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The contribution of national mycological societies: establishing a British Mycological Society policy

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Introduction

The British Mycological Society (BMS) was founded in 1896 and today has about 2000 members who are located all over the world. The constitutional objective of the Society is to promote mycology in all its aspects by publications, meetings and such other means as it shall deem appropriate. The Council of the BMS is the executive that implements on a day-to-day basis the activity of the Society that is decided by the members of the Society at the Annual General Meeting, usually held in early December of each year.

Field mycology and an awareness and appreciation for the natural world were at the heart of the business of the Society from its foundation and these concerns continue as one of the Society's major activities today. The origins of the BMS trace back to the mid-nineteenth century (Webster, 1997). The Woolhope Field Naturalists' Club was based on the Hereford Museum, though members of the club dined at the Green Dragon Hotel in Hereford. In 1867 the Curator of the museum, Dr H. G. Bull, encouraged the club to take a special interest in fungi. He invited them to join him in 'a foray among the funguses' and this became an annual event, traditionally held in Hereford during the first week of October. The Woolhope Club meetings became a focus for all with an interest in fungi and attracted mycologists both from Britain and abroad. These forays lost their popularity when Dr Bull died in 1885 and stopped in 1892. By that time, though, the Yorkshire Naturalists' Union (YNU) was organising regular forays in different parts of Yorkshire and a Mycological Committee was formed in 1892. The stated aim of the YNU Mycological Committee was that their annual forays would take the place of the Hereford Foray and 'by avoiding the weak points of its predecessor, which were mainly confined to an excess

of hospitality – prove at least equally attractive and instructive to mycologists' (Massee & Crossland, 1893, quoted by Ramsbottom, 1948). A need was also felt to provide an outlet for the publication of scientific articles on fungi. The idea of forming a 'National Mycological Union' emerged at the YNU meeting in Huddersfield in 1895 and the decision to set up the British Mycological Society was taken on 19 September 1896 at a meeting of the YNU Mycological Committee at the Londesborough Arms in Selby. The first officers were G. E. Massee as President (then Mycologist at the Royal Botanic Gardens, Kew), Charles Crossland as Treasurer (a Halifax butcher by trade, Crossland compiled, with Massee, *The Fungus-flora of Yorkshire* in 1902–1905) and Carleton Rea as Secretary. Rea was a barrister by profession but he gave this up in 1907 and wrote *British Basidiomycetae* (published 1922) which was the standard work on identification of the group for many years.

Autumn forays were the main activity of the Society initially and their arrangement was the chief responsibility of the Secretary. From 1919 a Foray Secretary took on this task. The first was A. A. Pearson (1919–24), who was a gifted amateur and an authority on the identification of agarics and boletes. He wrote popular keys to *Russula*, *Lactarius*, *Boletus*, *Inocybe* and *Mycena*, and in 1948, with R. W. G. Dennis, *A Revised List of British Agarics and Boleti*. The Annual General Meeting in 1942 established a Foray Committee. Later the committee was renamed the Foray and Conservation Committee.

Autumn, Spring and Day forays became a regular feature of the Society's annual programme. Regular specialist forays were inaugurated in 1982 with an Upland foray to Wester Ross. The first 'official' Truffle Hunt took place in the Cotswolds in 1984. They were enthusiastically continued for several years and included a truffle meeting in Italy in 1987. Regular annual hunts were discontinued because of the possible threat to rare fungi. Overseas Forays have been held in Northern France (1984), Northern Greece (1988), Southern Denmark (1991), Norway (1994) and are now also a regular feature of the programme. The first Tropical Expedition organised by the Society was an excursion to Cuyabeno, Ecuador, in 1992 (Hedger *et al.*, 1995). Collecting trips have more recently been made to Thailand and it is expected that tropical expeditions will be organised every three to four years. In 1998 the BMS held a joint meeting in Chiba, Japan, with the Mycological Society of Japan. Although not a field meeting, this sealed close contacts between the two Societies and will lead to further and closer intercontinental collaborations in the future.

Collections made during BMS forays and expeditions provided valuable

information on numbers of species and species distributions: for example, of British truffles (Pegler, Spooner & Young, 1993). Lists of fungi collected on forays formed a regular part of Foray Reports in the *Transactions of the British Mycological Society* and the earlier volumes of the Society's *Bulletin*. With the establishment of a BMS Fungal Records Database in 1986, computerisation of records began (Minter 1986*a*,*b*) and that database is now becoming a major resource.

