Chapter 19

Biodiversity and Ecosystem Services in the Frome Catchment, Purbeck District, United Kingdom

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ABSTRACT

A map for valuing ecosystem services in the 480 km² Frome catchment, to investigate scenarios of change in land use, was internet crowd-sourced. Scouts mapped deer habitats in 15% of the 30 km² Arne Parish, while 143 residents volunteered data on deer sightings in the 5-year community survey.

INTRODUCTION

The River Frome feeds from a 48,000 ha catchment in the south of the county of Dorset, on the UK south coast, about 60 km long and 17 km wide near its westerly origin at about 225m above sea level (See Figure 1). It drains from chalk downland with steep slopes and sheltered valleys to flat-bottomed open valleys with clay and alluvial deposits in the lower reaches. More than 74% of the catchment supports either improved grassland or arable farms, with nearly 4% developed as housing and gardens, the remainder being forest and heathland.

Arne is a Parish of 1,260 citizens, which in 2006 had €28,285 average income and only 2% unemployment. Of its 29.6 km² area, with 40% farmland, 13% woodland, 18% water or wetland and most of the remainder heathland or coast (See Figure 1), 65% is designated for conservation. Extensive lowland heaths have international conservation priority (See Figure 2), with rare...
plants, invertebrates, reptiles, amphibians and birds that have long been a UK Biodiversity Action Plan priority (DOE, 1995). Both main residential areas, Stoborough and Ridge, are within a 10km² quadrat containing the UK’s highest plant diversity.

THE SOCIO-ECONOMIC PROJECT IN THE FROME CATCHMENT

The key objective of this project was to examine the linkages between human well-being and the benefits derived from ecosystem services as perceived by the local community and other stakeholders. Participatory rural appraisal (PRA) techniques were used to elicit the relative importance of the benefits identified to the different societal sectors and to develop suitable indices to measure recreation and aesthetic value of landscapes from the community perspective. The study involved assessment of the provision of selected ecosystem services as identified by local stakeholders, a stakeholders’ workshop and an online survey designed to engage the wider community. Outputs include an assessment of the spatial variation in provision of ecosystem services and their associated values, both under the current situation (‘business as usual’, BAU), and under a scenario of potential land cover change, focusing on ecological restoration at the landscape scale.

More specifically the objectives were to:

1. Provide a measure of the value of the environment to local people, and how this varies across the landscape.
2. Identify synergies and trade-offs between different ecosystem services, and between ecosystem services and biodiversity.
3. Illustrate the impacts of potential land-use decisions on biodiversity and benefits derived from ecosystem services.

Methodology

For Objective 1, participatory rural appraisal techniques were used to elicit views of local stakeholders in two ways: (a) stakeholder workshop for decision makers (b) Internet-based survey. The online survey used the Drupal Content Management System (CMS) 6.16 and Webform 6.x-3.0 Beta 4. The survey was piloted at the Stakeholder...