

ELECTRONIC FORUM

"The role of biodiversity in providing ecosystem services for human wellbeing"

June 2011

INTRODUCTION

The objective of this electronic forum is to improve and expand our knowledge about when, how and under which circumstances biodiversity is essential to ensure the provision and regulation of ecosystem services (ES) and its relationships to human wellbeing (HWB). We expect that through group learning, experts' interaction and collaborative exchange of experiences, this forum will help advance the state of our knowledge on biodiversity and ecosystem services, including ecological, economic, institutional, political and social issues. This initiative will bring together different points of views and field experiences on the knowledge and actions required to better understand the role of biodiversity in areas such as Clean Development Mechanism (CDM) for forests, Payment for Ecosystem Services (PES) for freshwater and Reduction of Emissions from Deforestation and Degradation (REDD+). We also expect to contribute with more information on other ES that are not yet incorporated into the existing incentive mechanisms.

In this forum we will use the definition of ES as "*the benefits that human beings obtain from ecosystems*". The forum will focus on the role of biodiversity in provisioning and regulating ES at the landscape level, such as pollination, seed dispersal, disease and pest control, and climate, air, water, erosion and natural disasters regulation. It is widely acknowledged that (1) biodiversity loss leads to the degradation of the ES necessary for the wellbeing of humans, and that about 60% of the world's ES are declining, mainly regulating and supporting services (MEA 2005¹); (2) the management of an ecosystem that seeks to maximize the production of a particular ES, generally leads to the decline of other ES (Bennett et al. 2009²); (3) it is essential to maintain the integrity of anthropogenic landscape matrices due to their ability to host biological diversity and maintain the viability of the core and protected areas in the landscape (Harvey y Saenz 2007³); and (4) it is necessary to turn the concept of PES into practice to promote biodiversity conservation, identify successful models in which the economic incentives are aligned with conservation goals, and apply them to the design of public policies that help maximizing the benefits obtained from sustainable managed ecosystems (Turner & Daily 2008⁴; Sutherland et al. 2009⁵).

¹ Millenium Ecosystem Assesment. 2005. Ecosystems and Human Well-Being: Current State and Trends. Vol 1. Washington, DC. World Resource Institute.

² Bennett, E.M., Peterson, G.D. & Gordon, L.J. 2009. Understanding relationships among multiple ecosystem services. Ecology Letters 12:1-11.

³ Harvey, C.A. & Saenz, J. 2007. Evaluacion y conservación de biodiversidad en paisajes fragmentados en Mesoamerica. InBio, Costa Rica. 624 p.

⁴ Turner, R.K. & Daily, G.C. 2008. The Ecosystem Services Framework and Natural Capital Conservation. Environ Resource Econ 39:25-35

⁵ Sutherland, W.J. et al. 2009. One Hundred Questions of Importance to the Conservation of Global Biological Diversity. Conservation Biology 23: 557-567.

In some cases, the management of ES only seek to maximize economic benefits and do not always ensure the conservation of biodiversity (Nelson et al. 2008⁶; Wunder et al., 2008⁷). It is also necessary to ensure that those PES schemes based on payment for carbon sequestration find a balance between carbon stocks and biodiversity conservation (Baker et al. 2010⁸). However, current investments in ecosystem conservation, restoration and sustainable use are increasingly perceived as a “win-win” situation, generating substantial ecological, social and economic benefits (de Groot et al. 2010⁹).

EXPECTED RESULTS

The results of this forum will serve as input for a *Regional Synthesis* publication. It is therefore essential that **all comments and suggestions are properly supported by relevant sources of information, such as scientific papers, book chapters, books, theses and technical reports, etc.**

We also expect to provide recommendations to ensure that current conservation and development initiatives associated to ES not yet valued, incorporate more comprehensive approaches and mutual feedback.

FORUM FORMAT

This electronic forum will be implemented in partnership with Consorcio para el Desarrollo Sostenible de la Ecorregion Andina (CONDESAN) through the INFOANDINA web platform. We expect that this forum will promote experience sharing among the participants, which in turn will enhance our knowledge of and improve the approaches being developed in PES schemes. **The official languages for this forum will be Spanish and English.**

The forum will be active for five weeks, during which four main themes will be discussed. Each theme will be open for discussion for a week, while the last week will be devoted to summarizing our findings and receiving final feedbacks from all participants:

⁶ Nelson, E. et al. 2008. Efficiency of incentives to jointly increase carbon sequestration and species conservation on a landscape. *PNAS* 105:9471-9476.

⁷ Wunder, S., S. Engel, and S. Pagiola. 2008. Taking Stock: A Comparative Analysis of Payments for Environmental Services Programs in Developed and Developing Countries. *Ecological Economics* 65(4): 834–52.

