

ABC Earth Beat Program

Australian Scientists Leaders in 'Valuing' Nature

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Summary:

Putting a price on the natural world is one way of better valuing the services it provides us. Australian scientists are leading the way when it comes understanding these so-called 'ecosystem services', and the Goulburn Broken catchment is the focus of one important project.

Transcript:

Alexandra de Blas: Here in Australia the CSIRO is a trail blazer in understanding how our ecosystems work and what they're worth in dollar terms.

Two years ago, they began a project in the Goulburn Broken Catchment in Victoria's Goulburn Valley with a grant from the Myer Foundation. It's now grown to include six projects in five States, with a host of research collaborators.

Dr Steve Cork is the leader of the Ecosystems Services Project and I asked him to tell me about the study.

Steve Cork: Well we're aiming at fighting the three big things that are causing ecosystems, or the environment, to decline, and they are ignorance: most people, including our decision-makers, don't know a lot about the benefits that come from the environment; market failure, which is really just the failure of economics to take account of things that belong to everybody; and institutional failure, which is the failure of our institutions including our government and our markets, to really encourage investment in the natural environment.

Alexandra de Blas: What are you specifically looking at and how are you measuring ecosystem services?

Steve Cork: We are doing studies in a range of catchments around Australia and we're working with communities, the people who live in the catchments, and identifying what all the benefits are that come from the natural environment to them.

So we asked them what are the products that come from nature that you value, and that might be things like meat and what, or fruit, but it might also be nice views and pleasant experiences that we get from going for a walk in a bushland setting. And having done that, we then work with ecological and economic experts to say how important are these to people, and what is the impact of human activity on them? Are we getting less or more of these services by the way we're managing the land, and what might that mean to us if we have to replace some of the services, because the sorts of things we're talking about are filtration of water, maintenance of the quality of air, maintenance of the fertility of our soil, as well as maintaining the species, the biodiversity that we value. And these are the things that support our life. So if we start to lose them, we have to replace them in some way, and that usually costs us money.

Alexandra de Blas: You are doing work in the Goulburn Broken Catchment; give me an example of how you might change the management of the natural environment in a way that will impact on some of those products that we want.

Steve Cork: One of the big products that's produced from the Goulburn Broken is fruit, and to produce fruit, we put a lot of fertiliser on the orchards, we put a lot of pesticide to stop pest damage and we use a lot of water.

Some research that CSIRO Entomology Division has been doing, suggests that if we get the bugs or the creatures living in the soil working for us, they can do a lot of the pest control, they can fertilise the soil by taking nutrients out of the air and they can keep the soil structure such that water goes in much easier, and that means we use a lot less water, (and water is rare at the moment) we use a lot less pesticide, and a lot less fertiliser, and that means we don't get those chemicals running into our waterways. So it benefits the farmers, because they have to pay less for these chemicals, it benefits the rest of the catchment community because they get cleaner water, and it saves them money, because they don't then have to filter that water as much.

Alexandra de Blas: What sort of bugs are you talking about?

Steve Cork: Oh these are creepy-crawly things like little worms, things called nematodes, there's some what are called predatory mites which if you look at them under a microscope they'll scare the socks off you, they just look horrendous. They're really tiny, the size of a pinhead, but under a microscope they look like Godzilla.

Alexandra de Blas: We've really changed the way the rivers flow in the Goulburn Broken area of Victoria. I believe you're also experimenting with some changes on the flood plain; what are you intending there?

Steve Cork: Well the Catchment Management Authority in the Goulburn Broken have discovered that it's more cost effective to let the river flood through its natural flood plain than to try and hold it in place with levee banks, as they have done for many years. And so they've proposed to remove those levee banks, let the river flood. It means they have to buy back some property from that flood plain, but after that there'll be a new wetland created, and it is believed that that will create a lot of benefit for the general public, and it's public money that's being used to buy back this flood plain. Now the sorts of benefits that will come are greater filtration of water, because the silt sediment will settle out in the flood plain; we'll get a whole lot of species of fish and birds that will prosper in this new environment, some of which are endangered. We'll get more trees growing, and that could produce more timber, and take some of the pressure off some of the natural areas in Barmah Forest for example, and we'll get less erosion of soil because the river won't be flowing as fast. So they're just some of the benefits. And those sort of things usually don't get taken into account in our economic accounting very well.

