'People from a planet without flowers would think we must be mad with joy the whole time to have such things about us.' (Iris Murdoch) These are the flowers of rusty carabeen (*Aceratium ferrugineum*), a rainforest tree of north Queensland. *Photo: Tatiana Gerus*

NATURE – HOW DO I VALUE THEE? LET ME COUNT THE WAYS

Ecologists **Gary Luck** and **Manu Saunders** explore one of conservation's most pressing issues – how to value nature and acknowledge that value in ways that have social and political force.

As we hurtle into the planet's sixth great extinction event, debates rage in conservation biology about how to strengthen society's regard for nature. We need much greater recognition of nature's values but how do we understand, identify and measure them?

The framers of Australia's biodiversity conservation strategy envision a society that values nature 'both in its own right and for its essential contribution to our existence'. For many years philosophers and biologists have debated which of these two ways of valuing nature – intrinsically or instrumentally – is the more legitimate and useful. Should we advocate the protection of nature for its own sake because this is the right thing to do regardless of any benefits for humans, or should we acknowledge that not everyone shares the same moral compass, and focus on promoting the 'use' values of nature (what nature does for us)? The first is nature-centred and the second human-centred.

Valuing nature's services

One prominent framework for promoting the utility of conservation is based on the concept of ecosystem services (sometimes more appealingly called 'nature's services'). Biologists have identified many 'services' beneficial to humans that derive from ecological processes, including pollination of crops by bees and other insects, climate regulation by carbon-storing forests, cycling of nutrients and dispersal of seeds from useful plants by animals, and horticultural pest control by insect-eating birds.

The services concept was boosted by the 2005 publication of the *United Nations Millennium Ecosystem Assessment*, in which more than 1300 experts evaluated the consequences for human wellbeing of 24 ecosystem services, including the supply of products (such as food, fibre and fuel), regulation of ecosystem processes (such as climate, air quality and water), support services (such as soil production and nutrient cycling) and cultural sustenance (through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences).

Yet, some conservationists worry that emphasising the utility of nature undermines the moral arguments for protecting nature. They have a point. A focus only on 'what can nature do for us?' could threaten the conservation of certain ecosystems if the answer is 'not much' or if destructive uses seem more beneficial for humans.

'Not a single bee has ever sent you an invoice.' (Pavan Sukhdev) The values of pollinators such as this carpenter bee are economic as well as aesthetic and intrinsic. *Photo: Jenny Thynne*

Some analyses assign a dollar value to particular services. In Costa Rica, native forest patches near coffee plantations that are habitat for borer-eating birds are estimated to provide US$75–310 per hectare worth of pest control services each year. In Australia, parrots that forage in almond orchards can damage crops and cost growers pre-harvest, but the same birds help control almond pests post-harvest by eating unharvested nuts that are reservoirs for fungal and insect-pest infestations. The net benefit for growers is around AUD$25–275 a hectare.

It is this monetisation of nature's services that provokes the strongest criticisms. What if the dollar value of conserving forest patches for pest control is less than a grower can obtain by clearing forest to grow more coffee, or if pesticides cost less than managing orchards to support bird diversity? A narrow focus on monetary values risks commodifying nature to the point where conservation is an option to be discarded if destruction is more lucrative.

Focusing primarily on economic reasons for conservation also risks undermining moral motivations for protecting nature. In a process known as 'motivational crowding out', paying people to do what they would have done for other reasons can sap their interest in doing it without payment, which is counterproductive for conservation if the payment ceases or is inadequate.

However, valuing services provided by nature does not require assigning monetary value to them. The concept has great value as a communication tool, for fostering a better understanding of human-nature relations and a deeper appreciation of the

'One touch of nature makes the whole world kin.' (William Shakespeare) This is a koel nestling being raised by a wildlife carer. ***Photo: Gerard Zimmerman***

importance of nature for human wellbeing. The language of nature's services translates particularly well in policy fields, where greater emphasis is placed on tangible social outcomes than on seemingly less tangible moral imperatives. The concept can help guide land-use planners and managers to identify and protect sites that provide important services. For example, protecting mangrove forests can save lives and infrastructure in coastal communities by blocking storm surges. Recognition of this value in land planning does not depend on applying a dollar value. Many such services – the role of the Amazonian rainforest in regulating global climate is the exemplar – have value beyond measure. The nature's service concept is also helpful for motivating interdisciplinary research because the concept requires a better understanding of how nature functions and the social and economic implications of this – an objective that can only be achieved with the input of ecologists, sociologists and economists.

Valuing nature for being

If we avoid a strong emphasis on dollar values, a focus on nature's services can supplement rather than undermine moral or cultural motivations for conservation. This focus does not deny that we have a moral responsibility to maintain biodiversity for its own sake. Framing the debate as a simplistic case of instrumental versus intrinsic values overlooks the bigger picture and the potentially complementary role of the two approaches.

Moreover, we think the singular concept of intrinsic value is limited in explaining what really motivates conservation. Many people who believe that nature has intrinsic value would, on deeper reflection, express more specific reasons for wanting to protect nature – for its beauty, its cultural or spiritual significance, or the pleasures of interacting with wildlife. Or they may be motivated by a sense of justice, or because they care deeply for particular species. All these reasons can be encompassed under the umbrella of intrinsic value but, when detailed, are more revealing of the great diversity of ways for valuing nature in non-instrumental terms.

Are nature's values countable?

The debate raging in conservation journals about how to value nature has brought into sharp focus just how inadequate both instrumental and intrinsic values are at explaining the complexity of human-nature relationships. Many ways of appreciating nature are not easily pigeon-holed as either – think about the feelings that come from watching sunsets over the ocean, walking through rainforest or caring for orphaned wildlife. Rather than frame the debate in terms of intrinsic versus instrumental values, it would be more instructive to consider the many faceted relationships people have with nature (relational values) and the myriad ways in which nature contributes to a good (satisfying, fulfilling) life ('eudaimonistic' values). Many people feel a strong sense of kinship with nature or see themselves as stewards or protectors, and view a relationship with nature as essential to a meaningful life.

Research into the many wellbeing benefits of nature is growing, particularly in the field of urban ecology, revealing, for example, that people in England who use urban parks with higher bird and plant richness (or perceived richness) report higher wellbeing than users of parks with lower richness, and that residents of some 'leafy green' suburbs in Australian regional cities enjoy more wellbeing and

'When you have seen one ant, one bird, one tree, you have not seen them all.' (EO Wilson). ***Photo: Dianne Clarke***

connectedness to nature than residents in more barren neighbourhoods. Other studies have shown that green spaces in cities have health and restorative benefits.

Despite any shortcomings, the nature's services approach can promote much more transparent and considered decision-making about the inevitable trade-offs in human development. Properly considering a proposed conversion of forest to cropland in these terms would involve weighing up what would be lost in climate regulation, water filtration, soil stabilisation, food provision, wildlife habitat, recreational and cultural pursuits, human-nature relations and the life satisfaction of people using the forest, as well as the social and economic gains from expanded agriculture.

A focus on nature's services can supplement rather than undermine moral or cultural motivations for conservation.

We need deeper reflection on our relations with the natural world and our responsibilities to protect nature's myriad values. Some values can be captured in markets, and assigned a price to help sections of society understand some of nature's importance to humans, but many values have no price, and trying to assign a market value would be to belittle nature and ourselves.

Nature – how should we value thee? In multiple and complex ways, we say. And appreciating nature's services to humans does not stop us – to further paraphrase Elizabeth Barrett Browning – valuing nature 'to the depth and breadth and height [our souls] can reach'. ■

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