

John M. (“Marty”) Anderies

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Education

- 1993-1998 Institute of Applied Mathematics, University of British Columbia, Vancouver, Canada.
Ph.D., Applied Mathematics, August, 1998. Supervisor: C.W. Clark.
Thesis title: Culture, Economic Structure, and the Dynamics of Ecological Economic Systems.
M.Sc., Applied Mathematics, October, 1996.
- 1992-1993 Department of Mathematics, Colorado School of Mines, Golden, CO, USA.
Completed course work in preparation for graduate work in mathematics.
- 1983-1987 Department of Petroleum Engineering, Colorado School of Mines, Golden, CO, USA. B.Sc., Petroleum Engineering, May, 1987.

Awards & Fellowships

- 2007 Early Career Development (CAREER) Award. National Science Foundation.
- 2006 Dean’s Distinguished Teaching Award, College of Liberal Arts and Sciences, Arizona State University.
- 1997-1998 University Graduate Fellowship, University of British Columbia.
- 1997 Excellence in Teaching Prize, University of British Columbia.
- 1996 Graduate Teaching Award, Mathematics Department, University of British Columbia.
- 1993-1995 University Graduate Fellowship, University of British Columbia.

Professional Experience

- 08/08- *Associate Professor*, School of Human Evolution and Social Change and School of Sustainability, Arizona State University, Tempe, Arizona.
- 01/07-07/08 *Assistant Professor*, School of Sustainability (50% appointment), Arizona State University, Tempe, Arizona.
- 08/05-07/08 *Assistant Professor*, School of Human Evolution and Social Change (50% appointment), Arizona State University, Tempe, Arizona.
- 08/02-07/08 *Affiliated Assistant Professor*, Department of Mathematics and Statistics, Arizona State University, Tempe, Arizona.
- 08/02-08/05 *Assistant Professor*, School of Life Sciences, Arizona State University, Tempe, Arizona.

Professional Experience, continued

- 7/99-7/02 *Postdoctoral Research Fellow*, Division of Sustainable Ecosystems, Commonwealth Scientific and Industrial Research Organization, Canberra, Australia. Advisor: Brian Walker.
- 9/98-7/99 *Postdoctoral Research Fellow*, Peter Wall Institute for Advanced Studies, University of British Columbia. Advisor: Priscilla Greenwood.
- 9/93-8/98 *Doctoral Student*, Department of Mathematics, University of British Columbia. Advisor: Colin W. Clark.
- 6/95-9/97 *Mathematics Instructor*, Mathematics Department, University of British Columbia.
- 9/93-5/96 *Teaching Assistant and Computer Lab Instructor*, Mathematics and Biology Departments, University of British Columbia.
- 1/91-7/92 *Teacher of Technical English*, Harvard University's WorldTeach Program, People's Republic of China (12 months) followed by extensive travel throughout China, Siberia, Russia, and Europe (6 months).
- 8/87-11/90 *Production Engineer*, Oryx Energy Company, California.

Research Activities

Peer-Reviewed Journal Articles:

- Anderies, John M.**, B. Nelson, and A. Kinzig, 2008. Analyzing the impact of agave cultivation on famine risk in arid prehispanic northern Mexico. *Human Ecology* 36(3):409-422.
- Anderies, John M.**, A. Rodriguez, M. Janssen MA, O. Cifdaloz, 2007. Panaceas, uncertainty, and the robust control framework in sustainability science. *Proceedings of the National Academy of Sciences of the United States of America* 104(39):15194-15199.
- Ostrom, Elinor, M. Janssen, and **J. Anderies**, 2007. Going beyond panaceas. *Proceedings of the National Academy of Sciences of the United States of America* 104(39):15176-15178.
- Janssen, Marco, **J. Anderies**, and E. Ostrom, 2007. Robustness of social-ecological systems to spatial and temporal variability. *Society and Natural Resources* 20(4):307-322.
- Anderies, John M.**, M. Katti, and E. Shochat, 2007. Living in the city: Resource availability, predation, and bird population dynamics in urban areas. *Journal of Theoretical Biology* 247(1):36-49
- Janssen, Marco A. and **J. Anderies**, 2007. Robustness trade-offs in Social Ecological Systems. *International Journal of the Commons* 1(1):43-66.
- Anderies, John M.**, P. Ryan, and B. Walker, 2006. Loss of resilience, crisis, and institutional change: Lessons from an intensive agricultural system in southeastern Australia. *Ecosystems* 9(6):865-878.