In the present committee structure of the Society there are several Special Interest Committees (SICs): Biodiversity; Ecology and Environmental Mycology; Foray; Fungus–Invertebrate Interactions; Conservation; Genetics, Molecular Biology and Evolution; Pathogenic and Mutualistic Interactions; Physiology; Systematics and Structure. The SICs for Conservation and for Biodiversity were set up in 1996 in recognition of the need for better focus on these particular aspects of mycology.

Developing the conservation agenda within BMS

Mounting concern over adverse effects of environmental and atmospheric pollution was reflected in data showing similar decline in fungal populations published from the 1970s onwards. This is not the place for a comprehensive set of references, but it is interesting to note the time span represented in the following few papers: Wilkins & Patrick, 1940; Wilkins & Harris, 1946; Richardson, 1970; Arnolds, 1988*a*,*b*; Eveling *et al.*, 1990.

In a report to Council dated 9 December 1986, the 1987 BMS President, Professor Roy Watling, reminded Council that 'In 1976 a list of rare larger fungi was discussed with BRC [Biological Records Centre] (Greenhalgh, Whalley and Watling representing BMS). It is possible to produce a list for Britain and a list of indicator species . . . '.

Subsequently, in April 1987, Roy Watling was even more instrumental in placing conservation firmly on BMS Council's agenda, in a perceptive document that stated: 'The British Mycological Society is committed to the conservation of our national heritage and to playing some defined and active role to meet these aims. The Society is in a good position to offer expert advice on individual sites and expert opinions on specific fungal records and this will improve in the future as more records are keyed into the Society's computer. To fulfil the above role, which is really one of communication and co-operation, the Society has already appointed a representative on the Conservation Committee of the European Mycological Congress, and its own Conservation Advisory Officer. It is hoped that as time goes on the names of these Officers will be more widely known, and

their expertise called upon more frequently . . . Council should think in terms of setting up a small working party probably best linked to the Systematics, Structure and Foray SIC to consider how the proposed mapping of British Fungi can be used to monitor the decrease of particular species etc., and so find out the impact that foraying has on a selected fungus flora, or whether such a factor can even be measured.'

On 22 February 1988, Roy Watling made the specific suggestion that Council should finance some urgent research 'To circulate and collate information concerning fungal protection in European countries and to relate this to the situation in the British Isles.' The supporting documentation for this proposal clearly identifies the major concern being expressed at that time about 'the effects of collecting fungi, either for recreational or scientific purposes, on their productivity and, therefore, their long term continuance in nature. The Plant Protection Act has made a major contribution to the safeguarding of higher plants, but sadly the fungi were not included therein owing to lack of knowledge. Unfortunately, this lack of knowledge continues but there is an ever-increasing pressure on our fungi, including demands from abroad for edible species. Certain European countries already have a 'picking policy' and the British Mycological Society needs urgently to make a preliminary study of (a) the information which has brought this about, (b) the desirability of similar policies in the British Isles with all its attendant problems, and (c) the effects of introduction of such policies if considered necessary.'

Council agreed to support the project on 'Effects of picking fleshy fungi on the Countryside's resources' and the recently appointed Conservation Officer, Bruce Ing, was able to report to Council in July, 1988, details of the programme of research and that the work would be undertaken by Dr Thomas Læssøe, who then reported in November of the same year.

As far as I am aware the Læssøe report *Conservation of Fungi* remained a Council discussion paper which was never published, but as its findings formed much of the foundation for subsequent BMS activity it is worth giving some extensive quotations from it. The first few paragraphs established the history and background of the study.

> Since the invitation to European mycologists by the Dutch group to form a committee on fungal conservation [at] the European Mycological Congress in 1985 the subject has become topical. Many journals including the *Mycologist* and *The Transactions of the British Mycological Society* have published papers on the protection of fungi and have pointed to alarming decline in some fungal groups in specific areas. Acid rain, over-picking, bad management, etc., have been put forward as reasons for the alleged

decline. The Council of the British Mycological Society also felt that something should be done and appointed an officer to the European Committee (Roy Watling) and an officer to deal with the local matters (Bruce Ing). These two officers together with the General Secretary (Tony Whalley) became the board for my project: To write a summary of the situation and give some suggestions of how to proceed.

History of mycological conservation

For obvious reasons the direct conservation of fungus species have been a very insignificant part of general conservation schemes and only recently have fungi been taken into consideration by conservationists.

In the USSR all fungi included on the Red Data List are automatically protected. In Poland a special list of protected fungi have been prepared and e.g. advertised to the public by issuing a stamp series with pictures of the different species. In some countries (e.g. the German Federal Republic) it is prohibited to market certain edible but rare species.

