

*Editorial*

## **A Different Future**

*Lance Gunderson*<sup>1</sup> and *Carl Folke*<sup>2</sup>

---

### **INTRODUCTION**

As we close the 13th issue of *Ecology and Society* and approach a new year, we'll step out on a limb and speculate about our collective future. But first we present the observations about our current global situation that form the basis of such speculation.

The first observation is the continued increase in human dominance of global systems. From increasing carbon in the atmosphere, transference of terrestrial productivity to humans, or sequential collapses in marine ecosystems, humans continue to be the global driver of change (Fig. 1). The global linkages among ecological, economic, and social sectors are more apparent. The recent fiscal and economic crises suggest the downside of global connectivity and overconnectedness at the scale of the planet.

The second observation is that surprises are increasing. One only need to open a newspaper, log on to a news Web site, or turn on the television to get an indication of the never-ending string of surprises that appear to confront humanity. Some surprises such as jokes or winning a jackpot are welcomed. Others, such as earthquakes, hurricanes, or oil that costs U.S. \$500 a barrel, are shocks that must be managed. Surprises occur when our expectations about the world differ from reality. Surprises are a consequence of living in an increasingly complex world, full of uncertainties and the expanding scale of human impacts.

The third observation is that the consequences of action are more serious. We live in a time when the consequences of our actions are great. Human wealth and infrastructures have never before been as widespread on the planet. In spite of that, judging from their policies and decision making, large segments of society continue to operate as if development is disconnected from the life-supporting environment and processes of the biosphere. Nevertheless, losses from natural

disasters are climbing exponentially, leading insurance companies to become primary funders of climate change research. Loss of the natural capital, ecological goods, and the services that form the basis for economic activity are all indicators of the increasingly serious consequences of pathologic activities.

One inference from these observations is that our future will not be like our recent past. Indeed, many scientists are now indicating that the information from our recent history that we use to plan for the future, such as the probability of floods or droughts, will have limited applicability in predicting the future. If that is true, we need to develop new ways of thinking about our relationship with our environment and start to prepare and act for adaptations and transformations. In short, we need to conceptualize a different future.

That different future will challenge our ability to adapt to changes in climates and ecosystems. That different future will be a combination of the known and the unknown. The outcomes of our adaptive capacity will in large part be determined by our creativity. As such, new and novel approaches will be required to deal with the types and magnitudes of issues that we face.

We believe that *Ecology and Society* is contributing to a different future for our planet. The ideas that are proposed, tested, and presented in this journal are becoming the foundations for change. The journal presents articles on local, regional, and global experiments in sustainability. This hard-won knowledge is critically important to our capacity to plan, adapt, and possibly even transform our integrated social-ecological systems. This issue continues in the same vein, presenting a diverse set of lessons as described in the following sections. However, we would first like to take time to recognize the annual Science and Practice Award. The winner of that award is described in the next paragraph.

---

<sup>1</sup>Emory University, <sup>2</sup>Stockholm University

**Fig. 1.** A biosphere shaped by humans. Human actions continue to alter environments up to the scale of the planet, yet societal development, human well-being, and collective welfare depend on the capacity of these environments to be sustained. Bottom right photo used with permission from Nils Kautsky.



### THE SCIENCE AND PRACTICE AWARD FOR 2008

Each year, Marco Janssen directs a small committee to present an award for the article in *Ecology and Society* that best integrates ecology and society as well as theory and practice. The Science and Practice of Ecology and Society Award for 2008 was awarded to "[Omora Ethnobotanical Park and the UNESCO Cape Horn Biosphere Reserve](#)" by Eugene Hargrove, Mary Arroyo, Peter Raven, and Harold Mooney. Hargrove and colleagues (2008)

present the story of "a dynamic hive of investigators, artists, writers, students, volunteers, and friends, all exploring ways to better integrate academia and society" in support of research and social-ecological stewardship at the southern tip of South America. A consortium of formal and informal institutions from North and South America all concentrate on research that strengthens local social institutions as well as biodiversity conservation at the UNESCO Biosphere Reserve at Cape Horn.

## THIS ISSUE

With some 60 articles, this is the largest issue published to date. Roughly a third of the articles are parts of special features. The special feature on [The Influence of Human Demography and Agriculture on Natural Systems in the Neotropics](#) edited by Ricardo Grau, Mitch Aide, and Ariel Lugo is complete. Other special issues that received new contributions in this issue are those on [Risk Mapping for Avian Influenza: a Social-Ecological Problem](#) edited by Graeme Cumming; [Pathways to Resilient Salmon Ecosystems](#) edited by Dan Bottom, Kim Jones, Charles Simenstad, and Courtland Smith; [Do We Need New Management Paradigms to Achieve Sustainability in Tropical Forests?](#) edited by Robert Nasi; and [New Methods for Adaptive Water Management](#) edited by Claudia Pahl-Wostl, Jan Sendzimir, and Paul Jeffrey.

