



Ecosphere Ecology Ecological Monographs Ecological Applications Frontiers Bulletin Ecological Archives

ESA Publications Home Online Journals Home EcoTrack Subscriptions

Quick Search

All Publications > Frontiers in Ecology and the Environment > November 2011 > Ecosystem services, targets, and indicators for the conservation and s...

Advanced Search

Volume 9, Issue 9 (November)

< Previous Next >



Current Issue  
Available Issues  
e-View

Share this Article

Share |

Journal Information

ISSN: 1540-9295  
Frequency: 10 times per year

[General Information](#)

[Staff](#)

[Instructions to Authors](#)

[Manuscript Submission](#)

[How to Subscribe](#)

[Permissions](#)

< Previous Article

Volume 9, Issue 9 (November 2011)

Next Article >

[Add to Favorites](#)

| [Email](#)

| [Download to Citation Manager](#)

| [Track Citations](#)

| [Permissions](#)

[Full-text](#)

[PDF](#)

[Supplemental Material](#)

Charles Perrings, Shahid Naeem, Farshid S Ahrestani, Daniel E Bunker, Peter Burkill, Graciela Canziani, Thomas Elmqvist, Jed A Fuhrman, Fabian M Jaksic, Zen'ichiro Kawabata, Ann Kinzig, Georgina M Mace, Harold Mooney, Anne-Hélène Prieur-Richard, John Tschirhart, and Wolfgang Weisser. 2011. Ecosystem services, targets, and indicators for the conservation and sustainable use of biodiversity. *Frontiers in Ecology and the Environment* 9: 512–520. <http://dx.doi.org/10.1890/100212>

Reviews

### Ecosystem services, targets, and indicators for the conservation and sustainable use of biodiversity

Charles Perrings<sup>1,\*</sup>, Shahid Naeem<sup>2</sup>, Farshid S Ahrestani<sup>2</sup>, Daniel E Bunker<sup>3</sup>, Peter Burkill<sup>4</sup>, Graciela Canziani<sup>5</sup>, Thomas Elmqvist<sup>6</sup>, Jed A Fuhrman<sup>7</sup>, Fabian M Jaksic<sup>8</sup>, Zen'ichiro Kawabata<sup>9</sup>, Ann Kinzig<sup>1</sup>, Georgina M Mace<sup>10</sup>, Harold Mooney<sup>11</sup>, Anne-Hélène Prieur-Richard<sup>12</sup>, John Tschirhart<sup>13</sup>, and Wolfgang Weisser<sup>14</sup>

After the collective failure to achieve the Convention on Biological Diversity's (CBD's) 2010 target to substantially reduce biodiversity losses, the CBD adopted a plan composed of five strategic goals and 20 "SMART" (Specific, Measurable, Ambitious, Realistic, and Time-bound) targets, to be achieved by 2020. Here, an interdisciplinary group of scientists from DIVERSITAS – an international program that focuses on biodiversity science – evaluates these targets and considers the implications of an ecosystem-services-based approach for their implementation. We describe the functional differences between the targets corresponding to distinct strategic goals and identify the interdependency between targets. We then discuss the implications for supporting research and target indicators, and make several specific suggestions for target implementation.

<sup>1</sup>School of Life Sciences, Arizona State University, Tempe, AZ

<sup>2</sup>Department of Ecology, Evolution, and Environmental Biology, Columbia University, New York, NY

<sup>3</sup>Department of Biological Sciences, New Jersey Institute of Technology, Newark, NJ

<sup>4</sup>Sir Alister Hardy Foundation for Ocean Science, Plymouth, UK

<sup>5</sup>Instituto Multidisciplinario sobre Ecosistemas y Desarrollo Sustentable, Universidad Nacional del Centro, Tandil, Argentina

<sup>6</sup>Department of Systems Ecology and Stockholm Resilience Centre, Stockholm University, Stockholm, Sweden

<sup>7</sup>Department of Biological Sciences, University of Southern California, Los Angeles, CA

<sup>8</sup>Centro de Estudios Avanzados en Ecología y Biodiversidad (CASEB), Pontificia Universidad Católica de Chile, Santiago, Chile

<sup>9</sup>Research Institute for Humanity and Nature, Kyoto, Japan

<sup>10</sup>Centre for Population Biology, Imperial College London, Ascot, UK

<sup>11</sup>Department of Biology, Stanford University, Stanford, CA

<sup>12</sup>DIVERSITAS, MNHN, Paris, France

<sup>13</sup>Department of Economics and Finance, University of Wyoming, Laramie, WY

<sup>14</sup>Institut für Ökologie, Friedrich-Schiller-Universität, Jena, Germany

\*[charles.perrings@asu.edu](mailto:charles.perrings@asu.edu)

### Cited by

Joachim Maes, Jennifer Hauck, Maria Luisa Paracchini, Outi Ratamäki, Michael Hutchins, Mette Termansen, Eeva Furman, Marta Pérez-Soba, Leon Braat, Giovanni Bidoglio. (2013) Mainstreaming ecosystem services into EU policy. *Current Opinion in Environmental Sustainability* 5:1, 128-134  
Online publication date: 1-Mar-2013.  
[CrossRef](#)

