

Conservation Works...

for local economies in the UK

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Executive Summary

1. Introduction

Nature conservation supports employment and provides benefits to local economies in the UK. This is the latest in a series of RSPB reports investigating these linkages, and summarises the results of studies undertaken by the RSPB and others between 1997 and 2001.

2. Nature Conservation, Employment and Local Economies

Nature conservation benefits rural economies in a number of different ways:

- **Direct employment** in the natural environment sector in the UK is estimated to total 18,000 full time equivalent (FTE) jobs;
- **Expenditures by conservation organisations** provide revenues and employment for local suppliers and contractors;
- **Conservation schemes** (such as agri-environment and woodland management initiatives) fund work in the wider countryside, and have been shown to support incomes and employment;
- **The tourism sector** benefits from conservation activities, as wildlife, habitats and landscapes attract visitors to rural areas, who spend money on local goods and services. Most recent studies suggest that tourism spending of between £30,000 and £40,000 is required to support one FTE job in local economies in the UK.

3. Spending by Visitors to RSPB Reserves

RSPB nature reserves receive more than one million visits each year. Visitors to reserves are estimated to spend a total of £12 million in local economies each year as a result of visiting reserves. This spending is estimated to support more than 300 FTE jobs in local economies, while direct employment on reserves amounts to a further 200 FTE jobs.

4. Wildlife Tourism on Orkney

Tourism is an important sector of Orkney's economy, bringing estimated tourism revenues of £18 million to the islands in 2000. The RSPB estimates that £1.3 million of this spending can be attributed to Orkney's birds and wildlife, and this is estimated to support 36 FTE jobs on the islands. The other main attractions of Orkney to visitors are its history, archaeology, and the quality of the landscape. The future of the tourism industry depends on the protection and management of Orkney's outstanding natural and historic environment, including the conservation of the marine environment. Given the highly seasonal nature of tourism on Orkney, there may be opportunities to extend the tourism season by promoting wildlife tourism in the winter and "shoulder" months, by raising awareness of the value of the islands for migrant and wintering birds.

5. RSPB Forsinard Reserve - Attracting Visitors to the Flow Country

RSPB Forsinard Reserve comprises 7,000 hectares of blanket bog in the Flow Country of Caithness and Sutherland. Management and expansion of the reserve have benefited from funding from the EU LIFE Nature programme and the Heritage Lottery Fund. The reserve is estimated to have brought extra visitor spending of £185,000 into the economies of Caithness and Sutherland in 1997, which we estimate supports at least 5 FTE jobs. The reserve provides direct employment amounting to 3 FTE jobs. New work to restore the peatlands is creating additional employment opportunities. Forsinard Reserve has the potential to attract many more visitors, and to increase its contribution to the local economy by encouraging them to spend more money locally. There is scope to promote sustainable tourism development by encouraging greater use of Forsinard railway station.

6. Red Kites and Tourism on the Black Isle

Red Kites have been re-introduced to the Black Isle in the Highland region of Scotland. In 1997, a red kite viewing facility was established at North Kessock Tourist Information Centre (TIC), using closed circuit television cameras to show visitors nesting birds. Large numbers of visitors are also attracted to the Moray Firth to watch dolphins. A visitor survey at the TIC in 2000 found that the wildlife of the Black Isle was a major attraction for many visitors, and estimated that red kites attract extra visitor spending totalling £116,000 per year to the local economy, supporting at least 3 FTE jobs. A survey of local tourism businesses found that two thirds of accommodation providers use wildlife in their promotional material. The survey concluded that, while the economic impact of dolphins is more significant, red kites form an important and growing component of the Black Isle's wildlife tourism experience.

7. Geese and Local Economies in Scotland

Growing populations of geese in Scotland damage agricultural crops, but benefit the tourism industry by attracting winter birdwatchers and goose shooters. A study by the RSPB and BASC for the National Goose Forum estimated that birdwatchers and goose shooters spend a total of £5.4 million in the local economies around goose sites each winter, of which £3.6 million can be attributed to the presence of geese themselves. This spending was estimated to support more than 100 FTE jobs in 1997/98. Goose watching was estimated to attract annual revenues of £1.5 million to these economies. These benefits are significant when compared to estimates of the damage caused by geese. The benefits that geese bring to the wider rural economy support the case for intervention to ensure that farmers are rewarded appropriately for managing their land in a way that supports healthy goose populations

8. Reedbeds – Opportunities for Rural Development in the UK

Re-creation and management of reedbeds benefits rural economies and wildlife in the UK. Conservation management of reedbeds supports up to 90 direct FTE jobs and further contract work to a value of up to £4m per year. Commercial harvesting of reeds provides further direct employment, and this helps to support the thatching industry. Major reedbed sites such as Titchwell, Minsmere and Leighton Moss RSPB reserves are also important for wildlife tourism. There is strong demand for quality UK produced thatching reed, and other fen products (such as biofuel and pet litter) can be viably produced in association with sensitive wildlife management. Reedbeds can also provide other indirect benefits, such as water management functions. Increasing the area of reedbed in the UK will benefit both biodiversity and rural

employment. However, careful management is required, both of reedbeds themselves, and of the way they are worked, to provide sustainable benefits to local communities and wildlife.

9. Valuing Norfolk's Coast

A study of visitors to six sites on the Norfolk Coast in 1999 estimated that they spent £21 million per year in the local economy. Visitors attracted to these sites mainly by their birds and wildlife were estimated to have spent a total of £6 million in the area, supporting an estimated 135 FTE jobs. The Norfolk Wildlife Trust's Cley reserve and Titchwell RSPB reserve were estimated to bring extra visitor spending of £2.5 million and £1.8 million respectively into the Norfolk coastal economy in 1999. In addition, work by conservation organisations in managing sites in the Norfolk coast area supports 30 FTE jobs. The study identified a series of challenges for the management of Norfolk's coastal environment and the tourism that depends on it. These include maintaining the extent and quality of internationally important wildlife habitats in the face of sea level rise, reducing the environmental impact of traffic, ensuring that tourism benefits local communities, and managing the pressure of increasing visitor numbers.

10. Minsmere RSPB Reserve and the Local Economy

Minsmere RSPB reserve lies on the Suffolk coast between Felixstowe and Lowestoft. It has a variety of habitats, is rich in biodiversity, and receives almost 80,000 visitors per year. Based on a survey of visitors in 2000, we estimate that the reserve attracts tourism expenditures of £1.1 million per year into the local economy, supporting an estimated 27.5 FTE tourism jobs. Direct employment on the reserve totals 20 FTE jobs. A survey of local businesses revealed a general recognition of these benefits, but also some concern about the environmental impact of tourism locally. The study emphasised the need to manage the environmental impact of reserve visiting, and suggested that further efforts should be made to spread visits more evenly across the year.

11. Cirl Buntings and Countryside Stewardship in South Devon

The cirl bunting is now confined to low-intensity mixed farmland in South Devon, but its population has increased following the introduction of special Countryside Stewardship payments in 1992. To assess the economic and social impact of CS cirl bunting agreements, the RSPB undertook a face-to-face survey of participating farmers in 1999/2000. This revealed that the agreements support extra employment totalling more than 6 FTE jobs among local farmers, farm-workers and contractors, with 89% of farmers perceiving them to have increased the profitability of their enterprise. The study concluded that, as well as benefiting cirl buntings and other wildlife, the scheme has helped to enhance business viability and farmers' optimism about the future.

12. Spending by Visitors to Symond's Yat Rock Peregrine Project

Each year, the RSPB and Forestry Commission operate a peregrine falcon nest protection and viewing scheme at Symond's Yat Rock in the Forest of Dean, which attracts 50,000 visitors. A visitor survey estimated that Symond's Yat Rock Peregrine Project attracted extra visitor spending of £551,000 to the Forest of Dean area in 1999, supporting an estimated 18 FTE jobs. The study suggested that further efforts could be made to promote the wildlife interest of the Forest of Dean area to visitors. Promoting messages about the benefits of peregrines and other birds of prey to local economies could further help to enhance attitudes towards them.

13. Leighton Moss RSPB Reserve and the Local Economy

Leighton Moss RSPB Nature Reserve is situated 10 miles north of Lancaster. The reserve covers 110 hectares of open water, reedbeds, woodland, scrub and limestone grassland. It is one of the RSPB's most visited reserves, attracting over 90,000 visitors, including 4,000 schoolchildren, each year. Direct employment on the reserve amounts to 10 FTE jobs. A survey of visitors in 1999 estimated that the wildlife of Leighton Moss and neighbouring sites attracts visitor spending of at least £0.95 million per year in the local economy within 20 miles of the reserve, supporting at least 27 FTE jobs in tourism activities. A further 20 FTE jobs are supported by spending by visitors to Leighton Moss attracted to the area by its scenery. The wildlife and landscape of Leighton Moss and other sites in the Morecambe Bay area are attracting increasing numbers of visitors, and are recognised as important assets by the tourism industry.

14. Rathlin Island – Coastal Tourism in Northern Ireland

Rathlin Island lies off the north-east coast of Northern Ireland. Between 23,500 and 29,000 recreational visitors travel to Rathlin each year, with 6,000 visiting the RSPB reserve at the West Lighthouse. A visitor survey in August 2000 found that 78% of visitors watched birds and/or other wildlife during their visit. The study estimated total spending by recreational visitors on the island at £245,000 per year, supporting at least 7 FTE jobs locally. In addition, the island ferry employs 8 full time crew and 2 full time and one seasonal office staff. As at least two-thirds of the ferry's traffic is estimated to be recreational passengers, about 7 FTE jobs in the ferry operation can be attributed to the tourists attracted to Rathlin. Designation of Rathlin as a Marine Nature Reserve would help to protect its scenery and wildlife, which are a valuable resource to the local economy.

15. Conclusions and Policy Recommendations

Nature conservation supports employment and provides benefits to local economies in the UK. Interest in conservation is growing, and these benefits are increasing. The case studies in this report highlight some positive examples of projects and nature reserves that have achieved significant conservation benefits while contributing to wider rural development. However, the UK still faces huge conservation problems and challenges. Addressing these challenges is essential for the UK's biodiversity, but it will also create jobs and contribute to rural development.

This report concludes by proposing a series of policy measures that would benefit both wildlife and rural economies in the UK. These involve:

1. Restoring and re-creating wildlife habitats;
2. Supporting conservation-friendly rural produce;
3. Investing in conservation skills;
4. Reforming the CAP;
5. Promoting sustainable tourism;
6. Extending environmental tax reform;
7. Recognising the role of nature conservation in rural development.

1. Introduction

Nature conservation supports employment and provides benefits to local economies in the UK. The RSPB has been aware of the increasing role of conservation activities in rural development for many years, and has been gathering evidence of these linkages since the late 1980s.

In 1997, we released a report entitled *Working with Nature in Britain* (Rayment, 1997). This presented eight case studies examining the role of nature conservation in different local economies. It also drew some conclusions about rural policy in the UK and Europe. It was accompanied by a BirdLife International report, *Working with Nature – Economies, Employment and Conservation in Europe* (Cuff and Rayment, 1997) which presented twelve case studies from across the EU, and included a more detailed discussion about the implications for rural policy in Europe.

This report provides further evidence of the links between nature conservation and local economies in the UK, based on work undertaken by the RSPB and others in the last four years. Interest in this issue is increasing, as growing attention is paid to the links between the environmental, social and economic aspects of sustainable development, particularly with regard to the increasingly prominent regional agenda.

This report begins by summarising evidence of the economic impacts of nature conservation in the UK. It then presents a series of case studies examining the role of conservation activities in different local economies. The final section presents general conclusions, and makes a series of recommendations about policy developments that will benefit both wildlife and rural economies.

2. Nature Conservation, Employment and Local Economies

The Economic Impact of Conservation Activities

Nature conservation benefits rural economies in a number of different ways:

- People are **employed directly** in conservation activities;
- **Expenditures by conservation organisations** provide revenues and employment for local suppliers and contractors;
- **Conservation schemes** (such as agri-environment and woodland management initiatives) fund work in the wider countryside, and have been shown to support incomes and employment;
- Conservation benefits the **tourism sector**, as wildlife, habitats and landscapes attract visitors to rural areas, who spend money on local goods and services.

The Natural Environment Sector

Several studies have examined employment and expenditure by organisations involved in nature and landscape conservation (Table 1).

The size of the sector depends largely on how it is defined. The CEAS study considered employment in nature and landscape conservation, while the MacKay report addressed the "conservation and enhancement of the natural heritage". Although surveys such as these always encounter problems of definition regarding precisely what types of activity are included, the two studies covered broadly the same areas of activity - the protection, enhancement, management and interpretation of natural habitats and landscape - and related survey, monitoring, environmental education and consultancy work. They excluded employment in pollution control and in the mainstream tourism, forestry and agricultural sectors, except where these were specialist environmental jobs. The CEAS report covered only the public and voluntary sectors, and excluded private companies. Recent regional surveys have adopted similar definitions to the MacKay report, although the extent to which they have attempted to include private sector activities has varied.

Table 1: Studies of the Natural Environment Sector

Author/ Commissioning Organisation	Year of Survey	Area	Subject
Dartington Institute for the Nature Conservancy Council	1985	Great Britain	Nature conservation and related activities, including museums, zoos, binocular suppliers etc.
CEAS Consultants for English Nature, Countryside Commission, Countryside Council for Wales	1991/2	England and Wales	Employment, expenditures and tourism spending associated with nature and landscape conservation
Independent Northern Consultants for Scottish Natural Heritage	1995	Scottish Highlands and Islands	Employment in natural environment sector
MacKay Consultants for Scottish Natural Heritage	1996	Scotland	Employment in natural environment sector, and tourism related to natural heritage
RSPB	1998	South West England	Employment and expenditure by natural environment sector
RSPB	2000	North West England	Employment and expenditure by natural environment sector
RSPB with SQW	2000	East of England	Employment in environmental sector
Tourism Associates and Geoff Broom Associates for National Trust and partners	2001	Wales	Employment in environmental sector
ERM for regional partners in the North East	2001	North East England	Employment in environmental sector
ERM for regional partners in the West Midlands	2001	West Midlands	Employment in environmental sector

Direct Employment in the Natural Environment Sector in the UK

CEAS (1993) estimated that direct employment in nature and landscape conservation totalled 7,666 FTE jobs in England and 1,065 FTE jobs in Wales in 1991/1992. A recent study by Tourism Associates for the National Trust and other partners identified 1,564 FTE conservation jobs in the organisations surveyed by CEAS in Wales, representing growth of 48% since the 1991 survey. 1,194 FTE jobs were in the public sector and 370 FTEs in the voluntary sector, the latter having grown 123% since the 1991 survey. The MacKay Consultants study identified a total of 8,230 direct jobs related to the management of the natural heritage in Scotland in 1998, amounting to 6,680 full time equivalent (FTE) jobs.

Combining the results of the CEAS (England), MacKay Consultants (Scotland) and Tourism Associates (Wales) studies suggests that there are more than 15,000 direct full time equivalent (FTE) jobs in conservation activities in Great Britain. However, the Welsh study suggests that there has been significant

growth since the CEAS study. Some evidence of growth in the conservation sector in England is available from recent regional environment and economy studies.

A survey by the RSPB (Mackridge *et al*, 1998) identified 1,376 jobs (1,200 FTE jobs) in the natural environment in SW England. The RSPB has also estimated employment in the natural environment sector in NW England to total 1,193 FTE jobs (ERM, 2000). In addition, the survey revealed that at least 4,095 volunteers work in this sector in the North West, completing 19,834 hours of work per week. Another RSPB survey, in the East of England, identified a total of 1,546 jobs in public and voluntary sector organisations concerned with the protection and management of the natural environment, and estimated a further 500 jobs in these activities in local authorities in the region. ERM (2001) found 500 nature conservation jobs in the West Midlands region, equivalent to 420 FTEs, and estimated that 2,400 volunteers carry out 5,100 hours of conservation work per week in the region. The recent ERM report in North East England provided estimates of employment in different organizations concerned with environmental management in the region, but did not make a separate estimate of employment in natural environmental activities. However, the data presented suggests a total of around 700 FTE natural environment jobs in the region.

Although there has not been a complete survey of employment in the natural environment sector in England since 1991/92, some indication of its size can be gained by extrapolating from the available regional survey data. The surveys collectively identified at least 5,263 FTE jobs in the South West, North West, Eastern, North East and West Midlands regions of England. These regions together account for 51% of England's population and 60% of its land area. If employment in the natural environment sector is proportionate to regional land area, we might expect that the sector in England as a whole is 1.67 times as large as its size in the five surveyed regions. This suggests a total of at least 8,789 FTE jobs in the natural environment sector in England (Table 2). It suggests some growth since the CEAS study which identified 7,666 FTE jobs in nature and landscape conservation in England in 1991/2.

