

Curriculum Vitae
SIMON ASHER LEVIN
George M. Moffett Professor of Biology
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EDUCATION

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

PROFESSIONAL EXPERIENCE

Princeton University

2001-	Director, The Center for BioComplexity
1993-98	Director, Princeton Environmental Institute
1993-	Associated Faculty, Princeton Environmental Institute
1992-	George M. Moffett Professor of Biology
1992-	Associated Faculty, Program in Applied and Computational Mathematics

Cornell University

1992-	Adjunct Professor, Ecology and Evolutionary Biology
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
1965-70	Assistant Professor

Visiting Positions

2008-09	Visiting Professor, Institute for Advanced Study, Princeton, NJ
2007; 09	Visiting Researcher, University of California, Irvine; Visiting Professor
2004-05	Visiting Professor, University of Miami, Department of Mathematics
2003	Visiting Miller Research Professor, University of California, Berkeley
1999	Institute for Advanced Study, Princeton, NJ
1994	Woods Hole Oceanographic Institution, Geophysical Fluid Dynamics Summer Program
1988	Visiting Fellow, All Souls College, University of Oxford (Trinity Term)
1988	Stanford University, Stanford, CA
1987	Visiting Distinguished Ecologist, Colorado State University
1983-84	University of Kyoto, Kyoto, Japan
1980	The Weizmann Institute, Rehovot, Israel
1979-80	The University of British Columbia, Vancouver, Canada
1977	The Weizmann Institute, Rehovot, Israel
1973-74	University of Washington, Seattle
1968	University of Maryland, College Park

HONORS AND AWARDS

Resources for the Future University Fellow (2008-2011)
Foreign Member, Istituto Veneto di Scienze, Lettere ed Arti, Venice, Italy (2008)
Beijer Fellow (2007)
American Institute of Biological Sciences Distinguished Scientist Award (2007)
SIAM I.E. Block Community Lecture Award (2006)
Kyoto Prize in Basic Sciences, Inamori Foundation, Japan (2005)

Clay Mathematics Senior Scholar-in-Residence (2005)
 A.H. Heineken Prize for Environmental Sciences 2004, Royal Netherlands
 Academy of Arts and Sciences
 Medallion of the Université de Montpellier (2004)
 Honorary Doctor of Humane Letters Honoris Causa, Whittier College (2004)
 Member, American Philosophical Society (2003)
 Member, National Academy of Sciences (2000)
 Distinguished Landscape Ecologist Award, U.S. Regional Association of the International
 Association for Landscape Ecology (US-IALE) (2003)
 World Innovation Foundation, Honorary Member (2003)
 Fellow, American Academy of Arts and Sciences (1992)
 Fellow, American Association for the Advancement of Science (AAAS) (1992)
 MacArthur Award, Ecological Society of America (1988)
 The First Okubo Lifetime Achievement Award, Society for Mathematical Biology and
 Japanese Society for Theoretical Biology (2001)
 Distinguished Service Citation of the Ecological Society of America (1998)
 Distinguished Statistical Ecologist Award, International Association for Ecology
 (INTECOL) (1994)
 Asian Mathematical Ecology Society (AMES), Honorary Member (1995)
 Eastern Europe Society of Mathematical Ecology (EESME), Honorary Member (1995)
 Lund Ecological Society (Sweden), Honorary Member (1999)
 The Honor Society of Phi Kappa Phi Biology Colloquium Award (1991)
 Honorary Doctor of Sciences, Eastern Michigan University (1990)
 Japan Society for the Promotion of Science Fellowship, Kyoto, Japan (12/83-01/84)
 Guggenheim Fellow (1979-80)
 NSF Postdoctoral Fellow, University of California, Berkeley (1964-65)
 NSF Predoctoral Fellow, University of Maryland, College Park (1962-64)

PUBLICATION AWARDS

"Most cited paper in the field of Ecology and Environment for the 1990s,"
 Institute for Scientific Information (2002)
 Outstanding Paper in the Discipline of Landscape Ecology Award for 2001 (with J. Keymer, P.A.
 Marquet, J.X. Velasco-Hernandez), U.S. Chapter of the International Association for
 Landscape Ecology
 Best Publication in Landscape Ecology Award (with David Andow, Peter Kareiva, Akira Okubo),
 U.S. Chapter, International Association for Landscape Ecology (1990)

NAME LECTURES

Stelson Lecturer, Georgia Institute of Technology, 2 lectures, Atlanta, GA (2008)
 Distinguished Lecturer, Distinguished Ecologists Lecture Series, University of Wyoming (2007)
 Distinguished Lecturer, Mathematics of Global Public Health Workshop,
 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)
 Louis Thaler Lecturer, Université de Montpellier, France (2004)
 Michael Perkins Lecturer, University of Cambridge, UK (2003)
 Okubo Distinguished Scholar Lecturer, State University of New York, Stony Brook (2003)
 Frank G. & 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)

