

Carl Folke

Professor in Natural Resource Management

Date of Birth: 26 June 1955, Nationality: Swedish.

Married, three children

Short resumé

Carl Folke is a systems thinker in integrative science for sustainability, recognized internationally as leading scientist in research on social-ecological systems and resilience thinking¹. His work emphasizes that humans and our societies are embedded parts of the biosphere dependent on its life-supporting ecosystems, while simultaneously shaping them from local to global scales and from the past into the future. Since the mid-1980s he has broken new ground in understanding the dynamic interplay of humans and nature, of economy and ecology, from management and stewardship of ecosystem services in the seas and on the land to global sustainability. His work has illustrated how progress, prosperity and wellbeing will benefit from reconnecting development to the biosphere and how to adaptively govern and manage resilience and transformations for improved stewardship of social-ecological systems, ecosystem services, natural capital, and sustainability in the Anthropocene. He has more than 30 years of experience in collaborating across disciplines, has produced some three-hundred publications and is recognized as highly cited researcher by Thompson Reuters (2014-2018) and Google Scholar Citations. He has created inter- and transdisciplinary collaborative platforms and contributed to the development of new areas of research (e.g. sustainability science, ecological economics, resilience science, complex adaptive systems), new concepts (e.g. resilience, transformation, regime shifts, response diversity, ecosystem services, ecological footprints, ecosystem stewardship, traditional ecological knowledge systems, planetary boundaries, reconnecting to the biosphere) and approaches (e.g. resilience thinking, social-ecological systems analyses, adaptive governance, transdisciplinary collaboration) that have spread in science, education, policy, and practice and more recently into the business community. He has a long record of science, policy and practice collaboration, working with key actors from local landscapes in Sweden to international bodies and enterprises. Carl has strategically contributed in fostering a new generation of sustainability science scholars with a focus on social-ecological systems, ecological economics, and resilience thinking internationally and in Sweden, built internationally leading research centres and institutes, and worked with scholars across the natural and social sciences and the humanities. He serves on scientific committees and boards and as advisor to policy and practice from local to international actors. He started an institute for science communication in the late 1990s and is genuinely engaged in the arts-science interface.

Current positions

- 2007- Director of the Beijer Institute of Ecological Economics, Royal Swedish Academy of Sciences.
- 2007- Founder and Director of Science of the Stockholm Resilience Centre, Stockholm University.

Previous positions

- 1997-2007 Chair, Natural Resource Management, Dept. Systems Ecology, Stockholm University.
- 1999-2006 Director, Centre for Transdisciplinary Environmental Research (CTM), Stockholm Univ.
- 1991-1996 Deputy Director, Beijer Institute, Royal Swedish Academy of Sciences.

Academic titles and education

- 1996 Professor in Natural Resource Management, Stockholm University.
- 1994 Docent (Associate prof.) in Natural Resource Management, Stockholm University.
- 1990 Ph.D. Department of Systems Ecology, Stockholm University.
- 1981 BBA/MBA in business, economics, administration, 1983 university degree in biology/ecology.

Academy membership

- Elected Member of the Royal Swedish Academy of Sciences 2002.
- Elected Member (Foreign) of the U.S. National Academy of Sciences 2017.
- Elected Member of the Royal Norwegian Society of Sciences and Letters (DKNVS) 2017.
- Elected Member of the Royal Swedish Academy of Agriculture and Forestry (KSLA) 2017.