A more important thing for a long-term conservation purpose is of course to protect sites rather than species. But again very few sites have been protected because of a known important mycoflora. There is only one nature reserve in the UK created to protect the mycoflora (a 'hedge-row-locality' with *Battarrea phalloides*). One or two other sites have been listed as sites of special scientific interest because of an interesting and well-documented mycoflora. Protection of sites because of mycological interests is equally rare in other parts of the world. . . .

Possible causes of fungal decline (or increase): Picking . . . Although it is commonly believed that mushrooms are threatened by overpicking, no scientific data support this view (Jansen & van Dobben, 1987, Arnolds 1988[b], etc.). Fruiting of some species seems to be enhanced by cropping and it has been postulated that hypogeous fungi are favoured by soil disturbance. Nitare (1988) warns against continued picking of fungi already recorded in an area although the taxonomic difficulties often make it necessary to collect specimens. In Oregon a project [has] recently been set up to study the cropping of *Cantharellus cibarius* over a 10 year period. The aim is also to measure the effect of trampling (mechanical damage to the soil and supporting vegetation). This might be a more severe threat than the actual picking. Arnolds (1988*b*) made a seven year study where fungal fruit bodies were removed from plots. No decrease in fruiting was observed.

. . . The British Mycological Society policy concerning picking is somewhat unclear, since on [the] one hand R. Watling in *CAB News* and in the *Mycologist* advises the membership to collect only what is necessary for a determination while in each issue of the *Mycologist* you will find instructions of how to cook (etc.) your mushrooms. In most European countries, with the exception of The Netherlands, it would be considered completely non-desirable to condemn picking for culinary purposes.

Land management

"The principal reasons for the decline of fungi are forest management practices, including the reduction in the numbers of rotting trees in commercial forests, the artificial drainage of wetlands, the encroachment of forest and especially spruce trees on what was originally meadowland, and constructions." (from the Finnish Red Data Book).

This statement is almost universal in the different conservation papers. Another general factor is the agreement on the negative effect of commercial fertilisers both in grasslands and, in forests. Even coprophilous species such as some *Coprinus* species and *Poronia punctata* are negatively affected by adding commercial fertilisers (Arnolds, 1988*b*).

The removal of dead trunks and larger fallen branches is also considered a general problem.

In a table [unpublished] communicated by Bruce Ing the loss of major habitats in the UK since 1949 is listed. Only 3% of 'lowland neutral grasslands' remain undamaged and only 15% of 'ancient lowland woods of native broad leafed trees' remain undamaged . . .

Pollution

Both Arnolds (1988*b*) and Nitare (1988) (and various Dutch and German papers) stress the importance of airborne pollutants in fungal decline. In all probability airborne pollutants are responsible for the decline of ectomycorrhizal fungi in The Netherlands, exemplified by detailed studies on the Chanterelle. Jansen & van Dobben (1987) stated about the decline of *Cantharellus cibarius* "although our data indicate an effect of acidification or eutrophication, effects caused by heavy metals are also possible. Heavy-metal pollution may also lead to an increase in the accumulation of organic matter. In one case there is evidence of sensitivity of *C. cibarius* to heavy metals (a Swedish study)". In the Dutch material levels of heavy metals were lower than in the proven cases of toxicity, and thus heavy metals were less likely to be the cause of the decline.

Judged by the communications in Poland also the situation in Czechoslovakia and in parts of Germany is very grave concerning the ectomycorrhizal fungi, while the situation in Scandinavia is either not documented or much less severe. The same seems to apply for the UK.

Climatic changes

Many fungi considered rare in various countries can probably best be regarded as being outposts from their natural distribution and they are thus sensible to even small changes in the climate. No doubt some of the disappearing species can be regarded as 'threatened' by climatic changes (e.g. several elements in the south eastern British mycoflora). The annual variation in climate no doubt also is responsible for many records of so called rare fungi, e.g. in this summer in Denmark where the unusually hot and humid July has resulted in a number of records of "rare, southern" species.

In reaching his conclusions, Læssøe referred to a paper by Kirby (1988) from the Chief Scientific Directorate of the Nature Conservancy, who raised three questions about fungal conservation: (A) are special conservation measures for fungi needed or justified? (B) How should we judge which sites should be conserved for their fungi? (C) How should these sites be managed to maintain their fungal value?

Læssøe concluded that special conservation measures for fungi are justified, that Red Data lists can provide the basis for deciding which sites are most important, and recommended that site management should ensure, for example, that nutrient poor grasslands should be kept nutrient poor (by avoiding fertilisers) and should be grazed or cut; old wood should be left in forest reserves, and drying of the topsoil should be avoided.

