

SIMON ASHER LEVIN

James S. McDonnell Distinguished University Professor in Ecology and Evolutionary Biology
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EDUCATION

B.A.	The Johns Hopkins University, Baltimore, MD	Mathematics	1961
Ph.D.	The University of Maryland	Mathematics	1964

PROFESSIONAL EXPERIENCE

Princeton University

1992-2016	George M. Moffett Professor of Biology
1992-	Affiliated Faculty, Program in Applied and Computational Mathematics
1993-98	Founding Director, Princeton Environmental Institute
1994-	Affiliated Faculty, Princeton Environmental Institute
2001-	Director, Center for BioComplexity
2009-	Faculty, Quantitative and Computational Biology Program, Princeton University
2012-	Faculty Associate, Princeton Institute for International and Regional Studies (PIIRS)
2012-	Faculty Associate, Graduate Certificate in Computational and Information Science (PICSciE)
2014-	Affiliated Faculty, Science, Technology and Environmental Policy (STEP) Program
2016-	James S. McDonnell Distinguished University Professor in Ecology and Evolutionary Biology

Cornell University

1992-	Adjunct Professor, Ecology and Evolutionary Biology; Center for Applied Mathematics
1985-92	Charles A. Alexander Professor of Biological Sciences
1990-92	Director, Program on Theoretical and Computational Biology
1987-90	Director, Center for Environmental Research
1980-87	Director, Ecosystems Research Center
1977-92	Professor of Applied Mathematics and Ecology
1974-79	Chair, Section of Ecology and Systematics, Division of Biological Sciences
1971-77	Associate Professor; Assistant Professor

ACHIEVEMENTS IN RESEARCH

Simon Levin is an ecologist, noted especially for his contributions to the development of the foundations of spatial ecology, for his work on pattern and scale, and more recently for his research at the interface between ecology and economics, especially problems of public goods, common pool resources, and the global commons. His book, *Fragile Dominion*, along with his subsequent research, weaves these themes together, invoking ecological and evolutionary theory to inform principles for management practice.

Levin's research has been devoted to understanding the dynamics of biological diversity at all levels, from the molecular diversity of diseases to the diversity of global ecological and cultural systems. It is furthermore concerned with exploring the importance of that diversity for humans, and socioeconomic mechanisms for sustaining or modifying diversity. He has combined mathematical modeling with empirical investigations to explore the dynamics of biodiversity and biocomplexity, including infectious diseases and the interactions between ecological systems and socioeconomic systems, with attention to the management of natural resources. Throughout, a central thread has been the development of rules for scaling from the microscopic to the macroscopic, from individuals to collectives, from small scales to large, from short time scales to long. He has built interfaces between theoretical investigations and their application to the management of natural resources, used those applications to stimulate theoretical investigations and the elucidation of general principles for the management of ecological systems.

HONORS AND AWARDS

Major International Prizes

A.H. Heineken Prize for Environmental Sciences, Royal Netherlands Academy of Arts and Sciences (2004)
Kyoto Prize in Basic Sciences, Inamori Foundation, Japan (2005)
Ramon Margalef Prize in Ecology and Environmental Sciences, Government of Catalonia (2010)
Tyler Prize for Environmental Achievement (2014)
Luca Pacioli Prize, Ca'Foscari University of Venice, Italy (2014)
National Medal of Science (2014, announced 2015, awarded 2016)

Major Honorary Societies

Fellow, American Academy of Arts and Sciences (1992)
 Member, National Academy of Sciences (2000)
 Member, American Philosophical Society (2003)
 Foreign Member, Istituto Veneto di Scienze, Lettere ed Arti, Venice, Italy (2008)
 Foreign Member, Istituto Lombardo, Milan (2014)