Alexandra de Blas: Steve Cork, leader of the Ecosystems Services Project.

If you want to put a figure on the value of nature protection and restoration then sound economic analysis is essential. Steve's colleague, Carl Binning, is a Principal Research Economist with the CSIRO, and he's doing the sums here in Australia.

Carl Binning: Well firstly we're looking at how valuable they are. So if we didn't have these services for the environment, how much would we have to invest in other technologies in order to provide that service?

The clearest example of that would be in water filtration. If we had a healthy catchment, it provides us with clean water, and we barely do anything, we just add a little bit of chlorine. On the other hand our water comes from an agricultural catchment, there tends to be a lot more turbidity, a lot more nutrients, a lot more chemicals in the water that need treating. For example, in Canberra there are two catchments, one that's forested and one that isn't, and the treatment costs for the one that isn't forested is about ten times that from the forested one.

So what we're trying to do is identify some of those costs and then look to models of how we can improve the way we use the environment to get more cost effective outcomes.

Alexandra de Blas: The National Farmers' Federation and the Australian Conservation Foundation did some analysis, and they thought it would cost \$60-billion over ten years to repair the country. How will your work help encourage greater investment in fixing up land degradation and that sort of thing, across Australia?

Carl Binning: Well this is really our big focus. What we're trying to do is say how would we encourage people to reinvest back into the natural environment? One example might be can we create some commercial opportunities for farmers that are better for the environment? So agroforestry operations, re-establishment of perennial pastures and those sorts of things. One of the difficulties with those is that it's very hard to get finance to change land use in Australia, so we've been working with a group called Allen's and the ACF and NFF to develop some new models for investment in those sort of commercial opportunities.

But right at the other end of the spectrum, here's an idea: could we sell shares in bush blocks into our major urban centres like Sydney and Melbourne, so for example you know that World Vision program where you sponsor a child? Well could you sponsor an endangered species in Australia, or sponsor an endangered vegetation type in Australia, have a photograph of it on your wall, be allowed to visit it. There's a couple of organisations in Australia that are starting to do this, the Australian Bush Heritage Fund, Trust for Nature in Victoria, the National Trust in W.A. They're starting to create innovative ways where people who live in the city with a \$1,000 or maybe \$5,000 investment can really feel as though they've made a tangible, on-ground difference to conserving Australia's biodiversity.

Alexandra de Blas: Well you're talking about those organisations, but what about farmers, are there going to be novel ways in which they can actually generate an outcome off their land and protect the environment?

Carl Binning: So take that example of the bush blocks I talked about. Rather than selling the bush block, the farmer might lease it to these conservation people, and that way they'll get an income which enables them to stay on the land. But then instead of just being a wool or wheat producer, they'll become a wool, wheat and conservation farmer, and they'll be paid for the quality of their conservation service to that organisation. So just like farmers now have to worry about the quality of their agricultural products, they'll have to worry about the quality of their environmental performance. But if they perform well, they'll be rewarded.

Alexandra de Blas: So if you're going to measure environmental performance, you're going to have to have pretty good scientific systems to do that aren't you. So Steve Cork, how does your ecosystems work enable that sort of auditing process to

take place in the future, or how will it?