Research Activities, continued**Peer-Reviewed Journal Articles, continued:**

Anderies, John M., 2006. Robustness, Institutions, and Large-Scale Change in Social-Ecological Systems: The Hohokam of the Phoenix Basin. *Journal of Institutional Economics* 2(2):133-155.

Anderies, John M., B. H. Walker, and A. P. Kinzig, 2006. Fifteen weddings and a funeral: case studies and resilience-based management. *Ecology and Society* 11(1):21. [online] URL: <http://www.ecologyandsociety.org/vol11/iss1/art21/>

Abel, Nick, D. Cumming, and **J. Anderies**, 2006. Collapse and Reorganization in Social-Ecological Systems: Questions, Some Ideas, and Policy Implications. *Ecology and Society* 11(1):17. [online] URL: <http://www.ecologyandsociety.org/vol11/iss1/art17/>

Janssen, Marco A., Ö. Bodin, **J. Anderies**, T. Elmqvist, H. Ernstson, R. McAllister, P. Olsson, P. Ryan, 2006. Toward a Network Perspective of the Study of Resilience in Social-Ecological Systems. *Ecology and Society* 11(1):15. [online] URL: <http://www.ecologyandsociety.org/vol11/iss1/art15/>

Lebel, Louis, **J. Anderies**, B. Campbell, C. Folke, S. Hatfield-Dodds, T. Hughes, J. Wilson, 2006. Governance and the capacity to manage resilience in regional social-ecological systems. *Ecology and Society* 11(1):19. [online] URL: <http://www.ecologyandsociety.org/vol11/iss1/art19/>

Walker, Brian, **J. Anderies**, A. Kinzig, P. Ryan, 2006. Exploring Resilience in Social-Ecological Systems Through Comparative Studies and Theory Development: Introduction to the Special Issue. *Ecology and Society* 11(1):12. [online] URL: <http://www.ecologyandsociety.org/vol11/iss1/art12/>

Anderies, John M., 2005. Minimal models and agroecological policy at the regional scale: An application to salinity problems in southeastern Australia. *Regional Environmental Change* 5(1):1-17.

Anderies, John M., M. Janssen, and E. Ostrom, 2004. A Framework to Analyze the Robustness of Social-ecological Systems from an Institutional Perspective *Ecology and Society* 9(1):<http://www.ecologyandsociety.org/vol9/iss1/index.html>.

Janssen, Marco A., **J. Anderies**, and B. Walker, 2004. Robust strategies for managing rangelands with multiple stable states. *Journal of Environmental Economics and Management* 47:140-162.

Anderies, John M., 2003. Economic growth, demographics, and renewable resources: A dynamical systems approach. *Environment and Development Economics* 8(2):219-246.

Pezzey, John C. V. and **J. Anderies**, 2003. The effect of subsistence on collapse and institutional adaptation in population-resource societies. *Journal of Development Economics* 72(1):299-320.

Walker, Brian H., S. Carpenter, **J. Anderies**, N. Abel, G. Cumming, M. Janssen, L. Lebel, J. Norberg, G. Peterson, and R. Pritchard, 2002. Analyzing resilience in a social-ecological system: An evolving framework. *Ecology and Society* 6(1):<http://www.ecologyandsociety.org/vol6/iss1/index.html>.

Research Activities, continued

Peer-Reviewed Journal Articles, continued:

Anderies, John M., M. Janssen, and B. Walker, 2002. Grazing management, resilience and the dynamics of a fire driven rangeland system. *Ecosystems* 5(1):23-44.

