

## **Curriculum vitae**

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<b>Education:</b>	1983	Ph.D., Zoology, Duke University
	1977	M.S., Biology, Stanford University
	1976	B.A., French, with high honors, Oberlin College
<b>Employment:</b>	2003 -	Professor
	1997	Associate Professor
	1991	Assistant Professor, Stanford University
	1989-91	Research Associate, Centre for Population Biology Imperial College at Silwood Park, UK
		College Research Fellow, Lady Margaret Hall University of Oxford, UK
	1987-88	Centre for Mathematical Biology, Oxford, UK
	1984-87	Harvard Society of Fellows

### **Selected Honors and Fellowships:**

2020	Quest Award, Animal Behavior Society
2016	Fellow, Animal Behavior Society
2009-10	Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford
2007	Fellow, California Academy of Sciences
2001-02	J S Guggenheim Fellowship
2001-02	Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford
2001	Walter J Gores Award for Excellence in Teaching, Stanford University
1997	Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford
1995	Phi Beta Kappa Association of N. California, Excellence in Teaching Award
1993	MacNamara Fellow, Stanford
1989-91	E.P.A. Cephalosporin Research Fellowship, Lady Margaret Hall, Oxford
1987-88	NSF-NATO Postdoctoral Fellowship
1984-87	Junior Fellow, Harvard Society of Fellows

## **Publications:**

### **Books:**

1. D. M. Gordon. 1999. Ants at Work: how an insect society is organized. Free Press, Simon and Schuster. 2000 paperback, W. W. Norton. Excerpted in Best American Science Writing 2000, ed. J Gleick, Harper Collins.
2. Gordon DM. 2010. Ant Encounters: Interaction Networks and Colony Behavior. Princeton University Press. (Primers in complex systems).
3. Gordon DM. 2023. The Ecology of Collective Behavior. Forthcoming, Princeton University Press.

### **Articles:**

1. Gordon DM. 1983. Dependence of necrophoric response to oleic acid on social context in the harvester ant, *Pogonomyrmex badius*. *J. Chemical Ecology*. 9(1): 105-111.
2. Gordon DM. 1983. The relation of recruitment rate to activity rhythms in the harvester ant, *Pogonomyrmex barbatus*. *J. Kansas Entomological Society*. 56(3):277-285.
3. Gordon DM. 1983. Daily rhythms in social activities of the harvester ant. *Pogonomyrmex badius*. *Psyche*. 90(4): 413-423.
4. Gordon DM. 1984. Species-specific patterns in the social activities of harvester ant colonies. *Insectes Sociaux*. 31(1): 74-86.
5. Gordon DM. 1984. Harvester ant middens: refuse or boundary? *Ecological Entomology*. 9:403-412.
6. Gordon DM. 1984. The persistence of role in exterior workers of the harvester ant, *Pogonomyrmex badius*. *Psyche*. 91(3-4): 251-266.
7. Gordon DM. 1985. Do we need more ethograms? *Zietschrift fur Tierpsychologie*. 68: 340-342.
8. Gordon DM. 1986. The dynamics of the daily round of the harvester ant colony. *Animal Behaviour*. 34: 1402-1419.
9. Gordon DM. 1987. Group-level dynamics in harvester ants: young colonies and the role of patrolling. *Animal Behaviour*. 35:833-843.

