

**Brief CURRICULUM VITAE
NELSON G. HAIRSTON, JR.**

Frank H.T. Rhodes Professor of Environmental Science
September 2019

PERSONAL

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EDUCATION

B.S. in Zoology, with Honors, University of Michigan, Ann Arbor, Michigan, 1971

Ph.D. in Zoology, University of Washington, Seattle, Washington, 1977
(W. T. Edmondson, Supervisory Committee Chair)

EMPLOYMENT

2017-18, 2009-11
& 2001-05 Chair, Department of Ecology and Evolutionary Biology, Cornell University
2012 & 2006-09 Senior Associate Dean, College of Arts and Sciences, Cornell University
1996- Frank H. T. Rhodes Professor of Environmental Science, College of Arts and
Sciences, Cornell University
1988- Professor, Department of Ecology and Evolutionary Biology, Cornell University
1985-1987 Associate Professor, Section of Ecology and Systematics, Cornell University
1981-1985 Associate Professor, Dept. of Zoology, University of Rhode Island, Kingston, RI
1977-1981 Assistant Professor, Dept. of Zoology, University of Rhode Island, Kingston, RI

GRANTS AND AWARDS (last decade)

US EPA with DM Lodge, LG Rudstam, K Deiner 2017-2019
USDA Hatch Grants (NIFA) 2015-2018; 2009-2012; 2005-2007
NSF DEB with SP Ellner, G Hooker, B Lazzaro, BE Miner: 2013-2016
NSF DEB with I Hewson: 2010-2012
NSF DEB with SP Ellner, LE Jones, GJ Hooker: 2008-2012
JS McDonnell Foundation with SP Ellner, LE Jones, GF Fussmann: 2008-2012
NY State Great Lakes Protection Fund with CT Driscoll, DJ Leopold, DM Peteet): 2004-2008
Andrew Mellon Foundation with SP Ellner: 2003-2008
Atlantic Philanthropies Inc. for Cornell Biogeochemistry and Biocomplexity Initiative (Lead PI and Chair
of Steering Committee): 2002-2008
NSF Doctoral Dissertation Improvement Grants for PhD students: Katherine Sirianni (2015-17)
Cornelia Twining (2015-2017); Christopher Dalton (2013-15); Sarah Collins (2011-2013);
Joseph Simonis (2011-13); Cayelan Carey (2009-2011); Michael Booth (2008-10)
Smithsonian Institution; EB & PE Reed Fellowship for Copepod Research – Dissertation Research Grant
for PhD student Rachel Wilkins: 2014-16

AWARDS & RECOGNITIONS (last 5 years)

Kendall S. Carpenter Memorial Advising Award – Cornell University-wide recognition for excellence in
undergraduate advising and mentoring, 2013.
Trustee, Cornell University Board of Trustees (faculty elected position; 2010-2014)
Trustee, Paleontological Research Institution (member elected position – two terms; 2014-2020)

Honorary Lectureships (selected last decade)

Keynote Speaker, DynaTrait Conference, Hannover, Germany, October 2017 (*scheduled*)
Keynote Speaker, Symposium on “Natural Selection is Ecology in Action” in honor of W. Lampert’s 75th
birthday, Max-Planck-Institute for Evolutionary Biology, Plön, Germany, October 2016
Keynote Speaker, Cornell University Chinese Visiting Scholars Association, Annual Meeting, Aug. 2016
Plenary Speaker, Monte Verità Conference on “The Genomic Basis of Eco-Evolutionary Change,”
Ascona, Switzerland, June 2016