¹ Janssen, M.A. 2007. An update on the scholarly networks on resilience, vulnerability, and adaptation within the human dimensions of global environmental change. *Ecology and Society* 12(2): 9. [online] URL: <http://www.ecologyandsociety.org/vol12/iss2/art9/>

Xu, L., D. Marinova. 2013. Resilience thinking: A bibliometric analysis of socio-ecological research. *Scientometrics* 96:911–927 DOI 10.1007/s11192-013-0957-0

Meerow, S., J.P Newell. 2015. Resilience and complexity: A bibliometric review and prospects for industrial ecology. *Journal of Industrial Ecology* 19:236-251 DOI: 10.1111/jiec.12252

Xue, X., L. Wang, R.J. Yang. 2018. Exploring the science of resilience: critical review and bibliometric analysis. *Natural Hazards* 90:477-510 <https://doi.org/10.1007/s11069-017-3040-y>

Honorary doctorates

- Honorary doctorate, Wageningen University and Research, the Netherlands 2018 on the occasion of the 100 anniversary celebration. <https://www.wur.nl/en/About-Wageningen/100years/show/100-year-old-university-awards-honorary-doctorates-to-four-top-researchers-1.htm>
- Honorary doctorate of science, Michigan State University, East Lansing, USA 2017. <http://msutoday.msu.edu/news/2017/more-than-2700-spartans-graduate-this-weekend/>
- Honorary doctorate, KU Leuven, Belgium 2015. <https://nieuws.kuleuven.be/en/content/2015/psd2015-interview-carl-folke>

Selected awards, honours, and fellowships

- HM The King's Medal 8th size with the ribbon of the Order of the Seraphim 2018.
- Lord-in-Waiting (Kabinettskammarherre), Swedish Royal Court, 2018.
- Honorary Fellow, the South American Institute for Resilience and Sustainability Studies (SARAS), 2018.
- Gunnerus Award in Sustainability Science 2017 <https://www.ntnu.edu/gunnerus-award2017>
- International Geographical Union's Planet and Humanity Medal 2016. <http://igu-online.org/carl-folke-receives-igu-planet-and-humanity-award/>
- Ebba and Sven Schwartz Scientific Award 2016. <https://schwartzstiftelse.com/>
- Resilience Alliance (RA) Fellow 2016.
- Senior Fellow IHOPE, Integrated History and future of People on Earth 2015.
- Fellow STIAS, Stellenbosch Institute for Advanced Study, South Africa 2014.
- Fellow the Synergy Program on Resilience and Critical TransitionS (SparcS), Wageningen, the Netherlands 2012.
- Social Capitalist of the Year award (with J. Rockström) 2010 for contributing to a mind shift on environmental issues among business by Veckans Affärer (Swedish weekly business newspaper).
- The 2004 Sustainability Science Award of the Ecological Society of America (with Scheffer, M., S. Carpenter, J. Foley, C. Folke, and B. Walker).
- The Centre Party's Environmental Prize (a Swedish political party) 1998 "for his pioneering work with ecosystem services and ecological footprints."
- Member of the Ralph Yorke Society 1997.
- Pew Scholar in Conservation and the Environment 1995.
- Post-Doctoral Fellow Boston University, spring 1991.
- Nordic stipendiary in Marine Biology Nordland College, Bodö, Norway, August 1985.

Current scientific commissions

- Co-director (w Beatrice Crona) of the Erling-Persson Family Academy Programme, New Approaches to the Grand Challenge: Global Finance, Global Health and the Biosphere, The Royal Swedish Academy of Sciences.
- Principal investigator (w. Gretchen Daily, Stanford) of the Wallenberg Foundation research collaboration program Fundamental Research in Biosphere-based Sustainability Science.
- Principal investigator (w. Gretchen Daily, Stanford) of the Wallenberg Foundation research exchange program Advancing Fundamental Knowledge of Natural Capital, Resilience and Biosphere Stewardship.
- Director of the Erling-Persson Family Academy Programme, Global Economic Dynamics and the Biosphere (GEDB), The Royal Swedish Academy of Sciences.
- Editor in Chief of the scientific journal Ecology and Society (with Lance Gunderson).
- Member Academic Advisory Board of STIAS, Stellenbosch Institute for Advanced Study, South Africa.
- Scientific Advisory Committee of SIGHT (The Swedish Institute for Global Health Transformation), Royal Swedish Academy of Sciences.
- Board member, United Nations University's Institute for the Advanced Study of Sustainability (IAS), and sustainability science, Tokyo, Japan.
- International Scientific Advisory Board, Helsinki Institute of Sustainability Science, HELSUS, University of Helsinki, Finland.
- External Member of the International Scientific Advisory Council of the Waterloo Institute for Complexity and Innovation (WICI), and Committee of the Waterloo Institute for Social Innovation and Resilience (WISIR), University of Waterloo, Canada.
- Director of the IPO, Programme on Ecosystem Change and Society (PECS), Future Earth.
- Partner Investigator Nereus Program, Predicting the Future Ocean, UBC, Canada.
- Advisory Board to the International Network of Research on Coupled Human and Natural Systems.
- Lead Faculty of the Earth System Governance Project.
- Member of the Environment Research Committee of the Royal Swedish Academy of Sciences.