The regular feature contributions cover a wide range of topics. Research articles include those by [Fernandez-Gimenez et al. \(2008\)](#), [Pennington \(2008\)](#), [Brugnach et al. \(2008\)](#), [Kumler and Lemos \(2008\)](#), and [Yuan et al. \(2008\)](#), who explore connections between social learning and ecosystem management in different settings and from different perspectives. Research by [Njuki et al. \(2008\)](#) in Southern Africa, [Stephens et al. \(2008\)](#) in northwestern Mexico, [Sudtongkong and Webb \(2008\)](#) in Thailand, [Varghese and Ticktin \(2008\)](#) in India, [Plieninger and Schaar \(2008\)](#) in Spain, [García-Frapolli et al. \(2008\)](#) in Mexico's Yucatan, [van Vliet and Nasi \(2008\)](#) in Gabon, and [Ballard et al. \(2008\)](#) in the United States all provide lessons in the difficulties of ecosystem management. The articles by [Basurto \(2008\)](#) and [Axford et al. \(2008\)](#) look at management and governance issues in marine ecosystems. A research article by [Cousins et al. \(2008\)](#) examines the participation of stakeholders in conservation, and [Enfors et al. \(2008\)](#) develop participatory scenarios for dryland management. [Ernstson et al. \(2008\)](#) look at social networks in relation to ecosystem services in urban areas. The other research articles, i.e., [Hyder et al. 2008](#), [Steel et al. 2008](#), and [Potapov et al. 2008](#), and the insight article by [Shamoun-Baranes et al. \(2008\)](#) present new ways to integrate and synthesize information for better decision making. The alteration and rehabilitation of ecosystem goods and services are explored in articles by [Sunderlin et al. \(2008\)](#) at the global scale and [Shields et al. \(2008\)](#) at the watershed scale. [Poot and colleagues \(2008\)](#) explore intricacies of human impacts on bird migrations.

The insight articles provide a wide-ranging integration of theory and practice. [Turner et al. \(2008\)](#) argue for inclusion of various cultural perspectives in resource management. Better integration of the social and ecological dimensions of resource managements are themes put forth in articles by [González et al. \(2008\)](#), [Giller et al. \(2008\)](#), [Macleod et al. \(2008\)](#), and [Gonzalo-Turpin et al. \(2008\)](#). A must-read article is on adaptive capacity and traps ([Carpenter and Brock 2008](#)).

The synthesis articles touch on topics related to vulnerability to global change; [Ericksen \(2008\)](#) studies the food system, and [Schwinning and colleagues \(2008\)](#) look at the Colorado plateau. Perspectives on interdisciplinary and integrative research are presented by [Setty et al. \(2008\)](#), [Miller et al. \(2008\)](#), and [Evely et al. \(2008\)](#). [Cox \(2008\)](#) examines scale-related issues in common pool resource theory.

In summary, we want to take the opportunity with the closing of our 13th issue of *Ecology and Society* to thank the people and groups responsible for producing the journal. We thank the Resilience Alliance for its commitment to and support of a high-quality, open-access journal. We thank the subscribers for their interest and use of the material published here. We again express our deepest gratitude and appreciation to the subject editors and reviewers who carry a lion's share of the work. Finally, the staff, Michelle Lee and Adele Mullie, who have managed the day-to-day operations, and the copy editors who improve all of our writing but are rarely acknowledged. Finally, we are grateful to our contributors for their hard work, from which the seeds of a different future grow.

Responses to this article can be read online at:  
<http://www.ecologyandsociety.org/vol13/iss2/art57/responses/>

---

## LITERATURE CITED

**Axford, J. C., M. T. Hockings, and R. W. Carter.** 2008. What constitutes success in Pacific island community conserved areas? *Ecology and Society* 13(2): 45. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art45/>.

**Ballard, H. L., M. E. Fernandez-Gimenez, and V. E. Sturtevant.** 2008. Integration of local

ecological knowledge and conventional science: a study of seven community-based forestry organizations in the USA. *Ecology and Society* 13(2): 37. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art37/>.

