

A Summary of the Moorland Research Strategy

Exmoor's moorland is shaped by a variety of factors. Some, such as climate and geology are entirely natural. Others such as air and water pollution and management by farmers and conservation bodies arise through the influence of man. Research aims to make sense of these varying impacts and thus to improve our understanding and management of Exmoor's moorland heritage. This document will provide a rationale for moorland research in the National Park over the next five years. It is divided into two halves. Firstly, there is an introduction which briefly sets the moorland scene, followed by a section on the broad policy objectives that already exist to guide the Exmoor National Park Authority's (ENPA) moorland research. Secondly, this introductory framework is used to identify the main aims of moorland research, then to assess priorities and lastly to set out an action plan of projects for implementation.

To carry out all of the research proposals would be beyond the financial resources of the ENPA. Working with partners will enable us to spread our resources more widely and to benefit from the different perspectives of other organisations. Partnership is also a prerequisite in applications for major sources of European funding, such as the Atlantis and LIFE programmes. Whilst this strategy primarily aims to guide the work of the National Park, it is hoped that it will act as a stimulus to encourage collaboration, co-operation and co-ordination with the many partners the ENPA works with on moorland issues. It is also vital that we inform the landowners who manage so much of Exmoor's moorland heritage in order to gain their support for our research programme.

Introduction

In addition to experimental work which will increase our knowledge of the ecological and historical resource of the moors, the definition of research adopted in this report includes the more prosaic disciplines of baseline survey/inventory and monitoring.

Its remit is restricted to those areas defined on the ENPA's Section 3 maps as moor and heath. The Exmoor National Park Plan 1991-1996 defines moor as being:

an area of acid soil with a peaty surface horizon of variable depth, bearing plant communities typical of bog or moss formations, or acid grassland in which ericaceous species are not abundant but bracken may be present as an invasive species.

heath is described as:

areas where trees or small shrubs are sparse or absent and in which the dominant life form is that of the evergreen dwarf shrub particularly represented in Ericaceae.

Exmoor supports a diverse moorland heritage. Within the 19,000 hectares of National Park moorland, habitats and landscapes range from the heather moorlands of Dunkery through to the bleak white moors of the Exmoor Forest. Heather moorland is a particularly important habitat, with Great Britain supporting a significant proportion of the world resource. Equally significant are the fragments of blanket bog that still occur on the wettest and least disturbed plateau areas. Closer to the sea, heather moorland grades into coastal heath, another internationally threatened habitat. Additionally, from the more obvious

monuments such as standing stones and tumuli through to more cryptic sources such as the peat deposits laid down over thousands of years in Exmoor's blanket bogs, the moorland is a rich record of man's influence on the landscape through history.

In the recent past, large areas of moorland have been lost in the post-war drive towards agricultural intensification. With the advent of a burgeoning environmental movement, such losses no longer occur. Much of the moorland is notified by English Nature as Sites of Special Scientific Interest (SSSI), the entirety of Exmoor has been designated an Environmentally Sensitive Area (ESA) and the ENPA and the National Trust (NT) between them own a significant proportion. Of the 19,000 ha of moorland, an estimated 12,500 ha (66%) are now managed broadly in line with ENPA objectives.

Policy Objectives

The National Park Plan 1991-1996 provides the policy backbone for this document and it states that the main aims in relation to the moorland resource are its preservation and enhancement. With the much diminished impetus for food production and the great increase in environmental awareness, we should look to address the second strand of moorland enhancement. For research the National Park Plan "vision" is of

a complete knowledge and record of Exmoor's natural, historic, archaeological and cultural resources coupled with programmes for their conservation, maintenance, enhancement and ultimate enjoyment by the public at large.

Whilst this is a worthy aim, limited resources necessitate that we focus in on the key issues affecting Exmoor's moorland and concentrate our research effort upon these areas. In this respect, the National Park Plan lists conservation priorities, some of which are particularly relevant to a moorland research strategy:

developing and undertaking a structured programme of research and experimentation, particularly concerned with investigating methods of moorland reversion...

Such a programme may involve the setting up of research looking at reversion of degraded/semi-improved moorland and reversion of improved moorland. The former would be a particular priority, as the soil chemistry of semi-improved land should be easier to return to a state suitable for reversion to dwarf-shrub heath. Also, these may be areas that are less important to sustain the farming pattern of local landowners. Other areas of work might include the effects of swaling, the management of coastal heaths and the impact on the moorland of management neglect.

promoting basic conservation survey and recording work, involving the collection, arrangement and updating of information...