Major Society Awards

MacArthur Award, Ecological Society of America (1988)
 Fellow, American Association for the Advancement of Science (AAAS) (1992)
 Distinguished Statistical Ecologist Award, International Association for Ecology (INTECOL) (1994)
 Distinguished Service Citation of the Ecological Society of America (1998)
 The First Okubo Lifetime Achievement Award, Society for Mathematical Biology and Japanese Society for Theoretical Biology (2001)
 Distinguished Landscape Ecologist Award, U.S. Regional Association of the International Association for Landscape Ecology (US-IALE) (2003)
 I.E. Block Community Lecture Award, Society for Industrial and Applied Mathematics (2006)
 Distinguished Scientist Award, American Institute of Biological Sciences (2007)
 Fellow, Society for Industrial and Applied Mathematics (2009)
 Eminent Ecologist Award, Ecological Society of America (2010)
 National Associate, National Research Council of the National Academies (2011)
 Fellow, Ecological Society of America (2012)

Honorary Degrees

Honorary Doctor of Sciences, Eastern Michigan University (1990)
 Honorary Doctor of Humane Letters Honoris Causa, Whittier College (2004)
 Honorary Doctor of Science, Michigan State University (2009)
 Honorary Doctor of Science, McMaster University (2015)

Fellowships

NSF Predoctoral Fellow, University of Maryland, College Park (1962-64)
 NSF Postdoctoral Fellow, University of California, Berkeley (1964-65)
 Guggenheim Fellow (1979-80)
 Japan Society for the Promotion of Science Fellowship, Kyoto, Japan (1983-4)

Publication Awards

Best Publication in Landscape Ecology Award for 1990 (with D. Andow, P. Kareiva, A. Okubo), U.S. Chapter, International Association for Landscape Ecology
 Outstanding Paper in the Discipline of Landscape Ecology Award for 2001 (with J. Keymer, P.A. Marquet, J.X. Velasco-Hernandez), U.S. Chapter, International Association for Landscape Ecology
 Most cited paper in the field of Ecology and Environment for the 1990s, Institute for Scientific Information (2002)
 Most cited paper in 2005-2009 (with R. Durrett), Elsevier's Economic and Finance Journals (2010)
 Co-author of Mercer Award winning paper (with C. Staver, S. Archibald), published in *Ecology* in 2011 (2012)
 Co-author of President's Award for best paper in the *American Naturalist* (with C. Farrior et al., 2013) (2014)

Other

The Honor Society of Phi Kappa Phi Biology Colloquium Award, Oregon State University (1991)
 Clay Mathematics Institute Senior Scholar (2004-2005)
 Medallion of the Université de Montpellier (2004)
 University Fellow, Resources for the Future (2008-)
 Beijer Fellow, Beijer Institute of Ecological Economics, Stockholm, Sweden (2007-)
 SIAM Fellow (2009-)
 Distinguished Alumnus of the Year Award, University of Maryland, College of Computer, Mathematical and Natural Sciences (2011)
 IIASA Honorary Scholar (2012-)
 The Mathematical, Computational and Modeling Sciences Center at Arizona State University Relunched in Honor of Simon A. Levin as The Simon A. Levin Mathematical, Computational, and Modeling Sciences Center (2014)
 IIASA Distinguished Visiting Fellow (2014)
 Society for Mathematical Biology Fellow (2017)

NAMED LECTURES

The John R. Raben/Sullivan & Cromwell Fellow Lecture, Yale University Law School (2017)
 McKnight Zame Lecture, University of Miami, FL (2017)
 The Fridtjof Nansen Lectures on Ocean Life, University of Oslo, Norway (2016)
 Siemens Lecture, Carl Friedrich von Siemens Foundation, Munich, Germany (2016)