Table 2: Estimated Employment in the UK Natural Environment Sector

	Total Jobs	FTE Jobs	Source/Method
Eastern England	2,046	c.1,750	SQW (2001)
NW England	1,431	1,193	RSPB (2001), ERM (2000)
SW England	1,376	1,200	Mackridge et al (1998)
W Midlands	500	420	ERM (2001a)
NE England	-	c.700	RSPB estimate from ERM (2001b)
Rest of England	-	3,526	Extrapolated from English regional studies
England	-	8,789	RSPB estimate
Scotland	8,230	6,680	MacKay Consultants (1997)
Wales	-	1,564	Tourism Associates (2001)
Northern Ireland	-	1,000	RSPB estimate
UK	-	18,033	

Combining the totals for England, Wales and Scotland gives a total estimate of 17,033 FTE jobs in the conservation sector in Great Britain. No data are available for Northern Ireland, but a rough estimate based on land area would suggest a total of 1,000 FTE jobs, taking the UK total to around 18,000 FTEs.

By comparison, a recent Forestry Commission Survey put employment in forestry management in Great Britain at 12,676 FTEs, and found a further 16,856 FTE jobs in non-forest activities such as timber haulage and processing (Forestry Commission, 2001).

Types of Jobs in Natural Environment Sector

The majority of these jobs are in the public sector - in national government, agencies and local authorities. The MacKay report estimated that 70% of employment was in the public sector, 17% in private companies and 13% in the voluntary sector. Eighty percent of the jobs found by CEAS were in the public sector (with 50% in national bodies and 30% in local authorities/national parks), and the remaining 20% in the voluntary sector, with no attempt made to estimate private sector employment. Some 35% of jobs identified by the RSPB study in the South West were in government departments and agencies, 30% in NGOs, 24% in local authorities and 11% in private companies.

Employment in conservation involves a wide range of occupations requiring different skills, such as countryside management, biological and environmental sciences, visitor services and environmental education, as well as managerial, administrative and support functions. Conservation organisations often find it difficult to recruit local people with the specialist skills and experience required, and therefore jobs are frequently filled by incomers (Rayment, 1997).

Employment in nature conservation is widely distributed across the UK, reflecting regional variations in natural landscape, habitats and biodiversity. Many of the jobs associated with conservation-related activities are located in remote rural areas suffering from declining employment in agriculture and with a shortage of alternative job opportunities. In these areas, conservation plays an important role in promoting the diversification of the rural economy. For example, there are 1,350 FTE jobs in the natural environment sector in the Scottish Highlands and Islands (Independent Northern Consultants, 1995.)

A recent study of the quality of natural heritage jobs in Scotland by RSK ERA Ltd (forthcoming) for SNH concluded that they contribute to rural population retention and community life, help to diversify the rural economy, provide nature conservation benefits, and help to enhance regional identity. A survey of employees in the natural heritage sector found that:

- Most (62%) are Scots, though many are not local to the area in which they work;
- Qualification levels are high, with 83% of the sample having a degree, compared to an estimated 65% of the environmental workforce of the UK;
- The gender ratio in the sector was found to be 74% male to 26% female, in contrast to a fairly even split found by other studies;
- Job satisfaction is high, with 85% saying their work gave them job satisfaction;
- Satisfaction with pay levels is similar to that of the Scottish workforce as a whole, with 37% of the sample saying they were satisfied.

There are examples of land managed for nature conservation supporting higher levels of employment than under previous uses. For example, the RSPB's reserve at Abernethy in the Scottish Highlands provides

direct employment totalling 11 FTE jobs. When this land was managed for sporting purposes alone, it provided employment only for one full-time keeper and a seasonal gillie (Rayment, 1997).

Conservation Expenditures

In addition to direct employment, expenditures by conservation organisations on other inputs generate activity in the local economy and support employment for suppliers and contractors. Expenditures incurred in the management of conservation sites vary considerably by type of habitat, being highest for intensively managed habitats such as wet grassland, lowland woodland and heathland, and lower for upland and estuarine habitats (Rayment, 1995). In a survey of organisations involved in nature and landscape conservation, CEAS (1993) found that £384 million was spent on conservation in England and £44 million in Wales in 1991/2. These figures are equivalent to £485 million and £56 million respectively in 2000 prices.

Regional studies have estimated expenditures by the natural environment sector, excluding grants, to total £43 million in South West England in 1997/98, and £60 million in North West England in 1999/2000. These two regions together make up 29% of England's land area and 24% of its population.

Conservation Schemes in the Wider Countryside

Agri-environment schemes pay farmers to protect and enhance the environment. They have helped to enhance wildlife habitats including lowland wet grassland and heathland, and to support employment and incomes in rural areas. For example:

- The Countryside Stewardship Scheme has been shown to create new jobs for farmers, contractors and other small rural businesses (Harrison-Mayfield *et al*, 1998);
- The Tir Cymen scheme created a total of more than 200 new jobs in three pilot areas of Wales (ADAS, 1996a);
- Environmentally Sensitive Area (ESA) schemes have been shown to create employment and new sources of farm income in rural areas (ADAS, 1996b);
- Support for organic farming benefits birds and other wildlife. Organic farming is more labour intensive than conventional agriculture and offers scope for job creation in local processing and marketing (Lampkin and Padel, 1994).

It should be recognised, however, that by promoting more extensive farming practices that reduce output and require fewer inputs, agri-environment schemes can also have negative effects on employment in some sectors of the economy. The Countryside Stewardship study suggested that the scheme creates additional jobs on farms and in rural economies, but may cause some jobs to be lost in firms upstream and downstream from farming. The authors considered that negative effects are likely to be located among larger businesses in distant or urban locations and hence fairly dissipated in nature, and are therefore more likely to be absorbed by the businesses affected without loss of employment (Harrison-Mayfield *et al*, 1998).

Employment effects vary between schemes. For example, measures which fund additional conservation work such as hedge laying, dry stone walling and habitat recreation tend to generate more employment than schemes which merely reduce stocking rates or applications of chemicals, thereby reducing inputs and outputs (Rayment, 1995).

Woodland management schemes have also created new jobs by bringing neglected woodlands into management. By focusing on existing, under-managed woods rather than creating new ones, these schemes have helped wildlife without displacing jobs in other land uses such as agriculture. For example:

- In Wales, it has been estimated that 290 FTE jobs are supported in management, harvesting, processing and manufacturing activities involving Welsh hardwoods produced in association with the Coed Cymru scheme. This includes 17 jobs in operating the scheme and providing advice to woodland owners, 15 FTE jobs spread among farmers and farm workers, 15 jobs in local contracting businesses, and an estimated 236 jobs in processing and manufacturing activities using Welsh timber;
- In southern England, the restoration and management of hazel coppice offers potential to provide significant employment and conservation benefits. The Wessex Coppice Group has estimated that 500 jobs could be created in Hampshire alone by restoring 16,000 acres (6,400 ha) of derelict coppice, and that there is scope to create a total of 2,000 jobs in southern England. Coppicing is a skilled trade with potential to provide fulfilling employment with few barriers to entry and little danger of displacing existing jobs (Rayment, 1997).

Nature Conservation and Tourism

Nature conservation activities can have significant benefits for the tourism industry by attracting visitors to rural areas, who spend money on local goods and services, helping to provide income and employment for local people. These benefits are often greater than the direct economic impact of employment and expenditures by conservation organisations.

The strength of these linkages varies for different types of people and activity. Many people are attracted to visit rural areas by pleasant landscapes, and nature conservation can benefit the mainstream rural tourism industry by helping to maintain and enhance the countryside and its natural features and wildlife. At the same time, increasing numbers of people are developing a more specialist interest in wildlife and visit rural areas especially because of their biodiversity value.

Visitor surveys have been used to assess the importance of wildlife, landscape and other features to the tourism sector, and hence to local economies. Typically, visitors to an area are asked how much money they have spent locally, and the importance of different sites or features in encouraging them to visit the area. From this, it is possible to estimate the extra tourist expenditure that wildlife and other attributes bring to that area. It is then possible to apply multipliers to estimate how many jobs and how much income that spending supports.

A study for the (then) Rural Development Commission and Countryside Commission (1997) estimated that tourism spending in the English Countryside totals some £9 billion per annum, supporting an estimated 350,000 jobs. Various studies have attempted to estimate the scale and impact of tourism activity related to the environment (Table 3). Other studies have examined the economic impact of wildlife tourism (Table 4).

Table 3: Studies of Rural and Environmental Tourism

Study	Year	Subject	Value/Impact
Broom Associates and Cambridge Policy Consultants (1997) for RDC/CoCo	1994	Rural tourism in England	£9 billion expenditure; 354,000 jobs
CEAS	1991/2	Tourism related to nature and landscape conservation in England and Wales	£350-£450 million expenditure; 71,400 FTE jobs
National Trust	1997	Tourism motivated by conserved landscape in SW England	£2,354 million expenditure; 97,200 jobs
MacKay Consultants	1997	Natural heritage related tourism in Scotland	£105 million expenditure

Table 4: Studies of Wildlife Tourism

Study	Year	Subject	Value/Impact
Crabtree <i>et al</i> (1992)	1991	Spending by visitors to 149 Scottish wildlife sites	£30 million annual spending attributable to sites, supporting 1,200 FTE jobs
Griffiths (1996)	1996	Spending by visitors to Kite Country, mid Wales	£2.9 million annual attributable spending, supporting 114 FTE jobs
Guffogg (1996)	1996	Spending by visitors to the Loch Garten Osprey Centre, Highland	£1.7 million spending attributable to the reserve, supporting 69 FTE jobs
TMS (1995), Rayment (1997)	1995	Spending by visitors to Shetland	£1 million of £4 million annual spending by holidaymakers on Shetland attributable to birdlife, supporting 43 FTE jobs

Wildlife tourism can help to extend the tourism season and therefore mitigate some of the problems of seasonal unemployment associated with the mainstream tourism sector. For example, in the Scottish islands of Islay and Jura, much of the expenditure that wildlife tourism brings into the local economy is in the winter months, when many people visit Islay to watch the large flocks of barnacle and Greenland white-fronted geese (MacKay Consultants, 1989). In the Isles of Scilly, an influx of birdwatchers each October helps to extend the tourism season by an extra month (Rayment, 1997).

Assessing the Economic Impact of Tourism Spending

Spending by visitors benefits a wide range of enterprises in the local area, from hotels and campsites to attractions, cafes, local transport, shops and other local businesses, resulting in additional business turnover. A proportion of this turnover is used to meet the wage costs of the proprietors and employees, **directly** supporting employment and local incomes. Businesses in direct receipt of visitor spending in turn also spend some of their turnover on purchasing goods and services from other supply businesses. These purchases in turn boost the turnover of the supplier businesses supporting additional **indirect** employment in those businesses. Finally, employees whose jobs depend directly or indirectly on visitor spending in turn spend money in shops, attractions and other local businesses, resulting in further **induced** jobs and incomes in the area.

The degree to which the indirect and induced jobs arise locally depends on the nature of the local economy. Multiplier effects are greater in economies with strong trading links between local firms, and smaller where local linkages are weaker, so that trade results in money leaking from the local economy. Major urban economies tend to have a well-developed chain of local supply companies, particularly when compared to rural areas, so tend to have stronger indirect and induced multiplier effects. Indirect impacts also vary by business sector - catering establishments tend to spend more of their turnover locally in purchasing fresh supplies from local producers, whereas petrol filling stations are supplied from a national chain of refineries. Multiplier effects also depend on the spatial scale of the economy in question, since more spending tends to be retained in larger economies than in small ones. Visitor spending can therefore be expected to have a greater economic impact at a county level than at a district level.

A number of studies have been carried out in the UK seeking to identify the various linkages between visitor spending and local income and employment. Two of the main models used are:

- The Scottish Tourism Multiplier Study;
- The Cambridge Tourism Model.

Scottish Tourism Multiplier Study

The most comprehensive set of tourism multipliers available for Scotland was developed by Surrey Research Group (1993) for Highlands and Islands Enterprise, Scottish Enterprise, the Scottish Tourist Board and the Scottish Office Industry Department. This study involved a detailed survey of tourism and related businesses in different local economies in Scotland, to assess the value of direct, indirect and induced expenditure, income and employment multipliers. These were used to calculate models for three main types of area - Urban, Rural and Remote Rural (Table 5).

Table 5: Scottish Tourism Multipliers - Including Direct, Indirect and Induced Effects*

	Income multiplier – local income per £1 of visitor expenditure	Employment multiplier: expenditure to support 1 FTE job (1991 prices)	Employment multiplier in 2000 prices
Urban	£0.3142	£27,548	£34,808
Rural	£0.3256	£29,240	£36,946
Remote Rural	£0.2271	£27,548	£34,808

** figures are for visitors across all types of accommodation*

The figures indicate that each £1 of visitor spending was estimated to support between £0.23 and £0.33 of local income (wages, salaries, profits and rents). Visitor expenditure of between £27,548 and £29,240 was required to support 1 FTE job (including direct, indirect and induced effects, with all figures in 1991 prices). When adjusted for inflation, the employment multipliers suggest that visitor spending of between £35,000 and £37,000 would have been required to support 1 local FTE job in 2000.

The Cambridge Model

The Cambridge model uses a variety of published and unpublished survey data to estimate the volume, value and economic impact of tourism at a local or regional level. The model can be used to assess the impact of visitor spending on business turnover. This in turn can be used to estimate the effect on wage

costs, and, using regional wage rates, the effect on direct employment can be assessed. By applying ratios based on survey data, estimates of indirect and induced employment can also be made (RSPB, 2000a; Tourism Associates, 1999).

Studies using the Cambridge model to assess tourism impacts have included:

- Broom Associates and Cambridge Policy Consultants (1997), in a study of the economic impact of recreation and tourism in the English countryside. This estimated that business turnover resulting from visitor spending in the countryside totalled £8.4 billion in 1994, supporting a total of 354,000 direct, indirect and induced FTE jobs, an average of £23,641 per FTE job. This is equivalent to £27,789 per FTE job in 2000 prices;
- A study by Tourism Associates (1999) for the National Trust, examining the economic impact of landscape-based tourism in South West England. This found that turnover of £2,144 million supported 47,500 direct FTE jobs and 71,400 FTE jobs in total - a ratio of £30,000 per FTE job supported in the region in 1997.
- The Tourism Associates study also examined the local employment impacts of spending around individual National Trust sites. The study estimated that £244.9 million of spending in the South West supported 6,421 direct and indirect FTE jobs in 1997. It assumed that an additional induced job would be supported at the district level for every 10 direct/indirect jobs created, and at the county level for every 5 direct/indirect jobs. This suggests that visitor spending of £34,700 is needed to support 1 FTE job at the district level, while £31,800 would support 1 FTE job at the county level;
- The RSPB North Norfolk study (Section 9 of this report) suggested that expenditure of up to £50,000 was needed to support one FTE job in a small local study area.

Summary

The economic impact of visitor spending depends on the structure of the local economy, and should ideally be assessed on a case-by-case basis, using local economic data. However, most of the evidence suggests that, taking account of direct, indirect and induced employment, expenditure of between £30,000 and £40,000 is generally required to support one FTE job in local economies in the UK.

3. Spending by Visitors to RSPB Reserves

Results from the Reserves Visitor Survey 1998

RSPB Reserves

The RSPB manages 168 nature reserves in the UK, covering a total land area of 115,000 hectares (at 31 March 2001). The Society's policy is to encourage people to visit these reserves as much as is possible without exerting pressure on sensitive habitats and wildlife. Although most reserves are open to visitors, the RSPB has identified 20 reserves that it promotes most actively. These are usually reserves offering good access, well-developed facilities and infrastructure (visitor centres, car parks, shops, hides, footpaths etc.), and easily viewable wildlife.

The 1989 Reserves Visitor Survey

Before 1998, the last survey of spending by visitors to more than one RSPB reserve took place in 1989, and was reported by Smith and Harley (1993). This involved a survey of 24 reserves. Visitors were asked how much money they had spent locally on their visit to the reserve, and the importance of the reserve for encouraging them to visit the area. A proportion of each visitor's expenditure was attributed to the reserve, depending on the importance of the reserve for his or her visit to the area. This enabled total visitor expenditure attributable to the reserve to be estimated. A total of 2,632 questionnaires were completed.

The survey found that visitor expenditure attributable to reserves averaged at least £7.65 per visit. There were wide variations between reserves, with attributable expenditure per visitor varying from less than £1 at some reserves, to £48 and £127 respectively at the island reserves of Fetlar and Balranald. Scaling up these figures to cover all visits to RSPB reserves, it was estimated that 1.01 million reserve visits in 1989 brought spending of £7.7 million to local economies. This figure is equivalent to £10.6 million at 1998 prices.