Steve Cork: Well one of the things that we're realising is that we've done a lot of science in the past and it hasn't necessarily been focused on these particular questions, so we've got to do the right science. And some of the questions we have to ask are: if we had a small change in the amount of an ecosystem service, let's say the filtration of water, if there was a small change in that, what difference would that make to satisfying people's needs. And if that's a big change, then economists would say it's going to be worth a lot of money. The scientific challenge though is to be able to say how do all the species that live out there in nature, how do they actually affect the quality of water that flows out of a catchment? And that becomes very important when you've got a catchment that's lost its trees, and we have to ask the question What do we need to put back to get those services from nature? And they're the sort of questions that scientists tend not to have addressed in the past.

Alexandra de Blas: I'd like to come back to the bush blocks idea though, where farmers may be managing their land for conservation. Now if there's money coming in from the outside to pay them to do that, need very clear systems to be able to audit what they're doing, so we know we're getting value for our dollar. Has the work been done to actually measure whether these farmers would be doing a good job or not?

Carl Binning: I think some of the tools are there. Just one example is the Victorian Department of Natural Resources and Environment have created an index called a Habitat Hectare, and what that index does, it enables them to go out to a farm and assess the relative conservation value of a block and then start to look at its management needs, and from that basis they can sign a contract with the landowner which says These are the values that this block has that need to be managed for and maintained, and here are the set of actions that we're going to contract you to undertake and that's what we'll be paying you for. Then it's just a matter of having good processes of checking that that's done.

Alexandra de Blas: How long will it be before we actually develop good strong healthy markets for ecosystem services?

Carl Binning: My guess would be about ten years, but I think within about 18 months to two years we'll have some markets up and running, but they'll be small and what I'd call embryonic.

Let's just take biodiversity and bush blocks again: there's already some markets for biodiversity and bush blocks, but we're aiming to grow that market so instead of having to buy a whole bush block for \$30,000 or \$40,000 or \$100,000 you might be able to invest that small amount, \$1000 or \$2000 for example. So I can see that market emerging. But if we want these markets to deliver for conservation we will need government backing for the markets.

An example of what government backing might mean is something that economists call 'offsets', which says when you chop down some trees over here, you need to replace those trees elsewhere within the catchment. Victoria has just implemented a policy which says any clearing needs to yield a nett gain for the environment, but no-one knows how to operationalise this yet. But what we can hopefully do over time is develop some rules that say If you were allowed to clear, for establishing a vineyard for example, here's how much and where you would need to rehabilitate in order to be allowed to do that. I think the reality is that we are going to continue to develop our landscape and up to now, what we've just done is 'Oh well, we'll accept the loss', but we can't really afford to do that any more, so we have to say, 'Yes, we'll accept

the loss but only if it's offset by something that gains for the environment elsewhere.' I would imagine that that's five to ten years away.

Alexandra de Blas: Isn't it better to actually protect nature where it is, where it has its full suite of functions as opposed to destroying this piece and then creating an artificial example of it somewhere else?

Carl Binning: Absolutely, and that's right most of the time, and I think we need a really commonsense approach. If we have a healthy functioning ecosystem we shouldn't allow it to be cleared, and we've got a whole bunch of legislation and rules that governments have developed over a long time now, and if they're applied well, some of this clearing shouldn't occur. But on the other hand, let's think about some of our agricultural regions. Here we've got vastly changed natural environments, and actually they need a whole bunch of re-investment. As ACF and NFF have estimated, \$60-billion to \$100-billion of investment. And so there we're not talking about protecting an original landscape, we're talking about rehabilitating a degraded landscape. And that's where these tools are most appropriately used.

Alexandra de Blas: Economist Carl Binning, and before that we heard from project leader, Steve Cork. And they're both with CSIRO Sustainable Ecosystems. And in the interests of transparency I'd like to mention that I'm a member of the CSIRO'S Biodiversity Sector Advisory Committee.

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Golden Broken Catchment Management Authority

<http://www.gbcma.vic.gov.au/>

National Investment in Rural Landscapes

An investment scenario prepared for National Farmers Federation and the Australian Conservation Council, April 2000

<http://www.acfonline.org.au/campaigns/landm/indepth/ACFNFFfullreport.htm>

CSIRO Sustainable Ecosystems

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