- Advisory and Editorial Boards of scientific journals: *Ambio*, *Ecological Economics*, *Environmental Conservation*, *Environment and Development Economics*, *Environmental Innovation and Societal Transitions*, *Frontiers in Ecology and the Environment*, *Global Sustainability*, *Proceeding of the National Academy of Sciences USA (PNAS)*, *Resilience: International Policies, Practices and Discourses*, *Reviews in Ecological Economics*, *Sustainability*, *Sustainability Science*.
- Reviewer for e.g. *Nature*, *Science*, *PNAS*, *Trends in Ecology and Evolution*, *American Anthropologist*, *American Naturalist*, *Ecology Letters*, *Ecological Applications*, *Human Organization*, *Human Ecology*, *Environmental Values*, *Journal of Environmental Economics and Management*, *Environmental and Resource Economics*, *Journal of Theoretical Politics*, *Marine Ecology Progress Series*, *Progress in Oceanography*, *Philosophical Transactions of the Royal Society London*, *Plos One*.

Examples of previous scientific commissions

- Founding member, Chair of the Executive Committee (2008-2010) and member Board of Directors of the Resilience Alliance 1999-2015.
- Scientific Advisory Board and engaged in the development of SARAS (South American Institute for Resilience and Sustainability Studies), Maldonado, Uruguay 2007-2016.
- Science Council of the International Human Dimensions Programme on Global Environmental Change (IHDP) 2002-2007.
- Scientific Advisory Board of the National Center for Ecological Analysis and Synthesis (NCEAS), Santa Barbara, California 2000-2003.
- Partner investigator, The ARC Centre of Excellence for Coral Reef Studies, JCU, Australia 2005-2013.
- Active in the start of the International Society for Ecological Economics (ISEE) and served as elected officer 1993-96, 1998-99.
- Member, Committee of the Centre for Climate Change Economics and Policy, Leeds University/London School of Economics 2009-2013.
- Member, Science Advisory Committee, IIASA 2009-2010.
- Member, Scientific Advisory Board, the STEPS Centre, Brighton, UK 2010-2015.
- Advisory Board, Swedish Secretariat for Environmental Earth System Sciences (SSEESS) 2010-2014.
- Millennium Ecosystem Assessment (MA), in particular the development of the subglobal assessments, participated in the assessment, and been involved in follow-up processes.
- Advisory Board, ICSU follow-up of the MA, leading to the Programme on Ecosystem Change and Society (PECS) with links to Future Earth.
- Member of the Swedish National Committees for Biology and for Global Environmental Change.
- Editorial Board of fifteen scientific journals incl. *Conservation Biology*, *Ecosystems*, *Environment*, *Global Environmental Change*.
- Book Review Editor of *Ecological Economics* 1989-2002.
- Swedish Research Council engagements, board FORMAS 2001-2003, 2004-2006, evaluation committees Sida/SAREC 2000-2003, SJFR 1994-2000, Swedish Environmental Protection Agency (NV) 1997-1998, FRN 1993-1999.
- Board member, Vice Chairman, Beijer International Institute of Ecological Economics 2005-2006. Board member, Center for Transdisciplinary Environmental Research, 2003-2006. Board member, Department of Systems Ecology, 1997-2006. Board member, the Natural Resources and Environmental Research Center (CNM), Stockholm University, 1993-1997, 1998-2003.