⁸ Baker, R.B. et al. How can ecologists help realise the potential of payments for carbon in tropical forest countries?. *Journal of Applied Ecology*. doi: 10.1111/j.1365-2664.2010.01885.x

⁹ de Groot, R.S., Alkemade, R., Braat, L. Hein, L. y Willemen, L. 2010. Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological Complexity* 7:260–272.

TOPIC 1

(May 30 – June 4)

Thematic leader: J. Nicolás Urbina-Cardona

Relationship between biodiversity crisis and the provision ecosystem services

Question 1. (May 30-31) ¿How to measure ecological thresholds from which species loss influence the loss of ecosystem´ functioning and their capacity to provide ecosystem services for the socioeconomic development of a region and their inhabitants?

Question 2. (June 1-2) ¿Which are the most appropriate methods to measure changes in the provision of ecosystem services due to native biodiversity loss as a consequence of anthropogenic factors (e.g. land use changes, invasive species, contamination, overexploitation, emergent diseases, climate change, between others)?

Question 3. (June 3-4) ¿Which are the main functions and ecosystem services that contribute to the increase of ecosystem´ resiliency to the threatening factors (e.g. land use changes, invasive species, contamination, overexploitation, emergent diseases, climate change, between others)?

Scientific literature of support

Bennett et al. 2009. Understanding relationships among multiple ecosystem services. Ecology Letters 12: 1–11.

de Groot et al. 2010 Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. Ecological Complexity 7: 260–272.

Hooper et al. 2005. Effects of Biodiversity on Ecosystem Functioning: A Consensus of Current Knowledge. Ecological Monographs 75: 3-35.

Martín-López et al. 2007 Biodiversidad y bienestar humano: el papel de la diversidad funcional. Ecosistemas 16 (3): 69-80.

Mooney, H. 2010. The ecosystem-service chain and the biological diversity crisis. Phil. Trans. R. Soc. B 365: 31–39

Raudsepp-Hearne et al. 2010. Untangling the Environmentalist’s Paradox: Why Is Human Well-being Increasing as Ecosystem Services Degrade?. BioScience 60: 576–589.

TOPIC 2

(June 6 – 11)

Thematic leader: Cesar A. Ruiz Agudelo

Multitemporal evaluation and monitoring of the ecosystem services related with biodiversity, and the measure of additionality for PES projects (Hydric PES, Forestry CDM, REDD+)

Question 1. (June 6-7) ¿Which are the main methods to quantify, monitor and follow up the ecosystem services offer?

Question 2. (June 8-9) ¿Which are the main gaps and challenges in information and knowledge on the role of biodiversity when designing, monitoring and implementing PES projects (Hydric PES, Forestry CDM, REDD+)?

Question 3. (June 10-11) ¿How to measure (socioeconomic and environmental) additionality in PES projects (Hydric PES, Forestry CDM, REDD+)?, ¿do you know some well documented experiences on this issue?, ¿which is the most proper way to evaluate additionality for this PES projects?

Scientific literature of support

Adams, W. M., R. Aveling, D. Brockington, B. Dickson, J. Elliott, J. Hutton, D. Roe, B. Vira, and W. Wolmer. 2004. Biodiversity conservation and the eradication of poverty. *Science* 306:1146–1149.

Baker et al. 2010. How can ecologists help realise the potential of payments for carbon in tropical forest countries?. *Journal of Applied Ecology* 47: 1159–1165.

Balmford, A., and T. Whitten. 2003. Who should pay for tropical conservation, and how could the costs be met? *Oryx* 37:14.

Ferraro, P., and S. Pattanayak. 2006. Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biology* 4:e105.

James, A., K. Gaston, and A. Balmford. 2001. Can we afford to conserve biodiversity? *BioScience* 51:43–52.

Pagiola, S., Platais, G., 2007. *Payments for Environmental Services: From Theory to Practice*. World Bank, Washington.

Sanderson, S. E., and K. H. Redford. 2003. Contested relationships between biodiversity conservation and poverty alleviation. *Oryx* 37:389–390.

Scherr, S., A. White, and A. Khare. 2004. Tropical forests provide the planet with many valuable services. Are beneficiaries prepared to pay for them? *ITTO Tropical Forest Update* 14:11–14.

Wunder, S. 2001. Poverty alleviation and tropical forests—what scope for synergies? *World Development* 29:1817–1833.

Wunder, S. 2005. *Payments for environmental services: some nuts and bolts*. CIFOR Occasional paper 42. Center for International Forestry Research, Bogor, Indonesia.

