

Amy L. Downing

Professor
Department of Zoology
Ohio Wesleyan University
Delaware, OH 43015

EDUCATION

University of Chicago, Chicago, IL. M.Sc. 1998, Ph.D. in Ecology 2001.

Lawrence University, Appleton, WI. B.A. in Biology, 1995, Phi Beta Kappa.

APPOINTMENTS

Professor in Zoology, Ohio Wesleyan University. 2010-present

Associate Professor in Zoology, Ohio Wesleyan University. 2005-2010

Assistant Professor in Department of Zoology, Ohio Wesleyan University. 2001 – 2004

Instructor, University of Chicago Graham School of General Studies, Fall 2000.

Research Associate, Wright State University, 1995 – 1996.

FELLOWSHIPS, GRANTS, & AWARDS

Welch Meritorious Teaching Award, Ohio Wesleyan University, 2021.

Sherwood Dodge Shankland Award for the Encouragement of Teachers, Ohio Wesleyan University, 2007.

Environmental Challenge Grant granted by NiSource. ‘Management and Monitoring of Invasive Species and Aquatic Habitats in the Ohio Wesleyan Kraus Nature Preserve’. L. Anderson & A. Downing. \$10,000. 2006.

NSF REU supplemental grant. \$13,000. Summer 2004, Summer 2005.

NSF grant. ‘Collaborative Research: Compensatory vs amplifying effects of community structure on ecological systems in response to environmental fluctuations’. Leibold, M. & A. Downing. \$400,000. 2003-2006.

William Rainey Harper Fellow, University of Chicago, 2000–2001. Dissertation writing fellowship.

PEO Scholar Award, 2000 – 2001. \$7,000.

NSF Dissertation Improvement Grant. ‘Biodiversity’s effects on ecosystem function and stability in ponds.’ Awarded to M.A. Leibold and A.L. Downing, 1999-2001. \$10,000.

Department of Education Training Grant Fellow (GAAN), U. of Chicago, 1997-2001.

Hinds Fund Research Grant, University of Chicago, 1998-1999. \$2500.

PUBLICATIONS * indicates student co-author

Arnott, S. E.; Fugere, V.; Symons, C. C.; Melles, S. J.; Beisner, B. E.; Canedo-Arguelles, M.; Hebert, M. P.; Brentrup, J. A.; Downing, A. L.; Gray, D. K.; et al. 2022. Widespread variation in salt tolerance within freshwater zooplankton species reduces the predictability of community-level salt tolerance. *Limnology and Oceanography Letters*. DOI: [10.1002/lol2.10277](https://doi.org/10.1002/lol2.10277).

Hintz, W. D.; Arnott, S. E.; Symons, C. C.; Greco, D. A.; McClymont, A.; Brentrup, J. A.; Canedo-Arguelles, M.; Derry, A. M.; Downing, A. L.; Gray, D. K.; et al. 2022. Current water quality guidelines across North America and Europe do not protect lakes from salinization. *Proceedings of the National Academy of Sciences of the United States of America*, 119 (9). DOI: [10.1073/pnas.2115033119](https://doi.org/10.1073/pnas.2115033119).

Hebert, M. P.; Symons, C. C.; Canedo-Arguelles, M.; Arnott, S. E.; Derry, A. M.; Fugere, V.; Hintz, W. D.; Melles, S. J.; Astorg, L.; Baker, H. K.; J.A. Brentrup, J.A.; Downing, A.L., et al. 2022. Lake salinization drives consistent losses of zooplankton abundance and diversity across coordinated mesocosm experiments. *Limnology and Oceanography Letters*. DOI: [10.1002/lol2.10239](https://doi.org/10.1002/lol2.10239).

Shoemaker, L. G.; Hallett, L. M.; Zhao, L.; Reuman, D. C.; Wang, S.; Cottingham, K. L.; Hobbs, R. J.; Castorani, M. C. N.; Downing, A. L.; Dudley, J. C.; et al. 2022. The long and the short of it: Mechanisms of synchronous and compensatory dynamics across temporal scales. *Ecology (Washington DC)* 103 (4), e3650. DOI: [10.1002/ecy.3650](https://doi.org/10.1002/ecy.3650).

Downing, A.L.¹ C. Jackson¹, C. Plunkett*, J. A. Lockhart*, S. M. Schlater*, and M. A. Leibold. 2020. Temporal stability vs community matrix stability and the role of weak interactions. *Ecology Letters*. 23: 1468-1478. DOI: [10.1111/ele.13538](https://doi.org/10.1111/ele.13538)

Mooij, W., U. Gaedke, B. Beisner, A. Downing, J. Kuiper, C. Van Altena, F.H. Soudjin, C.P. Guill, A. Inzer. 2017. Importance of trait-related flexibility for food web dynamics and the maintenance of biodiversity. *Adaptive Food Webs: Stability and Transitions of Real and Model Ecosystems*. Editors J. Moore, Peter de Ruiter, Kevin McCann, Volkmar Wolters. Cambridge University Press.

