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MESSAGE FROM THE PROJECT LEADER



The year 2003 marked the culmination of most of the major case studies and the writing of the final report. The New Year builds on findings and pushes into new areas or applications.

The final report on the Goulburn Broken case study was signed off by the Project Management Advisory Board at a joint meeting with the Steering Committee in July 2003. The report was launched in Canberra in Dec 2003 (see the press release below). The launch was followed by a Symposium entitled 'Making Better Use of our Natural Assets'. The report is available on-line or you can use the feedback page to order a hard copy. The release of the report has since been followed by a workshop in the Goulburn Broken to determine the next steps towards implementing the report recommendations.

The Rainforest Arthropods ecosystem services case studies are now in the final analysis and write-up phase. Another report on Soil Biodiversity in the Riverland of SA is also complete. Updates on these projects are featured in this edition.

The Markets for Ecosystem Services Project continues to grow and an environmental economist is starting soon to add to the capacity of the team. The team played a major role in hosting the 6th Australian Agricultural and Resource Economics Society (AARES) Annual National Symposium in Canberra, September 2003. Market-Based Tools for Environmental Management was the theme. The symposium was an important event for anyone interested in the use of market-based tools for management of natural and environmental resources. An interesting and informative program of speakers was assembled who explored the concepts, practice and complexities of applying these tools. The Project hosted the Symposium website and it will remain there for a limited time before being returned to the AARES website. The Proceedings from the Symposium are being published by Rural Industries Research and Development Corporation (RIRDC). These Proceedings and other Research Reports from The Project will be available from their website.

A new case study with Drew Collins of BDA Group and Coleambally Irrigation Cooperative is officially underway. This project was presented as a poster paper at the Symposium; a copy is available from the publications section.

The web has been updated to include case study developments, new publications, posters and fact sheets. Some links to new projects are also included as the team moves into new areas of research. Go to the What's New page to get the best summary of these updates.

<http://www.ecosystemsproject.org/html/news.html>.

Nick Abel

PRESS RELEASE: COUNTING ON OUR NATURAL ASSETS

A new report showing how one regional community can better manage its ecosystems may have implications for regional areas not only across Australia but around the world.

CSIRO researchers have recently explored 'ecosystem services' in the Goulburn Broken Catchment and found that Australians are developing a new and deeper understanding of how the environment underpins human activities.

"Services that ecosystems provide to humans are necessary to support and fulfil human life", says CSIRO's Dr Nick Abel.

These included regulation of climate; maintenance and regeneration of habitat for native species; provision of shade and shelter; water filtration and erosion control; maintenance of soil health; provision of healthy waterways; and regulation of river flows and groundwater levels.

"These natural processes are often overlooked, used inefficiently and degraded, but they are the hidden foundations of economies and communities".

Connecting researchers with the community and combining scientific and local knowledge has been one of the successes of our research, says Dr Abel. Through their participation in the four year Ecosystem Services Project, many in the catchment now see the real asset value of their ecosystems.

"The concept of ecosystem services has become an integral part of what we do at both the strategic level and also at the operational level," says Mr Bill O'Kane, Chief Executive Officer of the Goulburn Broken Catchment Authority.

"It has opened our minds and helped our thinking on the best ways to protect and enhance the Catchment's valuable natural assets and the services they provide," he says.

According to Dr Abel, the project has helped change perceptions of the value of ecosystem services.

"It will take more than changes in attitudes to reverse degradation and make use more efficient," he says.

"We could create markets in which the industries that need the services in cities and on high intensity farmland pay broadacre landholders to produce them, just as they now produce crops", he says. "In fact, pilot market and other projects are already underway around Australia to test this and other potential approaches."

Australia's first ecosystems services project was supported by the Myer Foundation, CSIRO, the Goulburn Broken Catchment Management Authority and Land and Water Australia.

This press release and more like it are available from CSIRO Online Media <http://www.csiro.au/index.asp?type=mediaRelease&id=Precosystems2>

RAINFOREST ARTHROPODS RESEARCH UPDATE

This project is looking at both the contribution of native species to pollination and their potential to control pest species. Table 1 is a summary of results from the pollination studies of the services or dis-services provided by rainforest insects to important tropical crops. The predator studies are also summarised below.

An early Research Report is available on the web: Blanche, R., Bauer, R., Cunningham, S. & Floyd, R. 2002. *Services and dis-services of rainforest insects to crops in north Queensland*. Cooperative Research Centre for Tropical Rainforest Ecology and Management, Cairns (20 pages). The site address is <http://www.rainforest-crc.jcu.edu.au/publications/research%20reports/insectsRR.htm>:

New fact sheets or mini posters are also available from publications section http://www.ecosystemservicesproject.org/html/publications/fact_sheets.htm



Table 1: Summary of pollination studies

Pollination study	contribution from rainforest	Pollination details	Outcomes from research or possible management options
Custard apple	yes	At least five species of tropical rainforest insect visit custard apple orchards on the Tablelands but rarely in high enough numbers to take the place of hand-pollination	Manage crops to provide suitable conditions for the beetles to complete their life cycles within the orchard. Possible ways to do this are: allowing some rotting fruit to remain on the ground throughout the year, having moist mulch under trees, reducing pesticide use.
Peanut	Not at present	There are numerous species of bee in the area that could aid pollen release but they are not present in high enough numbers in peanut crops to have a measurable impact on yield.	Providing suitable habitat near, or in, the crop (eg alternative plant hosts to provide food when peanuts are not flowering, and suitable nesting sites in ground or trees/logs) and reducing pesticide use, could help increase numbers of these bees in peanut crops.
Macadamia	yes	Native Trigona bees, thought to be the best pollinators of macadamia in southern Queensland,	Native bees visit macadamia orchards on the Tablelands but appear to be adversely affected by pesticide use. Introduced honey bees are the main insects responsible for increasing yields on the Tablelands.
Lychee flower	yes	Numerous insects are attracted to lychee flowers.	Near rainforest, small species predominate. Honey bees are more important far from rainforest.
Longan	yes	Insects are responsible for about 66% of longan pollination and native insects, particularly small species, play a major role in providing this service. Wind is responsible for about 33% of pollination and self-pollination is negligible.	This is the first time the relative importance of the different modes of pollination have been determined for longan.