10. Gordon DM, Holldobler B. 1987. Worker longevity in harvester ants. *Psyche*. 94:341-46.
11. Gordon DM. 1987. The dynamics of group behavior. In: Bateson PPG, Klopfer PH, editors. *Perspectives in Ethology*, Vol. 7. New York: Plenum Press; p. 217-231
12. Gordon DM. 1988. The development of organizational flexibility in harvester ant colonies. In: Greenberg G, Tobach E, editors. *Evolution of Social Behavior and Integrative Levels*. Hillsdale (NJ): Lawrence Erlbaum Press; p. 197-203.
13. Gordon DM. 1988. The group context of role switching in harvester ants. In: Jeanne RL, editor. *Interindividual Behavioral Variability in Social Insects*. Boulder (CO): Westview Press; p.53-59.
14. Gordon DM. 1988. Nest-plugging: interference competition in desert harvester ants (*Pogonomyrmex barbatus* and *Novomessor cockerelli* ). *Oecologia*. 75: 114-117.
15. Gordon DM. 1988. Group-level exploration tactics in fire ants. *Behaviour*. 104:162-175.
16. Gordon DM. 1988. Behavior changes - finding the rules. In: Ho M, Fox S, editors. *Processes and Metaphors in the Evolutionary Paradigm*. London: Wiley & Sons; p. 243-254.
17. Gordon DM. 1988. Groups, change and the ordinary: some new questions about ant behavior. In: Trager JC, editor. *Advances in Myrmecology*. New York: E.J. Brill Co; p. 259-266.
18. Gordon DM. 1989. Dynamics of task switching in harvester ants. *Animal Behaviour*. 38: 194-204.
19. Gordon DM. 1989. Caste and change in social insects. *Oxford Surveys in Evolutionary Biology*. 6:56-72.
20. Silverton J, Gordon DM. 1989. A framework for the analysis of plant behaviour. *Annual Reviews of Ecology and Systematics*. 20:349-366.
21. Gordon DM. 1989. Ants distinguish neighbours from strangers. *Oecologia*. 81:198-200.
22. Gordon DM. 1991. Behavioral flexibility and the foraging ecology of seed-eating ants. *Am Nat*. 138:379-411.
23. Gordon DM. 1991. Variation and change in behavioral ecology. *Ecology*. 72:1196-1203.
24. Gordon DM. 1991. Comment on "Short-term activity cycles in ants." *American Naturalist*. 137:260-61.

25. Gordon DM. 1992. How colony growth affects forager intrusion in neighboring harvester ant colonies. *Behav Ecol Sociobiol.* 31:417-427.
26. Gordon DM, Goodwin B, Trainor LEH. 1992. A parallel distributed model of ant colony behaviour. *Journal of Theoretical Biology.* 156:293-307.
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30. Gordon DM. 1992. Wittgenstein and ant-watching. *Biology & Philosophy.* 7:13-25.
31. Gordon DM. 1992. Phenotypic plasticity. In: Keller EF, Lloyd EA, editors. *Keywords in Evolutionary Biology.* Cambridge (MA): Harvard University Press. p. 255-262.
32. Gordon DM., Paul REH, Thorpe K. 1993. What is the function of encounter patterns in ant colonies? *Animal Behaviour.* 45:1083-1100.
33. Gordon DM. 1993. The spatial scale of seed collection by harvester ants. *Oecologia.* 95: 479-487.
34. Gordon DM. 1993. Untangling data and theory. Review of D. H. Wise, Spiders in Ecological Webs. *Nature.* 362:800.
35. Gordon DM. 1993. Communal Dwellings. *Animal Behaviour.* 45(6):1083-1100.
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37. Gordon DM. 1995. The development of an ant colony's foraging range. *Anim Behav.* 49:649-659.
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40. Gordon DM. 1995 Sep. Peter and the Wolf. Review of P. Steinhart, The Company of Wolves. *Stanford magazine.*