Milton Wing Lecture, University of Rochester, NY (2016)
 Moore Lecture, University of Virginia, Dept. of Environmental Sciences (2016)
 C.C. Mei Distinguished Speaker Series, Civil and Environmental Engineering, MIT (2015)
 Hugh Hanson Ecology Seminar Series, University of Arizona, Tempe (2015)
 The John H. Rassweiler Annual Science Forum on Strategic Techniques and Innovations in Land Preservation and Stewardship, D&R Greenway Land Trust, Princeton, NJ (2014)
 The Stockholm Seminars: Frontiers in Sustainability, Science and Policy, Sweden (2014)
 Tyler Prize Laureate Lecture, University of Southern California, Los Angeles (2014)
 Aisenstadt Chair for the Pan-Canadian Thematic Program on Models and Methods in Ecology, Epidemiology and Public Health Related to Mathematics of Planet Earth 2013, Université de Montréal (3 Lectures)
 Simons Public Lecture, MPE 2013, Melbourne, Australia (2013)
 Roland Lamberson Lecture in Ecology, Humboldt State University, Arcata, CA (2011)
 The Haldane Lecture, John Innes Centre, Norwich BioScience Institutes, Norwich, UK (2011)
 Lansdowne Lecturer, University of Victoria, Victoria, British Columbia, Canada (2011)
 Edward L. Reiss Memorial Lectures in Applied Mathematics, Northwestern University (2010)
 Rachel Carson Distinguished Lecture, Center for Systems Integration and Sustainability, Michigan State University (2009)
 Shih-I Pai Lecture, Institute for Physical Science and Technology, University of Maryland (2009)
 Carnegie Capital Science Evening Lecture, Washington, DC (2008)
 Pardee Distinguished Lectures, Boston University (2008)
 Stelson Lecturer, Georgia Institute of Technology, Atlanta, GA (2008)
 Distinguished Lecturer, Distinguished Ecologists Lecture Series, University of Wyoming (2007)
 Distinguished Lecturer, Workshop on the Mathematics of Global Public Health, ASU, Phoenix, AZ (2007)
 Storer Life Sciences Lecturer, University of California, Davis (2006)
 Louis Thaler Lecturer, Université Montpellier II, France (2004)
 Michael Perkins Lecturer, University of Cambridge, UK (2003)
 Okubo Distinguished Scholar Lecturer, State University of New York, Stony Brook (2003)
 Frank G. and Jean M. Chesley Lecturer, Carleton College, Northfield, MN (2002)
 Kaeser Lecturer, University of Wisconsin (2001)
 Okubo Prize Lecturer, Society for Mathematical Biology and Japanese Society for Theoretical Biology (2001)
 Per Brinck Lecturer, Lund University (1999)
 R. Kent Nagle Lecturer, University of South Florida, Tampa (1999)
 The Third Annual Stanislaw Ulam Memorial Lecturer, Santa Fe Institute, Santa Fe, NM (1996)
 Ostrom Lecturer, Washington State University, Pullman (1994)
 Commencement Speaker, Eastern Michigan University (1990)
 MacArthur Lecturer, Ecological Society of American (1989)
 H.J. Oosting Memorial Lecturer, Duke University, Durham, NC (1987)
 Distinguished Ecologist Lecture Series, Colorado State University (1987)
 Grace Kimball Memorial Lecturer, Wilkes College, Wilkes-Barre, PA (1986)
 Alexander Professorship Lecturer, Cornell University, Ithaca, NY (1985)
 CBMS Lecturer, Conference on Mathematical Ecology, University of California, Davis (1985)
 Lansdowne Lecturer, University of Victoria, Victoria, British Columbia, Canada (1981)

CURRENT PROFESSIONAL ACTIVITIES:

SCIENCE/ADVISORY BOARDS, COMMITTEES

Board of Directors

The Committee of Concerned Scientists, Vice-Chair (Mathematics), (1979-)

Science/Advisory Boards

Science Advisory Board, Santa Fe Institute, New Mexico, (1991-99; 2001-05; 2011-17); Co-Chair (2007-10);

Advisory Board Educational and Outreach Programs Committee (2014-)

Advisory Board, Institute for Medical BioMathematics, Bene Ataroth, Israel (1999-)

Science Advisory Board, Gordon and Betty Moore Foundation (2006-)

Honorary Member, Arab Healthy Water Association (2007-)

Advisory Board, BioGraph: Graphical Programming for Constructing Complex Systems Understanding in Biology (2008-)

Advisory Board, McGill University, Centre for Applied Mathematics in Bioscience and Medicine (2009-)

International Advisory Board, CABDyN Complexity Center, Oxford University (2009-)

International Science Advisory Board, JST Crest (Novel Technologies to Evaluate Multi-Scale Variations of Marine Community and Biodiversity Under the Influence of Kuroshio and Internal Waves in Coastal Habitats (2012-)

