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Valuing Nature Network: evolving the ecosystem services paradigm

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Sustaining the crucial role which ecosystems play in underpinning economic activity and human well-being is of growing concern as evidence mounts of the increasing pressures being placed upon the environment by human activity. The NERC Valuing Nature Network (VNN) is a trans-disciplinary, virtual community undertaking research into the valuation of biodiversity, ecosystem services and natural resource use, and the processes for the incorporation of such values within decision-making.

The VNN has two major research objectives. First, *Developing a trans-disciplinary framework for the valuation of stocks of natural capital and flows of ecosystem services.* Here the VNN aims to bring together natural and social scientists to develop integrated methods for ecosystem valuation (both monetary and non-monetary) and examining approaches for ensuring the sustainability of stocks of natural resources and the flow of ecosystem services derived from them. The VNN also has an explicit remit to generate a new community linking researchers with both public and private sector decision-makers and other stakeholders to promote sustainable, well-informed policy creation. Second, *Characterizing the socio-ecological system knowledge required to properly capture the value of biodiversity, ecosystem services and natural resources.* Here the aims of the VNN are (1) to enhance the knowledge base regarding ecosystem processes and address the uncertainty created by non-linear system dynamics, so as to improve the valuation of both natural resource stocks and ecosystem service flows, and (2) to identify ways to improve the accessibility and integration of existing biophysical and socio-economic information and data sets; and to develop integrated modelling of natural capital and ecosystem services at relevant spatial and temporal scales.

However, the incorporation of such concerns within real-world decision-making raises a number of key challenges, which we co-constructed with scientists from a wide range of disciplines together with decision-makers, including government, its agencies, non-governmental organizations and the private sectors through a series of workshops. This inclusive process concluded that the VNN research objectives should be addressed by funding work to address the four challenges:

1. How can the complexity of socio-ecological systems be incorporated into valuations of biodiversity, ecosystem services and natural resource use?
2. How can stock sustainability be incorporated within valuations of biodiversity, ecosystem services and natural resource use?
3. How can issues of scale be incorporated within valuations of biodiversity, ecosystem services and natural resource use?
4. How do we integrate information on values obtained from the natural sciences, economics and other social sciences into governance and so improve decision-making and how can such improved decisions be implemented effectively?

Ten 1-year research projects to address these four challenges have recently started and some of the early work, relevant to the conference theme, will be described, as well as some future aspirations.