Rosemary Hill, Eyal Haramish, Iain J. Gordon, Megan Clark. (2013) The maturation of biodiversity as a global social–ecological issue and implications for future biodiversity science and policy. *Futures* 46, 41-49  
Online publication date: 1-Feb-2013.  
[CrossRef](#)

Marco Pautasso, Guntra Aistara, Adeline Barnaud, Sophie Caillon, Pascal Clouvel, Oliver T. Coomes, Marc Delêtre, Elise Demeulenaere, Paola Santis, Thomas Döring, Ludivine Eloy, Laure Empeiraire, Eric Garine, Isabelle Goldringer, Devra Jarvis, Hélène I. Joly, Christian Leclerc, Selim Louafi, Pierre Martin, François Massol, Shawn McGuire, Doyle McKey, Christine Padoch, Clélia Soler, Mathieu Thomas, Sara Tramontini. (2013) Seed exchange networks for agrobiodiversity conservation. A review. *Agronomy for Sustainable Development* 33:1, 151-175  
Online publication date: 1-Jan-2013.  
[CrossRef](#)

R. Lal. 2013. Vulnerability of Agroecosystems to Environmental Factors. , 109-116.

[CrossRef](#)

H. John B. Birks. (2012) Ecological palaeoecology and conservation biology: controversies, challenges, and compromises. *International Journal of Biodiversity Science, Ecosystem Services & Management* 8:4, 292-304

Online publication date: 1-Dec-2012.

[CrossRef](#)

Akira S. Mori, Takuya Furukawa, Takehiro Sasaki. (2012) Response diversity determines the resilience of ecosystems to environmental change. *Biological Reviews*n/a-n/a

Online publication date: 1-Dec-2012.

[CrossRef](#)

Lindsay Ann Turnbull, Jonathan M. Levine, Michel Loreau, Andy Hector. (2012) Coexistence, niches and biodiversity effects on ecosystem functioning. *Ecology Letters*n/a-n/a

Online publication date: 1-Dec-2012.

[CrossRef](#)

J. S. Singh. (2012) Biodiversity: An Overview. *Proceedings of the National Academy of Sciences, India Section B: Biological Sciences*

Online publication date: 30-Sep-2012.

[CrossRef](#)

Charles Perrings, George Halkos. (2012) Who Cares about Biodiversity? Optimal Conservation and Transboundary Biodiversity Externalities. *Environmental and Resource Economics* 52:4, 585-608

Online publication date: 1-Aug-2012.

[CrossRef](#)

S. Naeem, J. E. Duffy, E. Zavaleta. (2012) The Functions of Biological Diversity in an Age of Extinction. *Science* 336:6087, 1401-1406

Online publication date: 15-Jun-2012.

[CrossRef](#)

Bradley J. Cardinale, J. Emmett Duffy, Andrew Gonzalez, David U. Hooper, Charles Perrings, Patrick Venail, Anita Narwani, Georgina M. Mace, David Tilman, David A. Wardle, Ann P. Kinzig, Gretchen C. Daily, Michel Loreau, James B. Grace, Anne Larigauderie, Diane S. Srivastava, Shahid Naeem. (2012) Biodiversity loss and its impact on humanity. *Nature* 486:7401, 59-67

Online publication date: 6-Jun-2012.

[CrossRef](#)

David U. Hooper, E. Carol Adair, Bradley J. Cardinale, Jarrett E. K. Byrnes, Bruce A. Hungate, Kristin L. Matulich, Andrew Gonzalez, J. Emmett Duffy, Lars Gamfeldt, Mary I. O'Connor. (2012) A global synthesis reveals biodiversity loss as a major driver of ecosystem change. *Nature*

Online publication date: 2-May-2012.

[CrossRef](#)

Jameal F. Samhoury, Sarah E. Lester, Elizabeth R. Selig, Benjamin S. Halpern, Michael J. Fogarty, Catherine Longo, Karen L. McLeod. (2012) Sea sick? Setting targets to assess ocean health and ecosystem services. *Ecosphere* 3:5, art41

Online publication date: 1-May-2012.

[Abstract](#) . [Full Text](#) . [PDF \(2474 KB\)](#)

Christian Mulder, Alice Boit, Shigeta Mori, J. Arie Vonk, Scott D. Dyer, Leslie Faggiano, Stefan Geisen, Angélica L. González, Michael Kaspari, Sandra Lavorel, Pablo A. Marquet, Axel G. Rossberg, Robert W. Sterner, Winfried Voigt, Diana H. Wall. 2012. Distributional (In)Congruence of Biodiversity–Ecosystem Functioning. , 1-88.

[CrossRef](#)

---

ESA Publications Office | 127 W. State Street | Suite 301 | Ithaca, NY 14850-5427 | phone 607-255-3221 | email [esa\\_journals@cornell.edu](mailto:esa_journals@cornell.edu)

Frontiers Editorial Office | 1990 M Street, NW | Suite 700 | Washington, DC 20036 | phone 202-833-8773 | email [frontiers@esa.org](mailto:frontiers@esa.org)

ESA Headquarters | 1990 M Street, NW | Suite 700 | Washington, DC 20036 | phone 202-833-8773 | email [esahq@esa.org](mailto:esahq@esa.org)

Copyright Ecological Society of America. All rights reserved.