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

American Association for the Advancement of Science
American Institute of Biological Sciences (AIBS)
American Society of Naturalists
British Ecological Society
Ecological Society of America (ESA) (President-Elect, 1989-90; President, 1990-91)
Sigma Xi
Society for Conservation Biology
Society for Industrial and Applied Mathematics (SIAM)
Society for Mathematical Biology (President, 1987-89; Past President and Vice President, 1989-91;
Nominating Committee, 1994-95)
Society for the Study of Evolution
U.S. Committee for the Israel Environment

PROFESSIONAL ACTIVITIES

Board of Directors

The Committee of Concerned Scientists, Vice-Chair (Mathematics), (1979-)
Santa Fe Institute (ex officio)

Governing Council

IIASA, Laxenburg, Austria (2003-), Chair (2003-)

Science Board

James S. McDonnell Foundation Complex Systems Program (2005-)
Gordon and Betty Moore Foundation (2006-)
Institute for Medical BioMathematics, Bene Ataroth, Israel (1999-)
Santa Fe Institute, New Mexico, (1991-99; 2001-05), Chair (2006-)
Chair, Section 63, National Academy of Sciences (2007-)
Chair, U.S. National Committee for IIASA, The National Academies (2003-)
Advisory Board, Biodiversity Science and Education Initiative (BSEI), Smithsonian Institution
(2005-)
Advisory Board, DIMACS, Rutgers University (2008-2011)

Board of Directors (previous)

American Association for the Advancement of Science (1994-98)
The Beijer International Institute of Ecological Economics, Stockholm, Sweden (1994- 99;
Chair, 1997-99)
H. John Heinz III Center for Science, Economics and the Environment (1994-99)
Ecological Society of America (1989-91)
The Nature Conservancy, New Jersey Chapter (1995-97)
Society for Mathematical Biology (1987-91)
New York Sea Grant Institute (1988-90)

Technical Advisory Council (previous)

British Petroleum (2001-03)

Science Board (previous)

Chair, Steering Committee, Models of Infectious Disease Agent Study (MIDAS),
National Institutes of Health (2004-05)

Scientific Panel, Hudson River Foundation (Chair, 1985-86; Chair, Subcommittee on Community and Ecosystem Dynamics; Member, Executive Committee, 1982-85)
Scientific Advisory Committee, Multiscale Experimental Ecosystem Research Center (MEERC), University of Maryland
Advisory Board, 21st Century Scientist Awards Competition – Studying Complex Systems, James S. McDonnell Foundation (1999-)

PROFESSIONAL ACTIVITIES: EDITORIAL

Editor-in-Chief

Encyclopedia of Biodiversity, Online Edition, Elsevier (2005-)
Princeton Series in Theoretical and Computational Biology, Princeton University Press
(Co-Editor-in-Chief with Stephen Strogatz) (2000-)

Co-Managing Editor (with H.S. Horn)

Monographs in Population Biology, Princeton University Press (1992-)
Complexity Series, Princeton University Press (1992-)

Honorary Editor

Bulletin of Mathematical Biology (1996-)

Editorial Board

Applied Mathematics Letters (1987-)
Conservation Ecology (1995-)
The Earth Portal (2006-)
Evolutionary Theory (1976-)
Issues in Ecology (1995-)
Journal of Biomathematics (China), (1999-)
Journal of Biomathematics (Series B, English) (2006-)
Journal of Mathematical Biology (1995-; Managing Editor 1979-95; Advisory Editor, 1973-76)
Mathematical Biosciences (1987-)
Mathematical and Computer Modelling (1979-)
Mathematical Population Dynamics (2001-)
Papers on Mathematical Ecology (1987-)
PLoS Biology (2004-)
SIAM Review (1997-)
Faculty of 1000, Co-Section Head, Theoretical Biology (2004-)
The Scientist (2006-)
Theoretical Ecology (2006-)

Advisory Board

Landscape Ecology (2006-)
Journal of Biological Dynamics (2006-)
Ecological Complexity (2004-)
Ecological Research (1996-)
Ecosystems (1996-)
Environmental and Ecological Statistics (1992-)
Frontiers in Ecology and the Environment (2002-)
Journal of Theoretical Biology (1977-)
Mathematical Biosciences and Engineering (2004-)
Natural Resource Modeling (1984-)
Princeton University Press Papers Project Advisory Committee (2006-)
Princeton University Press Science Essentials Series Advisory Committee (2007-)
PLoS Computational Biology (Editorial Advisor, 2008-)