Publications

- More than 300 publications, including 14 books, more than 80 book chapters and 220 scientific articles (>15 in *Nature* and *Science*).
- Google Scholar Citations >120 000 citations, h-index >125, ISI cited in >45 000 journal articles, h-index >80.
- Recognized as Highly Cited Researcher by Thompson Reuters (among the top 1% of researchers for most cited documents in their specific field) 2014, 2015, 2016, 2017, 2018. Highly Cited Researchers worldwide in Google Scholar Citations (scholars with an h-index >100). Among the 2.5% most cited in ResearchGate and among the top cited scientists in Sweden across all fields.
- Papers have been reprinted >35 times in books and journals; 10 articles among the top 5 most cited in the scientific journals *Ambio* (2), *Annual Review of the Environment and Resources*, *Annual Review of Ecology, Evolution and Systematics*, *Ecology and Society* (2), *Environmental Management*, *Frontiers in Ecology and the Environment*, *Global Environmental Change* (2); 2 articles among the most notable papers published in ESA journals (*Ecological Applications*, *Frontiers in Ecology and the Environment*) as part of the Centennial celebration of the Ecological Society of America 2015.

Brief summary of research

- Performing (1983) one of the first analyses of *ecosystem services*, quantifying and valuing the life-supporting functions of a Swedish wetland landscape subject to exploitation, and emphasized the humans-as-part-of-nature view introducing new analyses using concepts like appropriated ecosystem areas or *ecological footprints* (late 1980s early 1990s).
- Advancing *ecological economics* with work on the significance of ecosystem dynamics, *natural capital*, *biodiversity and ecosystem services for human wellbeing* from local to global scales and in the context of rapidly globalizing human societies (1990s).
- Advancing research on *resilience*, *regime shifts*, *tipping points and complex social-ecological systems* (emerged in the 1990s), the interplay between agency/actors, social networks, organizations and institutions as part of the challenge of multilevel and *adaptive governance and transformations toward stewardship of landscapes and seascapes*, local and *traditional knowledge systems*, adaptive learning and adaptive co-management, values and belief systems in shaping social-ecological dynamics, true uncertainty and the challenge of dealing with the non-computable as part of resilience thinking.
- Played a central role (since 1991) in advancing the Beijer Institute's research programmes on the Ecology and Economics of Biodiversity Loss, Property Rights and the Performance of Natural Systems, Baltic Sea programme, the Resilience Network that later developed into the Resilience Alliance. This contributions at the Beijer with colleagues internationally, like in the Resilience Alliance, provided the *intellectual legacy and foundation for the establishment of the Stockholm Resilience Centre* in 2007.
- Contributed in proposing and advancing concepts and approaches such as *adaptive governance*, *bridging organizations*, *ecosystem stewardship*, *response diversity*, *social-ecological memory* and the *planetary boundaries and safe operating space* framework and recently *keystone actors*, *contagious resource exploitation* and the necessity of *reconnecting development to the biosphere*, clarifying how the human *scale*, *connectivity*, *spread and speed interplay with ecosystem dynamics* from local levels to the biosphere as a whole, i.e. *intertwined social-ecological systems of the Anthropocene*.
- Advancing understanding of social-ecological systems in relation to *marine ecosystems* and regimes shifts from the Baltic Sea to *coral reef resilience*, from small-scale *fisheries* to the role of *global keystone actors*, and *aquaculture development* as part of sustainable food production and security, *water resilience*, *ecohydrological landscape management*, *biosphere reserves*, *urban green areas and local stewards* and urban development, *trade*, *multilevel and polycentric governance* and globalization.
- Methods span from inductive and empirical work to conceptual models and theory development in *basic and applied sustainability science and ecological economics*. Using the lens of complex systems, his work is problem-oriented and when transdisciplinary integrates science and practice and coproduces knowledge and understanding.