Featured Speaker, Gordon Conference on Predator-Prey Interactions, Ventura, CA, Jan 2016
 Visiting Eminent Ecologist, Kellogg Biological Station, Michigan State University, 5-day visit, July 2015
 Darwin Days Lecturer, Paleontological Research Institution, Ithaca, NY, February 2015
 L. Floyd Clarke Lecturer, Department of Zoology and Physiology, University of Wyoming, October 2014
 Keynote Speaker, *Daphnia* Genomics Consortium (Birmingham, England), January 2014
 Keynote Speaker, First Joint Meeting of the Society for Ecology (Germany, Switzerland & Austria) and the German Limnological Society, Potsdam, Germany, September 2013
 Dennis H. Chitty Lecturer (graduate student invited), Department of Zoology, University of British Columbia, Canada, March 2013
 Plenary Speaker, Seventh International Symposium on "Eco-Evolutionary Dynamics," KU Leuven, Belgium, February 2013
 Plenary Speaker, Lorentz Center Workshop: "Eco-evolutionary Dynamics in a Changing World," Leiden, Netherlands, February 2013
 Plenary Speaker, Amer. Society of Limnology and Oceanography, Annual Mtg, Otsu, Japan, July 2012
 Connections Lecturer, 4-college distinguished lecturer at Cornell College, Mt. Vernon, IA, October 2011.
 Plenary Speaker, Symposium on "Animal Migration", The Wenner-Gren Foundation & Royal Swedish Acad. of Sciences; Eighth Kristineberg Symposium; Kristineberg/Fiskebäckskil, Sweden, June 2011
 Plenary Speaker, Symposium on "Darwinian thinking in limnology" in honor of Maciej Gliwicz's retirement, XXI Conference of Polish Hydrobiologists, Lubin, Poland, September 2009
 Invited Instructor, PhD Summer School "Interactions between ecological and evolutionary processes in aquatic systems" Eawag - Kastanienbaum, Switzerland, July 2009
 Plenary Speaker, Gordon Conference on Microbial Population Biology, NH, July 2009
 Plenary Speaker, XV National and VIII International Meeting of the Mexican Society of Planktology, Mexico City, Mexico, April 2009
 Plenary Speaker, 100th Ann Mtg of the Germany Zoological Society, Cologne, Germany, September 2007
 Keynote Speaker, Symposium on the Population Consequences of Adaptive Processes, European Society for Evolutionary Biology, Uppsala, Sweden, August 2007
 W.T. Edmondson Memorial Lecturer, University of Washington, Seattle, WA, May 2007

Sabbatical and Visiting Positions

Visiting Scientist, Eawag (Swiss Federal Institute of Aquatic Science and Technology), Dübendorf, Switzerland, Fall 2013
 Project Professor, University of Tokyo, Japan, Spring 2013
 Velux Foundation Professor of Biodiversity, ETH (Swiss Federal Institute of Technology), Zürich *and* Visiting Scientist, Eawag (see above), Dübendorf, Switzerland, Fall 2007
 Visiting Scientist, Max-Planck Institute for Limnology, Plön, Germany, Fall 1998
 Visiting Scientist, Archbold Biological Station, Lake Placid Florida, Spring 1992

Journals and Funding Agencies

Board of Editors, ECOLOGY/ECOLOGICAL MONOGRAPHS, 1989-1992;
Concepts Section editor 1994-1996
 Editorial Board, LIMNOLOGY AND OCEANOGRAPHY, 1986-1989; 2003-2004
 Panel Member, Population Biology and Physiological Ecology Program, National Science Foundation, 1985-1987
 Member, Site Visit Committee, Environmental Protection Agency, 1983

Other Activities (selected from last decade)

Member, Grant Proposal Review Committee, Deutsche Forschungsgemeinschaft (German Research Foundation) Priority Program: "DynaTrait." Potsdam, Germany 3/2014 and 10/2017
 Member Site Visit Committee: Strategic Partnership Grants for Networks, Natural Sciences and Engineering Research Council of Canada, Montreal, 4/2016
 Member and recorder, External Advisory Committee, KU Leuven Centre of Excellence on "Eco- and Socio-Evolutionary Dynamics," 6/2016 and 2/2013
 Member, External Review Committee, Graduate Program in Ecology, Duke University, 1/2014

