

**THE
SCOTTISH FORESTRY
TRUST**

**ANNUAL REPORT
1989/90**

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THE SCOTTISH FORESTRY TRUST AND ITS OBJECTIVES

The Scottish Forestry Trust is a charitable trust established in 1983 to promote education, training and research in forestry and silviculture.

The Trustees have determined that, for the time being, the Trust's major contribution should be towards funding research projects, although, as opportunities arise, educational and training projects are also supported. A small proportion of the budget is set aside for publications and travel.

The Trust's primary objective is to support private sector forestry by contributing to the scientific, technical and economic information it requires to enable it to develop its role in U.K. forestry. Forestry is defined as the forestry industry as a whole, including its contribution to landscape, recreation, wildlife and the environment.

Projects in all of the sciences which bear upon forestry are supported by the Trust. High priority is given to proposals which address industry needs related to policy formation and execution, and to broad management questions. In general terms preference is given to studies of a more applied nature where the benefits are more immediately available to the industry. Notwithstanding that, more fundamental work whose potential to resolve outstanding problems, or to reveal new opportunities and possibilities is thought to be high, is also supported.

The Trust is able to accept donations, and gifts of cash, property etc., from any source to further its work in assisting forestry to fulfill its potential in the countryside and in the wider economy.

The Trustees gratefully acknowledge a donation of £1000 from Mr E. J. McAlpine. It has been applied to the Trust's work on forestry and the environment.

TRUSTEES (1989/90)

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CHAIRMAN'S FOREWORD

I am pleased to be able to say that the Trust is now well established, and receiving a good flow of high quality project proposals in its areas of interest.

A notable event of the year was the completion and publication of the study "The Impact of Forestry on Output and Employment in the U.K. and its Member Countries". (Fraser of Allander Institute, with supplementary material by the University of Edinburgh). The Trust was a leading sponsor of this work, which lends substance and authority to the view that timber growing and processing is a single integrated industry. It also indicates the extent to which value added to home grown timber is even more important in economic terms than the timber itself.

Output and employment however vital they are, fall well short of constituting a comprehensive evaluation of forestry's contribution to the quality of life in this country. An exploration of the links between forestry and leisure, recreation, tourism, and the environment has become urgent. It is in the spirit of the age that the forestry industry will be expected to provide much of this appraisal from its own resources, and thus relevant to report that the Trust, acting together with the Forestry Commission has recently commissioned the Department of Economics, University College, London to undertake an analysis of the potential role of forestry in policies to counter the "greenhouse effect".

Other work funded by the Trust, such as the recently completed study of the forestry potential of the Grampian Region, relevant to forestry's consideration of that Region's forthcoming Indicative Forestry Strategy document, is equally topical. But the following pages also include accounts of promising work whose benefits will take longer to reach practical application, and which provide evidence of the balance the Trustees seek to achieve in their objectives.

After two and a half years as Chairman I am now handing over to the Hon. James Galbraith. His outstanding knowledge of forestry in Scotland and the United Kingdom will stand the Trust in very good stead.

Polwarth

PROJECTS SUMMARY

COMPLETED WORK

The Impact of Forestry on Output and Employment in the United Kingdom and its Member Countries (Fraser of Allander Institute: additional survey data compiled by the Dept. of Forestry and National Resources, University of Edinburgh)

The object of the work was to provide estimates of the impact of forestry on output and employment on the aggregate UK economy and those of its member countries. The approach involved the development of an input/output model of the UK economy as a whole, and of a spatial sub-model to determine the distribution of aggregate U.K. economic activity across England, Scotland, Wales, and Northern Ireland. Direct, indirect and induced effects of forestry activity were identified, and supply dependencies which tie timber-using sectors to the outputs of the domestic forestry industry were explored.

The value of the output of UK forests was shown to be £384 million. The total impact of UK forest output plus the dependent processing industry was almost £2 billion. The forests of the UK provided 11,800 full-time equivalent jobs. The whole industry (forests + dependent activities) provided 55,500 jobs. £552m of household incomes were involved. Value added to timber is thus an even more important consideration in economic terms than the timber itself.

The Study results, because a principal data source was the UK input tables last produced in 1984, relate to that year. Since then approximately £750 million of new investment has been attracted to the processing sector. The study is thus a very conservative evaluation of the current impact of forestry.

Yield Class and Windthrow Hazard Characteristics of Forestry in Grampian Region (Macauley Land Use Research Institute)

The context for this work is provided by the "Indicative Forestry Strategies" currently being produced by Regional Authorities.

