

The Wimmera Mallee Ecosystem Function Project

Fact Sheet 2

Ecosystem Services

Understanding and Improving Ecosystem Function in the Murray-Mallee and Wimmera Bioregions

Substantial investment into vegetation management and revegetation is being made in an attempt to reduce biodiversity loss and improve catchment health in the North Central and Mallee CMAs. With thousands of hectares of revegetation planned over the next decade, it is important that our vegetation management practices become more effective and efficient. In many parts of the landscape processes of natural restoration have broken down and there are a number of problems with current revegetation practices.

Previous research has provided a reasonable understanding of ecosystem structure and composition. However, little consideration has been given to fundamental ecological concepts such as ecosystem services.

What are ecosystem services?

The billions of species on our planet, including humans, interact with one another in many ways. These interactions among and between species are what define ecosystems. Ecosystems in turn, provide many “services” from which humans benefit.

Scientists usually categorise ecosystem services as one of three types. The types of services include the conversion of natural assets such as soil, plants and animals, air and water into things that we value. For example, when fungi, worms and bacteria transform the raw “ingredients” of sunlight, carbon and nitrogen into fertile soil this transformation is an ecosystem service. Ecosystem services also provide assimilation of by-products from human society and industry as well as maintaining the ecosystems themselves.

If we allow natural assets to decline, so do the benefits. Conversely, if we look after and maintain our natural assets, we will benefit from greater returns.

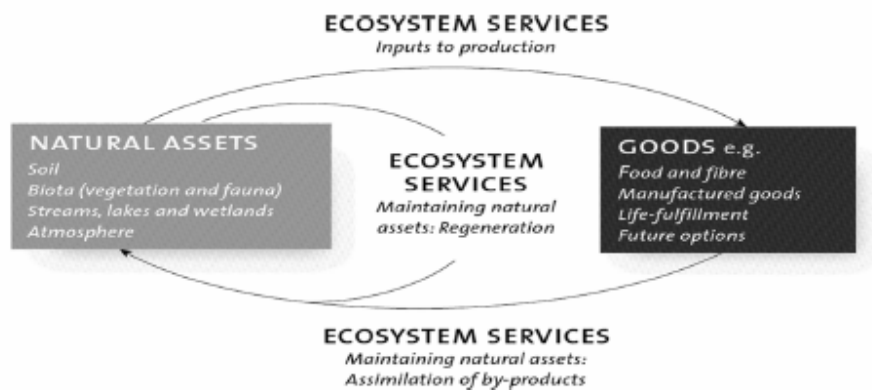
Some other examples of the services that come from nature include;

- provision of clean and pure water;
- maintenance of liveable climates and atmospheres;
- pollination of crops and native vegetation;
- fulfilment of people’s cultural, spiritual, intellectual needs; and

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- provision of options for the future that we cannot foresee.

Ecosystem services are little understood by scientists and often too sophisticated for us to reproduce even with the most advanced technology. As well, the important roles of these natural services are not widely recognised by human society. As a result, ecosystems and the services they provide are declining.



Why are ecosystem services important?

Ecosystem services operate in almost every aspect of our lives and they are found just about everywhere; in forests, farm paddocks, city parks and house gardens. Individuals, farms, towns, cities and industries rely on the services that ecosystems provide.

For example, cities around the world, including Australian ones, spend billions of dollars on technology to produce drinkable water. In New York City, it was found that repairing ecosystems in the water supply catchment so they produced cleaner water cost less than a fifth of the price of building a new water filtration facility.

In Australia, orchards with a high diversity of organisms in the soil cope better with pests and need much lower inputs of water and fertiliser than orchards with low soil biodiversity. This means lower costs for farmers and better water for downstream users.

Social, cultural and lifestyle benefits also come from natural assets. Recreation, tourism, a sense of collective identity and personal satisfaction are associated with Australian landscapes. If rivers and lakes are filled with algal blooms and the plains are filled with algal blooms and the plains covered in the carcasses of dead and dying trees our sense of place and identity changes.

It is useful to think about how we would replace these services with technological solutions if nature were no longer able to provide them. How, for instance, would we replicate the way birds and insects transfer pollen between plants? Many farming and horticultural industries rely on this service, yet it is declining because of

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a lack of appropriate habitat for insects and birds. Technological substitutions for these and other ecosystem services, in many instances, are difficult if not impossible to recreate.

What are we doing about it?

The first step in understanding ecosystem services is to provide an inventory of the services and the human goods and values they support. For those values to truly reflect catchment objectives they must integrate the viewpoints of the catchment community. In a general sense this has already been done, through community consultation processes undertaken to develop existing management plans.

However, to focus the communities' thinking it is valuable for people to come together to discuss native vegetation, land use, production and ecosystem values in the context of ecosystem services. This discussion will provide the basis for a report providing an inventory of ecosystem services associated with remnant vegetation. The report will also provide a conceptual framework for understanding and evaluating ecosystem services in relation to the CMA's landscape restoration objectives.

Who is involved?

The project, initiated by the North Central and Mallee Catchment Management Authorities, is a collaboration between the Arthur Rylah Institute for Environmental Research, CSIRO Sustainable Ecosystems and the Birchip Cropping Group.



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