Advisory Council of Fellowship Advisors, The Nature Conservancy (2012-)

Advisory Panel (Mathematical and Complex Systems Approaches for Brain Cancer Program), McDonnell Foundation (2013-)

Advisory Council, NCEAS II (2013-)

Scientific Advisory Board, NorMer (Nordic Centre for the Study of Nature, Ecosystems, Society, and Economic Effects of Climate Change in Marine Ecosystems) (2013-); Chair (2015-)

International Advisor, Graduate Education and Research Training Program for Decision Science toward Sustainability, Kyushu University (2013-)

Chair, Scientific Advisory Board of the Quantitative Biology Group at AIMS-Ghana (2014-)

Advisory Board, Stockholm Resilience Center (2014-)

Advisory Panel, Brain Tumor Funder's Collaborative (2015-)

International Advisory Board, Graduate Education and Research Training Program in Decision Science for a Sustainable Society of the Program for Leading Graduate School of the Japan Society for the Promotion of Science (2015-)

Scientific Advisory Board, Complexity Sciences Hub of Vienna, Austria (2016-)

Scientific Advisory Board, EcoPotential: Improving Future Ecosystem Benefits through Earth Observations, Politecnico di Milano, Italy (2016-)

Steering Committees

Scientific Steering Committee, Institute for Global Change Studies, Tsinghua University (2009-)

Founding Member, Science Steering Committee for PECS (Programme in Ecosystem Change and Society), Complexity Programme of Nanyang Technical University (NYU), Singapore (2012-)

Steering Group, US/NMO, IIASA's Advanced Systems Analysis (ASA) Forum for Exploratory Projects (2012-)

Selection Committees

Selection Committee, Margalef Prize (2011-)

Jury for the Dr. A.H. Heineken Prize for Environmental Sciences (2016-20)

Search Committee for the Carnegie Global Ecology Director, Carnegie Group (2016-)

Chair, Committee to Select the Gibbs Lecturer for 2018 and 2019, American Mathematical Society (2017-2019)

Planning/Organizing Committees

Organizing Committee Member, Resilience 2017, Resilience Alliance (2016-)

Other Committees

ESA Past Presidents 2015 Committee (2011-)

SparcS Fellow, Synergy Program on Resilience & Critical TransitionS (resulting from Ecteld Workshops) (2012-)

Princeton University Committees

Executive Committee, Princeton Environmental Institute (1993-)

Executive Committee for the Graduate Program in Quantitative and Computational Biology (2011-)

Executive Committee, Certificate Program in Quantitative and Computational Biology (2012-)

Coordinator, MBI-Princeton Institute Partner Program (2015-)

Chair, Faculty Committee for EEB 504, Dept. of Ecology and Evolutionary Biology (2016-)

Junior Assignment Committee, Dept. of Ecology and Evolutionary Biology (2016-)

Co-chair, Faculty Committee on Graduate Women in STEM and Diversity, Dept. of Ecology and Evolutionary Biology (2016-)

EDITORIAL

Editor-in-Chief/Managing Editor

Monographs in Population Biology (with Henry S. Horn), Princeton University Press (1992-)

Complexity Series (with co-editor Stephen Strogatz), Princeton University Press (1997-)

Princeton Series in Theoretical and Computational Biology, Princeton University Press (2003-)

Encyclopedia of Biodiversity, Elsevier (2005-); Second edition, 2013

Honorary Editor

Journal of Mathematical Biology (Co-Managing Ed. 1976-95; Advisory Ed., 1973-76; Honorary Ed. 1995-)

Bulletin for Mathematical Biology (1996-)

The Scientist (2006-)

Theoretical Ecology (2006-)

Editor

PLoS Biology, Challenges Series (2006-)

Editorial Boards

Mathematical and Computer Modelling (1979-)

Applied Mathematics Letters (1987-)

Mathematical Biosciences (1987-)

Papers on Mathematical Ecology (1987-)

Journal of Biomathematics (China), (1999-)

Faculty of 1000, Co-Section Head, Theoretical Ecology (2004-)

Journal of Biomathematics (Series B, English) (2006-)

