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EUROPEAN CHARTER

ON FUNGI-GATHERING AND BIODIVERSITY

- Final draft -

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EUROPEAN CHARTER ON FUNGI-GATHERING AND BIODIVERSITY

INTRODUCTION

A. Gathering of fungi in Europe

People have been gathering fungi since ancient times and to this date wild fungi provide a range of uses to people around the world. In ancient Greek and Roman times edible fungi were already highly valued by the upper class.[1] Southern European (particularly France and Italy) and Eastern European countries traditionally value fungi and have a strong and long tradition of popular use. Northern and Western Europe has a much weaker tradition of collecting fungi and indeed fungi were often actively feared. In modern Europe, this distinction between mycophilic and mycophobic countries is becoming less and less clear and across Europe interest in gathering of fungi is steadily increasing. Some of this is due to commercial reasons, but the influence of immigrants from fungi loving cultures has also changed attitudes.

Fungi include a wide range of taxonomic groups, from pathogenic microfungi carried by animals and the symbiotic component of lichens to ectomycorrhyzal species whose huge mycelial nets underpin tree populations in forests. However, it is the macrofungi, or fungi that have a visible fruiting body, that are most often collected from the wild. Globally, there are more than 200 genera of macrofungi which contain species of use to people, mostly because of their edible properties.[2,3] To a lesser extent, wild fungi are used amongst others for medicine, hallucinogens, ornaments, perfume, genetics and as a food source for livestock (including the important role of lichens as a winter staple for semi-domestic northern reindeer herds). In addition to the range of fungi that provide consumptive use to people, a far greater amount provides no such use, and only a very small amount is toxic or poisonous. It is important to acknowledge that a wide variety of people value fungi for non-consumptive reasons, such as the pleasure of observing of photographing them. They are a relevant group in the sense that they can be affected by the consumptive gathering of fungi, but they are not the focus of this charter; nor are those who cultivate fungi or whose livestock eat them.

There are two distinct patterns of fungi-gathering; for commercial and for non-commercial use. Non-commercial use covers a continuum from recreational to subsistence use and commercial use also exists on various scales. Traditionally, fungi gathering has provided an important, high quality food source for rural people[4,5], and in some countries a high proportion of the population participate in this activity. The best European data are from systematic surveys in Finland, where 40% of the population collected fungi and 58% gathered wild berries in 2010[6]. In rural communities from 7 countries in Europe, the lowest proportion gathering wild fruits and fungi in 2010 was 31% and averaged 53%[7].

Over the past two decades, fungi gathering has also increased in popularity among amateur enthusiasts. In some countries, gathering wild fungi is a major economic activity as well as being a national pastime. Since the 1980s, increased use of wild fungi by gourmet chefs and the development of an international market have created opportunities for commercial harvesting.[8] Assessing commercial value of harvests is challenging[9], but the Baltic States, Poland and Yugoslavia were

[1] Buller AHR. The fungus lores of the Greeks and Romans. Transactions of the British Mycological Society 1914; 5: 21 – 66.
[2] Boa, E. 2004. Wild edible fungi. A global overview of their use and importance to people. *Non-wood forest products* 17. Rome, FAO.
[3] http://www.fao.org/docrep/007/y5489e/y5489e08.htm
[4] Yang, Z.L. 2011. Mushrooms, health and nutrition. Pp. 161-173 in [5]
[5] Cunningham, A.B. & Yang, X. (eds.) 2011. Mushrooms in forests and woodlands; resource management, values and local livelihoods. Earthscan, London & Washington, D.C.
[6] Sievänen, T. & Neuvonen, M. 2011. Luonnon virkistyskäyttö 2010. Metlan working report 212 (http://www.metla.fi/julkaisut/workingpapers/2011/mwp212.htm)
[7] Kenward, R.E., Papathanasiou, J., Arampatzis, E. & Manos, B. (eds.) 2013. Transactional environmental support system design: global solutions. IGI-Global, Hershey, Pennsylvania.
[8] Schneider, E. 1999. Favored fungi: part one. Food Arts, October, 158–167.
[9] Alexander, S.J., Mclain, R.J., Jones, E.T. & Oswalt, S.N. 2011. Challenges and approaches to assessing the market value