Carpenter, S., B. Walker, **J. Anderies**, and N. Abel, 2001. From metaphor to measurement: Resilience of what to what? *Ecosystems* 4(8):765-781.

Anderies, John M., 2000. On modeling human behavior and institutions in simple ecological economic systems. *Ecological Economics* 35:393-412.

Anderies, John M. and B. Beisner, 2000. Fluctuating environments and phytoplankton community structure: a stochastic model. *The American Naturalist* 155(4):556-569.

Anderies, John M., 1998. Culture and human agro-ecosystem dynamics: The Tsembaga of New Guinea. *Journal of Theoretical Biology* 192(4):515-530.

Anderies, John M., 1996. An adaptive model for predicting !Kung reproductive performance: A stochastic dynamic programming approach. *Ethology and Sociobiology* 17(5):221-245.

Peer-Reviewed Chapters in Edited Volumes:

Anderies, John M., and J. Norberg, 2008. Observing, Understanding, and Acting: Information processing for navigating social-ecological systems. In J. Norberg and G. Cumming (ed.), *Complexity Theory for a Sustainable Future*, Columbia University Press.

Janssen, Marco A., **J. Anderies**, 2007 Stylized Models to Analyze Robustness of Irrigation Systems. In T. Kohler and S. Van der Leeuw (eds.) *The Model-based Archaeology of Socionatural Systems*, School for Advanced Research Press: pp. 157-173.

Anderies, John M., 2003. The transition from local to global dynamics: A proposed framework for agent based approaches in social - ecological systems. In M. Janssen (ed.), *Complexity and Ecosystem Management: The Theory and Practice of Multi-Agent Systems*, Edward Elgar Publishers, Cheltenham UK/Northampton USA: pp. 13-34.

Janssen, Marco A., **J. Anderies**, B. Walker, and M. Stafford-Smith, 2003. Implications of spatial heterogeneity of grazing pressure on the resilience of rangelands. In M. Janssen (ed.), *Complexity and Ecosystem Management: The Theory and Practice of Multi-Agent Systems*, Edward Elgar Publishers, Cheltenham UK/Northampton USA: pp. 103-123.

Walker, Brian W., G. Peterson, **J. Anderies**, A. Kinzig, and S. Carpenter, 2002. Robustness in Ecosystems. In E. Jen (ed.), *Robust Design: A Repertoire of Biological, Ecological, and Engineering Case Studies*, Oxford University Press: pp. 173-190.

Work in Progress:

Cifdaloz, Oguzhan, A. Rodriguez, **J. Anderies** M. Janssen, and J. Dickeson, 2008. Policy implementation in uncertain natural resource systems: Insights from robust control. Under Review.

Research Activities, continued

Work in Progress, continued:

Shochat, Eyal, J. Lobo, **J. Anderies**, C. Redman, P. Warren, S. Faeth, C. Nilon, 2007. Productivity, inequality, and biodiversity loss in human-dominated ecosystems. Under Review.

Book Reviews:

“Why we do it” by Niles Eldredge, *The Quarterly Review of Biology*, 80(2):264-265, 2005.

“Simple Heuristics That Make Us Smart” by Gerd Gigerenzer and Peter M. Todd, *Ecology and Society*, 5(2):<http://www.ecologyandsociety.org/vol5/iss2/index.html>, 2002.

“Institutions, Ecosystems, and Sustainability”, edited by Robert Costanza, Bobbi Low, Elinor Ostrom, and James Wilson, *Ecological Economics*, 42(3):498-499, 2002.

“Making Sense of Sex: How Genes and Gender Influence Our Relationships” by David Barash and Judith Lipton, *The Quarterly Review of Biology*, 73(4):486, 1998.

Research Grants:

NSF-CAREER: Local Context and the Dynamics of Social-Ecological Systems: Beyond One-size-fits-all Solutions to Environmental Problems. Role: PI. \$407,809. Start date: 03/01/2007. Duration 60 months.