**Basurto, X.** 2008. Biological and ecological mechanisms supporting marine self-governance: the *Seri callo de hacha* fishery in Mexico. *Ecology and Society* 13(2): 20. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art20/>.

**Brugnach, M., A. Dewulf, C. Pahl-Wostl, and T. Taillieu.** 2008. Toward a relational concept of uncertainty: about knowing too little, knowing too differently, and accepting not to know. *Ecology and Society* 13(2): 30. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art30/>.

**Carpenter, S. R., and W. A. Brock.** 2008. Adaptive capacity and traps. *Ecology and Society* 13(2): 40. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art40/>.

**Cousins, J. A., J. P. Sadler, and J. Evans.** 2008. Exploring the role of private wildlife ranching as a conservation tool in South Africa: stakeholder perspectives. *Ecology and Society* 13(2): 43. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art43/>.

**Cox, M.** 2008. Balancing accuracy and meaning in common-pool resource theory. *Ecology and Society* 13(2): 44. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art44/>.

**Enfors, E. I., L. J. Gordon, G. D. Peterson, and D. Bossio.** 2008. Making investments in dryland development work: participatory scenario planning in the Makanya catchment, Tanzania. *Ecology and Society* 13(2): 42. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art42/>.

**Erickson, P. J.** 2008. What is the vulnerability of a food system to global environmental change? *Ecology and Society* 13(2): 14. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art14/>.

**Ernstson, H., S. Sörlin, and T. Elmqvist.** 2008. Social movements and ecosystem services: the role of social network structure in protecting and managing urban green areas in Stockholm. *Ecology and Society* 13(2): 39. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art39/>.

**Evely, A. C., I. Fazey, M. Pinard, and X. Lambin.** 2008. The influence of philosophical perspectives in integrative research: a conservation case study in the Cairngorms National Park. *Ecology and Society* 13(2): 52. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art52/>.

**Fernandez-Gimenez, M. E., H. L. Ballard, and V. E. Sturtevant.** 2008. Adaptive management and social learning in collaborative and community-based forestry organizations in the western USA. *Ecology and Society* 13(2): 4. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art4/>.

**García-Frappoli, E., V. M. Toledo, and J. Martínez-Alier.** 2008. Adaptations of a Yucatec Maya multiple-use ecological management strategy to ecotourism. *Ecology and Society* 13(2): 31. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art31/>.

**Giller, K. E., C. Leeuwis, J. A. Andersson, W. Andriesse, A. Brouwer, P. Frost, P. Hebinck, I. Heitkönig, M. K. van Ittersum, N. Koning, R. Ruben, M. Slingerland, H. Udo, T. Veldkamp, C. van de Vijver, M. T. van Wijk, and P. Winmeijer.** 2008. Competing claims on natural resources: what role for science? *Ecology and Society* 13(2): 34. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art34/>.

**González, J. A., C. Montes, J. Rodríguez, and W. Tapia.** 2008. Rethinking the Galapagos Islands as a complex social-ecological system: implications for conservation and management. *Ecology and Society* 13(2): 13. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art13/>.

**Gonzalo-Turpin, H., N. Couix, and L. Hazard.** 2008. Rethinking partnerships with the aim of producing knowledge with practical relevance: a case study in the field of ecological restoration. *Ecology and Society* 13(2): 53. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art53/>.

**Hargrove, E. C., M. T. K. Arroyo, P. H. Raven, and H. Mooney.** 2008. Omoro Ethnobotanical Park and the UNESCO Cape Horn Biosphere Reserve. *Ecology and Society* 13(2): 49. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art49/>.

**Hyder, A., B. Leung, and Z. Miao.** 2008. Integrating data, biology, and decision models for

invasive species management: application to leafy spruce (*Euphorbia esula*). *Ecology and Society* 13(2): 12. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art12/>.

**Kumler, L. M., and M. C. Lemos.** 2008. Managing waters of the Paraíba do Sul River basin, Brazil: a case study in institutional change and social learning. *Ecology and Society* 13(2): 22. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art22/>.

**Macleod, C. J. A., K. L. Blackstock, and P. M. Haygarth.** 2008. Mechanisms to improve integrative research at the science-policy interface for sustainable catchment management. *Ecology and Society* 13(2): 48. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art48/>.

**Miller, T. R., T. D. Baird, C. M. Littlefield, G. Kofinas, F. S. Chapin III, and C. L. Redman.** 2008. Epistemological pluralism: reorganizing interdisciplinary research. *Ecology and Society* 13(2): 46. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art46/>.