exporting 3,900, 9,200 and 7,800 tonnes respectively in 1998, 1984 and 1990. Total Turkish exports were about 800 tonnes in 1990 and the Turkish harvest value was estimated at US$14.4 million in 1993[3]. Although commercial gathering is increasing, varying harvests and competition result in wide fluctuations of prices, with varying wholesale values of wild fungi harvests in the USA of US$35-57 million during 1998-2007[9]. In Tibet the US$225 million harvest of medicinal *Cordyceps sinensis* approximated 40% of rural incomes[10], but there are few in Europe who make their sole living from harvesting wild fungi[2]. However, the recreational value of European fungi may be much greater than the commodity value, as costs of collecting wild fungi and plant materials in 7 communities were about a tenth of the €35 billion spent annually on angling and hunting[7].

The expansion of commercial harvest in Europe has resulted in the introduction of national, regional and even communal regulatory and licensing systems in several countries. The regulatory and policy approach differs widely between countries and regions. In Scandinavia, fungi gatherers have open access and can pick as long as they do not harm property[11]. Finland promotes greater harvest of fungi as an underutilized resource[12,13], while in the Netherlands gathering of fungi is strongly discouraged through codes and local acts.[14] In France and Italy, there are gathering permits and timing and volume of harvest is regulated through daily limits and harvesting calendars. In some regions in Italy, this is complemented by the requirement to pass a proficiency test. In Spain, local communities administer permit schemes to regulate the collection of truffles.[2]

Information about the success or even the need for these schemes is sketchy and highlights the general difficulty of monitoring the conditions set by regulation as well as their social and environmental impact. The impact of harvesting wild fungi on the fungi and their habitat is frequently debated and research to date is inconclusive. In addition, little is known about collectors and collecting practices and the fairness of schemes in terms of equitable access to resources. Sustainability of fungi harvesting and its different dimensions will be discussed in more detail in section 1.5.

B. The Bern Convention and its relevance to the gathering of fungi and lichens

The Convention on the Conservation of European Wildlife and Natural Habitats (hereafter referred to as the Bern Convention[15]) was signed in Bern, Switzerland in 1979 and came into force on 1 June 1982. It aims to conserve wild flora and fauna species within States, and emphasises the need for cooperation in the conservation of species and habitats across national borders, with emphasis on endangered and vulnerable species (including migrants) and their habitats.

Its 50 Contracting Parties have committed themselves to enact appropriate legislation and administrative measures for the conservation of the indigenous species of fauna and flora and their habitats. The Bern Convention is the primary international treaty governing biodiversity conservation and management in Europe, and provides the foundations for this *Charter*. Articles 7 and 8 of the Bern Convention even allow for the exploitation of protected species listed in Annex III after taking into consideration some specific requirements.

However, no fungal species are represented in the Appendices of the Bern Convention or in the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. In fact, nature conservation actions have largely neglected fungi due to insufficient knowledge of their ecology, distribution and status. However, in recent decades scientific knowledge has significantly increased, as has awareness of declining fungal populations in Europe. These

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of wild fungi. Pp.87-106 in [5]

[10] Winkler, D. 2008. Yartsa Gunbu (Cordyceps sinensis) and the fungal commodification of Tibet's rural economy. Economic Botany 62:269-277.

[11] Saastamoinen, O. 1999. Forest policies, access rights and non-wood forest products in northern Europe. Unasylva, 50: 20–26.

[12] Härkönen, M. & Järvinen, I. 1993. Evaluation of courses for mushroom advisors in Finland. Aquilo, Ser. Botanica, 31: 93–97.

[13] Salo, K. 1999. Principles and design of a prognosis system for an annual forecast of non-wood forest products. Pp 35-44 in A. Niskanen & Demidova, N. (eds.) Research approaches to support non-wood forest products sector development: case of Arkhangelsk Region, Russia,. European Forest Institute Proceedings 29 Joensuu, EFI.

[14] Moore, D., Nauta, M.M., Evans, S.E. & Rotheroe, M,(eds.) 2001. Fungal conservation: issues and solutions. Cambridge University Press.

