

Ecosystem Services and Nature Conservation: Chalk and Cheese or a Match Made in Heaven?



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December 2015 is half way to delivery of the Scottish Biodiversity Strategy 2020 Challenge. The 2020 Challenge adopted ecosystem approach thinking, with emphasis on the services and benefits that we derive from nature. However - at this mid-point to 2020 - this focus is ringing alarm bells.

As expressed in the State of Nature Scotland conference (February 2015), there are concerns that a strong focus on ecosystem services and natural capital distract from effective biodiversity conservation. But are these concerns based on evidence, an inherent dislike of services and biodiversity 'valuation', or uncertainty about biodiversity's position within ecosystem service frameworks? And is there an alternative?

To explore this in greater depth the Scottish Policy Group and the Scottish Biodiversity Strategy Science and Technical Group organised a joint workshop at the BES Annual Meeting in Edinburgh. Thoughts and concerns similar to those outlined above were being expressed throughout the Annual Meeting, and so the workshop seems timely. These concerns, and perhaps the fortuitous location of the meeting room near to the lunch point, were reflected in good workshop attendance, and we're very grateful to all of the delegates that took the time to come along and contribute.

Short and thought-provoking presentations by Paul Walton (RSPB) and Philip Boulcott (Marine Scotland) set out clearly some of the main benefits and potential drawbacks of focussing on ecosystem service delivery (see Box 1). These were followed by break-out group discussion, each group considering three questions: 1. What is the basis for current concern (e.g. data, gut instinct, or uncertainty)? 2. What is the evidence base? 3. What should we do now? Reports back from break out groups were followed by a final open discussion.

Here I try to summarise responses to these questions. Many responses could fit in multiple categories, and so (as ever) this reporting process is imperfect. However, it does help us to move towards some broader over-arching messages which might form the basis for future action.

BOX 1 – SUMMARY OF INTRODUCTORY PRESENTATIONS

The following are the main points both for and against the use of ES concepts, particularly with respect to issues of nature conservation, put forward during the introductory presentations.

Pros – the use of ES concepts...

- Allows environmental issues to be introduced when (as may currently be the case) economics dominate the decision making process,
- Frames the environmental case in policy terms, possibly increasing the likelihood of action,
- Enables a closer tie in with governmental planning, leading to policies with better environmental outcomes,
- Encourages a more holistic approach during decision making by explicitly including the multiple services arising from the environment,
- Promotes a governmental focus on the environment, for example in national plans and high level strategies.

Cons – the use of ES concepts...

- Biases decisions towards cost /benefit criteria,
- Is difficult (impossible?) with respect to evaluation of intrinsic value,
- Often implies a trade-off between different services,
- Can result in loss of species on the (economic/environmental) margins,
- Drives a loss of focus on Good Environmental Status (GES) and the three pillars of sustainable development,
- Can involve prices (determined by market forces) that do not equate to social importance,
- Has re-orientated targets and goal setting towards service delivery rather than nature conservation.

1. WHAT IS THE BASIS FOR CURRENT CONCERN?

Responses were varied, but can be corralled into three broad categories.

Implementing and testing ecosystem service orientated approaches

First there are some basic practical concerns about implementing approaches based on ecosystem services, and if you can't make the approach work then its delivery for nature conservation becomes academic. The problems include the issue of valuation, including how to weight different services (and components of biodiversity) which may be valued very differently by different stakeholders.

Cultural services seemed to be a particularly troublesome: the feeling was that much of biodiversity is somehow 'dumped' into cultural services because it needs a home – no-one's sure what service it might deliver but they certainly don't want to risk stating that it delivers none. Does this then debase the cultural service concept? This may be linked to concerns about the under-valuing of cultural services; they are hard to value and often provide physical or mental

health benefits that aren't included in assessments. Perhaps there is a need for more social scientists (maybe within NGOs) to help develop approaches to (and argue the case for) cultural services?

A final general point with implementation is that the complexity generated by attempting to balance multiple ES can lead to difficulty in making decisions, for example in choosing between alternative land management and use options.

