



# Ecosystem services

## Our benefits from the environment



**Imagine pollinating whole orchards of fruit or nut trees, or a commercial lucerne or vegetable crop, by hand!**

This is a highly skilled task, and one we would have to do if insects stopped **pollinating** flowers as part of their daily round. We (and the crops) benefit greatly from this service, annually worth an estimated \$1–2 billion, and we take it for granted.

**Natural pest control** by other creatures is another service we gain from natural ecosystems when we don't use broad-spectrum ('hard') insecticides. For instance, integrated pest management in conjunction with GM Cotton at Boggabilla,

NSW, is letting natural pest control boost growers' income by around \$250 per hectare.

And what about **clean drinking water**? We can thank forested catchments for minimising the amount of treatment we need to apply to our main water supplies.

The benefits that we gain from our natural environment and its components are collectively called '**ecosystem services**'. They are the link between natural resources and our own health, prosperity and quality of life, and they are increasingly under threat from human activities and invasive species.

Groups of landowners and catchment managers in eastern Australia have acknowledged the 12 ecosystem services shown here, at discussion forums. You can probably think of other examples as well.

**Waste absorption and breakdown** – the natural recycling of wastes, on land and in water for example.



4 7 11 5 7

**Prevention of soil erosion** – by the effects of plants and plant litter in slowing runoff and allowing water infiltration, for example.



9 5 11 4 4

**Maintenance of water resources** – for example, river-flows and groundwaters.



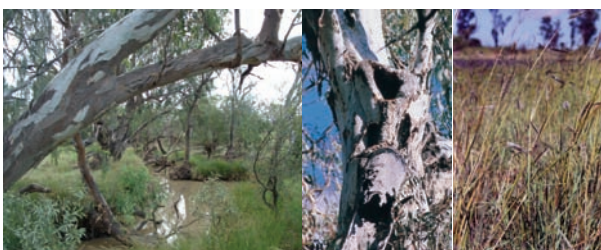
7 1 7 5 9

**Maintenance of healthy soils** – able to absorb water and sustain plant growth and active soil organisms (microbes, insects, worms, etc.).



1 1 2 1 2

**Maintenance of healthy habitats** – where plants and animals can regenerate, persist and grow.



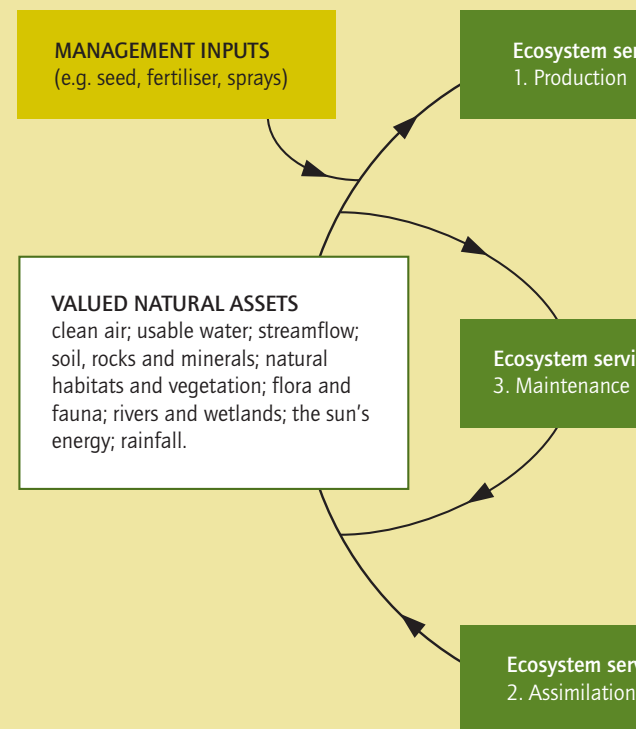
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**Natural filtration leading to healthy waterways** – the clean rivers that result when rain or runoff is naturally filtered via soil or vegetation before entering a stream.