[15] http://conventions.coe.int/Treaty/en/Treaties/Html/104.htm

declines have been brought about by loss of habitats due to changed land uses and degradation of habitats especially due to nitrification. European mycologists have, through the European Council for Conservation of Fungi, been preparing a list of fungi for possible inclusion in the Bern Convention since 1991. A report containing thirty-three datasheets on endangered mushrooms in Europe was presented at the 21st Standing Committee meeting, [document T-PVS (2001) 34] together with a request to include them in the Convention's Appendix. Although the proposal did not obtain the support of the necessary majority at the meeting of the Parties, a compilation of additional and updated information concerning the proposed fungi was published in 2006 in the Council of Europe's series "Nature and Environment" No. 136. Next year, following the "Declaration of Corboba"[16], the "Guidance for the conservation of mushroom in Europe" [document T-PVS(2007)13revised] inspired Recommendation No. 132 (2007) of the Standing Committee on the conservation of fungi in Europe, adopted by the Standing Committee on 29 November 2007.

C. Sustainability principles

The definition of sustainable development was formulated by the World Commission on Environment and Development Conference in 1987. It was endorsed under Agenda 21 at the World Summit on Sustainable Development in Rio in 1992, which also launched the Convention on Biological Diversity (CBD). The overall aim of the EU Sustainable Development Strategy, as renewed in 2006[17], is "*to identify and develop actions to enable the EU to achieve continuous improvement of quality of life both for current and for future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion*".

Progress in Europe towards sustainable development must also be viewed in a global context. The Council of Europe member states and EU member states are all Contracting Parties of the Convention on Biological Diversity (CBD). The CBD's overall objective is to encourage actions which will lead to a sustainable future[18]. It has three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. Sustainable use of the components of biological diversity is included in 13 of 19 substantive articles. In Articles 1 and 10 of the CBD, the conservation and sustainable use of biological diversity are clearly emphasized as central objectives.

The IUCN developed a Sustainable Use Initiative to help implement the CBD. Following a Policy Statement in 2000: "*The use of wild living resources, if sustainable, is an important conservation tool because the social and economic benefits derived from such use provide incentives for people to conserve them*", which was adopted at its 2nd World Conservation Congress in 2000, IUCN arranged regional workshops in Mozambique, Vietnam and Ecuador. These led to a synthesis workshop in Addis Ababa, Ethiopia, after which the 7 th CBD Conference of the Parties (COP) in 2004 adopted the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (AAPG)[19]. AAPG were also formally recognised by CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora[26]) in 2004, at its 13th COP, and in 2006 adopted by the 3rd Meeting of Parties to the African-Eurasian Waterbird Agreement (AEWA).

The AAPG are based on the assumption that it is possible to use biodiversity in a manner in which ecological processes, species and genetic variability remain above the thresholds needed for long-term viability, and that all resource managers and users have the responsibility to ensure that such use does not exceed these capacities. The AAPG emphasise the crucial need for the maintenance and/or recovery of biodiversity in ecosystems to ensure the long-term sustainability of ecological services upon which both biodiversity and people depend. Users and managers at all geographical and institutional levels are encouraged in AAPG to adapt the cross-cutting principles and guidelines pragmatically to best fit local circumstances.

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[16] Junta of Andalucia 2007. Declaration of Cordoba. First World Conference on Conservation and Sustainable Use of Wild Fungi, Cordoba, Andalucia, Spain.
[17] http://register.consilium.europa.eu/pdf/en/06/st10/st10117.en06.pdf
[18] CBD fact sheet http://www.cbd.int/iyb/doc/prints/factsheets/iyb-cbd-factsheet-cbd-en.pdf
[19] http://www.biodiv.org/doc/publications/addis-gdl-en.pdf (see Appendix 3.2)

In a parallel process, a Workshop on the Ecosystem Approach held in Malawi during 1998 identified twelve principles/characteristics for managing biodiversity at an ecosystem level, seeking to achieve a satisfactory balance between conservation and development. These "*Malawi Principles for the Ecosystem Approach* (MPEA)[20]" were also confirmed at the CBD 7th COP, noting their strong cross-linkage to AAPG. They advocate integrated management of land, water and living resources for promoting the conservation and sustainable use in an equitable way, recognising that humans and their diverse cultures are an integral part of ecosystems.

The AAPG and MPEA can be summarised together as recommendations for:

1. Supportive and linked governance at all levels with harmonised regulations that promote societal benefits from conservation and avoid perverse effects.