NSF-HSD: AOC: Integrated Analysis of Robustness in Dynamic Social Ecological Systems. Role: PI. Co-PI's: Charles Perrings, Marco Janssen, Ann Kinzig, and Armando Rodriguez. \$749,000. Start date: 09/01/2005, duration 42 months.

NSF-Biocomplexity CNH: Long-Term Coupled Socioecological Change in the American Southwest and Northern Mexico. Role: Co-PI and Co-Director. PI: Margaret Nelson. Other Co-PI's: Michelle Hegmon, Keith Kintigh, Ben Nelson. \$536,000. Start date: 11/01/2005. Duration: 24 months.

NSF-Biocomplexity CNH: Urban Landscape Patterns: Complex Dynamics and Emergent Properties. Role: Co-PI on ASU subcontract. PI: Marina Alberti, University of Washington. PI on ASU subcontract: Jian Guo Wu. Other Co-PI's: Charles Redman. \$430,000. Start date: 09/15/2005. Duration 36 months.

NSF: UBM: Interdisciplinary Training For Undergraduates In Biological And Mathematical Sciences At ASU. Role: Co-PI and Co-Director. PI: Yang Kuang. Other Co-PI's: James Elser, Carlos Castillo-Chavez, Hal Smith. \$640,000. Start date: 09/15/04. Duration: 48 months.

NSF: Enabling The Study Of Long-Term Human And Social Dynamics: A Cyberinfrastructure For Archaeology. Role: Co-PI. PI: Keith Kintigh. Other Co-PI's: K. Selcuk Candan, Peter McCartney, Margaret Nelson. \$100,000. Start date: 9/15/2004. Duration: 12 months.

CLAS Multi-Investigator Proposal Development Grant: Sociopolitical complexity and human-environment relations. Role: Co-Pi. PI: M. Nelson. \$20,000. Start date: 02/31/2003. Duration: 1 year.

Research Activities, continued

Presentations and Workshop/Conference Participation:

“Uncertainty, Robustness, and learning in Sustainable Resource Management”. 13th International Symposium on Society & Resource Management, Park City, Utah USA June, 2007

(Invited participant) Resilience and Adaptation to Climate Change: Linkages and a new Agenda. Hosted by Tyndall Centre for Climate Change Research and the Resilience Alliance. Blakeney, Norfolk, UK, April 2007.

(Invited) “Living in an uncertain world: Robustness-vulnerability trade-offs in natural resource management”. Stockholm Seminar Series, Stockholm, Sweden, September, 2006.

(Invited) “Diversity in Subsistence Strategies and Transformation: The Hohokam of the Phoenix Basin”. Paper presented in the invited session: Transformation and Stability in Socioecological Systems: Archaeological Perspectives on Resilience Theory at the Annual Meeting of the American Anthropological Association, Washington, D.C., December, 2005.

(Invited) “Agave as Infrastructure: Vulnerability and Crop Diversity in Northern Mexico”. Co-presented with Ben Nelson, SHESC, ASU, in the invited session: Transformation and Stability in Socioecological Systems: Archaeological Perspectives on Resilience Theory at the Annual Meeting of the American Anthropological Association, Washington, D.C., December, 2005.

“Loss of resilience, crisis, and institutional change: Lessons from an intensive agricultural system in southeastern Australia”. Paper presented at the 6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community, Bonn, Germany, October, 2005.

(Invited participant) Resilience Alliance: Reserves in Regions Workshop, Avignon, France, June, 2005.

“Institutional Design: Directions for the 21st Century”. Annual Meeting of the American Association for the Advancement of Science, Washington, D.C., February, 2005.

“Robustness and Large-Scale Change in Social-Ecological Systems: The Hohokam of the Phoenix Basin”. Workshop on the Workshop of Political Theory and Policy Analysis, Bloomington Indiana, June, 2004.

“Living in the city: population dynamics when resources are predictable and predators few”. Annual Meeting of the Ecological Society of America, Portland OR, Aug. 2004.