A number of specific projects for BMS to undertake were proposed in the Læssøe report. These were, in the order of preference quoted by Læssøe: production of a booklet on conservation of fungi; production of a code of conduct leaflet for forays and mushroom pickers; updating of the BMS database so it can help in preparing Red Data lists; protection of valuable grasslands (including dunes); study of airborne pollution and its effect on the mycota; and issuing questionnaires to the membership to assess change in distribution of indicator species.

Also in November 1988, Roy Watling reported to Council a successful meeting on Fungal Conservation held on 12 November which was organised for the BMS by David Minter. Delegates at the meeting included Dr A.-E. Jansen, the Secretary of the European Conservation Committee, Dr N. Stewart from the Conservation Association of Botanical Societies, and Dr N. Hodgetts and Dr Keith Kirby, of the Chief Scientific Directorate, of the Nature Conservancy Council. This was the first in a number of scientific meetings on this topic area sponsored by the Society. Later ones included a Symposium on Fungi and Environmental Change held in 1994 (Frankland, Magan & Gadd, 1996), and the Symposium at the Royal Botanic Gardens, Kew (13 November 1999) entitled Fungal Conservation in the 21st Century, which was the origin of this book.

All the above shows the careful scientific approach expected of a learned society. There is a need for cogent logical arguments if we hope to change what people are doing, but above all there is a need for relevant scientific knowledge.

In the course of the few years immediately following the Læssøe report the Society's then Conservation Officer, Bruce Ing, published a provisional Red Data list of British fungi (Ing, 1992); he has revised and re-evaluated these data on a regular basis since then. However, the first formal outcome

of discussions prompted by the Læssøe report was published as the ten point BMS policy on conservation (Anon., 1990), stating:

1. The British Mycological Society is committed to the conservation of non-harmful fungi and their habitats. To this end it will foster and support those activities which will ensure the survival of fungal populations.
2. The Society will compile a Red List, using strict criteria and related to habitat type, of rare and endangered fungal taxa, which may be helpful in evaluating sites and in drafting any future legislation on species protection.
3. The Society will, where possible, seek to provide information concerning the mycoflora of sites which may be threatened, so that management appropriate to fungal conservation may be planned. The Society will provide advice to landowners, conservation bodies and local authorities on the mycological importance of their land and of suitable conservation measures that may be adopted.
4. The Society will encourage research into the decline, or otherwise, of fungal populations and will help to make available the results of such research. The Society's database of fungal observations will assist in this motoring activity.
5. The Society maintains that there is no evidence that the responsible collection of fungi for scientific purposes presents any threat to populations and, moreover, that it is essential for the accurate identification of species and the compilation of site inventories.
6. The Society will provide a Code of Conduct for its members, other conservation bodies and individuals who wish to collect fungi.
7. The Society does not condone commercial collection of wild mushrooms, particularly as there is uncertainty as to the effects of such large-scale collection on fungal populations.
8. The Society will strengthen its links with those organisations concerned with forest ecosystems, especially where such systems are seen to be under stress, so that the vital role that fungi play in such ecosystems becomes more widely appreciated.
9. The Society will extend its relationship with its European and other overseas counterparts to exchange information concerning continental and global changes in mycoflora, and will encourage

appropriate research programmes. It will review and update the policy regularly so as to take into account new research findings and policy decisions in other countries.

10. The Society will actively promote a wider understanding of the importance of fungi and their biology, and in particular their significance in the conservation of natural communities, as a contribution to environmental education.

During the next few years the Society concentrated on codifying its conservation policies, with particular emphasis on collaboration with other bodies, both national and international, in an effort to increase and widen the effectiveness of those policies.

Codifying policy

At a meeting of Foray Group Leaders convened by the Society at Littledean in May 1995 Maurice Rotheroe, then speaking as Deputy Conservation Officer (and Conservation Officer-elect) expressed the view that the Society could make a much greater contribution to local and national conservation issues and there was a need for conservation to have a much higher profile within the BMS. He outlined the role that the BMS could play in liaison with English Nature, the County Trusts and other wildlife and conservation bodies. The BMS could offer specialist knowledge of the relationship between fungi and other organisms not available elsewhere. There was much work to do in publicising fungi, in educating reserve managers and others in mycology and management for conservation of fungi. He also issued a questionnaire to Group Leaders to enable him to collect the first-hand experience of these groups and to establish links with local County Trusts and English Nature representatives in each area.