External Reviewer for faculty position in Limnology at Uppsala University, Sweden, 7/2012
 Member, Judging Committee, New York Acad. Sciences 2012 Blavatnik Awards for Young Scientists
 External Reviewer for faculty position in Paleoecology at Umeå University, Sweden, 7/2011
 Member, External Peer Review Committee, Department of Ecology & Evolutionary Biology, Yale University, New Haven, CT, 2/2011
 Member, Faculty of 1000, Population Ecology, 2009-2010
 Member, External Peer Review Committee, Eawag (Swiss Federal Institute of Aquatic Science and Technology), Dübendorf and Kastanienbaum, Switzerland, 9/2009

PROFESSIONAL SOCIETIES

American Society of Limnology and Oceanography	Societas Internationalis Limnologiae
American Society of Naturalists	Society for the Study of Evolution
Ecological Society of America	Sigma Xi
Freshwater Biological Association	

TEACHING EXPERIENCE

Current: Ecology and the Environment - 3 credit; freshmen; cotaught (250 students)
 Limnology: Ecology of Lakes - 5 credit lecture & laboratory; seniors (30 students)
Past: Tropical Field Ecology - 2 credit; grad students; cotaught (14 students)
 Life-histories of Freshwater & Marine Invertebrates - 2 credit; seniors; cotaught (15 students)
 Plankton - 5 credit lecture & laboratory; seniors (12 students)
 Laboratory in Quantitative Population Biology - 2 credit; juniors (16 students)
 Various 1 and 2 credit seminars on limnological, ecological, and evolutionary (5-30 students)

GRADUATE STUDENTS ADVISED

MS students: KT Li (URI 1982); CJ Meise (URI 1982); VS George (URI 1983); JV Jackson (URI 1986);

SF Tjossem (Cornell 1990); AM Onion (Cornell 2004); LR Schaffner (Cornell current)

PhD students: DH Kesler (1979 U Michigan); BT De Stasio (1989 Cornell); VS George (1990 URI); KD Hambricht (1991 Cornell); GT Epp (1995 Cornell); CE Cáceres (1997 Cornell); AJ Bohonak (1998 Cornell); CL Holtmeier (2000 Cornell); DM Post (2000 Cornell); JA Fox (2005 Cornell); G Gerrish (2007 Cornell); R Doyle-Morin (2011 Cornell); M Booth (2011 Cornell); CC Carey (2012 Cornell); JL Simonis (2013 Cornell); SM Collins (2014 Cornell); CM Dalton (2015 Cornell); CW Twining (2018 Cornell); KM Sirianni (2018 Cornell); RLA Wilkins (Cornell current).

Selected PUBLICATIONS divided by areas of contribution to Ecology and Evolutionary Biology –
 [>130 peer-reviewed papers]

Eco-evolutionary dynamics - general

Schaffner, L.R., L. Govaert, B.E. Miner, E. Fairchild, P. Spaak, L. De Meester, S.P. Ellner, **N.G.**

Hairston, Jr. 2019. Consumer-resource dynamics is an eco-evolutionary process in a natural plankton community. *Nature Ecology & Evolution* [DOI.org/10.1038/s41559-019-0960-9]

Rudman, SM, M Barbour, K Csillery, P Gienapp, F Guillaume, **NG Hairston Jr**, AP Hendry, JR Lasky, M Rafajlović, K Räsänen, PS Schmidt, O Seehausen, NO Therkildsen, MM Turcotte, JM Levine.

2017. What genomic data can reveal about eco-evolutionary dynamics. *Nature Ecology and Evolution* 2:9-15

Messer, PW, SP Ellner, **NG Hairston Jr** 2016. Can population genetics adapt to rapid evolution? *Trends in Genetics* 32:408-418.

Hiltunen, T, **NG Hairston Jr**, G Hooker, LE Jones, SP Ellner. 2014. A newly discovered role of evolution in previously published consumer-resource dynamics. *Ecology Letters* 17:915-923.

Ellner, SP, MA Geber, **NG Hairston Jr.** 2011. Does rapid evolution matter? Measuring the rate of contemporary evolution and its impacts on ecological dynamics. *Ecology Letters* 14: 603–614.

- Kinnison, MT, **NG Hairston Jr.** 2007. Eco-evolutionary conservation biology: contemporary evolution and the dynamics of persistence. *Functional Ecol.* 21:444-454.
- Hairston, NG Jr**, SP Ellner, MA Geber, T Yoshida, JA Fox. 2005. Rapid evolution and the convergence of ecological and evolutionary time. *Ecology Letters* 8:1114-1127.