Brown B, Downing A, Leibold M. 2016. Compensatory dynamics stabilizes aggregate community properties in response to multiple types of disturbances. *Ecology* 97(8): 2021-2033. doi.org/10.1890/15-1951.1

Downing, A. B. Brown, M. Leibold. 2014. Multiple diversity-stability mechanisms enhance population and community stability in aquatic food webs. *Ecology* 95(1) 173–184. <https://doi.org/10.1890/12-1406.1>

Bowne, D.R., A. L. Downing, Martha F. Hoopes, Kathleen LoGiudice, Carolyn L. Thomas, Laurel J. Anderson, Tracy Gartner, Daniel J. Hornbach, Karen Kuers, Jose-Luis Machado, Bob R. Pohlrad, Kathleen L. Shea. 2011. Transforming Ecological Science at Primarily Undergraduate Institutions through Collaborative Networks. *BioScience*.61(5): 386-392.

Downing, A. L. and M. A. Leibold. 2010. Species richness facilitates ecosystem resilience in aquatic food webs. *Freshwater Biology* **55**(10): 2123-2137. <https://doi.org/10.1111/j.1365-2427.2010.02472.x>

Srivastava, D. S., B. J. Cardinale, A. L. Downing, J. E. Duffy, C. Jouseau, M. Sankaran, and J. P. Wright. 2009. Diversity has stronger top-down than bottom-effect effects on decomposition. *Ecology*. 90(4) 1073-1083. <https://doi.org/10.1890/08-0439.1>

Cardinale, B. J., D. S. Srivastava, J. E. Duffy, J. P. Wright, A. L. Downing, M. Sankaran, C. Jouseau, M. W. Cadotte, I. T. Carroll, J. J. Weis, A. a. Hector, and M. Loreau. 2009. Effects of biodiversity on the functioning of ecosystems: A summary of 164 experimental manipulations of species richness. *Ecology* 90: 854. <https://doi.org/10.1890/08-1584.1>

Downing, A. L., B. L. Brown, E. M. Perrin*, T. H. Keitt, and M. A. Leibold. 2008. Environmental fluctuations induce scale-dependent compensation and increase stability in plankton ecosystems. *Ecology* 89: 3204-3214. <https://doi.org/10.1890/07-1652.1>

Downing, A. K. DeVanna*, C. N. Rubeck-Shurtz*, L. Tuhela, and H. Grunkemeyer. 2008. Community and ecosystem responses to a pulsed pesticide disturbance in freshwater ecosystems. *Ecotoxicology* **17**:539-548. DOI: [10.1007/s10646-008-0211-3](https://doi.org/10.1007/s10646-008-0211-3)

Cardinale, B. J., D. S. Srivastava, J. E. Duffy, J. P. Wright, A. L. Downing, M. Sankaran, and C. Jouseau. 2006. Consistent effects of biodiversity on the functioning of trophic groups and ecosystems. *Nature* **443**:989-992. DOI: [10.1038/nature05202](https://doi.org/10.1038/nature05202)

Downing, A. L., and J. T. Wootton. 2005. Trophic position, biotic context, and abiotic factors determine species contributions to ecosystem functioning. Pages 295-308 in P. d. Ruiter, J. Moore, and V. Wolters, editors. *Dynamic Food Webs: Multispecies assemblages, ecosystem development, and environmental change*. Academic Press, Amsterdam.

Downing, A.L. 2005. Relative effects of species composition and richness on pond ecosystem properties in ponds. *Ecology* 86(3): 701-715. <https://doi.org/10.1890/03-0239>

Raffaelli D, Cardinale BJ, Downing AL, Engelhardt KAM, Ruesink JL, Solan M, Srivastava DS. 2004. Reinventing the wheel in ecology research? Response. *Science*. 307(5717): 1875-1876.

Solan, M., B. J. Cardinale, A. L. Downing, K. A. M. Engelhardt, J. L. Ruesink, D. S. Srivastava. 2004. Extinction and ecosystem function in the marine benthos. *Science* 306: 1177-1180. DOI: [10.1126/science.1103960](https://doi.org/10.1126/science.1103960)

Petchey, O., A. Downing, G. Mittelbach, L. Persson, C. Steiner, D. Raffaelli, P. Warren, and G. Woodward. 2004. Species loss and the structure and functioning of multitrophic aquatic ecosystems. *Oikos* 104: 467-478. <https://doi.org/10.1111/j.0030-1299.2004.13257.x>

Downing, A.L. and M. Leibold, 2002. Ecosystem consequences of species richness and composition in pond food webs. *Nature* 416: 837-41.