Issues of communication

All groups raised issues of communication. Whilst it was acknowledged that ES concepts might help with communicating nature conservation issues – for example, the benefits from the 'other bits' of biodiversity not captured on rarities lists or in protected areas - there were also concerns related to communication which differed depending on the stakeholder groups or bodies involved. These focussed

on the difficulty of communicating ecosystem service concepts and the risk of miscommunication and misinterpretation. One problem of (mis) communication is the long-running issue of confusing the ecosystem approach and ecosystem services; although these are not the same there is still confusion over terminology.

Policy makers were a key stakeholder group often mentioned in discussions concerning communication. For example, it was suggested that what scientists see as the ecosystem service agenda is different to what politicians see; this may lead to a change in objectives away from the key issues for scientists or conservationists. So, although it may be a useful tool with which to engage politicians or government, it may result in a different focus as governments (obviously) have their own agenda - certain topics may 'fall off of the list' because governments 'want to see a direct benefit to people'. In addition, not all policy makers may be

equally receptive to the concept; some of the break-out groups considered it be a good tool which is easy to communicate (evidenced by its uptake by policy makers), but others suggested that some policy makers may be almost 'allergic' to ecosystem service thinking, and in these cases we would be better arguing a case for biodiversity conservation (and even 'nature'). Also, do we over-estimate politician's understanding when we are discussing biodiversity – function – service linkages? Do policy makers make the same leap as ecologists that service delivery is necessarily underpinned by biodiversity (irrespective of how well-founded the ecologist's leap actually is)? Perhaps we have a poor understanding of when and where best to use the ecosystem service terminology for communication.

In terms of broader communication, there is also the risk that the ecosystem approach is seen by policy makers or the public as agreed upon by all scientists, whilst in reality there is still a lot of discussion about it within the ecological community (related to the lack of data for testing the ecosystem service-conservation link). However, publicising this 'disagreement/discussion' could do harm, perhaps with the media/politicians focussing on the disagreement rather than understanding the concepts of ecosystem services (as with climate change). So how can we at least highlight the concerns or uncertainties without throwing the baby out with the bathwater?

Away from government, some communication issues relate to the conservation NGO sector. It was noted that the "big NGOs are not talking cultural services"; this may be because of the (actual or perceived) risk that the terminology or concept alienates members. It may be easier to generate emotional connection to the conservation of species, particularly at a local level, than to ecosystem services. At the same time, however, this might be detrimental for communicating conservation messages to policy makers (noting the above comment that not all policy makers might be equally receptive to this language). In a similar vein, NGOs might over-emphasise the rare at the expense of the average, and service delivery might redress the imbalance in focus.

Repackaging alters the contents of the package – simply by repackaging the evidence base within ES concepts we alter it. There is a risk that 'organisations' use ecosystem services for their own ends; perhaps this relates to the need for comprehensive service assessments to avoid biased selection and over-emphasising of particular services.

The ethics of focussing on ecosystem services

A lot of discussion was focused at a fundamental level – is it ethically 'right' to focus on ecosystem services, or does accepting this framing lead inevitably down a slippery slope to monetisation, and reinforcement of market-centric, neoliberal values that are generally perceived as problematic for conservation? As you would expect there were a range of views.

There was a general feeling that we are having to justify the 'value' of biodiversity more and more. Consequently we are not putting the case for inherent value, which may then be forgotten. A separate issue associated with valuation was concern that calculating service value leads to marketization which then leads to offsetting; ES assessment is therefore worrying because it is seen as a first step to off-setting. In addition, valuation may mean that biodiversity conservation gets moved further down the priority list.

Nor do we acknowledge that ecosystem services is only one concept; others exist, such as 'nature based solutions' which points us toward a win-win approach (avoiding an either-or mentality). Over-emphasis on ecosystem services might be dangerous if it turns out to be a passing fashion; we will have spent time and money rebranding to include ecosystem services without it giving us the impact for either our research or for nature conservation that we wanted/hoped for.

In general, there was concern that we're abrogating the moral responsibility – passing on the decision-making to someone else by simply providing the data for others to make a decision, when instead we should be fighting the corner of biodiversity and reinforcing an ethical approach to nature conservation.

2. WHAT IS THE EVIDENCE BASE?

In some cases, responses to this question identified gaps in the evidence with respect to understanding and implementing ecosystem services concepts, including:

- The need to better understand cultural services;
- The position of biodiversity within the services framework;
- The regulation by biodiversity of functions and then services.