Minutes of the BMS Council meeting of 6 December 1996 featured the annual report to Council of the BMS Conservation Officer, Maurice Rotheroe. This was especially notable because in the course of 1996 a Conservation Special Interest Committee had been established. The SIC's first meeting lasted four hours during which its members took on responsibility for gathering more data on endangered species to contribute to future Red Data lists; initiated work on the production of a draft guide to site management techniques which are sensitive to the requirements of fungi; and identified commercial collecting of wild fungi as the most prominent current issue following intense publicity about the topic earlier in the year.

On behalf of the Conservation SIC, Patrick Leonard compiled a consultation document entitled *Outline Policy on Commercial Collecting of Wild Fungi* which was presented to Council at this December 1996 meeting. This report notes that the BMS had set out its policy on commercial collecting of macrofungi as part of its policy on conservation, published in 1990 (Anon., 1990; and see above). Public concern had mounted as commercial collecting had expanded in the early 1990s and the policy needed amendment. The vehemence of the concern among some members of the public had been brought home to the Society in a face-to-face confrontation several weeks before this Council meeting. 1996 was the BMS Centenary year and at the Society's 'Fungus 100' exhibition in London in 1996, a wild-mushroom cooking demonstration by one of the world's great chefs, Antonio Carluccio, was noisily interrupted by 'green activists' accusing him of pillaging the environment!

Increased collecting of fungi gave rise to concerns about: (1) the effect on the long-term survival of the fungus, and the indirect effect on organisms further down the food chain, that is, the overall wildlife conservation issue; (2) potential distortion of scientific records; (3) the effect on local people who thought they had *de facto* collecting rights in public forests; (4) effects on landowners, and particularly woodland owners, of the nuisance of ever more determined pickers; (5) adverse aesthetic effects on the natural environment caused by indiscriminate collecting in autumn woods.

Patrick Leonard argued that the then published position of the BMS appeared weak and difficult to explain to concerned but nonexpert members of the public. It also failed to address the question of the cause of observed declines in fungal populations because point 7 in the 1990 policy statement (see above) simply refers to 'uncertainty as to the effects of such large-scale collection'. Inevitably, also, the 1990 policy had no reference to the International Convention on Biological Diversity that the UK signed in 1992.

Leonard suggested that 'A much more viable policy position would be to acknowledge that there are declines in the populations of common edible fungi. To point clearly to habitat losses and the effects of pollution and make clear the BMS stance on these. To adopt the precautionary principle in relation to commercially collected species where numbers are declining rapidly and propose to Government that action plans should be drawn up for two or three of these. To protect habitats where rare and threatened fungi are present by halting commercial collecting. To make common cause with the conservation agencies, the Forestry Authority, landowners and with the major conservation voluntary bodies such as the

National Trust and the Wildlife Trusts . . . In the light of increasing concern about the rapid expansion of commercial collecting of fungi in Britain it would seem desirable for the BMS to re-examine and strengthen its conservation policy. Such a change would be seen as a positive response to the concerns and a timely updating of the policy following new national and international policies on conservation . . . '.

Council agreed on the need for a revised conservation policy and that there should be a statement which presented the Society's views on the commercial collecting of wild fungi. The President (John Webster) asked Maurice Rotheroe to receive and collate contributions to a revised policy document which would be brought back to Council before being published in the *Mycologist*.

Consultations continued through 1997 and the final policy document was approved at the December 1997 meeting of Council, with David Moore as President. The text, published two months later (Anon., 1998a), was as follows.

British Mycological Society Policy on Conservation

1. General Statement:The British Mycological Society is committed to the conservation of fungal populations and communities. To this end it will foster and promote those activities that contribute to survival of viable fungal populations and communities.
2. Threatened Fungi: The Society will compile and publish a Red List that conforms to international standards and will press for positive conservation of threatened fungi through national and international measures.
3. Habitat Conservation: The Society will seek protection for important mycological sites against loss, deterioration or fragmentation, howsoever caused.
4. Edible Fungi: The Society acknowledges the importance of edible wild fungi as a resource to be utilised, but accepts harvesting of such fungi only where it is non-threatening to the viability of fungal populations, and their associated organisms and habitats.
5. Code of Conduct: The Society will publish a Code of Conduct for the responsible collecting of fungi.
6. Research: The Society's constitutional object 'to promote mycology' encompasses encouragement of research on the biology, including taxonomy and ecology, of fungi; on the causes of decline of fungal populations; and on the cultivation of edible fungi.
7. Information: The Society will monitor and record the occurrence of fungi and make its Database available to its members and to outside organisations and individuals.
8. Education: The Society will promote a wider understanding of the importance of the conservation of fungi.