“A framework to analyze the robustness of social-ecological systems from an institutional perspective”. Tenth Biennial Conference of the International Association for the Study of Common Property, Oaxaca Mexico, August, 2004.

(Invited) “Robust strategies for managing rangelands with multiple stable attractors”. Stochastic Modeling Seminar Series, ASU, April, 2003.

(Invited) “Subsistence constraints and institutional adaptation in a simple population/resource society, a dynamical systems perspective.” Mathematical Biology Seminar, Mathematics Department, ASU, March, 2003.

Research Activities, continued

Presentations and Workshop/Conference Participation, continued:

(Invited participant) Adaptation and resilience in rangeland social-ecological systems. Workshop sponsored by CSIRO Australia. Townsville, Australia, July, 2003.

(Invited participant and manuscript co-author) “Design Principles for Robustness of Institutions in Social-Ecological Systems”. The Robustness in Coupled Natural and Human Systems Workshop, Santa Fe Institute, Santa Fe, New Mexico, May, 2003.

(Invited participant and manuscript co-author) “Robustness of Social-Ecological Systems to Spatial and Temporal Disturbance Regimes”. The Resiliency and Change in Ecological Systems Workshop, SFI, Santa Fe, New Mexico, October, 2003.

(Invited) “Resilience and robust management in a managed, fire driven rangeland system”. ASU Department of Geography Colloquium, November, 2002.

(Invited) “Economic growth, demographics, and renewable resources: A dynamical systems approach.” Workshop on Population, Economy and the Environment: Modeling and Simulating their Complex Interaction, Max Planck Institute for Demographic Research, Rostock Germany, May, 2001.

“Demographics, natural resources and economic development”. Presented at the International Society of Ecological Economics Conference, Canberra, July 2000.

“Complex adaptive systems as an integrative framework for ecological economic systems”. Presented at the International Society of Ecological Economics Conference, Canberra, July 2000.

“The effects of environmental harshness and noise on phytoplankton competition”. Presented at the Rocky Mountain Mathematics Consortium Summer Conference on Models in Population Biology and Epidemiology, University of Wyoming, July 1998.

“Culture and the dynamics of the Tsembaga agro-ecosystem in New Guinea”. Presented at the Pacific Northwest Workshop on Mathematical Biology, Washington State University, March 1997.

Teaching Activities

Courses Taught:

Arizona State University: BIO 320–Fundamentals of Ecology, BIO 424–Mathematical Models in Ecology, BIO 311–Biology and Society, BIO 591–Institutions, Governance, and Ecosystem Management, BIO 591–Economics, Ecology, and the Environment, BIO 591–Institutional Analysis, BIO 394–Numeracy in the Life and Social Sciences. SOS 511–Quantitative Methods in Sustainability

University of British Columbia: MATH 100 - Calculus for the Life Sciences (differential), MATH 101 - Calculus for the Life Sciences (integral), MATH 140 - Calculus for Business and Economics (differential), MATH 141 - Calculus for Business and Economics (integral).

Teaching Activities, continued

Undergraduate Student Mentoring

Leslie Padrnos, UBM: Interdisciplinary Training For Undergraduates In Biological And Mathematical Sciences At ASU participant. Project: "Mathematical Modeling and the Decisions that Influence the Mode of delivery in America". Completed: Spring 2007.

Katherine Mason, UBM: Interdisciplinary Training For Undergraduates In Biological And Mathematical Sciences At ASU participant. Project: "Simple mathematical models of parasitism: Applications to human disease". Completed: Fall 2006.

Paula Piedrahita, UBM: Interdisciplinary Training For Undergraduates In Biological And Mathematical Sciences At ASU participant. Project: "Climatic Affects of over harvesting in Tropical Rain forests: A Mathematical Model Approach". Completed: Spring 2007.

Brian Webb, Honors Student, Biology and Society Program, School of Life Sciences. Thesis title: "An ecological footprint analysis of energy use patterns in Arizona". Completed: Spring 2006.