Grampian Region was chosen for this pilot study. Its object was to produce information on forestry potential in the Region, relevant to the scale and conception of the I.F.S. The approach explored the use of predictive models which were developed and applied in conjunction with MLURI's land use information database.

The main output of the study is in the form of maps of yield class and windthrow hazard. A report discusses the methods used, and provides a commentary on the forestry potential of the Region.

The Influence of Wide Spacing of Trees on the Interception of Radiation, and the Growth of Trees and Pasture (University of Edinburgh, Department of Forestry and National Resources).

The production of timber from widely spaced trees combined with pasture from which animal product, often sheepmeat, is produced has developed in other parts of the world, notably Australia and New Zealand. Its potential relevance in the European environment remains uncertain and is the subject of an increasing amount of research in the U.K.

One of the key aspects in understanding the growth of trees and pasture over time, as the tree canopy develops, lies in the interception of solar radiation by the respective foliage canopies. The investigation supported by the Trust explored the proposition that the growth of trees and pasture when combined in agroforestry systems is linearly related to the light intercepted by their respective foliage canopies. The work was carried out on extensively instrumented sites at Dunkeld and Cloich.

It is currently being written up for publication.

Production Forecasting for Private Sector Scottish Forestry (University of Aberdeen, Forestry Department)

Planners in industry need to be informed of the likely future supply of timber in terms of its amount, size and location. The national production forecast calculated by the Forestry Commission has invariably exceeded estimated actual production by the private sector. It was not known whether the discrepancy lies with the forecast, or with the monitoring of private sector production.

The Scottish Forestry Trust commissioned the survey of the private sector growing stock in Scotland, in an attempt to resolve the problem.

The results confirm the potential forecast; indeed their implications suggest that it may even be an underestimate. They also suggest that most of the timber has in fact been removed and point to a clear need to investigate the fate of private sector production, and the extent of local and internal estate markets.

A seminar was held in June 1988 at which representatives of the production and processing sectors of the industry discussed the problem in the light of the survey.

Current Knowledge and Perceptions of Forestry (Valin Pollen Ltd. & Consensus Research)

The forestry industry is constantly under review, and quite often under attack from a number of directions. In an age in which public discussion of important issues is dominated by the media it seemed prudent to ensure that the industry's case is adequately and appropriately presented. In the hope that it would make a valuable contribution to the industry's communications planning the Scottish Forestry Trust commissioned a communications consultancy, and a specialist market research company, to identify forestry's key audiences, to assess their current knowledge and perceptions of the industry, and to explore how the communications chain operates to influence opinions.

A key primary major finding of the research study is the extent to which, despite a lengthy period of intensive press and T.V. comment, the public remains uninformed and largely uninterested in forestry.

More specialist groups - environmentalists, planners, MPs, journalists and landowners - are much better informed, but the importance of specific topics to these various audiences differs markedly. It is suggested that an effective communications strategy must become less defensive and more positive. It must project a whole industry rather than a fragmented array of interests, and the industry should adopt a more positive profile in an attempt to set the tone of the debate.

The Scottish Forestry Trust organised a seminar to discuss the study and a proposed communications strategy with all sectors of the forestry industry in December 1988.

Stirling Forestry Employment Study (Firn, Chrichton Roberts Ltd)

The forestry industry of the U.K. is expanding, and with it the industry's contribution to employment. Previous studies have focused on employment at the national level and in subsectors of the industry. The Scottish Forestry Trust joined with TGUK, the Scottish Development Agency and Stirling District Council to commission an examination of forestry employment in a specific geographic area, and to trace links between forestry and other sectors in the rural economy.

The resultant study showed that the Stirling District had just over 30,000 hectares of forest, 7 sawmills and 1 major board plant. The forestry industry in the district has a well-developed structure with all the main components of the forestry industry represented. Local forestry supports 354 jobs with an additional 30-35 jobs outwith the District dependent upon Stirling Districts forests. A further 200 jobs are reckoned to arise in other sectors of the local economy, but are dependent on the forests. Long-term growth prospects indicate that another 240 jobs will be created in Stirling District based upon its local forests in the next 15 years.

The Economic Effects of the "Guidelines for the Management of Broadleaved Woodland" (Timber Growers (United Kingdom) Ltd.)

The Forestry Commission's Broadleaved Policy was introduced in 1985, with the objective of ensuring that broadleaved woodlands are managed in a way which is compatible with maintaining their wildlife and amenity value as specified via management guidelines. These guidelines have important economic implications.