Wootton, T.W. and A. Downing. 2002. Understanding the Effects of Reduced Biodiversity: A Comparison of Two Approaches, eds. P. Kareiva, and S. Levin in The Importance of Species: Perspectives on Expendability and Triage? Princeton University Press. 440 pp.

Loreau, M., A. Downing, M. Emmerson, A. Gonzalez, J. Hughes, P. Inchausti, J. Joshi, and J. Norberg. 2002. A new look at the relationship between diversity and stability, eds. M. Loreau, S. Naeem, and P. Inchausti in Biodiversity and Ecosystem Functioning: Synthesis and Perspectives. Oxford University Press. 306 p.

Downing, A. L. 2001. The role of biological diversity for the functioning and stability of pond ecosystems. Dissertation. University of Chicago, Chicago, IL.

Chase J.M., M. A. Leibold, A. L. Downing, and J. B. Shurin. 2000. The effects of productivity, herbivory, and plant species turnover in grassland food webs. *Ecology* 81(9): 2485-2497.

Gonzalez, M. and A. Downing. 1999. Mechanisms underlying amphipod responses to the zebra-mussel invasion. *Canadian Journal of Fisheries & Aquatic Sciences*. 56(4): 679-685.

Leibold, M.A., J.M. Chase, J. B. Shurin, and A. L. Downing. 1997. Species turnover and the regulation of trophic structure. *Ann. Rev. of Ecol. and Syst.*. 28: 467-494.

Pastor, J., A. Downing, and H. Erickson. 1996. Species-area curves and ecosystem properties in beaver meadows of Voyageurs National Park. *Oikos* 77:399-406.

ORAL PAPERS * indicates student author

Downing, A. , B. Brown, M. Leibold. 2015. 'Temporal stability in aquatic food webs: the role of environmental variability and species richness.' In the special session: Beyond the Mean: Integrating the effect of variance in aquatic ecology. *American Society of Limnology and Oceanography*. February 2015. Grenada, Spain.

Downing, A., Brown, B., M. Leibold. 2011. Multiple diversity-stability mechanisms enhance population and community stability in aquatic ecosystems. *Bulletin of the Ecological Society of America*.

Downing, A., L. Woods*, A. Mock*, M. Leibold. 2008, Community & ecosystem dynamics: insights from natural and model ponds ecosystems. *Bulletin of the Ecological Society of America*.

Downing, A., Leibold, M. and *Perrin, E. 2005. Temporal dynamics of pond food webs and ecosystem functioning in response to disturbance. *Bulletin of the Ecological Society of America*.

Brown, B., M. Leibold and A. Downing. 2005. Multiple types of perturbation lead to compensatory dynamics in replicate experimental zooplankton communities. *Bulletin of the Ecological Society of America*.

Leibold, M., Downing, A. 2005. Environmental fluctuations can stabilize ecosystems. Oral paper presented by M. Leibold at the American Society of Limnology and Oceanography International meeting, Santiago, SPAIN.

Downing A.L. 2000. Species, functional groups, composition, or diversity; What determines ecosystem function and stability? *Bulletin of the Ecological Society of America*.

Downing A. 1999. Species regulate ecosystem function and stability in pond food webs. *Bulletin of the Ecological Society of America*.

Downing, A. and Leibold, M. 1998. Functional group diversity and composition, but not species diversity, influence ecosystem functioning in pond ecosystems. *Bulletin of the Ecological Society of America*.

POSTER PRESENTATIONS * indicates student author

A. Downing, M. Leibold, *C. Plunkett, J. Ackerman*, *S. Schlater, C. Jackson. 2016. Integrating theoretical and empirical definitions of ecological stability: Are they measuring the same thing? *Bulletin of the Ecological Society of America*.

A.I. Del Arco, G. Parra, A. Downing. 2015. Effects of biodiversity and environmental variability on the structure, composition, and stability of aquatic food webs. *American Society of Limnology and Oceanography*. Grenada, Spain.

Downing, A., *P. Ruppel, *B. Lutz, A.I. Del Arco, G. Perra. 2013, Effects of environmental variability & biodiversity on the stability of aquatic food webs. Food Web Symposium, Germany.

*Woods, L. and A. Downing. 2006. Variability of plankton communities in four ponds in southern Michigan. Memphis, TN. *Bulletin of the Ecological Society of America*.