These are classic questions – and big ones too – so it's not surprising that they were raised again during this discussion. There was also general agreement of a continued need for more linkages with economists and social scientists within any new research. However, (and admitting that we should probably have worded the question more tightly) what we were particularly interested in was evidence that enables us to test whether ecosystem service approaches support biodiversity conservation. To this end is there much of an evidence base, and if we need more information where might we get it?

Lack of an evidence base

There seemed to be general agreement that there is a real need for additional data on whether a focus on ecosystem services and natural capital will deliver effective biodiversity conservation. We don't have the data to test this in more than a few cases. Problems then arise in terms of prioritisation – if it's not possible to demonstrate a direct benefit from biodiversity for people, why should conservation be prioritised? However, discussions did flag up some relevant recent evidence which tried to link nature conservation and service delivery; the evidence discussed included demonstrations that very few species within certain groups (e.g. pollinators) were often involved in delivering key functions and services (see for example Kleijn et al. (2015), which focusses on the pollinator services delivered by bees), leading to the risk that the remaining species would be overlooked by a focus purely on service delivery. The flipside is service delivery by non-native species: if non-native invasive species provide services, does this outweigh their non-native status? It was also suggested, however, that perhaps it is too early for us to have developed an evidence base, and so the overall knowledge gap is not surprising.

Within the broad knowledge gap there are specific topics that might be addressed, including better understanding the linkages between biodiversity and ES delivery, and trade-offs between services. It was suggested that there is a risk that our thinking has become calcified and that we no longer challenge the validity of this assumed link. Likewise, we don't challenge the common assumption that maintaining high biodiversity provides an insurance policy for service delivery.

A final part of our missing evidence base is related to communication. Above we point out the possible lack of understanding concerning the appropriate use of ES terminology as a communication tool. The Common Cause for Nature1 report (and related work) draws on the 'values and frames' approach within social psychology. It argues (with a decent amount of evidence) that using ES/monetary arguments for nature conservation appeals to extrinsic motivations and reinforces these values, ultimately undermining 'the cause', and providing a good example of where a better understanding of the impacts of the communication mode indicates we might want to tailor that communication.

How can we build an evidence base for assessing the biodiversity-ES link?

Several options were proposed for addressing the identified knowledge gap(s). These include data from REDD and REDD+ mechanisms/studies, and applications of the TESSA (Toolkit for Ecosystem Service Site-Based Assessment2) as these might indicate whether or when adopting these approaches will lead to benefits for biodiversity. The TESSA website states "The compilers of TESSA are collating data derived from its application for meta-analysis, to evaluate at a broad scale the contribution that information on ecosystem services can make to biodiversity conservation." Meta-analytic assessments were also raised as an option for addressing knowledge gaps. One break-out group discussed



a meta-analysis from 2009, most likely that by Rey Benayas *et al.*, which showed that “ecological restoration increased provision of biodiversity and ecosystem services by 44 and 25%, respectively. However, values of both remained lower in restored versus intact reference ecosystems. Increases in biodiversity and ecosystem service measures after restoration were positively correlated”. This study takes a global approach, something also suggested in the break-out discussions (i.e. comparing conservation benefit – ES linkages at a global scale). Are sufficient data already available to allow similar meta-analyses?

An intriguing question was raised concerning future value projection: if we make choices now based on service levels/values, will these be maintained through time (i.e. will we value things in the same way in 2050)? Perhaps this issue might be addressed by back-casting, e.g. assessing historical service provision and the conservation management decisions that might have been made previously if we’d had ecosystem service assessments – would the outcomes of these decisions now be seen as “good”?

Differences in application of the approach in terrestrial and marine environments were also discussed, including, for example, the existence of different end users. However, in terms of addressing knowledge gaps it was noted that for the marine environment there is already a framework to work with (perhaps referring to the Marine Ecosystem Service Partnership³, which focusses in particular on valuation studies), although it was also noted that it is difficult to link the marine environment with health and wellbeing concepts.



3. WHAT CAN BE DONE ABOUT IT?

Having assessed the causes for current concern, and the quality of the evidence base against which these might be tested, we then considered what might be done to deal with these problems. Suggestions again fall into the two general categories of research and communication although, as mentioned above, these are not necessarily mutually exclusive.