The Scottish Forestry Trust provided financial support for an investigation of the financial implications of the guidelines on the economics of the traditional forest estate.

An economic model was set up to include all the costs and receipts expected in a broadleaved crop. The study measured the economic impact of the guidelines by analysing the changes in profitability of five major broadleaved species, based on sample estates throughout Britain, caused by the guidelines.

In essence, the guidelines alter management practices in order to promote conservation and landscape. But, as the report points out, these are not free commodities. Their cost is the profit from forestry foregone as a result of the guidelines' restrictions.

The estimates of the economic effects of the Guidelines will assist the private sector in the review of broadleaved policy. They will also contribute to the wide debate on landscape and conservation by indicating the magnitude of at least some of the costs involved.

A summary of the report is available from the Trust.

CURRENT PROJECTS

Development of a Transformation from Uniform Plantations to an Irregularly Structured Forest (Department of Forestry and Natural Resources, University of Edinburgh)

The need to promote visual amenity, conservation and recreation in production forests has led to a renewed interest in irregularly structured forests.

In 1952 Professor M. L. Anderson planned a 60-year transformation from uniform plantations to an all-aged forest of mixed species. In order to plan the concluding phases of the transformation a more detailed study of the present condition of the stands is being undertaken. This study, besides installing transects to measure diameter/volume distributions, and mapping the distributions of groups by size, age and species, will assess the productivity of different species, and determine productivity losses through edge effects.

The Mechanism of Increased Nitrogen Uptake by Spruce in Mixed Species Stands (Dept. of Plant and Soil Science, University of Aberdeen)

Sitka Spruce, when planted in mixture with lodgepole pine, or larch on some sites, shows improved nitrogen nutrition and better growth than pure Sitka Spruce stands. It has been shown that nitrogen is cycled more rapidly in mixed species plots. There is, as yet, no satisfactory explanation of how the extra nitrogen required to sustain the improved growth of spruce is brought in to the nitrogen cycle.

There is however, evidence that fungi of the genus *Suillus*, which are characteristic mycorrhizal associates of pine and larch, break down protein material much faster than spruce mycorrhizal fungi. It is thought that spruce is able to gain access to the resultant organic nitrogen.

The study aims to explore and confirm aspects of this hypothesis.

Molecular Methods for the Detection and Identification of *Heterobasidion Annosum* (Department of Molecular & Life Sciences, Dundee Institute of Technology)

Heterobasidion annosum is an important fungal parasite of conifers here and worldwide. Current methods of detection are time consuming and require specialist interpretation. A more accurate knowledge of the percentage of trees infected, and the extent of decay would be of great importance in forest management, and the laborious nature of the current procedures limits the scope and nature of research on the fungus.

Though they are widely used throughout biology, immunological methods have only recently been used in the investigation of decay fungi in standing trees. The objectives of the work are to produce immunological reagents to be used to identify *H. annosum*, to develop a solid phase immunoassay for the detection of *H. annosum* on wood surfaces, to investigate the molecular nature of strain differences (*H. annosum* exists as three strains), and to begin a molecular analysis of the fungus.

Maps and Manual of Designated Areas in Scotland

The object of this work is to produce a publication to include maps and descriptive accounts of the main designated areas in Scotland.

The seven designations to be included are:-

1. Environmentally Sensitive Areas
2. Green Belts
3. Local Nature Reserves
4. National Nature Reserves
5. National Scenic Areas
6. Regional Parks
7. Sites of Special Scientific Interest

The resulting publication will be sold at a price yet to be determined.

The Forestry Industry and the Greenhouse Effect (Department of Economics, University College, London)

The present state of uncertainty which surrounds important aspects of the underlying scientific understanding of the greenhouse effect is acknowledged. But it is increasingly recognised by governments, institutions, and scholars that precautionary policies need to be put in place.

The carbon-fixing role of forests is a widely discussed option for reducing the greenhouse effect. But it is one option among others. A broad consensus is beginning to emerge on the elements of a broad strategy. Whilst it is important that the role of forestry is properly evaluated it is equally important that this should be set in an appropriate context, i.e. in the overall context of policies being proposed to deal with the greenhouse effect.

The study includes an analysis of the carbon fixing benefits of trees, estimates of the benefits, carbon fixing as a component of general energy policies, and as a by-product of the forestry industry. The study will also consider UK forestry's role in an international context.