*Gullen, A. Downing, A. and Leibold, M. 2005. Environmental determinants of macroinvertebrate diversity and composition in ponds. *Bulletin of the Ecological Society of America*.

*Rubeck-Schurtz N, *K. DeVanna, L. Tuhela-Reuning, and A. Downing. 2003. The effect of carbaryl on aquatic bacterial communities and biofilm development. *American Society for Microbiology Meetings*. Washington, D.C.

*DeVanna, K., *N. Rubeck-Schurtz, A. Downing, and L. Tuhela-Reuning. 2003. Bulletin of the Ecological Society of America.

CONFERENCES AND INVITED WORKSHOPS

Responses of freshwater zooplankton to road salt pollution: A global perspective. A data and writing workshop for the Summer 2018 global salt experiment. Queens University Biological Station. October 2019.

NSF RCN: Cross-Scale Processes Impacting Biodiversity. I have been invited to participate in this 5-year (2018-2023) NSF sponsored Research Coordination Network due to my expertise in biodiversity at the local and ecological scales and in freshwater ecosystems. U. of Minnesota June 2018, U. of Florida June 2019.

In the special session: Beyond the Mean: Integrating the effect of variance in aquatic ecology. *American Society of Limnology and Oceanography*. February 2015. Grenada, Spain.

Food Web Symposium. Invited participant. Symposium of food web researchers organized every 10 years to summarize current and future research areas. Germany. 2013.

Biodiversity and Ecosystem Functioning - Cross Biome Syntheses. BioMERGE, 2005, Malaysian Borneo.

Experimental Model Systems in Community Ecology' NSF Headquarters, Arlington, VA., 2004.

Food Web Symposium. Invited participant. Symposium of food web researchers organized every 10 years to summarize current and future research areas. Germany. 2003.

The interface between intrinsic and extrinsic drivers. Workshop of the NSF sponsored network BioMERGE St. Louis, MO. 2003.

Biotic Mechanisms of Ecosystem Regulation in the Global Environment. BioMERGE Seattle, WA. 2002.

Faculty Institutes for Reforming Science Teaching (First II). Kellogg Biological Station, Hickory Corners, MI. 2002, 2003.

Aquatic biodiversity and ecosystem functioning, Switzerland. 2002.

Biodiversity and ecosystem functioning: synthesis and perspectives. Paris, France. 2000.

PROFESSIONAL SERVICE

Dissertation Committee Member for Ana Del Arco, PhD. Candidate. Jaen University, SPAIN, Advisor Dr. Gema Perra. 2012-2015.

Dissertation Committee Member for Mike Plenzler, PhD. Candidate. Bowling Green State University. Advisor Dr. Helen Michaels. 2009-2012.

National Science Foundation Panelist, April 2011

Ecological Research as Education Network (EREN) Research Coordination Network Participant. National Science Foundation. 2009-2016.

Peer reviewer: National Science Foundation, National Geographic, American Naturalist, Aquatic Biology, Biodiversity and Conservation, Conservation Science, Biological Conservation, Ecological Applications, Ecology, Ecology Letters, Ecography, Ecotoxicology, Freshwater Biology, Functional Ecology, Journal of the North American Benthological Society, Proceedings of the Royal Academy of the Sciences, Nature, Nature Communications, Oikos, Oecologia, textbook reviewer.

Advisory panel member, National Science Foundation's Doctoral Dissertation Improvement Grants (DDIG). Arlington, VA. February, 2004.

Moderator – Ecological Society of America National Meeting. Madison, WI. 2001.

OHIO WESLEYAN UNIVERSITY DEPARTMENTAL/UNIVERSITY SERVICE

Moving the Needle: First Year Experience Module Team Co-Leader June 2022 – current.

OWU Presidential Search Committee member. June – December 2022.

Academic Status Committee member, Fall 2020-current.

OWU Accreditation Leadership Team, lead on Criterion 5: Resources, Planning, Institutional Effectiveness, Spring 2016-Spring 2018.

University Governance Committee. 2013-2019, UGC Chair 2018-2019

Co-director of the Ohio Wesleyan University Honors Program: August 2014-current

Faculty advisor to Women's Volleyball (Fall 2016, 2017), Women's Soccer (Fall 2018-now)

Sexual Assault Committee 2010-2017

Provost Search Committee, Chair. May 2012-2013.

TEW review panel: 2013-current

Committee on Admissions and Financial Aid. 2003-9, 2010-13. Chair 2006-07.

Chair of the Department of Zoology, 2008-2010.

Ad Hoc Marketing committee. 2006-2007.

Natural Preserves Committee, Chair 2002 – present.

Committee on the Status of Women. 2002-2003.