41. Gordon DM. 1995. Review of J.H. Hunt and C.A. Nalepa, eds, Nourishment and Evolution in Insect Societies. *Trends in Ecology and Evolution*. 10:90.
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94. Ingram KK, Oefner P, Gordon DM. 2005. Task-specific expression of the foraging gene in harvester ants. *Molecular Ecology*. 14:813-818.
95. Gordon DM, Chu J, Lillie A, Tissot M, Pinter N. 2005. Variation in the transition from inside to outside work in the red harvester ant, *Pogonomyrmex barbatus*. *Insectes Sociaux*. 52:212-217.
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101. Linksvayer T, Wade MJ, Gordon DM. 2006. Genetic caste determination in harvester ants: possible origin and maintenance by cyto-nuclear epistasis. *Ecology*. 87:2185-2193.
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103. Greene MJ, Gordon DM. 2007. Interaction rate informs harvester ant task decisions. *Behavioral Ecology*. 18:451-455.
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108. Heller NE, Sanders NJ, Shors JW, Gordon DM. 2008. Rainfall facilitates the spread, and time alters the impact of the invasive Argentine ant. *Oecologia*. 155:385-395.
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178. Ouellette, N.T. and D.M.Gordon. 2021. Goals and limitations of modeling collective behavior in biological systems. *Frontiers in Physics*. DOI: 10.3389/fphy.2021.68782
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- urbanized California woodland. *J Insect Behavior* doi.org/10.1007/s10905-021-09778-w
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  182. Sundaram, M., Steiner, E., and D. M. Gordon. 2022. Rainfall, neighbors and foraging: the dynamics of a population of red harvester ant colonies 1988- 2019. *Ecological Monographs* <http://doi.org/10.1002/ecm.1503>
  183. Nova, N., Pagliari R and D.M. Gordon. 2022. Individual variation does not regulate forager response to humidity in harvester ants. *Frontiers Ecology and Evolution*. <https://doi.org/10.3389/fevo.2021.756204>
  184. Gordon D. M. 2022. The red harvester ant. *Nature Methods* 19: 1324–1325. DOI: 10.1038/s41592-022-01671-4
  185. Nelson, R. A., MacArthur-Waltz, D. J., Gordon, D. M. 2022. Critical thermal limits and temperature-dependent walking speed may mediate coexistence between the native winter ant (*Prenolepis imparis*) and the invasive Argentine ant (*Linepithema humile*). *Journal of Thermal Biology* 111: 103392. <https://doi.org/10.1016/j.jtherbio.2022.103392>.
  186. Garg, S., Shiragur, K., Gordon, D.M., Charikar, M. 2022. Distributed algorithms from arboreal ants for the shortest path problem. *Proceedings National Academy of Sciences*, in press.

## Selected Talks

### 1. Invited talks at conferences:

2014-15

- Janelia Farms. Life in the Aggregate: Mechanisms and Features of Social Dynamics
- National Academies Keck Futures Initiative: Collective behavior  
Social Insects as a Model for Biological Complexity, Entomological Society of America annual meeting
- Harvard Univ: Swarms with a Purpose: Collective Motion, Dynamics and Control: From Bacteria to Ballet
- Gordon Conference in Stochastic Physics in Biology
- Cold Spring Harbor Labs Social insect Genetics
- Biological Distributed Algorithms, Univ Texas

2015-16

- Biological Distributed Algorithms, MIT
- Institute for Complex Adaptive Matter, Univ Michigan

American Society for Cell Biology annual meeting  
World Economic Forum, Davos  
Symposium on Discrete Algorithms, Society for Industrial and Applied Mathematics

2016-17

Animal Behavior Society annual meeting: Behavioral Genetics  
Bioinspiration symposium, International Congress of Entomology

2017-18

Distributed Collective Computation in Biological and Artificial Systems,  
Janelia Farms  
I Dialoghi di San Giorgio, "Sovereignty, Identity, Ecology", Fondazione  
Giorgio Cini, Venice  
Cognitive Complexity, Santa Fe Institute workshop  
Conference on Collective Behavior, International Centre for Theoretical  
Physics, Trieste, Italy  
International Society for Ecology and Evolution of Cancer annual meeting  
plenary, Arizona State University

2018-19

Systems Biology Symposium (in honor of M Kirschner), Harvard University  
Collective Intelligence, keynote at annual meeting  
Johns Hopkins, symposium in Systems Biology

2019-20

SWARM2019 conference, Okinawa, Japan, keynote speaker  
Karolinska Institute Nobel conference, Stockholm  
Integrative Biology Symposium, University of Georgia