This is the more prosaic area of the research programme, but is a necessary prerequisite in making informed decisions about moorland management. It also includes monitoring, which is a pragmatic tool that assesses whether the moorland (including the ENPA's own moorland estate) is being managed effectively.

The ENPA should focus its research efforts on land it either owns or manages, because this is where we have the greatest amount of control and because it behoves the ENPA to be at the forefront of moorland research and management techniques. Using the above criteria as a guide, we can set out the basic aims and priorities for future moorland research in Exmoor National Park.

Aims of Research

There are three main strands to the research programme which are summarised below;

1. To provide baseline information about features of significance on Exmoor's moorlands.
2. To monitor both man's management and natural processes on the state of the moorlands.
3. To carry out experimentation into all aspects of the moorland environment, with particular reference to the testing of innovative management techniques aimed at enhancing Exmoor's moorlands.

Relating to all the above, there is a fourth main aim:

4. To disseminate the results of research in an accessible form to other bodies, landowners and the general public in order to promote understanding of and support for the work of the National Park and its partners.

Priorities for Research Establishing a Baseline

This is the cornerstone of everything we do and is an absolute prerequisite for any monitoring or experimentation we may wish to consider subsequently. The importance of establishing environmental inventories has been recognised by the National Parks in the setting up of the PIMS (Park Inventories and Monitoring System) process. The ENPA already holds a considerable body of vegetation survey information on those areas of moorland it either owns or manages, and will complete such work during the next five years. Future survey work needs to address more specific moorland issues. Particular priorities are to carry out archaeological and pollen analysis studies of moorland areas and to investigate the distribution of "problem" species such as bracken, gorse and ticks in order that we are better able to assess the need for further measures. Lastly, there is an urgent need to collect baseline information on groups such as mosses, lichens and invertebrates, which whilst obscure, nonetheless play a key role in the functioning of the moorland ecosystem.

Monitoring

In order to ensure that our management practices are both preserving and enhancing the moorland environment, it is essential that we monitor everything that we do. It also enables us to demonstrate that we are achieving "value for money" in our moorland management. To this end, the ENPA has already initiated a ten year rolling programme of monitoring

work which will ensure the refinement of management techniques on those areas of land we either own or manage. We may also need to monitor other man-made processes, such as erosion and disturbance on the moorland environment. Certain moorland species such as merlin, red grouse, snipe, curlew and heath and high brown fritillary butterflies have been identified in both national and international legislation as being of particular significance. It may be necessary to carry out new studies or repeat existing work in order to meet our national and international obligations to monitor their populations on Exmoor. It is also important that we consider the needs of more widespread species such as skylark, which whilst still quite common on our moorland, have drastically declined in numbers in other parts of Britain.

Experimentation

Given that the direct threat of moorland loss by ploughing and afforestation has now receded, it is clear that the ENPA needs to be looking at innovative moorland management techniques. A particular priority identified in the National Park Plan is the reversion of moorland. A range of experimental techniques should be tested during the next five years with the aim being to enhance the landscape, wildlife and archaeological features of semi-improved and *Molinia*-dominated moorland.

Another important area of experimental work will be to investigate Exmoor's coastal heaths. A number of these, including North Hill are currently suffering from either neglect or inappropriate management. Research here should particularly aim to assess the effect of introducing different types of grazing animals and of burning on coastal heath vegetation.

Dissemination

Though listed as subsidiary to the three main aims, the dissemination of research results from baseline survey, monitoring and experimental work carried out by the ENPA and its partners is critical if we wish to generate interest and support for our work. There is also a considerable backlog of survey work which has never been analysed or written up. Before embarking on new research, it is important that we ensure we have made the most of our existing supply of moorland data. Additionally we should look to tap into information held by other bodies. To this end the establishment of a database which enables us to examine and analyse moorland datasets is a clear priority. In particular, it is vital that moorland research data be fed into the ESA review process.

Action Plan

In this section, a set of actions based on the priorities discussed above are laid out. It should be emphasised that all of these action points are vital to our understanding of the moorland environment and the ENPA and its partners should aim to address them all during the next five years.