2. Avoidance of adverse impacts within or between ecosystems and of short-termism, especially when faced with inevitable change.

3. Transparent and adaptive management along a use-protection continuum, based on interdisciplinary science, monitoring and timely feedbacks.

4. Encouragement of economic/cultural incentives with sharing of benefits (and costs) especially at the local level, while avoiding waste.

5. Decentralisation of management to an appropriate bio-economic scale, especially to empower, hold accountable and access knowledge of local people.

6. Education, awareness and inclusion of managers, resource users, and society at large.

As will be seen, the AAPG and MPEA form the basis of the Principles and Guidelines in section 2 of this document.

D. Gathering of fungi as a tool for biodiversity conservation

In June 2010 the CBD secretariat released the third Global Biodiversity Outlook. The report shows that the nations of the world have individually and collectively failed to meet the 2010 biodiversity target. The five main global drivers of biodiversity loss have not only remained more or less constant over the last decade, but are in some cases intensifying. These drivers include habitat loss, the unsustainable use and overexploitation of resources, climate change, invasive alien species, and point source and diffuse pollution.

The loss of biodiversity continues, as illustrated by the fact that the nations of the world have individually and collectively failed to meet the 2010 biodiversity target. The 10th Conference of the Parties to the CBD met in Nagoya, Japan in October and adopted a "post-2010" Strategic Plan of the Convention for the period 2011-2020. The plan includes a 2050 biodiversity vision as well as a 2020 biodiversity target and sub-targets. "Aichi Targets" from CBD COP10, as well as the EU Biodiversity Strategy for the coming decade, set ambitious restoration goal for biodiversity, which must include fungi not least because of their important role in ecosystem services on which humans and other species depend. Recently the European Environmental Agency (EEA) emphasized the need for individual Europeans to become engaged in halting the loss of biodiversity[21]. Communities and individuals must act if nations are to succeed in meeting the 2020 deadline and sub-targets.

Commercial and non-commercial fungi gathering in Europe benefit people as a resource for food as well as other consumptive uses; a source of income; and through providing many cultural ecosystem services, including recreation, education, social and aesthetic pleasures; as well as contributing to provisioning services and motivating maintenance of the supporting and regulating services of ecosystems[22]. Sustainably managed fungi gathering can also contribute to the conservation of biodiversity, the preservation of rural lifestyles and local economies. In this context fungi gathering can provide strong incentives for conservation through use of biodiversity *sensu* CBD[23].

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[20] http://www.biodiv.org/doc/meetings/cop/cop-04/information/cop-04-inf-09-en.pdf (see Appendix 3.3)
[21] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/646&format=HTML&aged=0&language=EN&guiLanguage=en
[22] Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC.
[23] http://www.cbd.int; http://www.fao.org/docrep/005/v9878e/v9878e00.HTM

Many of the fungi that provide a consumptive use to people also play a vital supporting role in ecosystems through the symbiotic relationships known as mycorrhizas that they form with trees. Mycorrhizal fungi are difficult to grow in culture and attempts have failed in the absence of their natural symbiotic partners. Truffles and other valuable wild edible fungi also depend on trees for their growth and cannot be cultivated artificially. Thus, the loss of forest reduces the potential production of harvestable fungi. Through this dependency, the value attributed to fungi through their consumptive use provides a direct incentive to protect the environment the fungi depend on for their production. An example of fungi gathering contributing to conservation can be found in Tibet, where intact healthy forests are seen as the key to rural development through the harvest of matsutake mushrooms. Several villages have developed their own mushroom management plans and timber harvest has been scaled down[7].

Conversely, many tree species are dependent on their symbiotic mycorrhizal fungi to enable them to grow in nutrient-poor soils. Any unsustainable harvest of fungi could therefore have a direct negative impact not only on the fungi themselves, but on their symbionts as well. In addition, over-harvesting of fungi will have a spill down effect in the food chain through competition with animals that depend on fungi as a food source. To achieve any positive conservation outcomes of fungi gathering, sustainability of the use is therefore a prerequisite.