Predator studies

Field work and rearing studies searching for possible macadamia weevil parasitoids, i.e. insects that will attack the weevil, are complete. Several wasp species reared from weevil infested macadamia nuts are likely to help reduce weevil survival. Analysis of data is yet to be completed.

A field study of predator species aims to determine whether there are differences in the number and kinds of insects that prey on other insects (ie. potential biocontrol insects) near and far from rainforest. Data to be included are from a wide range of crops and seasons.

SOIL BIODIVERSITY AND ECOSYSTEM SERVICES IN CITRUS ORCHARDS

This project represents a partnership between CSIRO Entomology, Australian Landscape Trust and a citrus growers group in the Riverland of South Australia. It was funded under the Natural Heritage Trust Murray-Darling 2001 Program. The project provides a framework for the aspirations of Riverland communities to invest in quality of life for future generations and to explore and develop sustainable methods of land use within an established industry - citrus production. The project is a model for understanding the linkages between best management practice and sustainability at the industry and property levels. The citrus industry represents a significant form of land use on the floodplain in the Riverland region, with impacts on biodiversity and water availability and quality. Representatives of the citrus industry have embraced this project as an opportunity to develop a best practice accreditation scheme for the industry as a means of promoting natural resource management in horticulture and perhaps seeing a niche market for 'green' products.



This project was generated by the citrus growers, who decided on the need to develop ecologically sustainable production in order to provide for a long-term future for their industry. In order to achieve ecological and economic sustainability, growers have the option to reduce their inputs by learning how to make use of ecosystem goods and services (for example decomposition and nutrient cycling, nitrogen fixation and pest control) provided by the biological diversity of bacteria, fungi and animals present in the soil. Moreover, growers can add value to their produce through the marketing of sustainably-produced citrus. The report cited below includes the findings of this project, focussed around the use of insect predators and soil biota as natural assets for the provision of pest control and nutrient cycling respectively.

Colloff, M.J., Fokstuen, G. and Boland, T. (2003) *Toward the Triple Bottom Line in Sustainable Horticulture: Biodiversity, Ecosystem Services and an Environmental Management System for Citrus Orchards in the Riverland of South Australia*. CSIRO Entomology, Canberra

The report is available as a pdf from the publications section <http://www.ecosystemservicesproject.org/html/publications/index.htm> or send your request for a hard copy to Matt.Colloff@csiro.au or use the feedback form on the website

COLLABORATION

The Ecosystem Services Project team at Gungahlin in Canberra now has a link with CSIRO's Policy and Economic Research Unit (PERU) located in South Australia. Dr Wendy Proctor, a former team member, and colleague Dr Brenda Dyak have opened the Canberra arm of the Unit at CSIRO's Black Mountain Laboratories. This will allow for much closer collaboration in the future.

PERU is a Research Unit within CSIRO Land and Water. More information is available from the website located at <http://www.clw.csiro.au/research/peru/>

MILLENNIUM ECOSYSTEM ASSESSMENT

The Millennium Ecosystem Assessment (MA) is an international work program designed to meet the needs of decision makers and the public for scientific information concerning the consequences of ecosystem change for human well-being and options for responding to those changes. The MA was launched by U.N. Secretary-

General Kofi Annan in June 2001. If it proves to be useful to its stakeholders, it is anticipated that an assessment process modeled on the MA will be repeated every 5-10 years and that ecosystem assessments will be regularly conducted at national or sub-national scales.

The MA focuses on ecosystem services, how changes in ecosystem services have affected human well-being, how ecosystem changes may affect people in future decades, and response options that might be adopted at local, national, or global scales to improve ecosystem management and thereby contribute to human well-being and poverty alleviation.

The first major report from the MA, an assessment framework, has been released and a series of major reports on the assessments themselves are undergoing a review process at present. Further information can be found at www.millenniumassessment.org.

NEW RESEARCH LINKS

Social and Economic Integration (SEI): an “Emerging Science Area” established by CSIRO as a cross-disciplinary scientific program. www.csiro.au/sei

Measuring and Modelling Sustainable development (MMSD): an SEI project looking at the notion of Inclusive Wealth: measures of the fundamental building blocks that generate and sustain our well being. www.csiro.au/mmsd

Press release

The MMSD project visits the Goulburn Broken Catchment: www.gbcma.vic.gov.au/news_full.asp?ID=7

ECOSYSTEM EXCERPTS

Try these links, great resources for kids or teachers

(Note: Links listed are for convenience only and do not mean that CSIRO or The Ecosystem Services Project endorses or approves their content or the people who run them.)

- Scholastic's The Magic School Bus - Ecology and Environment Themes
<http://place.scholastic.com/magicschoolbus/theme/ecology.htm>
- Suffolk Web - Just Curious: Environmental Science
<http://www.suffolk.lib.ny.us/youth/jcsenvironment.html>
- Moby Games - Ecology and Nature Genre
<http://www.mobygames.com/genre/sheet/genrelid%2C81>
- River Landscapes – River Ramblers activities
<http://www.rivers.gov.au/training/ramblers/index.htm>
- Land and Water Australia Education
<http://www.lwa.gov.au/education.asp>
- National Biological Information Infrastructure (NBII) - Biodiversity and Environment
<http://www.nbii.gov/education/biodiversity.html>