CURRENT MAJOR OTHER PROFESSIONAL ACTIVITIES

Chair, Council, IIASA, Laxenburg, Austria (2003-)
Chair, U.S. National Committee for IIASA, The National Academies (2003-)

Chair, Steering Committee, Models of Infectious Disease Agent Study (MIDAS),
National Institutes of Health (2004-)
Steering Committee, Ecological Economics Programme, ICTP. FEEM and the
Beijer Institute (2003-)
Advisory Board, 21st Century Scientist Awards Competition–Studying Complex Systems,
James S. McDonnell Foundation (1999-)

RESEARCH INTERESTS

Modeling of ecological systems; dynamics of populations and communities; spatial heterogeneity and problem of scale; evolutionary, mathematical and theoretical ecology; evolution of cooperation, and maintenance of social norms.

SELECTED PUBLICATIONS

2008-09

Klausmeier, C.A., E. Litchman, T. Daufresne, and S.A. Levin. 2008. Phytoplankton stoichiometry. *Ecological Research* 23: 479-485.

Levin, S.A., ed. *The Princeton Guide to Ecology*. Princeton University Press, Princeton, NJ.
To appear in 2009.

Levin, S.A. and J. Lubchenco. 2008. Resilience, robustness and marine ecosystem-based management. *BioScience* 58(1): 27-32.

May, R.M., S.A. Levin, and G. Sugihara. 2008. Ecology for bankers. *Nature* 451: 893-895.

Stock, C.A., T.M. Powell, and S.A. Levin. 2008. Bottom-up and top-down forcing in a simple size-structured plankton dynamics model. *Journal of Marine Systems*. In press.

2007

Baskett, M., F. Micheli, and S.A. Levin. 2007. Designing marine reserves for interacting species: insights from theory. *Biological Conservation* 137(2): 163-179.

Cullen, J.J., W.F. Doolittle, S.A. Levin, and W.K.W. Li. 2007. Patterns and predictions in microbial oceanography. *Oceanography* 20(2): 32-44.

Kryazhimskiy, S., U. Dieckmann, S.A. Levin, and J. Dushoff. 2007. On state-space reduction in multi-strain pathogen models, with an application to antigenic drift in influenza A. *PLoS Computational Biology* 3(8): e159; doi: 10.1371/journal.pcbi.0030159.

Levin, S.A., Editor-in-Chief. 2007. *Encyclopedia of Biodiversity*. 2nd Edition. Online version.

Moon, S.J., B. Nabet, N.E. Leonard, S.A. Levin, and I.G. Kevrekidis. 2007. Heterogeneous animal group models and their group-level alignment dynamics: an equation-free approach. *Journal of Theoretical Biology* 246: 100-112.

Muneepeerakul, R., J.S. Weitz, S.A. Levin, A. Rinaldo, and I. Rodriguez-Iturbe. 2007. A neutral metapopulation model of biodiversity in river networks. *Journal of Theoretical Biology* 245(2): 351-363.

Satake, A., H.M. Leslie, Y. Iwasa, and S.A. Levin. 2007. Coupled ecological-social dynamics in a forested landscape: spatial interactions and information flow. *Journal of Theoretical Biology* 246(4): 695-707.

Scanlon, T., K. Caylor, S.A. Levin, and I. Rodriguez-Iturbe. 2007. Positive feedbacks promote power-law clustering of Kalahari vegetation. *Nature* 449: 209-212.

2006

Buchman, T.G., V.L. Patel, J. Dushoff, P.R. Ehrlich, M. Feldman, M. Feldman, B. Levin, D.T. Miller, P. Rozin, S.A. Levin, and S. Fitzpatrick. 2006. Enhancing the use of clinical guidelines: a social norms perspective. *Journal of the American College of Surgeons* 202(5): 826-836.

Levin, S.A. 2006. Learning to live in a Global Commons: socioeconomic challenges for a sustainable environment. *Ecological Research, Special Feature* 21(3): 328-333.

Wingreen, N.S. and S.A. Levin. 2006. Cooperation among microorganisms. *PLoS Biology* 4(9): 1486-1488.

2005

Baskett, M.L., S.A. Levin, S.D. Gaines, and J. Dushoff. 2005. Marine reserve design and the evolution of size at maturation in harvested fish. *Ecological Applications* 15(3): 882-901.

Couzin, I.D., J. Krause, N.R. Franks, and S.A. Levin. 2005. Effective leadership and decision-making in animal groups on the move. *Nature* 433: 513-516.