The 1998 Reserves Visitor Survey

The RSPB's Market Research Department conducted a survey of visitors to twenty of the Society's nationally promoted reserves between April and October 1998. Self-completion questionnaires were given to visitors by reserve staff, and collected immediately on completion. Each questionnaire was given to one individual to complete on behalf of his/her party. An effort was made to obtain a quota of completed questionnaires each month at each reserve. A total of 5,128 questionnaires were completed. At two reserves, Fairburn Ings and Lake Vyrnwy, sample sizes were too small to permit reliable within-site analysis, but questionnaires were included in the overall analysis.

The survey included a question on purchases made by parties in the vicinity of the reserve, which asked respondents to indicate what items (petrol, accommodation, food/drink, gifts and souvenirs, and other items) they had purchased locally as a result of visiting the reserve. Using certain assumptions, the results were used to estimate expenditure by reserve visitors and its impacts on local economies (Rayment, 1999).

Results

Taken over all reserves, 30% of respondents lived locally, 26% were on a day-trip to the area, 5% were staying with friends or relatives, and 38% were on holiday in the area (staying 4-5 nights on average).

Overall, 63% of respondents indicated that they spent some money as a result of their visit to the reserve. The answers given varied considerably between different reserves and different types of expenditure. A high proportion of visitors to Sandwell Valley and Pulborough Brooks are local, while those visiting Lake Vyrnwy and Abernethy are more likely to be on holidays or longer trips, and to spend money on petrol, accommodation and food and drink as a result of their visit.

Estimates of average spending per item per day (Table 6) were used to estimate the amount spent by each visitor. These were based on a review of daily expenditures from a range of other visitor expenditure surveys. They apply only to those people indicating that their party purchased these items as a result of visiting the reserve. For petrol, which is often a shared expense, the figure is an estimate of expenditure per person. These averages were multiplied by figures for reserve visitors in 1998/99 to estimate total spending by visitors.

Table 6: Assumed Daily Expenditure per Visitor Purchasing Different Items

Petrol	Accommodation	Drinks in Pub/Café	Meals	Food from Shop	Other items
£7	£20	£3	£5	£3	£3

The twenty reserves featured in the survey attracted a total of 808,000 visits during the year. Titchwell, Norfolk, is the most visited RSPB reserve, receiving an estimated 138,000 visits in 1998/99. Other RSPB reserves at which visitors are counted attracted 261,000 visits in 1998/99.

Combining these estimates, expenditures resulting from visits to RSPB reserves were estimated to total £10.1 million in 1998, of which £7.5 million was accounted for by the top 20 reserves. Almost 40% of this money was spent on accommodation, 31% on food and drink and 20% on petrol.

These results are comparable to those obtained by the more detailed 1989 reserve visitor survey, which estimated total visitor expenditure equivalent to £10.6 million in 1998 prices.

These estimates of visitor spending should be regarded as approximate (and conservative), since:

- respondents were asked only what they had bought as a result of visiting the reserve, not what they expected to buy after their visit;
- assumptions had to be made about expenditures on different items;
- for those items purchased, only one day's expenditure was included in the analysis, even though other surveys have found that reserves play a role in encouraging people to stay in an area for several days;
- average expenditures for less visited reserves were assumed to be the same as for the reserves surveyed, even though previous surveys have highlighted that expenditures attributable to more remote reserves may be much higher;
- visitor numbers were not counted at 34 RSPB reserves, and these are excluded from the analysis.

As a result, these estimates of visitor spending are likely to be less precise than those of other studies investigating visitor expenditures in detail at individual reserves, and should be used with some caution. In general, they should be regarded as underestimates, as detailed visitor surveys have tended to produce higher estimates of attributable visitor spending than those derived from the 1998 reserves visitors survey.

Estimates of Annual Visitor Expenditure Attributable to RSPB Reserves

Table 7 combines estimates from the 1998 reserves visitors survey with the results of detailed surveys at Abernethy (Guffogg, 1996; Rayment, 1997), Forsinard, Titchwell, Minsmere and Leighton Moss (sections 5, 9, 10 and 13 of this report). For Vane Farm, the 1998 reserves visitor survey estimate is included, although this is considerably lower than the estimate produced by the geese and local economies study (section 7). This highlights the conservative and indicative nature of the 1998 estimates, and demonstrates that obtaining accurate figures for spending attributable to individual reserves requires detailed survey work at each reserve.

Table 7: Estimated Local Expenditures by Visitors to RSPB Reserves (£000)

	Number of Visitors, 1998/99	Estimated visitor spending resulting from reserve visits, 1998/99 (£000)
1998 reserves visitor survey		
Bempton Cliffs, East Yorkshire	44,093	407
Blacktoft Sands, East Yorkshire	23,706	93
Conwy, Gwynedd	30,043	259
Dungeness, Kent	26,176	207
Fairburn Ings*, West Yorkshire	56,202	373
Lake Vyrnwy*, Powys	33,142	386
Lochwinnoch, Strathclyde	21,825	76
Pulborough Brooks, West Sussex	28,067	103
Radipole Lake, Dorset	35,097	423
Rye House Marsh, Hertfordshire	11,084	39
Sandwell Valley, West Midlands	24,422	105
Snettisham, Norfolk	2,900	29
South Stack, Anglesey	42,844	418
The Lodge, Bedfordshire	38,275	155
Vane Farm, Tayside	46,513	273
Ynys Hir, Powys	10,726	120
Detailed surveys of individual reserves		
Abernethy, Highland (Guffogg, 1996)	35,179	1,376**
Titchwell, Norfolk (section 9)	137,700	1,800
Minsmere, Suffolk (section 10)	68,247	1,100
Leighton Moss, Lancashire (section 13)	92,531	950
Total - Top 20 Reserves	808,772	8,692
Forsinard, Highland (section 5)	4,040	185
Other RSPB Reserves	267,891	2,925
Total RSPB Reserves	1,080,703	11,802

* Note: results from Fairburn Ings and Lake Vyrnwy were based on small samples, and should not be considered reliable in their own right.

** Adjusted to 1998/99 prices and visitor numbers

The results suggest that visitors spend at least £11.8 million per year in the local economies around RSPB reserves, as a result of visiting those reserves. This compares with the estimate of £10.1 million above, based on the 1998 reserves visitors survey alone. This money is spent in a variety of accommodation businesses, petrol stations, pubs, cafes, restaurants and shops. It helps to provide income and employment for people working in these businesses, and there are further economic benefits, as a proportion of this money is re-spent in the local economy.

If one assumes an average local employment multiplier of £35,000 of visitor spending required to support one full time equivalent (FTE) job across the UK, spending by visitors to RSPB reserves can be estimated to support 337 FTE jobs in the economies around reserves.

It is important to note that this is an estimate of the impact on the economies around RSPB reserves only, as a result of reserves attracting people who spend money in the area. It is **not** an estimate of the impact of reserves on national income and employment, as most of the expenditure would take place elsewhere in the UK if the reserves did not exist.

Reserves and Local Economies

RSPB reserves have other positive impacts on local economies, through direct employment, expenditures on local goods and services, by producing food and timber, and through grazing lets. Since reserves provide direct employment of more than 200 FTE jobs in the UK, they support total employment of more than 500 FTE jobs in local economies. Further work is planned to assess the overall benefits of reserves for local economies, and to use more detailed, site-specific visitor surveys to estimate expenditures attributable to individual reserves with more accuracy.

4. Wildlife Tourism on Orkney

Orkney

The Orkney Islands, located off the northern tip of Scotland, support a wealth of wildlife. There are spectacular seabird colonies, and other breeding birds include a variety of waders, ducks, short-eared owl, hen harrier, merlin, corncrake and red-throated diver. Orkney also provides habitat for rare flowers such as the Scottish primrose, and mammals such as Orkney voles, otters and mountain hares. The RSPB has no fewer than thirteen reserves on the islands.

Tourism is an important part of Orkney's economy, with distribution, hotels and restaurants employing 21% of the workforce in 1997. Other important sectors are manufacturing, agriculture and fisheries, construction, transport and communications and public administration (HIE, 1999a). The unemployment rate in Orkney is low - at 2.8% in July 1999 - but rises significantly during the winter months when employment in tourism and agriculture falls. Orkney's GDP per head is 84% of the UK average (HIE, 1999a).

Orkney Visitor Surveys

Hooper (1991), in a report for the RSPB, conducted two surveys of ferry passengers leaving Orkney, in summer 1989 and spring 1990, to assess the importance of tourism to the Orcadian economy and to compare changes in the proportion of visitor types throughout the year. Visitors were categorised as "green tourists", "wildlife tourists" and others. Using data collected on visitor expenditure, and scaling this up on the basis of overall visitor numbers, the author estimated total expenditure by Orkney's 125,000 visitors in spring and summer 1990 to amount to £18.8 million. Of this, £1.7 million was spent by "wildlife" tourists and £2.3 million by other "green" (fishing and walking) tourists. Later studies suggest that the 1989/90 study may have overestimated the number of visitors to Orkney (Orkney Tourist Board, *pers. comm.*).

Average expenditure per visitor per night amounted to £26.9 in the summer 1989 survey, and £32.9 in the spring 1990 survey. Transport was the largest item of expenditure, followed by accommodation, meals/drinks and gifts/souvenirs (Table 8). The study highlighted the importance of wildlife conservation to the local economy, and identified the need for sympathetic management of the islands' historic and pre-historic sites, wildlife and landscape.

Table 8: Expenditure by Visitors to Orkney, 1989/90

	£ per person per night: Summer 1989	Spring 1990
Accommodation	6.2	9.2
Meals/Drinks	5.9	5.1
Transport	10.1	11.9
Gifts/Souvenirs	3.0	4.5
Provisions	1.1	1.3
Other	0.9	0.9
Total	26.9	32.9

More recent surveys of visitors to Orkney were conducted by the Orkney Tourist Board in 1996 (in conjunction with System Three) and 2000. They collected data on the characteristics of visitors to Orkney, the reasons for their visit, and their expenditure.

Key findings of the 1996 survey were:

- the most important reason for visiting Orkney was to visit friends and relatives (20% of all visitors gave this as their main reason).
- 9% gave history and a further 8% archaeology as the main reasons for their visit;
- 6% of all visitors gave wildlife and nature reserves as their main reason for visiting Orkney, with a further 5% mentioning birdwatching. In total, therefore, 11% of all visitors (and 19% of overseas visitors) went to Orkney mainly because of its birds and wildlife;
- other reasons for visiting were also mostly related to the environment and landscape, and included scenery, remoteness, peace and quiet, and a love of islands;
- 73% of visitors visited archaeological sites, 62% beaches and coastline, and 54% walked for more than 2.5 miles;
- between April and October 1996, 113,000 people visited Orkney, staying 650,000 bed nights and spending £16 million on Orkney, and £31 million on their trip as a whole;
- 31% of holiday visitors to Orkney came from Scotland, 31% from elsewhere in the UK and 38% from overseas.

The results of the 2000 visitor survey have yet to be published. However, it is estimated that 81,000 people visited Orkney between May and the end of September, staying 450,000 bed nights, and spending £18 million on Orkney and £28 million on their trip as a whole. Twenty one per cent of visitors identified visiting friends and family as the main reason for their visit, 17% were attracted mostly by history, monuments and archaeology, and 7% by wildlife, birds and nature. Some 24% went bird watching during their visit (with 4% identifying this as their single main activity), and 27% were involved in nature watching (3% identifying this as their main activity).

Economic Impact of Wildlife Tourism

Using the results of the 2000 visitor survey, the RSPB estimates that people attracted to Orkney primarily by its birds, wildlife and nature spent £1.3 million on the islands in 2000. This estimate is based on a simple multiplication of total visitor spending on the islands by the 7% of people identifying these features as the main reason for their visit, and a similar proportion noting bird and wildlife watching as their main activities on the islands. It is worth noting that other visitors participate in bird and wildlife watching without identifying these as their main activities. Our estimate assumes that average expenditures by bird and wildlife watchers were the same as for all visitors to Orkney. It compares to Hooper's finding that "wildlife" tourists spent a total of £1.7 million on Orkney in 1990. Both studies also indicate the importance of Orkney's rural environment, landscape, history and archaeology in attracting visitors.

The Scottish Tourism Multiplier Study (Surrey Research Group, 1993) estimated that £27,548 of visitor spending was required to support 1 FTE job in remote rural areas of Scotland in 1991, taking account of direct, indirect and induced effects. This is equivalent to £34,800 at 2000 prices. Using this multiplier for Orkney, the RSPB estimates that total tourism spending of £18 million in 2000 supported 517 FTE jobs, of which an estimated 36 FTE jobs are supported by spending by visitors attracted mainly by Orkney's birds, wildlife and nature.

Conclusions

Tourism is an important sector of Orkney's economy. Its future depends on the protection and management of Orkney's outstanding natural and historic environment, including the conservation of the marine environment. Given the highly seasonal nature of tourism on Orkney, there may be opportunities to extend the tourism season by promoting wildlife tourism in the winter and "shoulder" months. This could include efforts to raise awareness of the value of the islands for migrant and wintering birds.

5. RSPB Forsinard Reserve - Attracting Visitors to the Flow Country

RSPB Forsinard Reserve

Comprising 7,000 hectares of blanket bog, the deep peatlands of Forsinard Reserve lie at the heart of the internationally important Flow Country of Caithness and Sutherland. Birds, including golden plover, dunlin, greenshank, hen harrier and merlin, breed on the reserve. A variety of interesting plants, such as sundews and bogbeans, dragonflies and other insects can be seen. Access is provided via a visitor centre at Forsinard railway station, a bog pool trail, regular guided walks and roadside viewing.

The RSPB acquired Forsinard Reserve in 1995, following a highly successful public appeal, and with co-funding from the EU LIFE Nature programme. The reserve has subsequently been expanded, with a number of extensions being co-funded by the Heritage Lottery Fund. In February 1999, the RSPB increased its peatland land holding in Caithness and Sutherland by acquiring Blar nam Faoileag Reserve (2,247 ha) and entering into a management agreement with the owner of Strathmore Estate (2,005 ha). In spring 2001, the acquisition of Dorrery Estate and part of Dorrery Farm was announced. This acquisition benefited from funding from the Heritage Lottery Fund, and forms part of a £2.8 million project to restore areas of damaged blanket bog, co-funded by the EU LIFE Nature Programme.

Caithness and Sutherland are very sparsely populated, with a population density averaging only 5 persons per square kilometre compared to 9.5 in the Highlands and Islands Enterprise area, and 65.5 in Scotland as a whole. The area also has a declining and ageing population. The economies of Caithness and Sutherland are highly dependent on tourism, with 25% of employment being in the distribution, hotels, and restaurants sector. As a result, unemployment rates, which are above the average for the Highlands and Islands, show a strong seasonal pattern. Other dominant industries are public administration (29% of employment) and financial services (19% of employment) (HIE, 1999b).

The 1997 Forsinard Visitor Survey

MacPherson Research was commissioned by the LIFE Peatlands Project to analyse and report on the findings of a survey of visitors to RSPB Forsinard reserve completed in 1997 (MacPherson Research, 1998). The 1997 survey followed a pilot survey the previous year. A self-fill questionnaire was used to collect information about visitors and their motivations and expenditures. A total of 225 questionnaires were completed in the 1997 survey, representing a total of 696 visitors to the reserve (as one questionnaire was completed per party). The survey captured 460 non-local visitors, almost 11% of the total estimated visitors to the reserve in 1997.

Results of the Visitor Survey

The survey found that:

- 80% of respondents came from outside the Highlands and Islands, with 20% coming from other parts of Scotland, 53% from England, and 5% from overseas;
- Over 90% of visitors had planned to visit the reserve, while only 8% found it by chance;
- 48% of visitors learnt of the reserve through Birds, the RSPB magazine;
- 68% of groups visiting the reserve contained at least one RSPB or YOC member;
- 91% of visitors from outside the area went bird or nature watching during their holiday trip.

The survey found that the wildlife of the area in general, and the RSPB reserve in particular, play an important role in attracting visitors. Of non-local respondents, 27% stated that the reserve was the single main reason for their visit to the area, a further 21% said that it was a significant reason, and only 15% that it was not a reason. Furthermore, 33% stated that the wildlife interest of the area was the main reason for their visit, and 41% that it was a significant reason. Of non-local visitors, 12% "definitely" stayed in the area longer as a result of the reserve, and 25% "probably" or "possibly" stayed longer - most by a single day.