2020-21

Symposium at American Physics Society annual meeting  
Program chair and speaker, Biology, Neuroscience and Algoriothms,  
Collective Intelligence Conference

2021-22

Symposium, Spatial Structure and Organization within Social Insect  
Colonies, International Union for the Study of Social Insects  
Augmented Intelligence NSF workshop  
Absolutely Interdisciplinary workshop, University of Toronto  
Estacion Chamela (UNAM) 50 year anniversary symposium  
Plenary speaker, International Symposium on Artificial Intelligence and  
Robotics/Biocomplexity, /Swarm Behavior and Bio-Inspired Robotics,  
Banff International Research Station workshop on Emergent Collective Behavior  
Indiana University Workshop on Agency in Living Systems, June

2. Selected other invited talks:

2014-15

Hewlett Foundation  
Institute for Science and Technology, Vienna  
Wissenschaftskolleg zu Berlin  
Macquarie University, Sydney, Australia  
University of Pittsburgh

2015-16

Dept. of Bioinformatics, UC San Diego  
Dell Research Labs, Mountain View  
Dept. of Entomology, Univ Minnesota  
Alfred M Boyce Lecture in Entomology, UC Riverside  
World Economic Forum, Davos, Ideas Lab

2016-17

Institut des Systemes Complexes, Paris  
OECD (Organization for Cooperation and Economic Development), Paris  
Max Planck Institute for Ornithology, Konstanz  
Max Planck Institute for Cell Biology, Dresden  
Oxford University, Department of Zoology  
University of Copenhagen, Department of Macroecology  
Princeton University, Ecology and Evolutionary Biology  
Dartmouth College, Dept of Ecology  
Stony Brook University, Dept Ecology and Evolution named lectureship  
UCSF Systems Biology Center  
University of Texas Southwestern, Green Center for Systems Biology  
Symposium on Biomimetics, International Congress of Entomology  
University of Manitoba, Interdisciplinary Science Speakers Series  
Interactive Media Seminar Series, Bioengineering, Stanford

2017-18

Harvard University, Dept of Organismal and Evolutionary Biology  
University of Chicago, Institute for Genomics and Systems Biology  
University of Montana, Dept of Ecology and Evolutionary Biology  
Arizona State University, Dept of Computing, Informatics and Decision Theory  
University of Duesseldorf, Germany Dept of Evolutionary Genetics,  
University of Wurzburg, Germany. Behavioral Physiology and Sociobiology,  
University College London, Dept of Genetics, Evolution and Environment,  
CNRS and University of Bordeaux, France. ImmunoConcept,  
Universite de Lausanne, Switzerland, Lausanne Center for Integrative Genomics  
IBM Almaden Research Center

2018-19

Duke University, Program in Ecology  
California Institute of Technology, Dept of Bioengineering

Oberlin College, Department of Biology  
University of California Merced, Quantitative and Systems Biology  
Universite Paris Descartes, Neuroscience  
University of Exeter, UK, Dept. of Behavioral Ecology  
Instituto Ecologia, Universidad National Autonomia de Mexico  
Computer Science, Stanford (Algorithms and Friends series)

**Outreach:**

ALEPH, Conference on emergence, Universidad National Autonomia de Mexico  
Class of 1955 Reunion, Stanford University  
Northern California Science Writers Association  
Wonderfest (science outreach public lecture)

**2019-20**

Lawrence Blinks Memorial Lecture, Hopkins Marine Station  
Brady Lecture, University of Georgia

**2020-21**

Long-term ecological data seminar series, Duke University  
Quantitative Ecology seminar series, Harvard University  
Diverse Intelligences Summer Institute  
Biological Physics seminar series, Purdue University  
Colloquium for editors of Nature  
Mentor, National Cancer Institute workshop on Emergent Cell-Cell Interactions

**2021-22**

Department of Integrative Biology, University Colorado-Denver  
Department of Biology, Vanderbilt University  
Department of Ecology and Evolution, University of Arizona  
Social Insects Research Group, Arizona State University  
Cambridge Entomological Society, Harvard University  
Department of Physics, Cornell University