More research

Suggestions for further research, in addition to those outlined above, included:

- Needing to maintain a broad understanding of the ecosystem approach framework;
- Working holistically across larger spatial scales and range of services to better understand balances and trade-offs between services across space and time;
- Comparative studies of biodiversity trends (nature conservation success) in areas +/- the application of an ecosystem approach or ecosystem service thinking;
- Exit studies – i.e. following up the impacts on nature conservation of policy decisions based on ES assessments;
- Scientific monitoring (e.g. for REDD+ projects) that allows assessment of the impacts of an ecosystem approach on biodiversity in the long-term, whether or not this approach involves payment for ecosystem services.

Communication

Discussions focussing on communication indicated a general acceptance that in some cases ecosystem service concepts might be useful tools for communication, and that cultural service concepts in particular had “emotional traction”. However, there were also some key points proposed with respect to redressing what was seen as a current imbalance in the way biodiversity conservation and ecosystem service concepts are communicated, including:

- Acknowledging up front that we want to conserve biodiversity, i.e. we should not be scared of saying it, and should get some passion back into the debate;
- Having as a starting point the statutory obligations as a baseline, with ecosystem service delivery and concepts included ‘on top’ of that baseline;
- The need not to subsume biodiversity within ecosystem service concepts, but to mention biodiversity and nature conservation explicitly (avoiding the assumption that conservation leads to service delivery);
- The possibility of not being bound by ecosystem service frameworks, or feeling that there is no alternative: the ecosystem approach, and within that ecosystem services, should be the tool and not the master;
- Make use of nature and biodiversity as an opportunity to tap into what really interests the people to whom we’re communicating.

The extent to which these proposals could be pursued may vary between researchers. For example, would stating that we “want to conserve biodiversity” de-value the weight given to what should be un-biased scientific opinion? However, it seems to be clear that overall more communication is required, and we certainly need to better understand when and where to use different terminology. Such understanding would help us to address the commonly-raised challenge of mainstreaming biodiversity conservation and the desire to get the biodiversity conservation message across multiple policy sectors.

Conclusions

A favourite pastime for researchers is arguing about definitions. With respect to the study of plant competition, John Harper (1961) noted that defining competition “might indeed be seen as a direct continuation of the mediaeval tradition of rhetoric”. Noting the risk, here we have not been overly prescriptive about definitions. Whether the points outlined above relate to the wider ecosystem approach or specifically to ecosystem services is something that the reader can pick apart. However, we would suggest that *within the workshop* we were (more-or-less) all talking about the same things.

What the workshop demonstrated was the complexity of the issue. It indicated that we have considerable knowledge gaps relating to the specific issue of whether a focus on ecosystem services will deliver for nature conservation. It's clear that we need to continue to pull together relevant datasets to address this question in a wider range of ecosystems and to assess the issue systematically (through a systematic review, perhaps?). But beyond a lack of scientific knowledge, we also have some major challenges with respect to communication. Notably we seem to have moved on from the issue of simply trying to communicate what ecosystem services are, to a more complex problem of understanding when and where different communication approaches are most effective or relevant.

Within this article I haven't tried to answer the questions posed during the workshop. Perhaps many answers have already been provided - for example in the recent papers by Mace *et al.* (2012) and Silvertown (2015) – or activities are underway to provide them. However, even if this is the case then this clearly has not been communicated, as indicated by the consistent messages of concern raised across all four workshop break-out groups.

Finally, we detected general enthusiasm within the workshop for going back to discussing nature conservation. A desire to please, or funding pragmatism, has

perhaps encouraged us to adopt ES terminology whilst not at the same time mentioning nature; we need to rebalance things. If not a groundswell, perhaps we are detecting a gentle susurrant to this effect within the workshop, the Annual Meeting, and the wider ecological community.

Overall, it has certainly given us food for thought, and flagged some interesting topics – such as the issue of horses for courses – that can now be taken up and explored further, for example through the BES' Policy work.

Finally, thanks again to all workshop participants, in particular Paul and Philip for such stimulating introductory talks, to Alison Hester for chairing us so efficiently, and to those of you that came along to contribute your thoughts and opinions.

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