Durrett, R. and S.A. Levin. 2005. Can stable social groups be maintained by homophilous imitation alone? *Journal of Economic Behavior and Organization* 57(3): 267-286.

Ehrlich, P.R. and S.A. Levin. 2005. The evolution of norms. *PloS Biology* 3(6): 0943-0948, e194.

Livnat, A., S.W. Pacala, and S.A. Levin. 2005. The evolution of intergenerational discounting in offspring quality. *American Naturalist* 165(3): 311-321.

Williams, J., C.S. ReVelle, and S.A. Levin. 2005. Spatial attributes and reserve design models: a review. *Environmental Modeling and Assessment (Special Issue)* 10(3): 161-162.

2004

Arrow, K., P. Dasgupta, L. Goulder, G. Daily, P. Ehrlich, G. Heal, S.A. Levin, K.-G. Mäler, S. Schneider, D. Starrett, and B. Walker. 2004. Are we consuming too much? *Journal of Economic Perspectives* 18(3): 147-172.

Klausmeier, C.A., E. Litchman, T. Daufresne, and S.A. Levin. 2004. Optimal nitrogen-to-phosphorus stoichiometry of phytoplankton. *Nature* 429: 171-174.

Levin, S.A., J. Dushoff, and J.B. Plotkin. 2004. Evolution and persistence of influenza A and other diseases. *Special Issue of Mathematical Biosciences* 188: 17-28.

2003

Kareiva, P. and S.A. Levin, eds. 2003. *The Importance of Species: Perspectives on Expendability and Triage*. Princeton University Press, Princeton, NJ.

Levin, S.A. 2003. Complex adaptive systems: exploring the known, the unknown and the unknowable. *Bulletin of the American Mathematical Society* 40(1): 3-19.

Levin, S.A., H.C. Muller-Landau, R. Nathan, and J. Chave. 2003. The ecology and evolution of seed dispersal: a theoretical perspective. *Annual Review of Ecology, Evolution, and Systematics* 34: 575-604.

Levin, S.A. and S.W. Pacala. 2003. Ecosystem dynamics. Pages 61-95 in K.-G. Mäler and J. R. Vincent, eds. *Handbook of Environmental Economics*. Elsevier Science B.V., Netherlands.

2002

Okubo, A. and S.A. Levin, eds. 2002. *Diffusion and Ecological Problems: Modern Perspective*. 2nd Edition. Springer, New York.

Plotkin, J.B., J. Dushoff, and S.A. Levin. 2002. Hemagglutinin sequence clusters and the antigenic evolution of influenza A virus. *Proceedings of the National Academy of Sciences, USA* 99(9): 6263-68.

2000

Levin, S.A., Editor-in-Chief. 2001. *Encyclopedia of Biodiversity, I-V*. Academic Press, San Diego, CA.

Levin, S.A. and H. Muller-Landau. 2000. The emergence of biodiversity in plant communities. *Comptes rendus de l'Académie des sciences de la vie/Life Sciences* 323: 129-39.

1999-1974

Flierl, G., D. Grünbaum, S.A. Levin, and D. Olson. 1999. From individuals to aggregations: the interplay between behavior and physics. *Journal of Theoretical Biology* 196: 397-454.

Levin, S.A. 1999. *Fragile Dominion: Complexity and the Commons*. Perseus Books, Reading, MA.

Levin, S.A. 1998. Ecosystems and the biosphere as complex adaptive systems. *Ecosystems* 1: 431-36.

Levin, S.A., B.T. Grenfell, A. Hastings, and A.S. Perelson. 1997. Mathematical and computational challenges in population biology and ecosystem science. *Science* 275: 334-43.

Levin, S.A. and S.W. Pacala. 1997. Theories of simplification and scaling of spatially distributed processes. Pages 271-96 in D. Tilman and P. Kareiva, eds. *Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions*. Princeton University Press, Princeton, NJ.

Durrett, R. and S.A. Levin. 1994. The importance of being discrete (and spatial). *Theoretical Population Biology* 46: 363-94.

Durrett, R. and S.A. Levin. 1994. Stochastic spatial models: a user's guide to ecological applications. *Philosophical Transactions of the Royal Society of London, Series B* 343: 329-50.

Levin, S.A. 1992. The problem of pattern and scale in ecology. *Ecology* 73(6): 1943-67.

Levin, S.A. and L.A. Segel. 1985. Pattern generation in space and aspect. *SIAM Review* 27(1): 45-67.

Paine, R.T. and S.A. Levin. 1981. Intertidal landscapes: disturbance and the dynamics of pattern. *Ecological Monographs* 51(2): 145-78.

Levin, S.A. 1974. Dispersion and population interactions. *American Naturalist* 108(960): 207-28.