Most respondents expressed an intention to visit the area again, with 31% claiming their visit had definitely encouraged them to visit on another occasion, 26% saying they would "probably" and 29% "possibly" visit again, and only 6% saying they would not visit the reserve again.

Non-local respondents stayed an average of 6.5 days in Caithness and Sutherland, and spent an average of £24.58 per person per day in the area. Almost 42% of local expenditure was on accommodation, with 29% on food and drink, 19% on transport and 10% on other items.

Economic Impact of Reserve Visiting

The survey results indicate that the sample of 428 people stayed for 2,813 days in the local area, spending £69,142 in Caithness and Sutherland. On this basis, the 4,206 people visiting Forsinard in 1997 were estimated to have spent £630,000 in the region.

Much of this expenditure would have taken place in Caithness and Sutherland whether or not Forsinard reserve existed. Therefore, when considering the economic impact of visits to Forsinard reserve, it is necessary to estimate the proportion of spending that can be attributed to the reserve itself. MacPherson Research used information about the role of the reserve in attracting people to visit the area, and in encouraging people to extend their stay in the area, to attribute a proportion of visitor spending to the reserve. For example, for those who stated that Forsinard reserve was their main reason for visiting Caithness and Sutherland, it was assumed that between 75% and 100% of spending could be attributed to the reserve. This fell to 25-50% if it was "a significant reason", and 0-10% for "one of several reasons". Using these ratios, MacPherson Research estimated that additional visitor expenditure of between £15,949 and £25,264 could be attributed to Forsinard RSPB reserve, from the sample covered by the survey. Scaling this up for all visitors to the reserve gives an annual estimate of between £146,000 and £230,000.

MacPherson Research concluded that a reasonable estimate of the extra visitor spending which Forsinard reserve brought to Caithness and Sutherland in 1997 would be £185,000. They also noted that this positive impact could be expected to increase in future years, given the stated intention of many visitors to make further visits in future.

The Scottish Tourism Multiplier study (Surrey Research Group, 1993) provided estimates of tourism multipliers, which can be used in measuring the economic impact of visitor spending. The "Remote Rural" model in this report estimated that £27,548 of visitor spending was required to support one FTE job in 1991, equivalent to £33,375 at 1997 prices. On this basis, it is estimated that the extra visitor spending Forsinard reserve brought into the local economy in 1997 supported 5.5 FTE jobs. This employment is likely to be dispersed among a variety of businesses in the Caithness and Sutherland area.

Direct Employment and Contract Work

RSPB Forsinard Reserve itself provides direct employment totalling 3 FTE jobs. These include a Peatlands Reserve Manager, a Warden, and seasonal staff to clean and staff the visitor centre, conduct surveys of breeding birds and to supervise school visits. Current levels of employment are expected to increase with the recruitment of a Warden to manage the Dorrery Reserves, on a six months per year basis.

In addition, new peatland management work, co-funded by the EU LIFE Nature programme, will employ an additional staff member (LIFE Reserves Officer) for four years, based at Forsinard Reserve. The RSPB employs a North Highland Conservation Officer, based at Golspie, part of whose work covers the peatlands, and will shortly be recruiting an additional new staff member in Golspie to manage the work co-funded by the LIFE Nature programme.

In addition, deer management work on the reserve is contracted out to a neighbouring estate and trout fishing rights are leased to Forsinard Hotel. All ongoing habitat management work (including fencing, drain blocking and tree felling) is undertaken by local contractors.

Conclusions

The peatlands of Caithness and Sutherland have been threatened in the past by afforestation and drainage, with economic development arguments often used to support damaging projects (Bainbridge *et al*, 1987). This case study demonstrates that the conservation and enhancement of this internationally important habitat also brings benefits to the local economy. New work to restore the peatlands is creating additional employment opportunities.

Forsinard Reserve has the potential to attract many more visitors, and to increase its contribution to the local economy by encouraging them to spend more money locally. This would also enhance people's understanding and awareness of this precious area. The proximity of the reserve to Forsinard railway station offers opportunities to attract people to the reserve with minimal impact on the area's outstanding environment. Better promotion of the reserve to RSPB members and other wildlife enthusiasts, through *Birds* and other wildlife magazines, could help to encourage this, especially if the RSPB works in partnership with ScotRail and local hotels to provide a package of information to visitors.

6. Red Kites and Tourism on the Black Isle

The Economy of the Black Isle

The Black Isle is situated in Ross and Cromarty, a district of the Highland region of Scotland, and is immediately north of Inverness. Its economy, traditionally based on agriculture and fishing, is now dominated by tourism, services and engineering/manufacturing activities related to the oil industry. Ross and Cromarty suffer from income levels 20% below the UK average, and have above average levels of unemployment (Rodgers, 2000).

The Highlands of Scotland Tourist Board (HOST) promotes the Black Isle as a naturalist's paradise, with bird reserves and visitor centres facilitating viewing of red kites, seals and dolphins. The area's cultural heritage and landscape are also attractive to visitors (Rodgers, 2000). The tourism industry was estimated to support 13.6% of employment in the rural Highlands in 1997 (Highland Council, 1999). However, the sector is suffering from increased foreign competition, the changing pattern of UK tourism (being relatively inaccessible for short breaks) and remains highly seasonal.

Red Kites on the Black Isle

More than 100 years after being made extinct in Scotland, red kites were reintroduced to the Black Isle in 1989. Scottish Natural Heritage and the RSPB have managed the reintroduction programme, with juvenile birds imported from Sweden. The reintroduction has been successful, with 33 nesting pairs raising 74 young in 2000, although high mortality rates, especially due to poisoning, limit the number of kites that reach breeding age (Etheridge *et al*, 1999).

In 1997, the RSPB and HOST established a red kite viewing facility at North Kessock Tourist Information Centre (TIC). The project, funded by LEADER II, Ross and Cromarty Enterprise and Highland Council, involves the use of closed circuit television cameras to allow visitors to watch live footage of nesting kites. By keeping nest sites secret and routing visitors around the main roads on the Red Kite Trail, the project has also helped to minimise disturbance to the birds themselves.

Moray Firth Dolphins and Other Wildlife

The Moray Firth supports one of only two populations of bottle-nosed dolphins resident in UK waters. The population is estimated at 129 individuals, but is decreasing at an estimated rate of 6% per year, probably as a result of a combination of natural factors and human impacts (WDCS, 1999). The dolphins are a major visitor attraction. In 1996, over 30,000 people went on dolphin watching boat trips, supporting 14 full time jobs on the boats. SNH (1998) found that the dolphins were a major factor in attracting these visitors to the area, and estimated that dolphins brought local tourism revenues totalling £720,000 per year. The Dolphins and Seals of the Moray Firth Visitor Centre is located 100m from the TIC and kite viewing facility.

Other mammals found in the Moray Firth include harbour porpoise, common and grey seals, a variety of other dolphin species, and occasionally minke and killer whales. Other important wildlife sites in the area include Udale Bay RSPB reserve (attracting greylag and pink-footed geese in winter and ospreys in late summer), the Cromarty Firth (overwintering Slavonian grebes), and North Sutor (inland seabird colonies, especially cormorants). Buzzards breed on the Black Isle and golden eagles can be found a few miles inland.

North Kessock Visitor Survey

A survey of visitors to the red kite viewing centre at North Kessock was conducted in July and August 2000, as part of an MSc dissertation project (Rodgers, 2000). The survey used a self-fill questionnaire to collect information about visitors' characteristics, activities, motivations and expenditures. A total of 130 usable questionnaires were collected, representing 426 visitors, an average party size of 3.3.

The survey found that:

- 7% of visitors were residents of Highland region, with 36% living elsewhere in Scotland, 47% elsewhere in the UK, and 9% coming from overseas;
- 84% of visitors were on holiday, with 7% on day trips from home, 7% visiting friends and relatives in the area, and 2% on business;
- Of the holiday parties, 29% were staying on the Black Isle, 54% were on a day trip from a holiday base outside the Black Isle, 14% were touring, and 4% were en route to or from another holiday destination;
- Over 90% of visitors used cars, both to reach the area and to travel around;
- Visitors staying on the Black Isle spent an average of 5.8 nights there.

The survey revealed the following about visitors' motivations:

- General wildlife interest (22%), dolphin spotting (17%) and scenery and coastline (13%) were given as the most important attractions for holiday-maker visitors to the Black Isle;
- Birdwatching was the most important factor for 9% of holiday-makers;
- The Red Kite Route and Dolphins and Seals of the Moray Firth Visitor Centre were also popular among visitors to the TIC.

Visitor spending was recorded as follows:

- Visitor expenditure on the Black Isle, on the day of visiting the TIC, was estimated to average £9.94 per visitor;
- Daily visitor spending per person varied from £4.35 for day-trippers to £23.44 for holiday-makers staying on the Black Isle;
- Information about visitors' motivations indicated that 11% of expenditure could be attributed to the presence of red kites, a further 28% to dolphins, and 4% to other wildlife;
- Total visitor expenditures in 2000 were estimated by multiplying these averages by an annual estimate of 25,034 visitors;
- Total visitor expenditure on the Black Isle, by visitors to the TIC, and over the length of their trip, was estimated at £1.09 million in 2000, with 89% of this spent by staying visitors;
- Visitor spending attributable to red kites was estimated at £116,000 per year, with spending attributable to dolphins put at £309,000 and other wildlife at £44,000.

These figures refer only to visitors to the Tourist Information Centre, and do not include non-TIC visitors attracted to the Black Isle by its wildlife. Rodgers considered that a large proportion of visitors interested in red kites are likely to visit the TIC, but that a smaller proportion of dolphin watchers use the facility.

Economic Impact of Visitor Expenditure

Rodgers used multipliers derived from the Scottish Tourism Multiplier study (Surrey Research Group, 1993) to estimate the income and employment effects of visitor spending. Based on the "rural" tourism model, adjusted to take account of inflation, Rodgers used an employment multiplier of one FTE job generated per £35,906 of visitor spending and an income multiplier of £0.3068 income per £1 of spending.

Using these multipliers, Rodgers estimated that the £470,000 of spending by visitors to the TIC kite viewing facility that can be attributed to wildlife brings extra income of £144,000 and supports 13.1 FTE jobs in the local area (Ross and Cromarty district). Of this, she estimated that visitor spending by TIC visitors attracted primarily by red kites supports 3.2 FTE jobs and adds £35,735 per year to local income. Spending by TIC visitors attracted to the area mainly by dolphins was estimated to support 8.6 FTE jobs and annual income of £95,000.

Business Survey

Rodgers also undertook a telephone survey of local tourism businesses (accommodation businesses, public houses and gift shops) to assess the extent to which they promote and benefit from red kites and other wildlife.

This revealed that:

- Two thirds of tourism accommodation businesses interviewed mention the Black Isle's wildlife in their promotional material;
- All of these mentioned the dolphins, and 44% mentioned red kites;
- Several operators advertised in the RSPB magazine *Birds*, and others were considering doing so;
- Accommodation providers noted that guests frequently mentioned the kites, but that a larger proportion of visitors were aware of and interested in the dolphins;
- Accommodation providers estimated that between 5% and 40% of their business was dependent on the area's wildlife;
- The accommodation businesses interviewed provided jobs for 37 local people;
- Most businesses purchased supplies primarily from Inverness, and used national supermarket chains or wholesalers, suggesting that leakages from the local economy are likely to be significant;
- Wildlife tourism was generally seen as being an important, favourable and growing sector of the tourism industry, which had yet to realise its full potential on the Black Isle;
- Employment is increasing at the Black Isle Brewery of Munlochy, as a result of increasing sales of Red Kite beer and organic lager.

Conclusions

Rodgers concluded that the economic impact of red kite watching on the Black Isle, while locally significant, is relatively modest compared to the impacts of Kite Country in mid Wales and the Osprey Centre at Loch Garten (Rayment, 1997). She considered that the survey underestimated the economic impact of kite-related tourism in the area, for two reasons. Firstly, the survey captured only visitors to the TIC, and missed people visiting the area to view the kites who did not stop at the centre. Secondly, the survey was conducted late in the holiday season, and it is likely that a larger proportion of visitors between April and June were more active birdwatchers. Indeed, the attraction of red kites to spring visitors was considered important in helping to strengthen the tourism trade during these "shoulder" months.

The survey revealed a high degree of inter-dependence between the various wildlife attractions of the area. While dolphins were the primary attraction for a large number of visitors, many visitors had a strong general interest in wildlife, and many dolphin watchers also used the Red Kite Trail or viewing facility, and vice-versa. Rodgers noted that the kite viewing facility had a fairly low profile, and was not promoted as vigorously as the Dolphins and Seals centre or the dolphin boat trips. With growing local interest in the kites, she considered that the economic benefits they bring to the area could be expected to increase in future years, even as the red kite becomes more numerous in Britain.

7. Geese and Local Economies in Scotland

Geese and Local Economies

Increasing populations of geese in Scotland are causing growing levels of damage to agriculture. This damage has prompted the Government to introduce goose management schemes, in order to manage the problem and compensate farmers for losses. This has raised concerns about the economic costs of goose conservation. However, geese also bring substantial economic benefits to the areas around key roosting and feeding sites, by attracting the attention of birdwatchers and shooters who spend money in local economies. These economic benefits tend to be less well understood and to attract less publicity than the costs of goose grazing.

Tourism is an important sector of the Scottish economy, but is highly seasonal. As a result, unemployment rises in many areas during the winter months. Wildlife, and particularly birds, offer year-round interest to visitors, and play an important role in extending the tourism season into the winter and "shoulder" months. Geese are a key component of Scotland's winter birdwatching experience, presenting an impressive wildlife spectacle in many areas. In many parts of Scotland, visitors are able to enjoy large numbers of greylag and pink-footed geese, while some sites hold internationally important populations of rarer species such as barnacle and Greenland white-fronted geese. In some areas, such as Islay, geese are the predominant attraction for winter birdwatchers, while in others, such as Grampian, they form an important part of a wider birdwatching experience.

Goose Watching on Islay

System Three Scotland (1988) reported a survey of visitors to Islay and Jura. This found evidence that wildlife, and especially birds, were attracting increasing numbers of visitors to Islay. Wildlife tourism was found to be particularly important in the first and last quarters of the year, when people visited Islay to watch the large flocks of wintering barnacle and Greenland white-fronted geese. 'Wildlife' was an important element in the decision to visit for 93 per cent of the 28,770 tourists who went to these islands in 1988. A follow up study by MacKay Consultants (1989) estimated that tourism expenditure amounted to £3.1 million for all visitors, of which £342,000 related to wildlife enthusiasts, a further £986,000 to visitors with an active wildlife interest, and £1.7 million to other visitors with a strong wildlife interest.

The results of the System Three survey indicate that 5.9% of holiday visitors to Islay in 1988 were winter birdwatchers. Assuming that average spending for these visitors was the same as for other visitors, winter birdwatchers spent around £180,000 in 1988. Much of this spending is likely to be attributable to the presence of geese on Islay. Updating this estimate to take account of inflation, the 1988 estimate of expenditures by winter birdwatchers is equivalent to £269,000 in 1997 prices. In practice, there has been significant and widespread growth in the wildlife tourism sector in the last decade, so this figure may well be an underestimate.

RSPB/BASC Study

In 1998, the Royal Society for the Protection of Birds (RSPB), in association with the British Association for Shooting and Conservation (BASC), was asked by the National Goose Forum to review available evidence of the benefits that geese bring to local economies in Scotland through tourism and shooting. This is a summary of the full report (RSPB/BASC, 1998).

In the 1998 study, questionnaires were sent to wardens and managers of key reserves in Scotland supporting important wintering populations of geese, and receiving significant numbers of visitors. The questionnaires asked each reserve to estimate the number of visitors during the winter months, the importance of geese as an attraction to visitors, and the types of visitors (locals, day-trippers and holidaymakers). This was combined with data on average daily expenditure to estimate the total annual spending in local economies by people visiting these sites to watch geese (Table 9).

From the survey, it was estimated that:

- at least 25,000 staying visitors and 19,000 day trippers visit key goose reserves in Scotland each winter;
- these visitors spend an estimated £3.0 million per year in local economies;
- allowing for visitors' other activities and interests, it was estimated that 50% of this expenditure, or £1.5 million, can be attributed to the presence of geese at these sites;
- key sites are Vane Farm (Tayside), Caerlaverock/Mersehead/Ken and Dee Marshes (Dumfries and Galloway), Islay (Argyll), Nigg and Udale Bays (Cromarty) and Loch of Strathbeg (Grampian).