**Njuki, J. M., M. T. Mapila, S. Zingore, and R. Delve.** 2008. The dynamics of social capital in influencing use of soil management options in the Chinyanja Triangle of Southern Africa. *Ecology and Society* 13(2): 9. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art9/>.

**Pennington, D. D.** 2008. Cross-disciplinary collaboration and learning. *Ecology and Society* 13(2): 8. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art8/>.

**Plieninger, T., and M. Schaar.** 2008. Modification of land cover in a traditional agroforestry system in Spain: processes of tree expansion and regression. *Ecology and Society* 13(2): 25. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art25/>.

**Poot, H., B. J. Ens, H. de Vries, M. A. H. Donners, M. R. Wernand, and J. M. Marquenie.** 2008. Green light for nocturnally migrating birds. *Ecology and Society* 13(2): 47. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art47/>.

**Potapov, P., A. Yaroshenko, S. Turubanova, M. DDubin, L. Laestadius, C. Thies, D. Akesenov, A. Egorov, Y. Yesipova, I. Glushkov, M. Karpachevskiy, A. Kostikova, A. Manisha, E.**

**Tsybikova, and I. Zhuravleva.** 2008. Mapping the world's intact forest landscapes by remote sensing. *Ecology and Society* 13(2): 51. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art51/>.

**Schwinning, S., J. Belnap, D. R. Bowling, and J. R. Ehleringer.** 2008. Sensitivity of the Colorado Plateau to change: climate, ecosystems, and society. *Ecology and Society* 13(2): 28. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art28/>.

**Setty, R. S., K. Bawa, T. Ticktin, and C. M. Gowda.** 2008. Evaluation of a participatory resource monitoring system for nontimber forest products: the case of *amla* (*Phyllanthus* spp.) fruit harvest of Soligas in South India. *Ecology and Society* 13(2): 19. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art19/>.

**Shamoun-Baranes, J., W. Bouten, L. Buurma, R. DeFusco, A. Dekker, H. Sierdsema, F. Sluiter, J. van Belle, H. van Gasteren, and E. van Loon.** 2008. Avian information systems: developing Web-based bird avoidance models. *Ecology and Society* 13(2): 38. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art38/>.

**Shields, F. D., Jr., S. R. Pezeshki, G. V. Wilson, W. Wu, and S. M. Dabney.** 2008. Rehabilitation of an incised stream using plant materials: the dominance of geomorphic processes. *Ecology and Society* 13(2): 54. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art54/>.

**Steel, E. A., A. Fullerton, Y. Caras, M. B. Sheer, P. Olson, D. Jensen, J. Burke, M. Maher, and P. McElhany.** 2008. A spatially explicit decision support system for watershed-scale management of salmon. *Ecology and Society* 13(2): 50. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art50/>.

**Stephens, S. L., D. L. Fry, and E. Franco-Vizcaíno.** 2008. Wildfire and spatial patterns in forests in northwestern Mexico: the United States wishes it had similar fire problems. *Ecology and Society* 13(2): 10. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art10/>.

**Sudtongkong, C., and E. L. Webb.** 2008. Outcomes of state- vs. community-based mangrove management in southern Thailand. *Ecology and Society* 13(2): 27. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art27/>.

**Sunderlin, W. D., S. Dewi, A. Puntodewo, D. Müller, A. Angelsen, and M. Epprecht.** 2008. Why forests are important for global poverty alleviation: a spatial explanation. *Ecology and Society* 13(2): 24. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art24/>.

**Turner, N. J., R. Gregory, C. Brooks, L. Failing, and T. Satterfield.** 2008. From invisibility to transparency: identifying the implications. *Ecology and Society* 13(2): 7. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art7/>.

**van Vliet, N., and R. Nasi.** 2008. Hunting for livelihood in northeast Gabon: patterns, evolution, and sustainability. *Ecology and Society* 13(2): 33. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art33/>.

**Varghese, A., and T. Ticktin.** 2008. Regional variation in nontimber forest product harvest strategies, trade, and ecological impacts: the case of black dammar (*Canarium strictum* Roxb.) use and conservation in the Nilgiri Biosphere Reserve, India. *Ecology and Society* 13(2): 11. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art11/>.

**Yuan, J., L. Dai, and Q. Wang.** 2008. State-led ecotourism development and nature conservation: a case study of the Changbai Mountain Biosphere Reserve, China. *Ecology and Society* 13(2): 55. Online URL: <http://www.ecologyandsociety.org/vol13/iss2/art55/>.