Plankton-chemostat consumer-resource and eco-evolutionary dynamics

- Hiltunen, T, SP Ellner, G Hooker, LE Jones, **NG Hairston Jr.** 2014. Eco-evolutionary dynamics in a three-species food web with intraguild predation: intriguingly complex. *Advances in Ecological Research* 50:41-72
- Becks, L, SP Ellner, LE Jones, **NG Hairston Jr.** 2012. The functional genomics of an eco-evolutionary feedback loop: linking gene expression, trait evolution, and community dynamics. *Ecology Letters* 15: 492–501.
- Yoshida, T, SP Ellner, LE Jones, BJM Bohannan, RE Lenski, **NG Hairston Jr.** 2007. Cryptic population dynamics: rapid evolution masks trophic interactions. *PLoS – Biology* 5:1868-1879.
- Meyer, JR, SP Ellner, **NG Hairston Jr.**, LE Jones, T Yoshida. 2006. Evolution on the time scale of predator-prey dynamics revealed by allele-specific quantitative PCR. *PNAS* 103:10690-10695.
- Yoshida, T, LE Jones, SP Ellner, GF Fussmann, **NG Hairston Jr.** 2003. Rapid evolution drives ecological dynamics in a predator-prey system. *Nature* 424:303-306.
- Fussmann, GF, SP Ellner, KW Shertzer, **NG Hairston Jr.** 2000. Crossing the Hopf Bifurcation in a live predator-prey system. *Science* 290: 1358-1360.

Rapid evolution in plankton

- Hairston, NG Jr**, CL Holtmeier, W Lampert, LJ Weider, DM Post, JM Fischer, CE Cáceres, JA Fox, U Gaedke. 2001. Natural selection for grazer resistance to toxic cyanobacteria: evolution of phenotypic plasticity? *Evolution* 55:2203-2214.
- Hairston, NG Jr**, W Lampert, CE Cáceres, CL Holtmeier, LJ Weider, U Gaedke, JM Fischer, JA Fox, DM Post. 1999. Rapid evolution revealed by dormant eggs. *Nature* 401:446
- Hairston, NG Jr**, TA Dillon. 1991. Fluctuating selection and response in a population of freshwater copepods. *Evolution* 44:1796-1805.
- Hairston, NG Jr**, BT De Stasio Jr. 1988. Rate of evolution slowed by a dormant propagule pool. *Nature* 336:239-242.
- Hairston, NG Jr**, WE Walton. 1986. Rapid evolution of a life-history trait. *PNAS* 83:4831-4833.

Diapause, egg banks and maintenance of genetic variation in temporally varying environments

- Yamamichi, M., **N.G. Hairston, Jr.**, M. Rees, S.P. Ellner. Rapid evolution with generation overlap: the double-edged effect of dormancy. *Theoretical Ecology* [DOI.org/10.1007/s12080-019-0414-7]
- Hairston, NG Jr**, LJ Perry, AJ Bohonak, MQ Fellows, CM Kearns, DR Engstrom. 1999. Population biology of a failed invasion: Paleolimnology of *Daphnia exilis* in upstate New York. *Limnology and Oceanography*. 44:477-486
- Ellner, S, **NG Hairston Jr**, CM Kearns, D Babai. 1999. The roles of fluctuating selection and long-term diapause in microevolution of diapause timing in a freshwater copepod. *Evolution*. 53:111-122.
- Hairston, NG Jr**, CM Kearns, S Ellner. 1996. Phenotypic variation in a zooplankton egg bank. *Ecology* 77:2382-2392.
- Ellner, SP, **NG Hairston Jr.** 1994. Role of overlapping generations in maintaining genetic variation in a fluctuating environment. *American Naturalist* 143:403-417.
- Hairston, NG Jr**, WR Munns Jr. 1984. The timing of copepod diapause as an evolutionarily stable strategy. *American Naturalist* 123:733-751.