9. Collaboration: The Society will enhance its links with organisations concerned with conservation and the protection of the environment at local, national and international levels.
10. Review: The Society will review and update its conservation policy, as required, to take account of new research findings and changes in relevant legislation and environmental policy.

The published policy was accompanied by a paragraph describing how practical implementation of the BMS Conservation Policy would be incorporated into a Five-year Plan which the Conservation SIC had developed and had been approved in principle at Council. As recorded in Council Minutes, the consultation document described the provisional five-year plan in the following terms.

1. *General:* The British Mycological Society will disseminate its policy on the conservation of fungi both inside and outside the scientific community, using appropriate media including publication via the World Wide Web.
2. *Threatened Fungi:* The Society will review and update the Provisional Red Data List of British Fungi and will press for national and European legislation to protect threatened fungi where appropriate. It will urge the Joint Nature Conservation Committee to publish a Red Data Book for fungi and will assist in its production. The Society will actively participate in the implementation of action plans for fungi published under the UK Biodiversity Action Plan.
3. *Habitat Conservation:* The Society will co-operate with statutory and voluntary conservation organisations to identify mycologically important sites and habitats. It will compile a management handbook, covering all ecosystems, to assist landowners and managers.
4. *Edible Fungi:* The Society will monitor the impact of commercial collecting and will press for regulation where such collection is shown to threaten the viability of fungal populations and their associated organisms. It will actively discourage the collecting of species that are identified as being under threat. The Society will co-operate with land managers and other bodies to promote the sustainable harvesting of edible fungi. It will initiate action through the European Council for the Conservation of Fungi to urge governments of importing and exporting countries to curb excesses of commercial collecting through legislation.
5. *Code of Conduct*: The Society will seek sponsorship for the production, publication and promotion of its Code of Conduct.
6. *Research:* The Society will press for research relevant to conservation of fungi and will compile a list of key areas for investigation, to be distributed to grant-awarding and research organisations in the public and private sectors. Specific areas for priority investigation will include: the impact of commercial collecting on fungal populations; the cultivation of mycorrhizal species of edible fungi; and the effect of

government agricultural and land-use policies on fungal populations and communities.

7. *Information:* The Society will ensure that its database is efficiently managed and updated and the design modified, where necessary, to make it compatible with similar databases held by other conservation agencies. It will place a high priority on participation in the National Biodiversity Network. The Society will encourage the exchange of data on fungi with European mycological societies.
8. *Education:* Officers of the Society will publicise the conservation activities of the Society, will promote educational training in fungal conservation and encourage other bodies to include consideration of fungi in their conservation and management activities. The Society will press for a programme of training to be set up for commercial collectors, restaurateurs and other traders in wild fungi in order to encourage responsible collecting and consideration of the importance of the long-term sustainability of the resource.
9. *Collaboration:* The Society will work with the European Council for the Conservation of Fungi, the International Union for Conservation of Nature and Natural Resources and the Berne Convention to seek protection for mycological habitats of European importance through the implementation of appropriate government land-use policies. Opportunities will be investigated for the financing of international fungus conservation research programmes. The Society will organise an international symposium in 1999 in order to review the future of fungal conservation in the 21st century.
10. *Review:* The Society will encourage its members to inform the Conservation Special Interest Committee of publication of new research relating to fungal conservation, of impending changes in legislation on environmental matters and of any modifications of policy by statutory or voluntary conservation agencies.

Consultations continued through 1997 and 1998 with English Nature, The Woodland Trust, The National Trust and the Forestry Commission, leading towards the publication of two leaflets entitled *The Wild Mushroom Pickers Code of Conduct* and *The Conservation of Wild Mushrooms* (Anon., 1998*b*,*c*).

The BMS input to these leaflets, which was crystallised over many years from the contributions of numerous individuals and committees can be paraphrased as follows.

British Mycological Society: collecting fungi from the wild, a code of conduct

Beauty, intrigue and value. All these can be found amongst the fungi. Exotic displays of mushrooms and toadstools in our woodlands and pastures, particularly during the autumn, are as much a part of our natural heritage as the more commonly appreciated displays of wild

flowers. And the flushes of fungi can provide as much aesthetic appeal as their cousins, the flowers.

But fungi are also important for their medical and industrial value. They are sources of life-saving drugs and other products in daily use by us all. But more than this: fungi are essential components of natural habitats like woodlands, meadows and pastures and without them the ecology of these places could not function.

Fungi of all sizes are used as food by a range of animals. Mammals like squirrels, voles, deer, and we, of course, take the larger fruit bodies. Indeed, these provide homes as well as nutrient to many invertebrates (worms, insects, slugs), some of which may be rare or endangered species in their own right.