Examples of science for change

- Co-organizer of Keystone Actors dialogues (Nov 2016, May 2017, Sept 2018) for ocean stewardship with leading multinational seafood businesses and the SeaBOS initiative (<http://keystonedialogues.earth/>).
- Engaged with the Global Resilience Partnership (GRP), convened by Swedish Sida, USAID, Zurich Insurance, DFID and others, for experimenting with new approaches to development aid and help build more resilient futures for billions of people.
- Co-organized (w G.Daily, Stanford) the Summit on Natural Capital, May 2015, Stockholm, with fifty business executives and scientists convened under Chatham house rules, representing institutions situated in contrasting, high-leverage contexts for driving innovation and systemic change.
- Advisory Board, EAT (food, health, sustainability), and Stockholm EAT Forum.
- Board member, Stockholm Environment Institute, 2004-2013.
- Leadership Council of the Sustainable Development Solution Network (SDSN) Northern Europe.
- Advisor to the Swedish Government Commission on ecosystem services 2012-2013 and the Swedish Government Official Report - Making the Value of Ecosystem Services Visible - (SOU 2013:68) providing direction for the implementation of ecosystem services management in Swedish landscapes.
- Chairing the scientific committee and developing the three scientific background documents of the 3rd Nobel Laureate Symposium on Global Sustainability, May 2011, Royal Swedish Academy of Sciences with participation by the UN Secretary General's High Level Panel on Global Sustainability that released "Resilient People, Resilient Planet: A Future Worth Choosing" as input to the Rio+20 meeting, 2012.
- Together with colleagues of the Stockholm Resilience Centre wrote in 2009 the report Resilience and Sustainable Development 2.0 for the Swedish Government's Commission on Sustainable Development.
- Lead author of the Swedish Government report to the World Summit on Sustainable Development, 2002 in Johannesburg (Folke, C., et al. 2002. Resilience and Sustainable Development: Building Adaptive

Capacity in a World of Transformations. *Report for the Swedish Environmental Advisory Council 2002:1*. Ministry of the Environment, Stockholm) also released by ICSU.

- Author of a Swedish Government Official Report in 1993 on trade and the environment, translated and published as a book in the UK and translated into Chinese and published in China.
- Member, Environmental Advisory Council to the Swedish Government, 1991-1994, and various roles as advisor over the years.
- Swedish Scientific Committee on Biological Diversity, of the Swedish Government, 1994-1996.
- Foresight Science Expert Panel to the UNEP 2010-2011.
- Several functions with UNEP in relation to the Convention on Biological Diversity.
- Collaborated with and written reports to organizations like FAO, UNESCO on issues like freshwater management, sustainable cities, and biosphere reserves.
- Contributor to the 2012 IPCC report Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation.
- Collaboration with stakeholders and practitioners of the landscapes and seascapes in focus, e.g. Kristianstad Vattenrike Biosphere Reserve, Sweden, PECS cases, bridging organizations.
- Scientific Committee, Volvo Environment Prize, 2008 and Chair since 2013.
- Scientific Committee, Kenneth E. Boulding Memorial Award, ISEE, since 2013.
- Member Kommittén Gustavianska Parkens Vänner, Stockholm, 2001-2010.
- Scientific advisor to The Swedish Society for Nature Conservation 1998-2000.
- In 1998 founded Albaeco, an institute devoted to communicate the latest in sustainability science with a focus on Nature's importance to society and the economy. Served on the board 1998-2004.