Fish vision, handling time, and ontogenetic changes in optimal diet

- Walton, WE, **NG Hairston Jr**, JK Wetterer. 1992. Growth-related constraints on diet selection by sunfish. *Ecology* 73:429-437.
- Li, KT, JK Wetterer, **NG Hairston Jr.** 1985. Fish size, visual resolution, and prey selectivity. *Ecology* 66:1729-1735.

Hairston, NG Jr, KT Li, SS Easter Jr. 1982. Fish vision and the detection of planktonic prey. *Science* 218:1240-1242.

Adaptations to damaging solar radiation and accompanying tradeoffs

Hairston, NG Jr. 1981. The interaction of salinity, predators, light and copepod color. In W. D. Williams, editor. Salt Lakes: Proceedings of an International Symposium on Athalassic Salt Lakes. *Hydrobiologia* 81:151-158.

Hairston, NG Jr. 1979. The adaptive significance of color polymorphism in two species of *Diatomus* (Copepoda). *Limnology and Oceanography* 24:15-37.

Hairston, NG, Jr. 1976. Photoprotection by carotenoid pigments in the copepod *Diatomus nevadensis*. *PNAS* 73:971-974.

Community and ecosystem processes

Twining, C.W, J.T. Brenna, P. Lawrence, D.W. Winkler, A.S. Flecker, **N.G. Hairston, Jr**. Aquatic and terrestrial resources are not nutritionally reciprocal for consumers. *Functional Ecology* [DOI:10.1111/1365-2435.13401]

Yamamichi, M., T. Kazama, K. Tokita, I. Katano, H. Doi, T. Yoshida, **N.G. Hairston, Jr.**, J. Urabe. 2018. A shady phytoplankton paradox: phytoplankton increases under low light. *Proceedings of the Royal Society B* 285: 20181067

Dalton, C.M., K.E. Tracy, **N.G. Hairston, Jr.**, A.S. Flecker. Fasting or fear: The mechanisms of indirect predator effects on nutrient cycling by intermediate consumers. *Ecology* 99:681-689

Spaak, P., J.A. Fox, **N.G. Hairston Jr**. 2012. Modes and mechanisms of a *Daphnia* invasion. *Proceedings of the Royal Society B* 279: 2936-2944.

Hiltunen, T, LE Jones, SP Ellner, **NG Hairston Jr**. 2013. Temporal dynamics of a simple community with intraguild predation: an experimental test. *Ecology* 94:773-779.

Barreiro Felpeto, A, **NG Hairston Jr**. 2013. Indirect bottom-up control of consumer-resource dynamics: Resource-driven algal quality alters grazer numerical response. *Limnology and Oceanography* 58:827-838.

Dalton, CM, A Mokiao-Lee, TS Sakihara, MG Weber, CA Roco, ZZ Han, B Dudley, RA MacKenzie, **NG Hairston Jr**. 2013. Density- and trait-mediated top-down effects modify bottom-up control of a high endemic tropical aquatic food web. *Oikos* 122:790-800.

Miner, BE, L De Meester, ME Pfrender, W Lampert, **NG Hairston Jr**. 2011. Linking genes to communities and ecosystems: *Daphnia* as an ecogenomic model. *Proceedings of the Royal Society of London B* 279: 1873–1882.

Hambright, KD, **NG Hairston Jr**, WR Schaffner, RW Howarth. 2007. Grazer control of nitrogen fixation: synergisms in the feeding ecology of two freshwater crustaceans. *Fundamental and Applied Limnology* 170:89-101.

Hairston, NG Jr, CM Kearns, LJ Perry, SW Effler. 2005. Species-specific *Daphnia* phenotypes: a history of industrial pollution and pelagic ecosystem response. *Ecology* 86:1669-1678.

Post, DM, ML Pace, **NG Hairston Jr**. 2000. Ecosystem size determines food-chain length in lakes. *Nature* 405:1047-1049.

Hairston, NG Jr, NG Hairston Sr. 1993. Cause-effect relationships in energy flow, trophic structure, and interspecific interactions. *American Naturalist* 142:379-411.