We collect fungi too. Some for scientific study and identification; some for screening for new drugs; but most, perhaps, for food use by the collectors themselves or for sale to groceries and restaurants.

We treat wild fungi as a natural harvest, the hunter-gatherer's perquisite! Which is all well and good, but humans don't have a particularly good track record for reasonable exploitation of such natural resources. The intention of this Code is to minimise the adverse impacts of our collecting activities. We want to maximise enjoyment of fungi whilst minimising the damage we might cause to other wildlife and wild places, to fungal populations in nature and, indeed, to landowners, site managers and other collectors.

Need for a code

Mycologists (people who study fungi) have known for many years that populations of wild fungi are subjected to the same adverse pressures as are other wildlife by our modern life style. This has led to the compilation of Red Data Lists of threatened species in the hope that recognising the threat will assist in their protection.

Right across Europe there has been a decline in the fruiting of some wild fungi. A particularly worrying aspect of this is that it is especially true for mycorrhizal mushrooms – which form an intimate symbiotic association with living tree roots – and which cannot yet be cultivated. Two popular edible mushrooms belong to this category: the Cep, *Boletus edulis*, and the Chanterelle, *Cantharellus cibarius*. The main causes of the decline appear to be loss of habitat and air pollution, and edible and inedible species of mushroom are equally affected.

But there are other pressures. Increasing popularity of 'field mushrooms' and 'wild fungi' on the menus of fashionable restaurants and in recipes of fashionable cookery books has increased the profitability of collecting from native populations. Collecting for commercial gain has become more common and is often concentrated on a few areas known to yield good harvests and has led to inevitable resentment and conflict with local residents and landowners.

The aim of this Code is to recommend good practice for all those who collecting fungi from the wild.

Principles

A number of common-sense principles underlie this Code:

- Scientific research has not detected any ecological damage arising directly from harvesting fungi, even on a large scale for commercial purposes. BUT, such studies are in their early stages. What IS clear is that the act of collecting can cause collateral damage by the effects of trampling, disturbance, removal and even destruction of natural areas.
- Mushrooms, toadstools and other fruiting structures are only the visible spore-producing bodies of the fungus, like the fruits of our orchard trees. The bulk of the fungus exists below ground as the fungal mycelium. Removing a mushroom may do no more damage than taking an apple from the tree (even though dispersal of spores, like discharge of plant seeds, is necessary for sexual reproduction). But trampling the mycelium to death can cause untold damage to the existing population.
- While we are so ignorant of the biological requirements of many fungi are not, it would be prudent to be cautious in our exploitation of natural resources. We must not risk long-term damage by ignorant exercise of our 'right to collect'.
- Nevertheless, wild fungi must be seen as a legitimate resource to be harvested. But we must ensure that harvesting is sustainable and does no damage either to the fungal population or to populations of organisms associated with the fungi.

  Scientific study of fungi, such as recording their occurrence, sometimes requires removal of fruit bodies, even when the study is aimed at conservation. The reason is that proper identification may need microscope observations, or even molecular analyses.

Fungi and the law

Two main laws may protect fungi.

The Theft Act (1968), which applies only to England and Wales, makes it an offence to:

- Dig up and take any plant, tree or shrub or any soil etc. which is part of the land, being the property of somebody, so digging up fungi could constitute theft unless the landowner has given permission.
- Take the property of somebody and sell it for gain. The emphasis here is on selling for gain. The custom of taking wild fruit and flowers, including fungi, is permitted by the Act so long as there is no personal financial gain. Sale of collected fungi without the landowner's permission may be an offence.

The Wildlife and Countryside Act (1981), and a similar law in Northern Ireland, makes it an offence to:

- Pick, uproot, destroy or sell, and/or collect and cut any plant listed on Schedule 8 attached to the Act – and that schedule now includes some species of fungi.
- Uproot any wild plant, unless the person is authorised.

Remember also that special protection restricting collection of fungi may apply to Sites of Special Scientific Interest (SSSIs), designated under the Wildlife & Countryside Act, and National Nature Reserves (NNRs).

Local Bylaws forbidding the picking of fungi and plants on National Trust property, Crown Estates, Local Nature Reserves, Forestry Commission and Local Authority land may also apply.

The fungus pickers' Code

General guidelines

Many of the recommendations below are simply common courtesy or countryside etiquette. Remember that we share the environment with many other organisms and interests and so are the custodians of our natural heritage.