Teaching, conferences, presentations

- Developing undergraduate and graduate courses in sustainability science.
- Participating in numerous courses at undergraduate and graduate levels in biology/ecology, economics, political sciences, environmental law, engineering, interdisciplinary at various Swedish universities, including two MOOC.
- Lecturing at several international courses abroad and participated in teaching workshops and research seminars on environment and development in developing regions.
- Supervised 25 PhD-students; main supervisor for 11, has advised many Master-theses.
- Initiating, building and supporting multiple platforms for young scientists e.g. Eco-Eco Group, 1984-1991, Interdisciplinary PhD-Group of the Centre for Transdisciplinary Environmental Research, 1997-2009; CART Group of the Resilience Alliance (2000) shifting into RAYS - The Resilience Alliance Young Scholars Group (ongoing); BYS – The Beijer Young Scholars (ongoing since 2012).
- Many conference committees, organized international conferences and workshops, including two major conferences in Stockholm – Investing in Natural Capital: A Prerequisite for Sustainability 1992 (second symposium of the International Society for Ecological Economics); and Resilience 2008 – Resilience, Adaptation, and Transformation in Turbulent Times (first symposium of the Resilience Alliance).
- In 2000 founded the Stockholm Seminars: Frontiers in Sustainability Science and Policy, held at the Royal Swedish Academy of Sciences with well over 125 talks by renowned scholars.
- About 200 scientific presentations including keynote speaker presentations and invited lectures worldwide e.g. at universities of Cambridge, Oxford, Stanford, Princeton, Tokyo, Bonn, Wageningen, Cape Town, Montevideo.
- Numerous public lectures and seminars for e.g. business leaders, NGOs, government agencies, politicians, royal families, artists, school classes, television and media.
- Research reported in newspapers, radio and television, websites in Sweden and internationally.
- Written popular science pieces and articles in media.

Science and art

- Organized “Changing Matters – The Resilience Art Exhibition”, the Swedish Royal Academy of Fine Arts and the Royal Swedish Academy of Sciences, shown at the Swedish Museum of Natural History 2008.
- “Reflections – On People and the Biosphere” (Folke and Hall 2014 Langenskiolds). The book shown as an installation at the art venue Artipelag outside Stockholm summer 2014, shown outdoors as an exhibition at the Raoul Wallenberg Square, Nybroplan April-May 2015, the Transformations conference October 2015, Stockholm, Freiburg, Germany November 2015, Nordic politicians January 2016, Resilience 2017 conference August 2017, Stockholm.
- Co-developed the exhibition “Patterns of the Biosphere” at Svenskt Tenn, Stockholm, April-June 2015, also shown at the Resilience conference August 2017, Kulturhuset 2017, Stockholm, and Läckö Slott/Naturrum, Lidköping, summer 2018.

- Engaged in the ArtScience dialogues of the South American Institute for Resilience and Sustainability Studies, SARAS, Uruguay, including the installation 'Reconnecting with the Ark' 2013 with Francisco Gazitua and the sculpture 'Nature, Society, Economy' by Tone Björdam, exhibited at the Resilience 2017 conference in Stockholm.
- Continuously engaged in ArtScience projects.

Grants

Have led and received funding for

- Centre-of-Excellences in Sweden (Formas) and the Nordic countries (Nordforsk).
- major research grants from the Strategic Environmental Fund-Mistra, The Kjell and Märta Beijer Foundation, The Erling-Persson Family Foundation, The Wallenberg Foundations, The Swedish International Development Cooperation Agency-Sida, The European Commission, and Swedish research councils and foundations.

Have been engaged in grants from e.g.

- MacArthur Foundation, The Rockefeller Foundation, The Christensen Fund, The David and Lucile Packard Foundation, Packard Foundation, Nippon Foundation, Australian Research Council, The Walton Family Foundation, The Gordon and Betty Moore Foundation.

A complete CV is available upon request.