Black Grouse (The Game Conservancy)

The Scottish Forestry Trust has joined with the World-Wide Fund for Nature, the Nature Conservancy Council and the World Pheasant Association in a project aimed at developing management recommendations for landowners who want to improve habitat for Blackgame.

Black Grouse numbers have declined in many areas. Their habitat is thought to have been diminished by agricultural intensification and afforestation.

The project aims to review historical evidence of population change and correlated changes in land use, and to undertake more detailed studies of habitats known to support Black Grouse, with a view to establishing more precisely which plant species are utilised. It is already known that Black Grouse inhabit marginal or edge habitats, and studies will be made of areas deliberately enriched by planting broadleaf edges, new copses and by fencing off overgrazed woodland to permit regeneration.

The findings of the work will be used to update practical guidelines already produced by the Game Conservancy.

The Potential for Outbreaks of Winter Moth in Stands of Sitka Spruce (Oxford University, Department of Zoology)

The Winter Moth (*Operophtera brumata*) is a caterpillar which feeds on many species of foodplant. It has severely defoliated oak and apple. It reached pest status in Sitka Spruce on several Scottish sites in 1981. An attempt at control by spraying in 1983 was only partially successful. Because of the importance of Sitka Spruce to the forest economy of Scotland, the Scottish Forestry Trust is funding a study of the biology of the moth as an essential prerequisite to the development of appropriate control strategies.

The work is being carried out with the cooperation of the Forestry Commission Northern Research Station and the N.E.R.C. Institute of Virology.

Dispersal by the Great Spruce Bark Beetle and its Specific Predator (Forestry Commission Research Division, Entomology Branch)

The Great Spruce Bark Beetle (*Dendroctonus micans*) is a major pest of spruce from Siberia to Western Europe. It was first discovered in Britain in 1982. Control strategies centre on sanitation felling and spot peeling. More recently biological control by the release of a specific predator, *Phizopagus grandis*, is being attempted.

The study aims to assess the risks of *D. micans* spreading into previously uninfested areas, to establish whether the specific predator is able to fly to these new locations and find new infections, and to identify the stimulæ that attract the predator to the *D. micans* broods.

THE SCOTTISH FORESTRY TRUST AUDITORS' REPORT TO THE TRUSTEES OF THE SCOTTISH FORESTRY TRUST

We have audited the financial statements on pages 1 to 5 in accordance with Auditing Standards.

In our opinion the financial statements, give a true and fair view of the state of the Trust's affairs at 31 March 1990 and of its surplus and source and application of funds for the year then ended and comply with the requirements of the Trust Deed under which the Trust was formed.

Brown, Campbell & Company
Chartered Accountants

July 1990

THE SCOTTISH FORESTRY TRUST

INCOME AND EXPENDITURE ACCOUNT

FOR THE YEAR TO 31 MARCH 1990

	Notes	£	1990 £	1989 £
INCOME				
Dividends			74,186	93,587
Interest on Deposits			53,201	62,690
Donations			1,000	10
Interest Supplement arising from Tax Claim			7,896	—
			<u>136,283</u>	<u>156,287</u>
EXPENSES				
Research Grants and Donations and Other Expenses	2	75,570		63,951
Salaries and Expenses		12,797		11,723
Travelling Expenses		1,036		534
Office Costs		3,399		3,653
Professional Fees		2,422		4,095
Investment Management Costs		6,840		4,702
Loss on disposal of Investments	3	25,712		36,086
			<u>127,776</u>	<u>124,744</u>
Excess of Income over Expenditure for Year			<u>8,507</u>	<u>31,543</u>

The Notes on pages 4 to 5 form part of these Accounts

THE SCOTTISH FORESTRY TRUST

BALANCE SHEET AS AT 31 MARCH 1990

	£	1989 £
INVESTMENTS at Cost (Note 4)	1,224,996	1,186,272
CURRENT ASSETS		
Debtors (Note 5)	6,925	56,384
Royal Bank of Scotland Premium A/C	19,377	22,180
Bank of Scotland Income & Capital A/C	355,298	333,987
	<u>1,606,596</u>	<u>1,598,823</u>
CURRENT LIABILITIES		
Creditors (Note 6)	6,083	6,817
	<u>1,600,513</u>	<u>1,592,006</u>
Represented by:		
Surplus Income brought forward	104,428	72,885
Surplus Income/(Deficit) for year	8,507	31,543
	<u>112,935</u>	<u>104,428</u>
Surplus Income carry forward	1,487,578	1,487,578
Capital Reserve	<u>1,600,513</u>	<u>1,592,006</u>

Approved by the Trustees on 1st August 1990
and signed on their behalf by

J. M. G. Galbraith Chairman

J. M. C. Macdonald Trustee

The Notes on pages 4 to 5 form part of these Accounts.