Before entering any land, get the landowner's or site manager's permission, explaining the purpose of your visit. Check for Bylaws concerning picking of fungi. Collecting is not allowed on some SSSIs, Nature reserves and other protected areas.

Follow the Country Code

Be sensitive to the structure of the natural habitat. Do not damage vegetation or soil, nor disturb unnecessarily leaf litter or other features. Do not move or remove dead wood unless essential to identify a fungus.

Collecting for food

Be VERY aware that some fungi contain deadly toxins and many more may make you unwell. Some people suffer allergic reactions after eating particular fungi, even though they may be well known as 'edible'.

Many mushrooms can concentrate heavy metals so do not collect in heavily polluted areas. This warning applies to the verges of busy roads (lead pollution) and to reclaimed land sited on old landfill waste dumps (where the danger is of industrial heavy metals like cadmium and mercury).

Do not collect large numbers of specimens that you don't recognise on the off chance that some might be edible.

Some edible species have poisonous look-alikes. Beginners should not eat anything that has not been checked by an experienced field mycologist. And remember that mainland Europe, where amateur mushroom hunting is a popular pastime, has the highest reported incidence of mushroom poisoning in the world!

Respect, and protect, all species, including poisonous ones.

Never collect rare or Red Data list species – and certainly not the species that are scheduled in the Wildlife and Countryside Act (listed below).

Even if the population is plentiful, take no more than you need for your personal consumption or use.

Collecting with a view to selling for profit or other commercial use

must be agreed beforehand with the landowner.

Generally, never take more than half of the fruit bodies you can see.

Generally, never collect unopened or 'button' mushrooms. Giving the fruit bodies time to expand will allow spores to be discharged and result in bigger, perhaps tastier, mushrooms to be picked later.

Scientific collecting

Collect the minimum amount of material or number of specimens required for proper description and reliable identification.

Minimise the disruptive effects of taking samples. For example, replace rolled-over logs and avoid the unsightly damage caused by cutting chunks out of long-lived bracket fungi.

Always offer the results of your fieldwork to the landowner or site manager, with explanation of the significance of your findings.

Record localities and habitat data for rare species accurately and retain dried 'voucher specimens' for deposit in herbarium collections. Supply information to local and national databases. Remember that science needs to be communicated!

If you have permission to collect for scientific purposes do not abuse it by collecting edible fungi for eating 'on the side'!

The following fungi are protected under the Amendment to Schedule 8 of the Wildlife & Countryside Act, 1981:

Sandy Stilt Puffball, *Battarrea phalloides* – inedible.
Royal Bolete, *Boletus regius* – edible.
Oak Polypore, *Buglossoporus pulvinus* – inedible.
Hedgehog Fungus or Lion's Mane, *Hericium erinaceum* – edible.

. . . but you can't please all of the people all of the time

One of the most remarkable, and unexpected, aspects of the reaction to publication of the *Code of Conduct* was a thunderous editorial in the *Daily Telegraph* of 31 August 1998 headlined 'Mushrooming bureaucracy'. An accompanying article by the newspaper's Environment Editor, Charles Clover, gave a fairly measured account, though it bore the challenging headline 'Country code to curb the mushroom picker'. However, the editorial started off 'After Greenpeace, green police? This week will see the publication of one of those increasingly familiar 'codes of conduct' which tell you what to do in areas where we have managed well enough without rules. This one is to control mushroom picking, for heaven's sake, and it promises to provide splendid new opportunities for minor-league jobsworths whose hobby is bossing us about.' This gem of the journalist's trade ended 'Leave us to pick our mushrooms in peace, and if we wish to sell them, that is our own affair.'

In some quarters, then, the *Code of Conduct* might well be seen as overly challenging, but this could reflect the attitudes of at least a few of those involved in bringing together the contributions of different organisations. Certainly, during the discussion phase a representative of one of the partner organisations with which we were trying to establish a joint compromise approach e-mailed the BMS Conservation Officer stating 'I would remind you that much of your text . . . is the intellectual property of K--------, M----- and I, and you do not have our consent to use it . . . ' – not a very helpful stance for one's co-authors! Nevertheless, careful political navigation around the jealously self-protective (the 'jobsworths' in the eyes of the *Daily Telegraph*'s Editor) can, and in this case did, lead to a satisfactory conclusion – a document agreed by all parties concerned which could actually help the situation.

Dissemination of the advice and continued education is the key to further progress. It is clearly not good enough to limit our targets to the mycological community. The message must be spread to other concerned naturalists and then to the wider lay audience, especially managing and legislating authorities. This is something a national Society can, and should, take into its responsibility.

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Issues and Solutions

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