A selection of publications

- Adger, W.N., T. Hughes, C. Folke, S.R. Carpenter and J. Rockström. 2005. Social-Ecological Resilience to Coastal Disasters. *Science* 309:1036-1039.
- Anderies, J.M., C. Folke, B.H. Walker, and E. Ostrom. 2013. Aligning Key Concepts for Global Change Policy: Robustness, Resilience, and Sustainability. *Ecology and Society*. 18(2):8.
- Andersson, E., S. Barthel, S. Borgström, J. Colding, T. Elmqvist, C. Folke, and Å. Gren. 2014. Reconnecting Cities to the Biosphere: Stewardship of Green Infrastructure and Urban Ecosystem Services. *Ambio* 43:445-453.
- Arrow, K., B. Bolin, R. Costanza, P. Dasgupta, C. Folke, C.S. Holling, B.-O. Jansson, S. Levin, K.-G. Mäler, C. Perrings, D. Pimentel. 1995. Economic Growth, Carrying Capacity, and the Environment. *Science* 268:520-521.
- Barbier, E.B., J. Burgess and C. Folke. 1994. *Paradise Lost? The Ecological Economics of Biodiversity*. Earthscan, London. 267 pp.
- Barthel, S., C. Folke and J. Colding. 2010. Social-Ecological Memory in Urban Gardens: Retaining the Capacity for Management of Ecosystem Services. *Global Environmental Change* 20:255-265.
- Barrett, S., T.M. Lenton, A. Millner, A. Tavoni, J. Anderies, S.R. Carpenter, F.S. Chapin III, G. Daily, C. Folke, V. Galaz, et al. 2014. Climate Engineering Reconsidered. *Nature Climate Change* 4:527-529.
- Bellwood, D., T. Hughes, C. Folke and M. Nyström. 2004. Confronting the Coral Reef Crisis. *Nature* 429:827-833.
- Berkes, F. and C. Folke. 1992. A Systems Perspective on the Interrelations between Natural, Human-made and Cultural Capital. *Ecological Economics* 5:1-8.
- Berkes, F. and C. Folke (eds.). 1998. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge University Press, Cambridge UK. 459 pp.
- Berkes, F., C. Folke and J. Colding. 2000. Rediscovery of Traditional Ecological Knowledge as Adaptive Management. *Ecological Applications* 10:1251-1262.
- Berkes, F., J. Colding and C. Folke (eds.). 2003. *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*. Cambridge University Press, Cambridge UK. 393 pp.
- Berkes, F., T.P. Hughes, R.S. Steneck, J.A. Wilson, D.R. Bellwood, B. Crona, C. Folke, et al. 2006. Globalization, Roving Bandits, and Marine Resources. *Science* 311:1557-1558.
- Biermann, F., K. Abbott, S. Andresen, K. Bäckstrand, S. Bernstein, M.M. Betsill, H. Bulkeley, B. Cashore, J. Clapp, C. Folke, et al. 2012. Navigating the Anthropocene: Improving Earth System Governance. *Science* 335:1306-1307.
- Biggs, O., T. Blenckner, C. Folke, L. Gordon, A. Norström, M. Nyström, and G. Peterson. 2012. Regime Shifts. In: Hastings, A. and L. Gross (eds.). *Encyclopedia in Theoretical Ecology*. University of California Press, Berkeley, CA.
- Boyd, E. and C. Folke (eds.). 2012. *Adapting Institutions: Governance, Complexity and Social-Ecological Resilience*. Cambridge University Press, Cambridge, UK. 290 pp.
- Carpenter, S.R. and C. Folke. 2006. Ecology for Transformation. *Trends in Ecology and Evolution* 21: 309-315.
- Carpenter, S.R., C. Folke, M. Scheffer and F. Westley. 2009. Resilience-Accounting for the Noncomputable. *Ecology and Society* 14(1):13.