**Professional Service:**

- |         |   |
|---------|---|
| 2020-21 | Founding associate editor, Collective Intelligence journal                  |
| 2019-20 | SWARM Robotics conference program committee                                 |
|         | TPNC 2018 Program Committee   |
|         | International Conference on the Theory and Practice of Natural Computing    |
| 2018-19 | TPNC 2018 Program Committee   |
|         | International Conference on the Theory and Practice of Natural Computing    |
| 2017    | - Editorial Board, Swarm Intelligence                                       |
| 2016    | "Swarm Intelligence" Task Force of IEEE Computational Intelligence Society. |
| 2016    | Collective Intelligence annual meeting, Program Committee                   |

2011- 2015	Editorial Board, <u>PLoS ONE</u>
2010- 2015	Editorial Board, <u>Proceedings Royal Society B</u>
2010-15, 2003 - 08, 1995-2001	Santa Fe Institute Science Board
2007	Fellow, California Academy of Sciences
2013-2014	California Academy of Sciences– Fellows Selection Committee
2009-2011	Editorial Board, <u>Behavioral Ecology</u>
2011	National Science Foundation Panel, Population Biology and Ecology 2007
2004	National Science Foundation Panel, Animal Behavior Program
2003-2006	Editorial Board, <u>Oecologia</u>
2001-2004	Editorial Board, <u>American Naturalist</u>
2000	National Science Foundation Panel, Animal Behavior Program
1998-2001	Editorial Board, <u>Ecology</u>
1997	Yale Ecology Summit (advise on new department)
1996- 2002	Chair, Ethics Committee; 1993-96 Member, Ethics Committee, Animal Behavior Society

### **Recent University service:**

#### Departmental:

2021	Graduate admissions committee, CMOB
2014-2022	Graduate studies committee; chair of co-term committee
2011-2012	Undergraduate studies committee
2008-2009	Ecology search committee Undergraduate laboratory course redesign committee Policy committee
2006 - 2008	Chair, Ecology and Evolution group

#### **University:**

2019-20	Marsh O'Neill awards committee
2017-18	University awards committee
2016-2017	Breadth Governance Board SIGF Fellowship committee
2015-2016	Breadth Governance Board
2013-2015	Writing Governance Board
2012-2013	SIGF selection committee IPER Admissions committee Writing Governance Board
2011-2012	SIGF selection committee Writing Governance Board
2010-2011	SIGF selection committee Writing Governance Board

## **Graduate Research Supervised:**

Kathleen Human (PhD 1996)  
Mark Brown (1997)  
Nathan Sanders (2000)  
Veronica Volny (2003)  
Natasha Mehdiabadi (M.Sc. 2001)  
Nicole Heller (2005)  
Megan Frederickson (2006)  
Sevan Suni (2009)  
Jessica Shors (2009)  
Katherine Fitzgerald (2010)  
Elizabeth Pringle (2011)  
Shelby Sturgis (2012)  
Andrew Merrell (M.Sc. 2016)  
Ga-II Lee (M. Sc. 2017)  
Daniel Friedman (2019)  
**Sophie Eisenberg-Edidin**

## **Postdoctoral fellows**

Jacob Davidson  
Andy Dosmann  
Roxana Auraco  
Anna Pilko  
Lis Castillo Nelis (NSF Postdoctoral Fellowship)  
Merav Vonshak (BARD Israeli Agricultural Agency Fellowship)  
Noa Pinter-Wollman (NSF Postdoctoral Fellowship)  
Diane Wagner (USDA Postdoctoral Fellowship)  
Madeline Tissot (Swiss government fellowship)  
Michael Greene (NIH postdoctoral training fellowship)  
Krista Ingram (from USDA grant to DMG, then NIH postdoctoral training fellowship)  
Mekala Sundaram  
Biplabendu Das