Table 9: Estimated Expenditures Attributable to Geese, 1997/98

Site/Area	No. of winter holiday visitors	Average stay (nights)	Estimated spend (at £40 per day)	No. of winter day trippers	Estimated spend (at £10/day)	Total spend (£)	Total spend attributed to geese (£)
Loch Gruinart, Islay	2,470	7	691,600	130	1,300	692,900	346,450
Vane Farm	9,600	3	1,152,000	10,400	104,000	1,256,000	628,000
Dumfries & Galloway	12,000	2	960,000	4,425	44,250	1,004,250	502,125
Grampian	715	2	57,200	3,215	32,150	89,350	44,675
Udale Bay	500	2	40,000	500	5,000	45,000	22,500
Total	25,285		2,900,800	18,670	186,700	3,087,500	1,543,750

As part of the same study, BASC collected data on visiting patterns and expenditures by inland goose shooters and coastal wildfowling. In total, the report estimated that bird watchers and goose shooters spend £5.4 million per year in local economies around Scottish goose sites. Of this, approximately £3.6 million can be attributed to the presence of geese themselves. Most of this expenditure is by non-Scottish visitors, and provides an injection of spending into the Scottish economy. Using income and employment multipliers derived from the Scottish Tourism Multiplier Study, these expenditures were estimated to support employment totalling more than 100 FTE jobs and income of £1.1 million in local economies in 1997/98. It was estimated that 53% of this employment and income are supported by inland goose shooting, 42% by goose watching and 5% by coastal wildfowling.

Conclusions

Scotland holds internationally important populations of geese, which it has a responsibility to conserve under the EU Birds Directive. The RSPB/BASC report demonstrated that geese bring significant benefits to rural economies in Scotland by attracting winter tourism by birdwatchers and shooters. These economic benefits are likely to be significant in comparison to estimates of the damage caused by goose grazing. For

example, on Islay, where goose grazing is seen as being particularly damaging to the agricultural economy, SNH has estimated that it reduces farmers' gross margins by between £336,973 and £787,733 per year outside the SSSI area. The RSPB/BASC study suggested that goose watching brings expenditures of between £269,000 and £346,000 to Islay's economy. While these figures are not strictly comparable, they suggest that any economic assessment which ignores the benefits of geese through tourism could seriously overstate the net damage geese are causing to the economy as a whole.

While farmers suffer income losses from goose grazing, the economic benefits are usually enjoyed by the wider rural economy - such as providers of accommodation, food and drink, transport and other services. Most farmers find it impractical to charge visitors for access to the countryside to view wildlife, even in areas where goose watching is most popular, such as Islay and the Solway. Moreover, though many farmers do gain revenues from allowing people to shoot geese on their land, these do not necessarily reflect the costs that individual farmers incur as a result of goose grazing. As a result, the benefits that geese bring to local economies are often not captured by those who bear the burden of the costs. This market failure supports the case for intervention to ensure that farmers are rewarded appropriately for managing their land in a way that supports healthy goose populations.

Further evidence of the benefits of wild goose conservation is provided by a recent report for the Scottish Executive (MacMillan *et al*, 2001). This revealed that the Scottish public is willing to pay substantial sums in extra taxation to conserve wintering geese populations, and especially populations of rare species.

8. Reedbeds – Opportunities for Rural Development in the UK

Reedbeds

Reedbeds are wetlands dominated by stands of common reed *Phragmites australis*. They are principally valued in the UK:

- As a source of commercial materials, such as thatching reed; and
- As a wildlife habitat: UK reedbeds provide habitat for six bird species and five invertebrate species from the Red Data species list (Biodiversity Steering Group, 1995).

The area and quality of reedbeds in the UK has declined in recent decades due to competition from other land uses and lack of appropriate management. Most of the remaining area is now under conservation management. However, reedbed management does not just bring conservation benefits. Integrated management of reedbeds for commercial and conservation interests can benefit both local communities and wildlife. Recently the value of reedbed functions, such as flood defence and waste water treatment, has been more widely recognised. This case study is taken from a longer RSPB report (Dickie, 2001).

Economic Benefits of Reedbeds

The Thatching Industry

The British thatching industry employed an estimated 1,000 people in England in the late 1980s (Bateman *et al*, 1990). The majority (about 800) of these are thatchers. The Countryside Agency organises formal thatching training courses, from which 75 people qualified during the 1990s (Countryside Agency, *pers comm*), while others train as apprentices to established thatchers.

Common reed has been used as a roofing material in Britain for centuries, but the UK thatching industry now relies extensively on imports (c. 70 - 80% of reed supplies are imported), with few jobs in the cutting and processing of reed. Britain's largest commercial reedbed, on Tayside, employs three permanent full-time staff in mechanised reed harvesting (Hawke and Jose, 1996). However, most commercial reed cutting jobs involve hand cutting and are part-time or temporary.

Conservation Management

The resources used to manage reedbeds in the UK are estimated in Table 10, using assumptions about the area and intensity of reedbed management:

- Of the UK's estimated 6,500 ha of reedbed, approximately 85% (c. 5,500 ha) are designated as SSSIs and it is assumed that about two-thirds (c. 4,500 ha) are managed for conservation. The BAP targets for reedbed are to increase the area in the UK by 1,200 ha and rehabilitate a further 800 ha by 2010, adding 2,000 ha to the 4,500 ha that will continue to be maintained for conservation purposes. The RSPB has proposed that the BAP reedbed creation target be doubled to 2,400 ha by 2020. This would generate significant extra economic activity to that identified below.
- Reedbed management for conservation by the RSPB is estimated to utilise approximately 2.5 days work per hectare per year (not including work done by volunteers), or 11 full time equivalent (FTE) jobs per thousand hectares (0.0109 jobs per ha). However, other organisations may manage reedbeds less intensively than the RSPB, so a minimum employment estimate might be half of this, at 0.0054 jobs per hectare per year. Work being planned by the Broads Authority using mechanical harvesting machines is expected to provide a similar number of permanent jobs per hectare.

- Reedbed creation work documented by Shepherd and Harley (1999) and by the RSPB suggests that reedbed creation and rehabilitation requires approximately 22 work days per hectare. This equates to 0.096 work years per hectare. In addition, typical expenditure of £2,000 per hectare is required for site engineering.

Table 10: Resources for Reedbed Conservation Management

Activity	Ha	Resources ha ⁻¹	Total resources
In conservation management	4,500	Low: 0.0054 permanent jobs High: 0.0109 permanent jobs	low: 24 FTE jobs high: 49 FTE jobs
BAP rehabilitation/ creation target	2,000	0.096 work-years £2,000 in contracts	191 work-years £4 million
BAP achievement summer 2000	1,036	0.09 work-years £2,000 in contracts	99 work years £2.1 million
Total target	6,500	Low: 0.0054 permanent jobs High: 0.0109 permanent jobs	low: 35 FTE jobs high: 71 FTE jobs

The management of 6,500 ha of reedbed will support an estimated 35 - 71 FTE jobs, and the work required to achieve BAP rehabilitation and creation targets will support an additional 191 work years (or 19 FTE jobs). This gives a total of up to 90 FTE jobs over the next ten years. Net job creation will be slightly lower than this, as allowance must be made for lost employment in agriculture for those sites where reedbed is being re-created on farmland.

Other Economic Benefits

Material cut from reedbeds or other fen habitats, either for conservation and/or commercial purposes, has other beneficial uses. Recent planning by the Broads Authority has shown the viability of fen litter as a biofuel for heat and electricity, for obtaining energy using a gasification process, and as pet litter (Andrews 2000).

Major reedbed sites are of interest to naturalists and attract significant numbers of visitors, bringing substantial benefits to the tourism industry. Examples include Titchwell, Minsmere and Leighton Moss RSPB reserves (sections 9, 10 and 13 of this report).

Reedbeds in the right location can also provide indirect economic values, such as flood defence, water resource, water quality, fishery and amenity benefits. Reedbeds contribute to natural landscapes throughout Britain and also have non-use values, being valued by people for their existence and the environmental benefits this provides.

Opportunities for UK Reedbed Management

For reedbeds to provide their maximum possible range of benefits requires management of both their physical and economic characteristics. Some reedbeds will be maintained purely for wildlife interests, and commercially viable reedbed products will support the management of further sites.

Physical Management

Reedbeds can be managed to meet conservation objectives, either on their own, or in combination with the production of high quality thatching reed (Hawke and Jose, 1996), or other commercial crops (Andrews, 2000). This combination requires a large enough area of reedbed to satisfy both commercial activity and

wildlife needs, and specific water level management. Commercial cutting will prevent encroachment of woodland scrub, because cutting removes material which would otherwise have caused the drying out of the reedbed, thus maintaining high biodiversity interest (Hawke and Jose, 1996). In the UK in 1990, the area of reedbed that was not being harvested was much larger than the cut area, due to financial constraints and non-commercial conservation cutting (Bateman *et al*, 1990), and to a lack of motivation to carry out reed cutting (Rob Andrews, *pers comm*).

Commercial Management

Thatching Reed

Imports of reed to the UK have been increasing steadily since before 1980 and overall supplies of UK reed have fallen as fewer reedbeds are actively managed and many have been replaced by other land uses. Demand for thatching reed has been buoyant since the 1980s property boom, which increased demand for roof thatching. The heavy reliance of the UK thatching industry on imported reed, and the competitiveness of established UK reed suppliers, suggests that there is a ready market for quality UK produced reed.

Employment

Thatching reed is cut in winter and cutting expertise is generally based on experience. Finding staff for seasonal work that cannot offer a high wage and is often solitary can be problematic. The solution to these employment difficulties may lie in offering a permanent employment structure, consisting partly of reed harvesting work, and partly of other conservation activities, such as interpretative work and other habitat management (Rob Andrews, *pers comm*). There is also room to use alternative, mechanised, reed harvesting techniques.

Reedbed Schemes

High levels of agricultural subsidies encouraged the drainage and destruction of reedbeds in the past (Bateman *et al*, 1990), and these payments remain a barrier to converting agricultural land back to reedbeds. Some reedbed owners can raise revenue from commercial reed cutting and land management payments, but these are not sufficient to support reedbed management on their own (Rob Andrews, *pers comm*). Area-based land-management payments for reedbeds are relatively low. For example, the fen tier in some Environmentally Sensitive Areas is lower than the permanent grassland tier. Agri-environment schemes have therefore failed to encourage reedbed creation for commercial and social benefits on a significant scale outside land owned by nature conservation organisations. This is partly because re-creation of reedbeds represents a radical departure from established farming practices.

Reedbeds could also be encouraged through better use of other public funds that influence land management. For example, the creation of reedbeds on washlands built for flood defence purposes could be financed by combining flood defence expenditure with environmental enhancement budgets, potentially allowing both funding objectives to be achieved at lower overall cost. It is also possible to create reedbeds from exhausted gravel extraction sites, utilising the resources that would otherwise be needed to return them to agricultural uses.

Reedbeds can be given better financial support through higher direct subsidies and better use of existing funds that influence land management practices. Both of these approaches could support the public benefits of biodiversity, amenity, water resource management and flood defence functions that appropriately located reedbeds can provide.

Conclusions

Large wetlands, with reedbed as a significant component, can be managed to produce supplies of reed products and provide conservation benefits. The benefits of reedbeds to rural economies include:

- Direct jobs in reed harvesting and thatching ;
- Up to 90 conservation jobs and £4m worth of contract work in reedbed conservation management; and
- Wildlife tourism that generates trade for local businesses.

There is demand for quality UK produced thatching reed, and other fen products (such as biofuel and pet litter) can be viably produced in association with sensitive wildlife management. Reedbeds can also provide other indirect benefits such as water management functions. Increasing the area of reedbed in the UK will benefit both biodiversity and rural employment. However, careful management is required, both of reedbeds themselves, and of the way they are worked, so as to provide sustainable benefits to local communities and wildlife.

Reedbeds can be supported in the UK through:

- The integration of support for reedbed management with other environmental management initiatives (e.g. flood defence programmes);
- Increased efforts by key government agencies (e.g. The Environment Agency, English Nature) to re-create, restore and improve the management of reedbeds;
- Improved payments and prescriptions for reedbed management in agri-environment schemes;
- Support for the development of markets for fen products other than thatching reed (such as biofuels).

9. Valuing Norfolk's Coast

The Norfolk coast

People have long been attracted to the Norfolk coast by its special character, landscape and wildlife. The outstanding importance for wildlife of the Wash and the Norfolk coast has earned these areas a host of national and international designations and has led to much of this coastal strip being owned or managed by wildlife conservation bodies. The coast is popular for visitors, attracted to the area by the quality of its landscape, beaches and wildlife, its traditional villages, and its peaceful atmosphere.

1999 Visitor Survey

Between August and October 1999, the RSPB undertook a study of tourism in the Norfolk Coast area (RSPB, 2000a). The study area chosen stretches from Snettisham on the Wash to Weybourne in the east, and the area up to 5 miles inland from the coast. Face-to-face surveys of visitors were completed at six sites on the coast, in order to investigate their activities, motivations, visiting patterns and expenditures. The six sites selected were Snettisham Beach, Titchwell RSPB Reserve, Holkham Lady Anne's Drive, Blakeney Quay, Morston Quay and Norfolk Wildlife Trust's (NWT) Cley reserve. These sites were chosen in order to interview a significant number of visitors attracted to the area by the quality of the natural environment.

A total of 1,759 interviews were conducted, with 946 of these being in August and 813 in October. More than 250 interviews took place at each site. Each respondent answered on behalf of his or her party. Taking account of the size of these parties, the completed surveys covered a total of 5,076 visitors.

Survey Results

The survey revealed that:

- 46% of visitors were on a holiday or short break in the area;
- staying visitors spent an average of 6.2 nights in the area, with stays averaging slightly longer in August than in October;
- 92% of visitors to the sites had arrived by car;
- walking and birdwatching were the most popular activities of visitors to the survey sites, with one third of respondents identifying each of these as their main activity in the Study Area;
- preferred activities varied between sites, with Cley and Titchwell attracting large numbers of dedicated birdwatchers, and the other sites attracting more walkers and beach visitors;
- birds and wildlife were the biggest attraction for visitors to the survey sites, with 34% of respondents identifying them as their main reason for visiting;
- other important reasons for visiting the Study Area were its scenery, landscape, peace and tranquillity.

The questions on visitor expenditures revealed that:

- Most visitors had spent, or planned to spend money in the local economy on the day they were interviewed, with 79% purchasing food and/or drink;
- Respondents spent an average of £42.89 per party, or £14.86 per visitor, on the day of the interview;
- Accommodation accounted for 43% of total money spent, and food and drink a further 30%;
- Average daily spending was higher for visitors to Cley and Titchwell than the other sites, and lowest at Holkham and Snettisham;
- By multiplying daily expenditures in the Study Area by the number of days stay, average trip expenditures were estimated at £172 per party, or £60 per individual visitor;

- Little difference in average expenditures was observed between the August and October sub -samples.

Attitudes of Visitors

Visitors were asked what they liked and disliked about the Norfolk Coast area. The most popular features included the peace and quiet, scenery and landscape, pace of life, birds and wildlife, and general unspoilt nature of the area. Although most respondents expressed no dislikes, those most frequently mentioned included the increasing number of visitors (especially in summer), growing levels of traffic, the quality of the roads and the level of car parking charges.

Assessing the Economic Impact of Tourism

Combining data for visitor expenditures with estimates of the number of people visiting each site annually, and adjusting the figures to allow for people who visit more than one site, total annual expenditures by visitors to the six sites were estimated. By combining expenditure data with information about motivations, it was possible to assess how much was spent by people attracted by different features of the area.

Published data are available on the volume, value and economic impact of tourism in North Norfolk and North-West Norfolk and King’s Lynn districts, based on the Cambridge tourism model (EETB, 1998, 1999). For the RSPB study, Geoff Broom Associates used information on the stock of accommodation and visitor attractions in the Study Area to estimate the volume and value of tourism in the area, and to compare this with data collected at the six coastal sites. Multipliers from the Cambridge tourism model were used to assess the impact of these expenditures on employment (Table 11).

Table 11: Spending and Employment Resulting from Tourism in Norfolk

	Estimated spending (£ million per year)	Estimated employment supported (total jobs)	Estimated employment supported (FTE jobs)
Overall visitor spending in North Norfolk/ North West Norfolk and King’s Lynn districts	506	14,018	9,977
Overall visitor spending in Norfolk coast study area	122	3,266	2,325
Spending by visitors to the six sites	21	620	442
Spending by visitors to six sites attracted mainly by the area’s birds and wildlife	6.2	189	135
Spending by visitors to six sites attracted mainly by the area’s scenery and landscape	2.7	82	59
Spending in the area attributable to Cley NWT reserve	2.5	-	55

Spending in the area attributable to Titchwell RSPB reserve	1.8	-	41
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Table 11 presents estimates of expenditure and employment resulting from tourism on the Norfolk Coast, based on a combination of the results of the EETB volume and value studies, and the RSPB Norfolk Coast survey. They indicate the significance of wildlife tourism in the local Norfolk coastal economy.