Wunder, S. 2006. The Efficiency of Payments for Environmental Services in Tropical Conservation. *Conservation Biology* Volume 21, No. 1, 48–58.

TOPIC 3

(June 13 – 18)

Thematic leader: Cesar A. Ruiz Agudelo

Economic valuation of ecosystem services related with biodiversity

Question 1. (June 13-14) ¿Which are the most efficient methods ecosystem services economic valuation, and under which tools or models can be applied?

Question 2. (June 15-16) ¿Which are the most appropriate criteria to select proper methods for conservation incentives taking into account the particular socioeconomic and environmental conditions of each region?

Question 3. (June 17-18) ¿Do you know some well documented study cases on which the economic valuation of the ecosystem services become an effective strategy for a trade-off analysis against the development of infrastructure (e.g. roads, dams), productive (e.g. cattle, oil palm), or extractive projects (e.g. mine and coal mining)?

Scientific literature of support

Costanza et al. 1997. The value of the world's ecosystem services and natural capital. NATURE 387: 253-260

Daily et al. 2009. Ecosystem services in decision making: time to deliver. Front Ecol Environ 7(1): 21–28.

Gómez-Baggethun y de Groot. 2007. Capital natural y funciones de los ecosistemas: explorando las bases ecológicas de la economía. Ecosistemas 16(3): 4-14.

Martinez de Anguita. 2004. Economía ambiental y ordenación del territorio. Ecosistemas 13(1): 87-93.

Plummer, M.L. 2009. Assessing benefit transfer for the valuation of ecosystem services. Front Ecol Environ 7(1): 38–45.

Starrett, D.A. 1998. Valuing Ecosystem Services. Working Papers from Stanford University, Department of Economics

TOPIC 4

(June 20 – 25)

Thematic leader: J. Nicolas Urbina-Cardona

Efficiency of PES schemes (hydric and forest carbon) in conserving biodiversity and ecosystem services

Question 1. (June 20-12) ¿How to properly alienate emergent forest carbon markets with an efficient management and conservation of biodiversity and their ecosystem services?

Question 2. (June 22-23) ¿Which management strategies for natural ecosystems and anthropogenic matrices are the most appropriate (at different spatial scales) to ensure the regulation and provision of the ecosystem services?

Question 3. (June 24-25) ¿How to control deforestation adjacent to the influence area of the PES projects (hydric PES, Forestry CDM, REDD+)?, ¿do you know some well documented experiences on this issue in which those PES schemes become in an perverse incentive for increasing deforestation by non involved local communities?

Scientific literature of support

Anderson et al. 2009. Spatial covariance between biodiversity and other ecosystem service priorities. *Journal of Applied Ecology* 46: 888–896.

Chan et al. 2006. Conservation planning for ecosystem services. *PLOS Biology*. 4(11):e379.

Imai 2009. Co-Benefits of Sustainable Forest Management in Biodiversity Conservation and Carbon Sequestration. *PLoS ONE* 4(12):e8267.

Larsen, et al. *in press*. Global priorities for conservation of threatened species, carbon storage and freshwater services: scope for synergy?. *Conservation Letters* DOI: 10.1111/j.1755-263X.2011.00183.x

Nelson et al. 2009. Modeling multiple ecosystem services, biodiversity conservation, commodity production, and tradeoffs at landscape scales. *Front Ecol Environ* 7(1): 4–11.

Pagiola et al. 2010. Can Payments for Watershed Services Help Finance Biodiversity Conservation? A Spatial Analysis of Highland Guatemala. *Journal of Natural Resources Policy Research* 2:7—24.

Strassburg et al. 2010. Global congruence of carbon storage and biodiversity in terrestrial ecosystems. *Conservation Letters* 3: 98–105.

REQUENTLY ASKED QUESTIONS

When does the forum start and how long it will be active?

- The forum will be open for four weeks during May-June 2011.

What's the structure of the forum?

- It has four Topic along four weeks.
- At the end of each week, the steering committee will produce a synthesis document to inform and guide the next theme discussion.
- Each main topic will be organized around key scientific papers which will serve as the basis for the discussions.

- Each main theme will have a thematic moderator who will facilitate the discussion in a active manner.

How will the information be shared/managed?

- All information circulated through and produced by this forum (presentations, papers, comments, etc.) will be sent and saved in the forum web platform provided by INFOANDINA o MOUNTAIN FORUM. This platform will make all the information readily available for the participants and will ensure the proper documentation of the process.

How can I participate?

- To participate, you need to fill out the participant's form that will be available soon on the INFOANDINA or MOUNTAIN FORUM website.

We will be contacting you soon with more specific details about this forum.

We look forward to your active participation!

Best regards,

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