 Weed Science Society of America (San Antonio), Ecological Society of America (San José, CA), Natural Areas Conference (Cleveland, OH)
- 2006 Ecological Society of America (Memphis)
- 2005 Ecological Society of America (Montréal)
- 2004 Ecological Society of America (Portland, OR)
- 2003 7th International Conference on the Ecology and Management of Alien Plant Invasions (Fort Lauderdale, FL), Ecological Society of America (Savannah, GA)
- 2002 American Naturalist (Banff, Canada), Midwest Ecology and Evolution Conference (Bowling Green, OH)
- 2001 Ecological Society of America (Madison, WI), Midwest Ecology and Evolution Conference (Oxford, OH)
- 2000 Natural Areas Conference (St. Louis, MO), Ecological Society of America (Snowbird, UT)
- 2000 Midwest Ecology and Evolution Conference (Athens, OH)
- 1997 Florida Ecological and Evolutionary Symposium (Archbold, FL)

Public talks

- 2007 St. Louis Academy of Science Seminar Series
- 2005 Missouri Native Plant Society (St. Louis, MO)
- 2002 Phipps Conservatory and Botanical Gardens (Pittsburgh, PA), Powdermill Nature Preserve (Ligonier, PA), Fern Hollow Nature Center (Sewickly, PA)
- 2000 Fox Chapel Borough (Pittsburgh, PA)

Invited workshops

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- National Center for Ecological Analysis and Synthesis
- 2003-2005- Pollen limitation working group (Co-organizer)
 - 2004-2006- Stochastic demography working group
 - 2009-2011- Matrix models and management

Australian Research Council- 2008-present- Plant population syndromes

Society Memberships

Botanical Society of America
 Ecological Society of America
 Sigma Xi