Economic Impact of Environmental Management

From a small survey of the main conservation bodies active in the Norfolk Coast area, the study estimated that at least a further 30 FTE jobs in the Study Area are supported by conservation activities, including:

- Direct Employment of 26.5 FTE jobs.
- Employment of 2.7 FTE jobs resulting from reserve expenditures.
- Employment of 1.5 FTE jobs resulting from employee expenditures (RSPB, 2000a).

Interviews with Local Businesses

The study presented 12 case studies of a variety of businesses in the area, all of which depended on tourists as an important part of their customer base. Asked what attracts the tourists, respondents cited the scenery, beaches, walking, wildlife, sailing, golf, the air and especially the unspoilt character of the area - peace and quiet and the ability to get away from it all. Several commented on the changing patterns of visiting, with more short breaks and more visitors in the shoulder months and winter.

Tourism on the Norfolk Coast - issues and challenges

It is clear that the high quality and special character of the Norfolk coast's environment deliver substantial economic benefits through tourism. If the area and local people are to continue to enjoy these benefits, both the environment and the tourism it attracts must be managed sustainably.

Key issues include:

- **The changing coast.** Many of the area's finest wildlife sites, including Titchwell and Cley, are threatened by rising sea levels and increased storminess, partly due to climate change. Plans for the coast must ensure that the extent and quality of internationally important wildlife habitats are maintained, with replacement habitats being created for any that may be lost.
- **Traffic and transport.** Continued dependence upon the car threatens to degrade the quality of the area's environment. Increased congestion is readily evident. More insidious is the contribution of vehicle emissions to climate change, which in turn threatens the very assets many visitors have come to enjoy. Better public transport would help to address these impacts.
- **Local community.** Tourism provides jobs and income for many people and ensures the viability of local shops and services. However, many of the jobs it supports are part-time, poorly paid and seasonal. Outside the tourism sector people are inconvenienced by greater congestion, and the increased demand for holiday and retirement homes is pushing house prices beyond the reach of local people.
- **Increased visitor pressure.** With the anticipated growth in short breaks and activity holidays and a substantial rise in interest in wildlife, the demand for holidays and day visits to the Norfolk coast can only be expected to increase.

Managing all of these issues is a major challenge for everyone with an interest in the Norfolk coast.

10. Minsmere RSPB Reserve and the Local Economy

Minsmere RSPB Reserve

Minsmere lies on the Suffolk coast between Felixstowe and Lowestoft. The local area is predominantly rural, and has a range of designations, including Rural Development Area, Area of Outstanding Natural Beauty and Heritage Coast. Minsmere became an RSPB reserve in 1947, when breeding avocets were first noted. The reserve now covers 935 hectares of a variety of habitats, including heathland, farmland, reedbed, coastal lagoons, dunes, grazing marshes, saltmarsh, shingle beach and woodland.

As a result of its habitat diversity, Minsmere supports a larger variety of birds than any other area of its size in the UK, with between 85 and 100 species breeding annually. It is a SSSI, Ramsar site, Special Protection Area (under the EU Birds Directive) and candidate Special Area of Conservation (under the Habitats Directive). Minsmere supports important breeding populations of bittern (20-25% of UK population), bearded tit, marsh harrier, woodlark, dartford warbler, nightjar, little tern, avocet, water rail and gadwall. In winter, important numbers of white fronted goose, water pipit, hen harrier and red-throated diver are present. In addition, Minsmere hosts a range of interesting invertebrates, mammals, reptiles and amphibians, including natterjack toads.

Reserve Visitors

Tourism is an important industry in the area, with Suffolk Coastal District attracting an estimated 5.9 million visitors in 1999 (Suffolk County Council, 1999). The County Council aims to promote tourism in the area in order to increase employment, while maintaining and enhancing the quality of the environment.

The numbers of visitors to Minsmere increased from 39,000 in 1986 to 84,000 in 1997/8. A new visitor centre, with education and conference area, was opened in 1996. Other visitor facilities include a car park picnic area, tearoom, shop, observation hides, wildlife trails, information displays and organised events. Adult visitors who are not members of the RSPB are charged £5 to enter the reserve.

Reserve Visitor Survey, 2000

A survey of visitors to Minsmere was conducted during a five-week period between 13 July and 18 August 2000, as part of an MSc dissertation project (Astman, 2000). The survey used a self-fill questionnaire, presented on a display board at the entrance to the reserve visitor centre. The questionnaire collected information about visitor profile, activities, motivations for visiting Minsmere and the surrounding area, expenditures, and views about the environmental impacts of tourism. In order to assess the effect of reserve visiting on the local economy, a study area was defined, stretching from Kessingland in the north to Orford in the south, and extending inland to include Saxmundham, Melton and Halesworth.

A total of 124 questionnaires were completed by visiting parties, covering 361 visitors, an average party size of 2.9. Of these visitors, 82% were adults and 18% children. The survey found that:

- 49% of visiting parties were staying in the study area, 27% were residents of the area, 10% were on a day trip from a holiday base outside the area, and 14% were on a day trip from home;
- staying visitors spent an average of 4.6 nights in the study area;
- 85% of respondents were RSPB members;
- 96% of visitors were UK residents, with 41% living in East Anglia;

- 90% of parties arrived by car.

When asked about the importance of the reserve in their decision to visit the study area, 52% of non-local respondents indicated that the reserve was the main reason for visiting the area, 38% said that it was one of the reasons for their visit, while 10% had not decided to visit the reserve until they reached the vicinity. Most of these visitors had learnt of Minsmere through RSPB publications, or through recommendations by other people. Almost 70% of visitors had also visited or planned to visit Dunwich Heath, with Orford Castle the next most popular attraction, attracting 22% of visitors.

Visitors were also asked their reasons for visiting the reserve. "Birdwatching" was the main reason given by 57% of visitors, with a further 11% mentioning general wildlife viewing as the main purpose of their visit. "Going for a walk", "going to the beach", and "going to eat and/or drink" were the main reasons given by 14%, 11% and 7% of parties respectively. In general, local residents visited the reserve for a wider variety of reasons than holidaymakers and day-trippers from outside the region, who were more focused on bird and wildlife watching.

Astman estimated spending by visitors to the reserve as follows:

- Visitor spending in the study area averaged £49.58 per party and £16.68 per visitor on the day of their visit to Minsmere;
- 36% of spending was on accommodation, 27% on food and drink, 17% on gifts and souvenirs, and 13% on travel;
- Holiday-makers spent an average of £27.65 per person per day in the study area, and day-trippers £12.98 per person per day;
- Average daily spending for holiday-makers varied by accommodation type, ranging from £10.55 for those visiting friends and relatives to £47.91 for those staying in a hotel or inn;
- Holidaymakers spent an average of £128 in the study area over the course of their trip.

Astman noted that much of this spending would have occurred in the study area whether or not Minsmere reserve existed. She estimated visitor expenditures that could be attributed to the reserve itself by combining visitor spending results with information about the importance of the reserve for visiting the area. For visitors who stated that the reserve was their main reason for visiting the area, 100% of spending was attributed to the reserve. Where the reserve was one of several reasons, 25% of spending was attributed, while no spending was attributed for visitors for whom the reserve did not influence their decision to visit the area.

Using this method, Astman estimated that average daily spending of £15.07 per holiday-maker, £10.45 per holiday-maker staying outside the area making a day-trip to Minsmere, and £3.45 per day-tripper from home could be attributed to the site.

In total, 76 903 people visited Minsmere RSPB reserve in the 1999/2000 financial year. Based on Astman's survey data, and allowing for seasonal differences in the composition of visitors and average length of stay in the area, we estimate that, each year:

- Visitors to Minsmere from outside the study area spend £0.9 million in the study area on the day of their visit to the reserve;
- These visitors spend a total of £2.4 million in the study area over their trip as a whole;
- Total visitor expenditures of £1.1 million can be attributed to the presence of the reserve itself.

No locally specific tourism multiplier is available for the Suffolk Coast area. However, if it is assumed that one local FTE job is supported by £40,000 of visitor spending (average per capita incomes in Suffolk are higher than in Scotland and the UK), visitor expenditures attributable to Minsmere reserve can be estimated to support 27.5 FTE jobs in the local economy.

Business Survey

Astman also conducted a postal survey of 23 local businesses, including accommodation providers, pubs, a restaurant and a tearoom. These were identified from information provided by the RSPB about places to eat, drink and stay near RSPB reserves. They represent only a small proportion (and not a representative sample) of tourist businesses in the study area. Respondents were asked about their tariffs and visitor numbers, their views about the importance of the reserve for their business, and their opinions about the environmental impacts of reserve visits.

Fourteen replies were received. These revealed that:

- six respondents estimated that Minsmere was responsible for 0-19% of their business; three that it accounted for 20-39%; one 40-59%; two 60-79% and two 80-100%;
- in total, responses indicated that between £110,000 and £434,000 of turnover in these businesses could be attributed to Minsmere reserve;
- advertisements in Birds magazine and recommendations from friends or relatives were considered the most important means by which customers found them;
- 40% of businesses “strongly agreed” that Minsmere brought them extra custom, 60% “agreed” and 0% “disagreed”;
- respondents generally reported a very high level of satisfaction among reserve visitors, with the main problem being that some visitors arrive without knowing that the reserve is closed on Tuesdays.

Economic Impact of Reserve Management

Minsmere reserve employs 18 full time and 5 part time staff, equating to 20 FTE jobs. The reserve also relies on 38 volunteers, most of whom live locally. The reserve spent approximately £486,000 on contractors, goods and services in the 1999/2000 financial year, of which £145,800 was spent in Suffolk. Using similar multipliers to those used for visitor spending, Astman estimated that these expenditures supported a further 3 local FTE jobs. Adding together direct employment and employment supported by visitor and reserve expenditures, it is estimated that Minsmere RSPB reserve supports a total of 50 FTE jobs in the local economy.

Reserve Visiting – Managing the Impacts

Half of the local businesses responding to Astman’s survey believed that tourism currently has adverse impacts on the local environment, most pointing to increased traffic congestion on the area’s narrow lanes. Most visits to Minsmere are by car, since the reserve is very difficult to access by public transport.

In the visitor survey, respondents were told that nearly 40% of Minsmere’s reedbed was expected to be lost in the next 75 years, as a result of sea level rise. When asked if they thought they were contributing to this problem, 65% thought that they were. This compares to the 90% of parties reaching the reserve by car. Many respondents recognised this link, but pointed to the lack of alternative means of transport. The survey revealed support for better cycling and public transport facilities in the area.

The RSPB aims to increase the number of visitors to Minsmere from 77,000 to 100,000 visitors per year. Two thirds of the local businesses surveyed by Astman supported an expansion in the number of visitors,

because of the benefits this would bring to the tourism industry, on which the local economy is now highly dependent. However, three respondents were opposed to any further increase in tourism, on the grounds that this would bring increased traffic and disturbance. Visitors to Minsmere often have to be turned away from the reserve on busy spring and summer weekends, when the car park becomes full. There are no plans to expand the car park, on the grounds that car-parking capacity is equivalent to the overall visitor capacity of the reserve. Increasing the number of visitors to the reserve therefore depends on spreading reserve visiting more evenly across the week, and into the quieter months of the year. Increased winter wildfowl watching could help to achieve this, while helping to extend the tourism season, and without increasing traffic at busy times of the year.

11. Cirl Buntings and Countryside Stewardship in South Devon

Cirl Buntings in South Devon

The cirl bunting, once a common and widespread farmland bird in southern England, is now confined to South Devon, where pockets of low intensity mixed farming favoured by the species remain. Its population declined to an estimated 114 pairs in 1989, when it seemed at threat of extinction from the UK.

Recognising that existing agri-environment schemes did not cater for the needs of cirl buntings, the RSPB proposed a special project under the Countryside Stewardship (CS) scheme. A key component of these proposals involved paying farmers to provide winter stubbles in which the birds could feed. This recommendation was adopted by the Countryside Commission, and south Devon became a target area for CS in 1991, with the first agreements incorporating winter stubbles being implemented in 1992 (Lock, 1999). The RSPB appointed a project officer in 1993 to provide advice to farmers and assistance in drawing up CS applications.

The number of CS agreements for cirl buntings has increased steadily and reached 80 in 1998. The scheme has played a major role in reversing the decline in the cirl bunting population, which was estimated at 453 pairs in 1998 (Wotton *et al*, 2000). Research demonstrates that cirl bunting numbers increased by 83% on land entering CS management agreements between 1992 and 1998, compared to an increase of just 2% on adjacent countryside not managed under CS (Peach *et al*, *in press*). The success of CS in facilitating the recovery of the cirl bunting population demonstrates the potential role of agri-environment schemes, if widely adopted and properly targeted, in reversing the decline of other farmland bird species.

To assess the economic and social impact of CS cirl bunting agreements, the RSPB undertook a face-to-face survey of participating farmers in 1999/2000. The results are set out in a RSPB report (Hewitt and Robins, 2001) and are summarised here.

Survey of Participating Farmers

Of the 63 farmers with CS agreements, a total of 53 farmers agreed to be interviewed by Nigel Hewitt between November 1999 and March 2000. All but one of these farms are located in south Devon, between Wembury in the west and the Exe Valley in the east. The total area of participating farms was 7,596 hectares, around 1.5% of the agricultural area of Devon. Farms were relatively large, averaging 143 hectares. Most farms were mixed, with 51% of survey land being arable, 37% pasture and 6% coastal heath. The sample contained 9 dairy herds, 34 beef herds and 30 flocks of sheep, with only one farmer having no livestock. A high proportion (23%) of farms were organic or in conversion, indicating a strong match between CS and organic farming, and 19% contained SSSIs, especially coastal cliff pastures.

The CS agreements involved:

- re-creation of 176 ha of permanent pasture;
- management of 737 ha of grassland, 346 ha of coastal heath, 58.4 km of hedgerow and 226 km (68 ha) of field margins;
- provision of 187 ha of winter stubbles;
- restoration of 10 ha of traditional orchards.

As a result of entering CS, 45% of farmers reported increasing their pasture, 60% grew more spring crops (especially barley), 42% had reduced stocking densities, 66% had increased hedgerows or reduced hedge trimming, and 53% had reduced inputs to grassland.

Socio-Economic Impacts of Stewardship Agreements

The financial benefits of CS were an important attraction for 58% of interviewees. CS was seen as important in providing an additional and reliable source of income and a source of funds for capital investment. Many farmers noted the benefits of CS in allowing them to derive income from the management of more marginal, less productive land. Some 30% of interviewees cited conservation motives for joining the scheme, with others mentioning a range of management benefits and a belief that the scheme pointed the way to future support for farming.

CS provides both annual management payments, based on the profit foregone in implementing prescriptions, and capital payments contributing to hedging and fencing work. Overall, 89% of farmers perceived that their CS agreements had increased the profitability of their enterprise. The effects on farm businesses included:

- annual CS payments averaging £3,770 per farm;
- a reduction in output for most participating farms, with 70% reporting a decline in crop sales and/or subsidy payments;
- a net increase in labour inputs of 200 person days per year, or 0.85 FTE jobs, resulting from annual CS management work, 65% being completed by existing workers and 35% by the family;
- reductions in spending on fertilisers and pesticides, with small increases in the cost of some other inputs;
- a few farmers indicated benefits to other on-farm businesses – e.g. accommodation for bird-watchers and walkers.

Capital agreements totalled £308,000 and run typically for 4 or 5 years, providing an average payment of £1,500 per year for participating farmers. These agreements help to fund work on participating farms, undertaken both by existing farm labour and contractors. The study estimated that at least 3 FTE on-farm jobs were being funded by CS capital grants, compared to a total workforce of 111 FTEs on participating farms. In addition, it found that 34% of farmers used contractors for all or part of their capital projects. One local contractor, with three full time employees and a 9-month forward order book, derived 60% of his work from CS agreements, principally hedge laying, planting and coppicing, and scrub management.

Overall, the figures suggest that CS annual management payments and capital agreements collectively support extra employment totalling more than 6 FTE jobs among local farmers, farm-workers and contractors.

Several farmers commented that participation in CS had enhanced the viability of their business and given them more optimism for the future. Others mentioned that it had increased their interest and enjoyment of their farm enterprise. 94% of interviewees indicated that they were pleased they had joined the scheme, and 55% had received positive feedback from the local community.

Farmers identified a wide range of management issues arising from entry into CS, with easier harvesting and more stock-proof hedges being balanced by problems with weeds and the need to spend time in learning and teaching new techniques during the early years of agreements. Advice from RSPB project

officers and other organisations such as FRCA was seen as important for the effective implementation of the scheme.

