



DiverSus

Functional Biodiversity Effects on Ecosystem Processes, Ecosystem Services and Sustainability in the Americas: An Interdisciplinary Approach

Introduction

Evidence is accumulating that the continued provision of essential ecosystem services is vulnerable to land change. Changing land-use patterns and practices affect the properties of ecosystems, including their biodiversity. This in turn has implications for the delivery of ecosystem services to different social groups. Integrating the ecological study of such land change impacts on biodiversity and ecosystem properties with the multiple contributions of ecosystems to human well-being is a major challenge of land science.

The DiverSus Collaborative Research Network focuses on this challenge by developing and testing a new interdisciplinary framework to analyze and compare field studies of land use change in the Americas. We extend our comparison from the tropics to the tundra, focusing on (1) functional biodiversity as a bridge between land-use patterns and ecosystem properties; and (2) ecosystem services as the key conceptual link between ecosystem properties and the livelihoods of social actors who benefit from them.

Project goals

- To construct a **network of scientists** addressing links between land change, functional biodiversity shifts, ecosystem responses and the combinations of ecosystem services that people incorporate into their livelihood strategies.
- To develop the first **comparison of the effects of land-use on functional biodiversity** and to establish how this in turn has the potential to modify ecosystem properties in systems under different degrees of climatic control.
- To establish links between functional biodiversity, ecosystem properties and major **ecosystem services as perceived by different stakeholder groups**.
- To develop a **conceptual framework and a set of empirical tools** and recommendations, available to a wide community of scientists, para-scientist and managers, to be used as the basis for land-use decisions that take into account ecosystem services and the potentially conflicting interests of different stakeholders.



Land-use changes can cause dramatic shifts in biodiversity, with strong impacts on ecosystem properties and the various services they provide to human-beings (photo Zayra Ramos).



People have different livelihoods that depend on the continued provision of different sets of ecosystem services. Land science cannot ignore the resulting conflicts if it is to be relevant (photos: Daniel Cáceres, Georgina Conti, Fabien Quétier & Esteban Tapella).

Contacts:

Lead agency: Instituto Multidisciplinario de Biología Vegetal (Argentina)

Sandra M. Díaz (PI): sdiaz@efn.uncor.edu

Fabien Quétier (Project Officer): fabien.quetier@ecosystem-services.org

Web: www.ecosystem-services.org/diversus

Instituto Multidisciplinario de Biología Vegetal
CONICET – UNC, Casilla de Correo 495, Avenida Vélez
Sársfield 299, 5000 Córdoba
Tel +54 - 0351- 4331097; Fax: +54 - 0351- 4332104.

Investigators:

Alexandre Adalardo de Oliveira

Universidade de São Paulo & INPA (Brazil)

Sydonia Bret-Harte

University of Alaska at Fairbanks (USA).

Daniel Cáceres

Universidad Nacional de Córdoba (Argentina).

Fernando Casanoves – Centro Agronómico Tropical de Investigación y Enseñanza (CATIE, Costa Rica).

Bryan Finegan – CATIE (Costa Rica).

Carlos Murillo – Centro Internacional de Política Económica para el Desarrollo Sostenible (CINPE, Costa Rica).

Lourens Poorter – Instituto Boliviano de Investigación Forestal (IBIF, Bolivia) & Univ. of Wageningen (NL).

Project activities

- **Measure functional biodiversity** (by assessing species composition and measuring the functional trait values of dominant species) **and ecosystem properties** (including C sequestration and nutrient cycling) under contrasting land-use treatments in **case-studies in Alaska, Costa Rica, Brazil, Bolivia and Argentina.**

- Develop **statistical tools** to analyze functional diversity effects on ecosystem properties.

- **Identify ecosystem services through social survey techniques** and describe **stakeholder livelihoods** (in Argentina) and the economics of ecosystem services (in Costa Rica).

- Develop and apply an **integrative framework to link land-use change to stakeholder livelihoods** and welfare in each case-study.

Project status (August 2008)

- Project partners met in Argentina in March 2007 and settled on protocols and objectives.

- Case-study sites were set-up in 2007 and both field surveys and social surveys were initiated in 2007-2008.

I M B I V



CONICET

U N C

