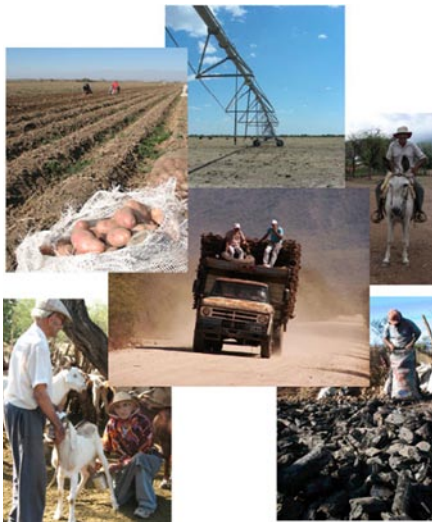
INTER-AMERICAN INSTITUTE FOR GLOBAL CHANGE RESEARCH

DIVERSUS: Functional biodiversity effects on ecosystem processes, ecosystem services and sustainability in the Americas: an interdisciplinary approach (CRN2015)

The provision of ecosystem services is vulnerable to land cover change (LCC). Changing land-use patterns and practices affect the properties and biodiversity of ecosystems. This has implications for the delivery of ecosystem services. Ecological studies of land use change and its impacts on biodiversity and ecosystem properties must be integrated with an understanding of the multiple contributions of ecosystems to human well-being. This is a major challenge for science. The DiverSus Collaborative Research Network concentrates on this challenge by developing and testing a new interdisciplinary framework to analyze and compare field studies of land use change from the tropics to the tundra. Comparisons, focus 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.

Land-use change can dramatically change biodiversity, with strong impacts on ecosystem properties and the various services they provide to society (photo Zayra Ramos)



People's livelihoods depend on the continued provision of ecosystem services. Science cannot ignore the resulting conflicts between decision on use and conservation of ecosystems if it is to be relevant (photos: Daniel Cáceres, Georgina Conti, Fabien Quétier & Esteban Tapella)

Goals

- Construct a network of scientists to address links between LCC, changes in functional biodiversity, ecosystem responses and those ecosystem services that people use towards their livelihoods
- Develop the first comparison of the effects of land-use change on functional biodiversity and establish how this can modify ecosystem properties
- Examine links between functional biodiversity, ecosystem properties and ecosystem services as perceived by different stakeholder groups
- Develop a conceptual framework and a set of empirical tools and recommendations, available to a wide community of scientists, managers, and society to be used in land-use decisions that take into account ecosystem services and potentially conflicting interests of different stakeholders

First results

- Measure functional biodiversity (by assessing species composition and measuring the functional trait values of dominant species)
- Characterize ecosystem properties including C sequestration and nutrient cycling under contrasting land-uses in case studies in Alaska, Costa Rica, Brazil, Bolivia and Argentina
- Develop statistical tools to analyze the effects of functional diversity on ecosystem properties
- Identify ecosystem services through social surveys 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 in all case studies

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Project web site: www.ecosystem-services.org/diversus

List of publications: http://iaibr1.iai.int/bs?publications/CRN2015.pdf

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