Conclusions and Policy Implications

Hewitt and Robins concluded that south Devon farmers have taken to CS with enthusiasm. As well as benefiting bird buntings and other wildlife, the scheme has helped to enhance business viability and farmers' optimism about the future. This case study demonstrates that agri-environment schemes can bring benefits to farm businesses and rural development, as well as helping to meet conservation objectives.

Hewitt and Robins identified a number of factors as being key to the future success of the scheme, and similar agri-environment projects:

- There must be enough capacity in the scheme to ensure sufficient entrants to achieve the conservation goals;
- Scheme design must ensure a good fit between existing farm practices and the required conservation result;
- The scheme must be attractive to farmers at financial, practical and motivational levels;
- Advisors with knowledge of the specific conservation issues are an important catalyst.

Since the study was completed, CS payments have been reviewed by MAFF and some have been cut significantly. These cuts have been made because agri-environment payments are based on profit foregone, while low commodity prices and adverse exchange rates have reduced farm incomes. The payment cuts have occurred despite the environmental benefits of the scheme. At a time of low farm incomes, they are a further blow for farmers, many of whom indicated that they entered CS on the grounds that it offered a new and "guaranteed" source of income. This example provides strong evidence of the need to change the current approach to agri-environment payment reviews in England.

12. Spending by Visitors to Symond's Yat Rock Peregrine Project

The Peregrine Falcons at Symond's Yat Rock

Symond's Yat Rock is a wooded limestone outcrop at the north-western edge of the Forest of Dean. Peregrine falcons bred at Symond's Yat Rock until the population crash of the 1950s. A pair returned to breed successfully in 1982, but failed the next year when their nest was robbed. This prompted the RSPB to approach the Forestry Commission to establish a nest protection and viewing scheme in 1984, which has operated each year since then. Information Assistants and volunteers are present at Symond's Yat Rock from April to August each year, showing visitors the birds, providing information about them, and securing support through name gathering, membership recruitment and donations. Around 50,000 people visit the Peregrine Project at Symond's Yat Rock each year.

Tourism in the Forest of Dean

The Forest of Dean is a rural area, which has suffered from a decline in primary and manufacturing industries. It was nationally recognised as an area of economic and social need in 1984, when the Rural Development Commission designated it as a Rural Development Area. The natural beauty and history of the area have for many years been attractive to tourists. Tourism is estimated to support 1,519 FTE jobs in the Forest of Dean directly (some 6% of the workforce), and a further 760 FTE jobs indirectly (Gloucestershire County Council, 1999a). The potential for sustainable tourism development to enhance economic well being in the area has been identified in economic development and tourism strategies (Gloucestershire County Council, 1996 and 1999b; Forest of Dean District Council, 1996 and 1999).

A total of 240,000 visitors were estimated to have stayed in the Forest of De an area in 1994, and a further 1.5 million or more made a day visit. Symond's Yat Rock is the leading tourist attraction in the Forest of Dean area, receiving around 300,000 visitors per year, though this figure has declined from 500,000 in 1990, following the opening of another attraction at Beechenhurst Lodge.

1999 Visitor Survey

Andrew Case, MSc student at Oxford Brookes University, surveyed visitors to the Symond's Yat Rock Peregrine Project in spring and summer 1999. His study collected information from visitors using a self-fill questionnaire, handed out personally to respondents. The questionnaire collected information about visitors' characteristics, motivations and expenditures. In total, 311 questionnaires were completed, covering a total of 1,513 visitors. The relatively high average group size reflects the fact that coach parties were encountered at the site.

The Symond's Yat Rock survey found that:

- 65% of visitors were staying in the area, 32% were day-trippers and 3% locals;
- staying visitors spent an average of 4.5 nights in the area;
- 56% of visitors knew of the existence of the peregrines before visiting Symond's Yat Rock;
- 20% of visitors to the viewpoint were RSPB members, 20% National Trust members and 6% Wildlife Trust members, with a total of 40% a member of at least one conservation organisation;
- the 1,513 visitors covered by the Symond's Yat Rock sample were estimated to have spent a total of £109,000 in the area (Case, 1999).

Only a proportion of this spending could be attributed to the Peregrine Project itself. To estimate the role of the site in attracting expenditure into the Forest of Dean area, it was necessary to consider its importance in attracting people to visit the Forest of Dean, and allocate appropriate proportions of respondents' expenditure. For example, Case attributed 100% of expenditure by respondents who considered the site to be "the main reason" for visiting the area, 50% for those who said it was "an important reason" and 25% if it was "one of several reasons". No expenditure was attributed where respondents considered the site was "not a reason" for visiting the area, or had not previously heard of the Peregrine Project.

Using these scaling factors, average expenditure attributable to the Peregrine Project was estimated at £11.40 per visitor. Attributable expenditure varied between £1.51 for day-trippers and £14.78 for staying visitors.

Economic Impact of the Site

Using the average attributable expenditure figure and an annual visitor estimate of 48,339 for Symond's Yat in 1999, Case estimated that Symond's Yat Rock Peregrine Project attracted extra visitor spending of £551,000 to the Forest of Dean area in 1999.

On the assumption that £30,000 of visitor spending is sufficient to support one full time equivalent (FTE) job, Case estimated that the extra visitor spending brought into the area by the Peregrine Project supported 18 FTE jobs.

Views of Local Agencies

Interviews with local authorities and other agencies revealed that their key concern is the large number of day-trippers to the Forest of Dean area, and the need to attract more staying visitors. However, the survey found that a large proportion of visitors to the Peregrine Project and to the nearby RSPB reserve at Nagshead stay for several days. This suggests that wildlife-based tourism may be more beneficial to the local economy than the mainstream tourism market.

Attitudes to Peregrine Falcons

Birds of prey face widespread persecution in the UK, and the successful conservation of species such as the peregrine falcon depends on effective legal protection, which in turn is dependent on favourable public attitudes towards them (BTO *et al*, 1999). Initiatives such as the Symond's Yat Rock Peregrine Project can be important in this respect, in raising awareness and understanding of birds of prey among visitors, and in bringing tourism benefits to local communities. Case's study found that attitudes to peregrine falcons among visitors to Symond's Yat Rock were generally positive, and that there was some evidence that the Project helped to reinforce these positive attitudes.

Conclusions

The visitor survey revealed that, as well as providing an opportunity for visitors to Symond's Yat Rock to watch peregrines, the Project brings significant opportunities to the Forest of Dean economy by attracting people to stay in the area. Case concluded that there could be benefits from key organisations (such as Forest Enterprise, the RSPB, local authorities and the tourist board) forming a partnership jointly to promote the wildlife interest of the area to visitors. He also proposed that promoting the benefits that peregrines and other birds of prey bring to local economies could further help to enhance attitudes towards them.

13. Leighton Moss RSPB Reserve and the Local Economy

Leighton Moss RSPB Reserve

Leighton Moss RSPB Nature Reserve is situated in Silverdale, Lancashire, approximately 10 miles north of Lancaster. Close by is the seaside resort of Morecambe which is adjacent to Morecambe Bay, an internationally important site for birds.

The RSPB reserve was established in 1964, and now covers 110 hectares of open water, reedbeds, woodland, scrub and limestone grassland. This mosaic supports a diversity of species, including breeding bitterns, bearded tits and marsh harriers. The Morecambe Bay part of the reserve is an important site for migrating waders and wildfowl. The reserve is a designated Special Protection Area under EU legislation.

Leighton Moss is one of the RSPB's most visited reserves, attracting over 90,000 visits each year, including 4,000 schoolchildren. Over the last few years the reserve has provided training for various groups including wardens, country park rangers, teachers and youth leaders. Facilities for visitors include several hides and a visitor and education centre. Leighton Moss was the county's tenth most popular visitor attraction in 1997 (Lancashire County Council, 2000).

The reserve benefits the local economy by providing direct employment, purchasing goods and services from local firms, and attracting visitors who spend money in the local area. The reserve also helps to raise the profile of the local area, and has helped to boost the local housing market, being frequently referred to in property details prepared by estate agents. The following case study is a summary of a longer report "Leighton Moss RSPB Nature Reserve and the Local Economy" (Cooper and Rayment, 2000).

Direct Employment

Twenty full- or part-time staff are currently employed on the reserve. This is equivalent to 10 FTE jobs. The range of jobs includes reserve management, field teaching, catering, retail, marketing and visitor services. All staff live near to the reserve, spending some of their income in the local economy. The reserve is also an important training site for young people who wish to develop careers in conservation.

Reserve Expenditures

Further local jobs are supported by reserve expenditures on contractors, goods, services and food for the tearoom. In 1999, the tearoom spent £38,000 in the local economy including £6,000 at a local bakery, and the gift shop spent an estimated £4,000 locally. A total of £25,000 was spent on contractors and services linked to reserve management. This total of £67,000 spent by RSPB in the local economy is estimated to support 2 FTE jobs locally.

In addition, the reserve visitor centre was refurbished in 2000. This involved purchases of goods and services totalling £300,000 from local contractors and equipment suppliers.

Visitor Spending

A survey of visitors to Leighton Moss was undertaken between March and October 1999. A self-fill questionnaire was used to collect information about visitors, with a total of 486 different parties completing survey forms. The completed forms covered a total of 1,083 people - an average party size of 2.2. Some 14% of responding parties lived within 20 miles of the reserve, 55% between 20 and 100 miles from the reserve, and 30% more than 100 miles from the reserve. Three parties had come from overseas -

Malta, Germany and the USA. Some 43% of visiting parties were on a holiday or short break, staying an average of 4.7 nights. Staying groups had made, or planned to make, an average of 1.75 visits each during their stay. The survey found that a large proportion of visitors to Leighton Moss also visit other natural attractions in the area, especially Arnside/Silverdale (48%) and Morecambe Bay (39%).

Respondents were asked the importance of different factors in their choice to visit or stay in the general area around the reserve. Birds and wildlife were found to be the dominant attraction for visitors to Leighton Moss and the surrounding area, with 59% stating that this was the main reason for their visit. The local scenery is an important secondary motivation for visitors.

Respondents were asked to estimate how much they had spent or planned to spend on various items that day, in an area within 20 miles of Leighton Moss, excluding spending on the reserve. Average local daily expenditure was estimated at £13.56 per visitor, of which 41% was spent on accommodation, 23% on food and drink, and 21% on travel and petrol. Average daily expenditure per visitor was higher in the summer and autumn months than in spring, reflecting a higher proportion of staying visitors later in the season. In addition, the groups in the sample spent an average of £6.19 per group, or £2.77 per visitor, on the reserve itself, of which 53% was spent on food and drink, and 30% on gifts and souvenirs.

By multiplying daily expenditures by the number of nights spent by each group in the area, and by adjusting for multiple visits by holidaymakers, average trip expenditures were estimated at £71.00 per group, or £31.80 per individual visitor. These figures exclude expenditures by locals.

By scaling these expenditures according to the motivations of visitors to the area, spending attributable to the birds/wildlife and scenery of the area was estimated. For example, 75% of people's expenditure was attributed to factors identified as "the main reason for visiting the area", and 25% to factors considered to be "an important reason".

Using these results, it was estimated that expenditure of £10.62 per visitor could be attributed to the birds and wildlife of the area, and a further £8.55 to the local scenery.

The survey identified that a large proportion of visitors to Leighton Moss are repeat visitors – 85% had visited before, 72% would "definitely" visit again, and a further 14% would probably visit again. Most had heard about the reserve through the RSPB, from their friends, or through bird watching magazines.

In 1998/99, there were a total of 92,531 visits to Leighton Moss RSPB reserve. Combining visitor numbers for different parts of the season with average expenditure figures, it was estimated that these visitors spend a total of £1.2 million per year in the local economy within 20 miles from the reserve, on the day of their visit. In total, these visitors are estimated to spend £2.7 million during their entire stay or day trip in the area.

Using estimates of the expenditure per visitor that can be attributed to the area's birds and wildlife, it is estimated that the birds and wildlife of Leighton Moss and neighbouring sites attract annual visitor spending of £0.95 million per year into the local economy. The local scenery is estimated to bring further annual tourism revenues of £0.7 million to the local economy.

These figures are based on expenditure by visitors to Leighton Moss only. They exclude expenditures by visitors attracted to the area by its natural environment, but who do not visit Leighton Moss.

The Economic Impact of Reserve Visitor Spending

The survey results suggest that the wildlife of Leighton Moss and neighbouring sites attracts visitor spending of at least £0.95 million per year in the local economy within 20 miles of the reserve. This money is spent in a variety of accommodation businesses, petrol stations, pubs, cafes, restaurants and shops. It helps to provide income and employment for people working in these businesses. There are further indirect and induced employment and income effects, as a proportion of this money is re-spent in the local economy.

The total impact on employment can be estimated by use of employment multipliers. Assuming an average local employment multiplier of £35,000 per FTE job, Leighton Moss's wildlife supports at least 27 FTE jobs in tourism activities. A further 20 FTE jobs are supported by spending by visitors to Leighton Moss attracted to the area by its scenery.

Conclusions

Conservation of the wildlife and scenery of Leighton Moss and its environs directly or indirectly supports the equivalent of at least 59 FTE jobs. These include direct employment of 10 FTE jobs, and tourism related employment comprising 27 FTE jobs attributable to wildlife, and 20 FTE jobs attributable to the landscape of the area. The economic impact of Leighton Moss is significant in this area of Northwest England and is a key feature in creating a positive image of the area. The reserve and Morecambe Bay are considered to be important assets by the local tourist authorities. With an increasing number of people participating in birdwatching and countryside recreation, places like Leighton Moss will become even more important economic assets in the future. A 13.5% increase in visitors over the next five years is expected as a result of RSPB investment in an extended visitor centre and additional landholdings, and this is expected to increase the local economic impact of the reserve further.

14. Rathlin Island – Coastal Tourism in Northern Ireland

Rathlin Island

Rathlin Island is an Environmentally Sensitive Area, has ASSI and Special Protection Area designations, is a candidate Special Area of Conservation and is a proposed Marine Nature Reserve. It lies off the north-east coast of Northern Ireland.

The RSPB and The National Trust jointly sponsored a survey of visitors to Rathlin Island during August 2000. Visitors were interviewed around the island's harbour and at points along the road to the West Lighthouse.

Data helpfully supplied by the island's ferry operator (Caledonian McBrayne) showed that the number of visitors to Rathlin has risen in recent years. Their data led to the number of recreational visitors to Rathlin being estimated at 23,500 to 29,000 people per year. The RSPB estimates that it received 6,000 visitors to its reserve facilities at the island's West Lighthouse in 2000. This suggests that 20-25% of all the visitors to Rathlin visit the RSPB reserve.

Visitor Activity on Rathlin

The survey found a high level of location fidelity and satisfaction amongst visitors to Rathlin. The most popular reasons for visiting Rathlin were the scenery and the attraction of a 'nice day out', and the most popular activity amongst visitors was walking. The majority of visitors were aware that there was an RSPB reserve on the island. A large number of the visitors surveyed (228 or 78%) watched birds and/or other wildlife during their visit.

The survey found that visitors to Rathlin spent an average of £9.39 each in the local economy (excluding ferry and accommodation costs). Total expenditure in the local economy by the estimated 23,500 – 29,000 annual recreational visitors to Rathlin is estimated at £245,000, the majority of which is by people enjoying the island's wildlife and natural environment. It is possible to estimate the number of jobs supported in the local economy by this spending.

Local Economic Impact

A study for the Northern Ireland Tourism Board (NITB) calculated that every £1 million of tourism spending supports (directly and indirectly) 55 full time equivalent (FTE) jobs (NIERC, 1998). On this basis, the estimated annual spending of £245,000 in the local economy by visitors to Rathlin would support approximately 13 FTE jobs in the NI economy. This method does not determine how many of these jobs are within the rural economy of the coastal area around Rathlin.

The Scottish Tourism Multiplier Study (Surrey Research Group, 1993) estimated the employment supported by tourism spending in rural economies. Adjusted for price inflation to the year 2000, one full time equivalent (FTE) job is supported for every £34,800 of tourism spending (excluding accommodation) in Scottish rural districts. If a similar multiplier is applied to the Rathlin figures, the estimated £245,000 of spending by visitors to Rathlin supports roughly 7 FTE jobs on Rathlin and in the Antrim coast area.

The island ferry employs 8 full time crew, and 2 full time and one seasonal office staff. As at least two-thirds of the ferry's traffic is estimated to be recreational passengers, about 7 FTE jobs in the ferry operation can be attributed to the tourists attracted to Rathlin.