Princeton University Press, Primers in Complexity (2007-)

Princeton University Press, Science Essential Series (2007-)

Princeton University Press, Princeton Foundations Series (2009-)
 Proceedings of the National Academy of Sciences, Environmental Sciences & Ecology (2011-); Perspectives (2011-)
 PeerJ (2012-)
 Movement Ecology (2012-)
 Experiments in Engagement (EiE), part of PNAS 2015-)

Advisory Boards

Natural Resource Modeling (1984-)
 Environmental and Ecological Statistics (1992-)
 Ecological Research (1996-)
 Frontiers in Ecology and the Environment (2002-)
 Ecological Complexity (2004-)
 Mathematical Biosciences and Engineering (2004-)
 Journal of Biological Dynamics (2006-)
 Landscape Ecology (2006-)
 Princeton University Press Papers Project (2006-)
 PLoS Computational Biology (2007-)
 F1000 Biology Reports (Faculty of 1000 Biology) (2009-)
 F1000 Prime, Head of Section for Theoretical Biology (2013-)
 Princeton University Press, Princeton Guide to Evolution (2010-)
 Ecosystem Health and Sustainability (EHS) (2014-)
 Faculty Advisory Board/Faculty Review Board, Princeton Undergraduate Research Journal (2016-)

MAJOR OTHER PROFESSIONAL ACTIVITIES

- 2016-17 • Academic Fellow, Boston Consulting Group
 • Co-organizer with Andrew Lo (M.I.T.) and Bill Miller (Legg Mason) of New Approaches to Financial Regulation Workshop, funded by the Santa Fe Institute, held in Washington D.C. (2016)
 • Co-Organizer of Stockholm Resilience Center-Princeton University Partnership
 • Co-Organizer of Humboldt University-Princeton University Strategic Partnership
 • Co-Organizer of Social Norms Research Group, Princeton University
- 2011-15 • Academic Fellow, Boston Consulting Group
 • Completed (as editor) second edition of the *Encyclopedia of Biodiversity*, including about 100 new articles as well as revisions of the great majority of entries from the first edition (2012)
 • Co-organizer with Robert Keohane (Princeton University) of Evolutionary Theory and World Politics Workshop (2015)
- 2009 • Co-Director, Special Year on Social Norms, Institute for Advanced Study, Princeton, NJ
- 2001-02 • Committee on Inquiry into Infectious Diseases in Livestock, Royal Society, UK
- 2000 • Co-Director, Fifth Autumn Course on Mathematical Ecology, ICTP, Trieste, Italy
 • Recovery Science Review Panel, National Marine Fisheries Service (2000-04)
- 1996 • Co-Director, Third Autumn Workshop on Mathematical Ecology, ICTP, Trieste, Italy
- 1994 • Co-Director, Fourth Autumn Course and International Conference on Mathematical Ecology, ICTP, Trieste, Italy
- 1993-94 • U.S. National Committee for Man and the Biosphere Program (MAB)
- 1992 • Co-Director, Second Autumn Workshop on Mathematical Ecology, ICTP, Trieste, Italy
- 1991-92 • Past President, ESA
 • Executive Committee, ESA
- 1990-91 • President, ESA
- 1990 • Co-Director, Second Autumn Course on Mathematical Ecology, ICTP, Trieste, Italy
- 1987-89 • President, Society for Mathematical Biology
- 1983-89 • Board on Biology, National Research Council
 • National Academy of Sciences Commission on Life Sciences, National Research Council, National Academy of Sciences
- 1988 • Co-Director, First Autumn Workshop on Mathematical Ecology, ICTP, Trieste, Italy
- 1986 • Co-Director, Second Autumn Course on Mathematical Ecology, ICTP, Trieste, Italy
- 1982 • Co-Director, First Autumn Course on Mathematical Ecology, ICTP, Trieste, Italy
- 1977-79 • Council, SIAM

1975-77 • Council, ESA

1973-79 • Chair, AMS/SIAM Committee on Mathematics in the Life Sciences

1971 • Chair, Gordon Research Conference on Theoretical Biology and Biomathematics, Andover, NH