Tiffany Souppa, HSD AOC: Integrated Analysis of Robustness in Dynamic Social Ecological Systems REU student. Project: "Ejidos and the robustness of irrigation systems in Mexico". Completed: Fall 2006.

Graduate Student Mentoring:

Miran Bozicevic, Ph.D. in progress, School of Human Evolution and Social Change, Committee Chair.

Michael Merrill, Ph.D. in progress, School of Human Evolution and Social Change, Committee Co-chair.

James Heffernan, Ph.D. Completed: Spring 2007. School of Life Sciences. Dissertation title: Wetland establishment, disturbance response, and patch interactions. Committee Member.

Nathan Moorehouse, Ph.D. in progress, School of Life Sciences, Committee Member.

Brigitte Hogan, Ph.D. in progress, School of Life Sciences, Committee Member.

Libby Larson, Ph.D. in progress, School of Life Sciences, Committee Member.

Jennifer Rupnow, M.Sc. Completed, Fall 2007. School of Life Sciences. Thesis title: Recreational fisheries and the ecology and management of targeted resources in the northern gulf of California, Mexico. Committee Member.

Steven Metzger, M.N.S. Completed, 2005. School of Life Sciences, Committee Member.

Marea Baggetta, M.Sc. completed, 2005. School of Life Sciences. Thesis title: Elegy for the Salt River: Successional Tales of a Social-Ecological System. Committee Co-chair.

Teaching Activities, continued

Postdoctoral Associate Mentoring:

Oguzhan Cifdaloz, Ph.D. Robustness-vulnerability trade-offs in social-ecological systems. Present position: Postdoctoral Associate, CSID, ASU.

Ashok Regmi, Ph.D. Governance of irrigation and forestry systems in Nepal. Present position: Postdoctoral Associate, CSID, ASU.

Madhu Katti, Ph.D. Local knowledge, traditional institutions and biodiversity reserve management in India. Present position: Assistant Professor, Department of Biology, California State University, Fresno.

Eyal Shochat, Ph.D. Productivity, inequality, and biodiversity loss in human-dominated ecosystems. Present position: Postdoctoral Associate, GIOS, ASU.

Professional Service and Activities

Editorial Activities:

Associate Editor - *Ecology and Society*

Manuscript Referee:

Science, Environmental and Resource Economics, Ecological Economics, Journal of Environmental Economics and Management, Conservation Ecology, Journal of Economic Behavior and Organization, The American Naturalist, Journal of Environmental Management, Journal of Vegetation Science, SIAM Journal of Applied Mathematics, Australian Journal of Botany, Journal of the History of Biology, Canadian Journal of Economics, Ecosystems, Journal of Theoretical Biology, Rangeland Ecology & Management, Natural Resource Modeling, International Journal of the Commons.

Membership in Professional Organizations:

International Association for the Study of Common Property
Association of Environmental and Resource Economists
Ecological Society of America

Departmental Service:

SHESC Personnel Committee, Fall 2007-
SOS Co-chair, Undergraduate Committee, Fall 2007-
SHESC Affirmative Action Committee, Fall 2006-
SHESC Chair, Computer Committee, Fall 2005-
SHESC Undergraduate Committee, Fall 2005-Spring 2006
SoLS Graduate Programs Committee, 2003-2005
Service on faculty search committees (4)
Second and third reader on honors theses (2)

Professional Service and Activities

National Service:

Peer Review Panel Member, United States Environmental Protection Agency, Office of Research and Development: Collaborative Science and Technology Network for Sustainability: Industrial Ecology and Organizational Behavior Competition, August 30-31, 2006.

Research Grant Proposal Reviewer, National Science Foundation, 2006, 2007.

International Service:

Research Grant Proposal Reviewer, Austrian Science Fund and Federal Ministry of Science, 2007.

Ph.D. Project Proposal Reviewer, Wageningen University, The Netherlands, 2007.