- Carpenter, S.R., C. Folke, A. Norström, O. Olsson, L. Schultz, B. Agarwal, P. Balvanera, B. Campbell, J.C. Castilla, W. Cramer, R. DeFries, P. Eyzaguirre, T. Hughes, S. Polasky, Z. Sanusi, R. Scholes, and M. Spierenburg. 2012. Program on Ecosystem Change and Society: An International Research Strategy for Integrated Social-Ecological Systems. *Current Opinion in Environmental Sustainability* 4:134-138.
- Carpenter, S.R., K.J. Arrow, S. Barrett, R. Biggs, W.A. Brock, A.-S. Crépin, G. Engström, C. Folke, et al. 2011. General Resilience to Cope With Extreme Events. *Sustainability* 4:3248-3259.
- Carpenter, S.R., W. Brocks, C. Folke, E. van der Nees, and M. Scheffer. 2015. Allowing Variance may Enlarge the Safe Operating Space for Exploited Ecosystems. *Proceedings of the National Academy of Sciences, USA* 112:14384-14389.
- Chapin, F.S., III, G.P. Kofinas and C. Folke (eds.). 2009. *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World*. Springer Verlag, New York. 401 pp.
- Chapin, III, F.S., S.R. Carpenter, G. P. Kofinas, C. Folke, N. Abel, W.C. Clark, P. Olsson, D.M. Stafford Smith, B.H. Walker, O.R. Young, F. Berkes, R. Biggs, J.M. Grove, R.L. Naylor, E. Pinkerton, W. Steffen, F.J. Swanson. 2010. Ecosystem Stewardship: Sustainability Strategies for a Rapidly Changing Planet. *Trends in Ecology and Evolution* 25:241-249.
- Colding, J. and C. Folke. 2001. Social taboos: "Invisible" Systems of Local Resource Management and Biological Conservation. *Ecological Applications* 11:584-600.
- Colding, J., J. Lundberg and C. Folke. 2006. Incorporating Green-area User Groups in Urban Ecosystem Management. *Ambio* 35:237-244.
- Colding, J. and C. Folke. 2009. The Role of Golf Courses in Biodiversity Conservation and Ecosystem Management. *Ecosystems* 12:191-206.
- Costanza, R., L. Waigner, C. Folke and K.-G. Mäler. 1993. Modeling Complex Ecological Economic Systems: Toward an Evolutionary Dynamic Understanding of People and Nature. *BioScience* 43:545-555.
- Crépin, A.-S., and C. Folke. 2015. The Economy, the Biosphere, and Planetary Boundaries: Towards Biosphere Economics. *International Review of Environmental and Resource Economics* 8: 57-100.
- Crona, B., T. Daw, W. Swartz, A. Norström, M. Nyström, M. Thyresson, C. Folke, et al. 2016. Masked, Diluted, Drowned Out: Global Seafood Trade Weakens Signals from Marine Ecosystems. *Fish and Fisheries* 17:1175-1182.
- Daily, G., T. Söderqvist, S. Aniyar, K. Arrow, P. Dasgupta, P.R. Ehrlich, C. Folke, et al. 2000. The Value of Nature and the Nature of Value? *Science* 289:395-396.
- Dasgupta, P., C. Folke and K.-G. Mäler. 1994. The Environmental Resource Base and Human Welfare. In: Lindahl-Kiessling, K. and H. Landberg (eds.). *Population, Economic Development and the Environment*. Oxford University Press, Oxford. pp 25-50.
- Deutsch, L., S. Gräslund, C. Folke, M. Huitric, N. Kautsky, M. Troell and L. Lebel. 2007. Feeding Aquaculture Growth through Globalization; Exploitation of Marine Ecosystems for Fishmeal. *Global Environmental Change* 17:238-249.
- Ekins, P., C. Folke and R. Costanza. 1994. Trade, Environment and Development: The Issues in Perspective. *Ecological Economics* 9:1-12.
- Elmqvist, T., C. Folke, M. Nyström, G. Peterson, J. Bengtsson, B. Walker and J. Norberg. 2003. Response Diversity and Ecosystem Resilience. *Frontiers in Ecology and the Environment* 1:488-494.
- Eriksson, H., H. Österblom, B. Crona, M. Troell, N. Andrew, J. Wilen, and C. Folke. 2015. Contagious Exploitation of Marine Resources. *Frontiers in Ecology and the Environment*. 13:435-440.
- Fischer, J., T.A. Gardner, E.B. Bennett, P. Balvanera, R. Biggs, S.R. Carpenter, T. Daw, C. Folke, et al. 2015. Advancing Sustainability through Mainstreaming a Social-Ecological Systems Perspective. *Current Opinion in Environmental Sustainability* 14:144-149.
- Folke, C., and N. Kautsky. 1989. The Role of Ecosystems for a Sustainable Development of Aquaculture. *Ambio* 18:234-243.
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