THE SCOTTISH FORESTRY TRUST

SOURCE AND APPLICATION OF FUNDS

FOR THE YEAR ENDED 31 MARCH 1990

	1989	
	£	£
Surplus for the Year	8,507	31,543
Adjustments for items not involving the movement of cash:		
Loss on Sale of Investments	25,712	36,086
	<u>34,219</u>	<u>67,629</u>
SOURCE OF FUNDS		
Disposal of Investments	159,699	215,112
	<u>193,918</u>	<u>282,741</u>
APPLICATION OF FUNDS		
Purchase of Investments	224,135	754,627
	<u>30,217</u>	<u>471,886</u>

Represented by Movements in Working Capital:

	Increase	Decrease	
	£	£	
Debtors	—	49,459	(53,177)
Creditors	734	—	2,994
Net Liquid Funds	<u>18,508</u>	<u>—</u>	<u>522,069</u>
	<u>19,242</u>	<u>49,459</u>	<u>30,217</u>
	<u>19,242</u>	<u>49,459</u>	<u>30,217</u>

THE SCOTTISH FORESTRY TRUST

NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 31 MARCH 1990

1. ACCOUNTING POLICIES

The Accounts have been prepared under the historical cost convention.

2. RESEARCH GRANTS AND DONATIONS

	1990	1989
	£	£
Agroforestry Conference Sponsorship	1,500	—
Agroforestry	6,881	7,658
Wood Industry Input/Output Study	8,990	7,000
Institute of Chartered Foresters (Deer Conference Proceedings)	—	1,000
Forestry's Public Relations Studies	—	11,880
Winter Moth in Sitka Spruce	—	2,500
Dispersal of the Great Spruce Bark Beetle	10,551	—
The Economics of the Broadleaved Guidelines	325	10,672
Response of Salmon Stocks to Pre-Afforestation Drainage (Atlantic Salmon Trust)	2,000	2,000
Education Pack for Central Scotland Countryside Trust (In association with B.P. Ltd)	—	1,250
Black Grouse Project (Game Conservatory Trust)	—	15,000
Scottish Forestry Trust Awards Scheme	2,068	—
Development of a Transformation from Uniform Plantations to an Irregularly Structured Forest	5,000	—
British Food and Farming Project - the Forestry Pack	2,500	—
Short Rotation Forestry Study Tour	1,500	—
Detection and Identification of Heterobasidion Annosum	8,405	—
Nitrogen Uptake by Spruce in Mixed Species Stands	5,710	—
Yield Class and Windthrow Hazard in Grampian	3,450	—
Timber Growers Award Sponsorship (Dulverton Flagon)	12,000	—
Printing and Distribution Costs — Annual Reports	4,690	4,991
	<u>75,570</u>	<u>63,951</u>

3. Certain shareholdings were disposed of in the year in order to take advantage of alternative Investment Opportunities. The disposal resulted in a loss of £25,712.

4. **INVESTMENTS**

	1990	1989
	£	£
Cost at 31 March 1989	1,186,272	682,843
Additions	224,135	754,627
Disposals	(185,411)	(251,198)
	<u>1,224,996</u>	<u>1,186,272</u>
Cost at 31 March 1990	<u>1,224,996</u>	<u>1,186,272</u>
Listed Investments, dealt on a recognised Stock Exchange	<u>1,224,996</u>	<u>1,186,272</u>
Valuation:		
Listed Investments - Market Value	<u>1,256,643</u>	<u>1,150,963</u>

5. **DEBTORS**

Included in Debtors are the following amounts:

	1990	1989
	£	£
Tax suffered on Scottish Woodland Owners' Association (Commercial) Ltd dividends		33,222
Tax suffered on Other Investments	1,624	17,001
Accrued Interest	<u>5,301</u>	<u>6,161</u>
	<u> </u>	<u> </u>

6. **CREDITORS**

Included in Creditors are the following amounts:

	1990	1989
Salaries and Expenses	893	828
Office Costs	756	756
Professional Fees	1,917	3,665
Investment Management Costs	1,630	1,568
Other Creditors	<u>887</u>	<u>—</u>
	<u>6,083</u>	<u>6,817</u>