3 3 9 2 3

### The flows of ecosystem goods and services in



Importance of each ecosystem service as rated by five interest groups in the Gwydir catchment (1 = high, 12 = low)

- Grazing and dryland cropping
- Irrigated agriculture

- Business, tourism and recreation
- ▲ Forestry and native vegetation

- Nature conservation

**Pollination** – by insects, birds, possums and the wind.



9 11 3 8 4

**Maintenance of natural genetic resources** – that is, the range of genetic combinations that give variety to life.



12 7 4 8 7

in a catchment

Service category

Service category of natural assets

Service category of by-products

**VALUED ECOSYSTEM PRODUCTS**  
 scenic views; recreational settings;  
 freshwater fish; pastures; firewood;  
 timber; crops (such as cotton, fibre,  
 grains, pecans); harvestable wildlife;  
 beneficial organisms.

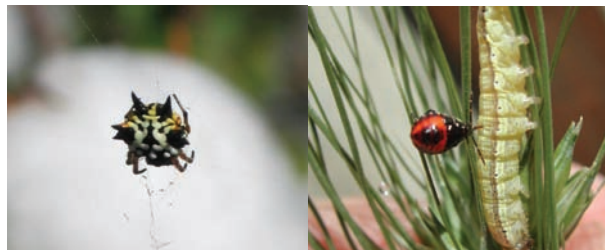
Export of goods and by-products from the catchment

**Provision of shade and shelter** – for instance, by vegetation which also acts as a barrier to spray drift and wind erosion.



4 11 7 8 9

**Natural pest control** – by bats, birds, insects, mammals and microbes, for example.



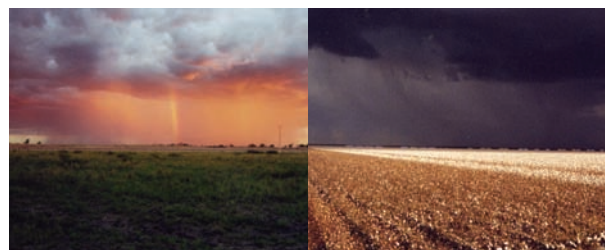
11 7 5 12 9

**Life fulfilment** – which we get from the beauty of the natural environment: cultural, intellectual and spiritual inspiration, and a sense of place.



2 5 9 3 9

**Climatic regulation** – the oceans, land and vegetation influence global and regional climate.



12 11 6 12 9

\* Sources: Binning et al. (2001), Reid et al. (2003, 2005).

## Growing awareness

At a set of workshops in northern New South Wales, members of the Gwydir catchment community shared their points of view about ecosystem services.

Together they concluded that the most important ecosystem services in the Gwydir catchment are the maintenance of the catchment's healthy soils, vegetation and water resources, and the lifestyle of the community.

The agreement was remarkable because the participants' primary occupations and interests were very different. On the previous two pages you can see how the participants (grouped by occupations and interests) rated the importance of 12 ecosystem services.

In their discussions, the participants realised that all the important ecosystem services in their catchment face multiple threats that generally cannot be removed simply. For example, it is not quick and easy for landholders or irrigators, say, to change their management systems and land-use practices to protect ecosystem services.

## Forums

The Gwydir catchment forum allowed representatives of the community to discuss ecosystem services, their sources and their benefits. They explored tradeoffs between the private and public benefits that ecosystem services provide. The forum structure made it possible for these groups to reach consensus.

If you would like to organise a forum to discuss local ecosystem services and their value to the communities of your catchment, see the companion fact sheet called 'Running a forum about ecosystem services' at <[www.cotton.crc.org.au](http://www.cotton.crc.org.au)>.

## Funding opportunities in your catchment

The Catchment Management Authorities have funds to invest in best-practice natural resource management to meet catchment targets for biodiversity, water quality, land and soil resources, and salinity. You may be eligible for incentive funds to improve your farm, safeguard ecosystem services and help meet your catchment's targets. If you are interested in funding support, contact your CMA Community Support Officer.

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**Further information is available at:** <[www.ecosystemsproject.org](http://www.ecosystemsproject.org)>

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