Collation of Moorland Data

Action 1: Establish a moorland database. The ENPA and its partners hold a considerable body of data relating to the moorland environment and its management.

Collation of this information onto a database would greatly facilitate study of the moorland resource and help identify future priorities for research. This is considered to be a very high priority. Partners: SERC.

Moorland Reversion

Action 2: Undertake research into the restoration of dwarf-shrub heath on semi-improved grassland primarily using nutrient-stripping techniques developed by the Institute of Grassland and Environmental Research (IGER). Suitable areas for such research exist on the fringes of the Exmoor Forest, where IGER have already carried out preliminary trials. These methods of moorland restoration, which involve application of chemicals such as ammonium sulphate, have the advantage of being "archaeology friendly". The ENPA has made preliminary investigations into the possibility of receiving Atlantis, or LIFE, funding from Europe for this work and has also submitted a bid for funds through the Objective 5(b) scheme. On a much more limited basis, the ENPA may carry out scarification or soil-stripping experiments where this will not have an adverse affect on archaeological features. Partners: IGER, EN, MAFF, NT, and EA.

Action 3: Examine methods of diversifying Molinia/dominated swards to increase their ecological value. The Heather Trust have recently set up plots to study this. The ENPA should look to support this MAFF-funded project and at the same time examine other possible techniques for controlling Molinia, such as the strict control of burning and heavy cattle grazing during the Molinia growth period. Partners: EN, MAFF, NT, and Heather Trust.

Vegetation Surveys

Action 4: Continue the ongoing programme of Phase 2 vegetation surveys on those areas of moorland which we own or have management agreements over. Aim to complete these surveys within the next five years. Partners: EN.

Moorland Monitoring

Action 5: Continue monitoring on those areas of moorland either owned by or in management agreements with the ENPA. Aim to establish a ten-year rolling programme.

Invasive Species

Action 6: Carry out surveys of bracken flora and fauna which aim to establish the value of this plant for wildlife and carry out trials of control techniques where appropriate. The survey should aim to identify those areas of high wildlife interest where bracken control would be inappropriate and conversely those areas where it's eradication would be acceptable. Partners: EN, MAFF, NT, academic institutions.

Action 7: Undertake surveys of European and western gorse to identify the relative importance for wildlife of different vegetation in which gorse is a significant component. Such work should particularly endeavour to elucidate the ecology of the two gorse species and suggest methods of managing them. Partners: EN, MAFF, NT, academic institutions, Heather Trust.

Rare Species

Action 8: Institute surveys or monitoring programmes for nationally or internationally important species and species showing a marked decline in their British populations. For some species of moorland plants and animals Exmoor has national or international responsibilities. Survey or monitoring programmes should be initiated where appropriate. If such information already exists, implement experimental management techniques which aim to enhance their status on Exmoor. Partners: EN, NT and lobby for their inclusion within existing schemes such as English Nature's Species Recovery Programme.

Historic Environment Surveys

Action 9: Continue the ongoing programme of archaeological surveys on moorland owned, or in management agreements with the ENPA. Partners: RCHME, English Heritage.

Action 10: Carry out pollen analysis and other forms of peat analysis that provide insights into the historical context of our current moorland management strategies. Partners: Academic institutions, English Heritage.

Coastal Heath Management Study

Action 11: Undertake an experimental study into the effects of different grazing and burning regimes on coastal heath vegetation that aims to address the current mis-management and neglect to which some areas are subject. Partners: EN, MAFF, Academic institutions, NT.

Ticks

Action 12: Carry out surveys of the distribution and abundance of ticks in a range of moorland habitats. This is an essential first stage in the drawing up of a tick control programme for the moorland. Partners: MAFF, Academic institutions.

Invertebrate Surveys

Action 13: Undertake a baseline survey of the invertebrate fauna of dung. This will provide information to assess the likely impact of veterinary chemicals on dung invertebrate communities. Partners: EN, NT.

Action 14: Carry out baseline surveys of the invertebrate fauna of coastal heath. This will provide information to help formulate future management strategies on Exmoor's coastal heaths. Implementation of this action point should be considered in conjunction with action point 10. Partners: EN, NT, MAFF, Academic institutions.

Historic Moorland Management

Action 16: Undertake survey of historic moorland management. Landowners on Exmoor hold a rich store of knowledge on the past management of the moor. It is important that the ENPA taps into this fund of knowledge in order to better inform its current management.