Conclusion

The majority of visitors to Rathlin are attracted to the island by its wildlife and natural environment. They spend around a quarter of a million pounds each year during their visit to the island. The total local employment supported by visitors to Rathlin is estimated at over 15 FTE jobs: 7 FTE jobs are supported by visitor spending; at least 7 FTE jobs are supported by visitors using the island's ferry service; plus further jobs supported in the local tourism accommodation sector.

Rathlin has been proposed as a Marine Nature Reserve, but the Northern Ireland Government is yet to act on this. This designation would help to protect Rathlin's scenery and wildlife, which are clearly a valuable resource to the local economy.

15. Conclusions and Policy Recommendations

Nature conservation supports employment and provides benefits to local economies in the UK. Interest in conservation is growing, and these benefits are increasing. The case studies in this report highlight some positive examples of projects and nature reserves that have achieved significant conservation benefits while contributing to wider rural development.

However, the UK still faces huge conservation problems and challenges. For example:

- Farmland birds and other wildlife have declined substantially in the last 30 years, as a result of the intensification of agricultural practices;
- Many of the UK's habitats have been lost through neglect, agricultural improvement, afforestation or built development. Although attempts have been made to restore habitats such as lowland heathland, wet grassland, native woodland and reedbeds, they occupy only a small proportion of their previous extent;
- Birds of prey still face widespread persecution;
- Climate change threatens large areas of wildlife habitat, especially in coastal and upland areas.

Addressing these challenges will require a large amount of effort. This work is essential for the UK's biodiversity, but it will also create jobs and contribute to rural development. Protecting and restoring habitats will provide direct employment, maintain and enhance the quality of the countryside and the tourism industry that depends on it, and will provide new opportunities to develop and market food and rural produce consistent with a high quality rural environment.

The following policy measures would benefit both wildlife and rural economies in the UK:

1. **Restoring and re-creating wildlife habitats.** Restoring habitats such as native woodlands, heathland, wet grassland, downland and reedbeds will create jobs as well as contributing to biodiversity targets. This will enhance the diversity of the countryside and provide increased opportunities for outdoor recreation, benefiting the nation's health and the tourism industry. The RSPB has called on the Government to double its targets for restoration of these habitats by 2010 (RSPB, 2000b).
2. **Supporting conservation-friendly rural produce.** The growth in demand for organic food demonstrates the public's willingness to pay a premium for produce grown in an environmentally beneficial way. There is significant unexploited potential for the marketing of other conservation-friendly rural produce, including food produced from nature reserves and under agri-environment schemes, timber from native woodlands and thatching materials from UK reedbeds. Government schemes such as the Processing and Marketing Grant Scheme under the Rural Development Regulation should help to promote the processing and marketing of wildlife-friendly produce, adding value to conservation management schemes.
3. **Supporting conservation skills.** The restoration and management of habitats such as native woodland and reedbeds would benefit from growth in traditional skills such as coppicing, woodland management and thatching. Government advisory and training schemes can help to increase these skills.
4. **Reforming the CAP.** Agricultural production subsidies have damaged wildlife habitats while failing to prevent large-scale declines in farm employment. Agri-environment schemes such as Countryside Stewardship both benefit wildlife and create local jobs, and deserve to claim an increasing proportion

of the CAP budget. There is a strong case for investing more resources in schemes that encourage the management of non-agricultural habitats, such as reedbeds, and provide opportunities for rural development and the environment.

5. **Promoting sustainable tourism.** Several of the case studies in this report highlight the positive role that wildlife tourism can bring to local economies, while recognising that wildlife sites themselves are increasingly threatened by climate change, caused partly by tourism. Promoting wildlife tourism further can bring a range of benefits, but greater efforts need to be made to minimise the adverse environmental impacts. While transport options are limited at sites like Minsmere, other reserves such as Forsinard are readily accessible by public transport. Joint initiatives between site managers, transport operators and local accommodation businesses could promote sustainable tourism packages that benefit local economies while minimising adverse impacts.
6. **Extending environmental tax reform.** Introducing new taxes on activities that damage the environment, and using the proceeds to cut employers' National Insurance Contributions or to fund labour intensive environmental schemes, offers potential to increase employment and enhance the environment (Tindale and Holtham, 1996). Further consideration should be given to environmental taxes on pesticides and fertilisers, which would help to reduce environmental impacts, while helping to fund training and conservation management schemes in the countryside.
7. **Recognising the role of nature conservation in rural development.** Greater recognition of the role that wildlife conservation plays in rural development would bring a range of benefits, helping to strengthen attitudes towards the conservation of birds such as geese and raptors, and to attract new sources of funding for conservation and rural development projects. The UK has protective nature conservation designations and Biodiversity Action Plans to conserve and enhance species and habitats. As well as protecting our most precious environmental assets, these mechanisms also serve a significant secondary role in preserving a valuable and sustainable economic resource. Meeting BAP targets should be seen as a crucial test of sustainable development.

References

- ADAS (1996a) *Socio Economic Assessment of Tir Cymen*. Report for Countryside Council for Wales. CCW, Bangor
- ADAS (1996b) *Economic Evaluation of Stage 1 ESAs*. Report for MAFF Economics (Resource Use) Division. September 1996.
- Andrews R (2000) *New Wetlands Harvests*. Final Technical Report. Broads Authority, Norwich.
- Bainbridge I P, Housden S D, Minns D W and Lance A N (1987) *Forestry in the Flows of Caithness and Sutherland*. RSPB Conservation Topic Paper No. 18. RSPB, Edinburgh.
- Bateman S , Turner K & Bateman I (1990) *Socio-Economic Impact of the Change in the Quality of Thatching Reed*. University of East Anglia, Norwich.
- Biodiversity Steering Group (1995) *Biodiversity in the UK: Steering Group Report*. HMSO., London
- British Trust for Ornithology, Hawk and Owl Trust, National Trust, National Trust for Scotland, RSPB, North of England Raptor and Upland Bird Study Groups, Scottish Raptor Study Groups, Wales Raptor Study Group, Wildlife Trusts, Scottish Ornithologists Club, Wildfowl and Wetlands Trust and the World Wide Fund for Nature WWF-UK (1999) *Birds of Prey in the UK: back from the brink*. 2nd edition. BTO, HOT, NT, NTS, RSPB, SOC, NERUBSG, SRSG, WRSG, WWT, WT and WWF, Thetford.
- Brooke C and Rayment M (1999) *The Environment and the Regional Economy. Opportunities for the Regional Development Agencies*. RSPB, Sandy
- Geoff Broom Associates and Cambridge Policy Consultants (1997) *The Economic Impact of Recreation and Tourism in the English Countryside*. Report for the Rural Development Commission and Countryside Commission.. RDC, Salisbury
- Case A J (1999) *Tourism Impacts of the RSPB Sites in the Forest of Dean*. Unpublished MSc Dissertation, Oxford Brookes University.
- CEAS (1993) *The Economy of Landscape and Nature Conservation in England and Wales*. CEAS Consultants (Wye) Ltd. Report to Countryside Council for Wales, Countryside Commission and English Nature. Unpublished.
- Cooper B and Rayment M (2000) *Leighton Moss RSPB Reserve and the Local Economy*. RSPB, Denby Dale
- Crabtree J R, Leat P M K, Santarossa J, Thomson K J and Lee K M (1992). *The Economic Contribution and Potential of Nature Conservation*. Proceedings of a Conference, "People, Economies and Nature Conservation", UCL, London
- Cuff J and Rayment M (1997) *Working with Nature – Economies, Employment and Conservation in Europe*. BirdLife International/RSPB, Sandy
- Dartington Institute (1985) *Employment and Nature Conservation*. A Report to the Nature Conservancy Council, Peterborough
- Dickie I (2001) *The Economics of Reedbed Management in the UK* RSPB, Sandy
- East of England Tourist Board (1998) *The Economic Impact of Tourism in North Norfolk, 1996*. EETB, Hadleigh, Suffolk
- East of England Tourist Board (1999) *The Economic Impact of Tourism in King's Lynn and West Norfolk, 1996*. EETB, Hadleigh, Suffolk
- ERM (2000) *Environmental Economy of the North West: A Driver for Economic and Social Progress*. Report for a consortium of organisations in the NW. ERM, Manchester

- ERM (2001a) *The Environmental Economy of the West Midlands*. Report to Advantage West Midlands, Environment Agency and Regional Partners in the West Midlands. ERM, Manchester
- ERM (2001b) *Valuing the Environment of the North East of England*. Report to Regional Partners in the North East. ERM, Manchester
- Etheridge B, Crooke C and Burns T (1999) *Red Kite North Scotland Newsletter*. RSPB Scotland, Inverness
- Forest of Dean District Council (1996) *A Tourism Strategy for the Forest of Dean*. FDDC, Coleford, Gloucestershire
- Forest of Dean District Council (1999) *Economic Development Strategy – Draft*. Unpublished. FDDC, Coleford, Gloucestershire.
- Forestry Commission (2001) *Forest Employment Survey, 1998/99*. FC, Edinburgh
- Gloucestershire County Council (1996) *An Economic Strategy for Gloucestershire, 1996-1999*. GCC, Gloucester.
- Gloucestershire County Council (1999a) *Forest of Dean – District Tourism Profile 1998*. GCC, Gloucester.
- Gloucestershire County Council (1999b) *Gloucestershire – The Challenges 1998-2001*. GCC, Gloucester
- Griffiths K K (1996) *The Economic Impact of the Kite Country Project in Mid Wales*. MSc Dissertation, Oxford Brookes University, unpublished.
- Guffogg A (1996) *Operation Osprey - A case study assessing the sustainability of wildlife related tourism in Speyside*. Unpublished discussion document, taken from MSc dissertation, Oxford Brookes University.
- Harrison-Mayfield L, Dwyer J and Brookes G (1998) *The Socio-Economic Effects of the Countryside Stewardship Scheme* Journal of Agricultural Economics, Vol. 49. No. 2, 157-170
- Hawke & Jose (1996) *Reedbed Management For Commercial and Wildlife Interests* RSPB, Sandy
- Hewitt N and Robins M (2001) *Cirl Buntings and Countryside Stewardship Farmers*. RSPB, Exeter
- Highland Council (1999) *Highland Focus: The Economic Development Bulletin of the Highland Council*. <http://www.highland.gov.uk>
- Highlands and Islands Enterprise (1999a) *Orkney Economic Update - November 1999*. HIE website.
- Highlands and Islands Enterprise (1999b) *Caithness and Sutherland Area Economic Update - November 1999*. HIE website.
- Hooper S (1991) *Orkney Survey Results: Final Report*. RSPB, Sandy
- Independent Northern Consultants (1995) *Assessment of the Direct Employment Impact of Environmental Activity in the Highlands and Islands*. A Report for Highlands and Islands Enterprise and Scottish Natural Heritage
- Lampkin N H and Padel S (eds) (1994) *The Economics of Organic Farming. An International Perspective*. CAB International, Wallingford
- Lancashire County Council (2000) *Lancashire 2000: An Economic Situation Report*, Lancashire CC Environment Directorate
- Lock L (1999) Saving the Cirl Bunting ... and lots more. *British Wildlife*, October 1999
- MacKay Consultants (1989). *Islay and Jura Tourism Economic Impact Study*. Report to Argyll and Bute DC, HIDB, NCC, Countryside Commission for Scotland, RSPB

- MacKay Consultants (1997) *Jobs and the Natural Heritage in Scotland*. Report for Scottish Natural Heritage. Inverness.
- Mackridge R, Rayment M and Robins M (1998) *The Economic Importance of the Natural Environment Sector in South West England*. RSPB, Exeter
- MacMillan D, Daw M, Daw D, Phillip L, Patterson I, Hanley N, Gustanski J A and Wright R (2001) *The Costs and Benefits of Managing Wild Geese in Scotland*. Scottish Executive Central Research Unit, Edinburgh
- MacPherson Research (1998) *RSPB Forsinard Reserve Visitor Survey 1997*. A report by MacPherson Research for the LIFE Peatlands Project. Inverness.
- NIERC (1998) *Update of Research Into the Contribution of Tourism to the Northern Ireland Economy*. Draft report for Northern Ireland Tourist Board.
- Peach W J, Lovett L J, Wotton S R and Jeffs C (in press) Countryside stewardship delivers curlew buntings (*Emberiza cirius*) in Devon, UK. *Biological Conservation*. In press
- Rayment M (1995) *Nature Conservation, Employment and Local Economies*. A Literature Review. RSPB, Sandy
- Rayment M (1997) *Working with Nature in Britain*. Case Studies of Nature Conservation, Employment and Local Economies. RSPB, Sandy
- Rayment, M (1999) *Spending by Visitors to RSPB Reserves: Results from the Reserves Visitor Survey 1998*. RSPB, Sandy
- Rodgers PA (2000) *The Economic Impact of the Red Kite Re-introduction Project on the Black Isle, North Scotland*. Unpublished MSc Dissertation, School of Planning and School of Molecular Sciences, Oxford Brookes University.
- RSPB (2000a) *Valuing Norfolk's Coast*. RSPB, Sandy
- RSPB (2000b) *Habitats for Health, Tourism and Wildlife*. RSPB Election Briefing, RSPB, Sandy.
- RSPB (2000c) *Economic Productivity and Green Jobs*. RSPB Election Briefing. RSPB, Sandy
- RSPB/BASC (1998) *Geese and Local Economies in Scotland*. A report to the National Goose Forum by RSPB and BASC. RSPB, Edinburgh
- RSK ERA Limited (forthcoming) *Jobs and the Environment: Quality of Natural Heritage Jobs*. Report for SNH. Unpublished.
- Scottish Natural Heritage (1998) *Jobs and the Natural Heritage - The Natural Heritage in Rural Development*. SNH, Battleby
- Shepherd P & Harley D (1999) *Preparation and Presentation of Habitat Replacement Cost Estimates*. English Nature Research Report, Peterborough.
- Smith, D and Harley D (1993) *The 1989 Reserves Visitor Survey Results: The Contribution of Visitors to Local Economies*. Unpublished report, RSPB, Sandy
- SQW (2001) *Business and the Environment in the East of England*. Final Report to a Consortium of Regional Organisations. SQW, Cambridge
- Suffolk County Council (1999) *Visitors to Suffolk Coastal District*. Suffolk CC, Ipswich
- Surrey Research Group (1993) *Scottish Tourism Multiplier Study 1992*. Surrey Research Paper No. 31. Scottish Office Industry Department

System Three Scotland (1989) *Survey of Visitors to Islay and Jura, 1988*. RSPB, Edinburgh

Tindale S and Holtham G (1996) *Green Tax Reform – Pollution Payments and Labour Tax Cuts*. IPPR, London

TMS (1996) *Shetland Visitor Survey 1995*. Final Report. TMS, Edinburgh

Tourism Associates (1999) *Valuing our Environment - A study of the economic impact of conserved landscapes and of the National Trust in the South West, 1998*. Tourism Associates/National Trust, Exeter

Tourism Associates and Geoff Broom Associates (2001) *Valuing our Environment: The Economic Impact of the Environment in Wales*. Report for the National Trust and partners in Wales. Tourism Associates, Exeter

Whale and Dolphin Conservation Society (1999) *Moray Firth dolphins under threat*. News Release from SNH.. <http://www.wdcs.org/dan/news>

Wotton S R, Langston RHW, Gibbons DW and Pierce AJ (2000) The status of the ciril bunting *Emberiza cirilus* in the UK and the Channel Islands in 1998. *Bird Study*, 2000

Abbreviations Used

ASSI	Area of Special Scientific Interest (Northern Ireland)
BAP	Biodiversity Action Plan
BASC	British Association for Shooting and Conservation
BTO	British Trust for Ornithology
CAP	Common Agricultural Policy
CoCo	Countryside Commission (now part of the Countryside Agency)
CS	Countryside Stewardship
EETB	East of England Tourist Board
ESA	Environmentally Sensitive Area
FRCA	Farming and Rural Conservation Agency
FTE	Full Time Equivalent
GDP	Gross Domestic Product
Ha	Hectare
HIE	Highlands and Islands Enterprise
HOST	Highlands of Scotland Tourist Board
MAFF	Ministry of Agriculture, Fisheries and Food (now part of the Department for Environment, Food and Rural Affairs)
NITB	Northern Ireland Tourist Board
NWT	Norfolk Wildlife Trust
RDC	Rural Development Commission (whose responsibilities are now divided between the Countryside Agency and Regional Development Agencies)
RSPB	Royal Society for the Protection of Birds
SNH	Scottish Natural Heritage
SSSI	Site of Special Scientific Interest
TIC	Tourist Information Centre
WDCS	Whale and Dolphin Conservation Society
YOC	Young Ornithologists' Club (now RSPB Wildlife Explorers)