E. Ensuring best practices

Collecting wild fungi is often compared with picking fruit from a tree. Removing all the fruit does not affect future harvests unless the tree is damaged, but might have an impact on regeneration. This appears to be true for wild edible fungi, with some reservations: removing unopened fruiting bodies prevents dispersal of spores. As long as only the mature fruit bodies are picked without harming the body of the fungus (often underground, or embedded in another substrate) and sufficient spores are released from old or non-harvested fungi for reproduction, harvesting does not impact regeneration. There are several studies that demonstrate that the harvesting of fungi itself does not significantly impact the continued fruiting of the harvested fungi in the short to medium term[24,25]. Potential effects on the longer term however, require further research. In Finland, none of the threatened *Aphyllophorales* species have become threatened as a result of picking or collecting[14] and a review of the 33 fungi species Red-Listed as threatened in Europe [26]shows that only one species had harvest listed as a possible threat.

Fungi gathering can however have an indirect impact on populations if unsustainable harvesting techniques are used. If soils are compacted, leaf layers disturbed, or mycelium damaged, this can affect production. Trampling of soil, crude raking of leaf litter and indiscriminate digging for truffles is harmful[17]. This can be avoided through the implementation of best practice. For instance, the traditional use of trained dogs or pigs to sniff out truffles negates the need for indiscriminate digging.

When harvesting is done on a small scale, it rarely leads to conservation concern. However, large-scale commercial gathering may have a negative effect, particularly if unsustainable harvest techniques are used. In Serbia, Poland and Portugal, negative effects of large scale commercial harvest of fungi on fungi and their ecosystem is alleged[14,25], although there is no scientific research to support these claims. Commercial harvesting does increase the pressure on sites, although the most commonly harvested fungi usually occur over a wide area and collectors keep apart in their searches.

In addition to environmental sustainability, there are several social aspects that need to be considered for the sustainable harvest of fungi. Fair and equitable access to forest, forest resources and their benefits is a critical issue. Unfair exclusion or inequitable benefit sharing may lead to people ignoring regulations and feelings of resentment that can lead to unsustainable practices. With more people now harvesting mushrooms for commercial, recreational and subsistence purposes, there is potential for conflicts to develop among the different users of the forest resources. Understanding the

[24] Norvell, L. 1995 Loving the chanterelle to death? The ten-year Oregon chanterelle project. McIlvanea 12:6-23
[25] Egli, S., Martina, P., Buser, C., Stahel, W. & Ayer, F. 1990. Mushroom picking does not impair future harvests – results of a long-term study in Switzerland. Biological Conservation 129: 271-276.
[26] Implementation of Recommendation No. 132 (2007) on the conservation of fungi in Europe (T-PVS/Files (2011)19)

different uses and users as well as developing regulation that acknowledges these differences is imperative to preventing such conflict.

Sustainable gathering of fungi depends on minimizing any adverse impact of harvest and harvesting procedures on the fungus resource and the forest. This can be achieved through ensuring best environmental and social practice. Several organisations, such as mycological societies and the Scottish Wild Mushroom Forum have developed codes of practice for the sustainable harvest of wild fungi, which are promoted in mycological publications[27,28].

One of the challenges with the implementation of such codes is that fungi gathering is done by a large amount of individuals and that representative organisations for fungi gatherers are uncommon, making it difficult to target the "fungi gathering community" effectively. Moreover, focusing more on the protective aspects of CBD than its wider remit for sustainable use has produced some tensions between professional mycologists and gatherers[29]. In view of the potential benefits to people and biodiversity from restoration of fungi, it is especially important to encourage scientists and other citizens to support each together. Professional ecologists need to develop techniques for monitoring fungal biodiversity status and threats that can be applied widely and easily by local communities. Research on restoration is important too, not only to develop simple and effective techniques but also to include studies of species genetics and distributions needed to ensure that re-introductions use appropriate stock, because inappropriate fungi could be hard to remove. There is a great need to encourage the very large community of interests in fungi to organise and cooperate.

F. The need for a *Charter on Fungi-Gathering and Biodiversity*

This document follows on the European Charter on Hunting and Biodiversity which was adopted by the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats[30]. Through Recommendation No. 128 (2007) "on the *European Charter on Hunting and Biodiversity*"[31], States Party to the Bern Convention were asked to take into consideration the *European Charter on Hunting and Biodiversity* "and apply its principles in the elaboration and implementation of their hunting policies so as to ensure that hunting is carried out in a sustainable way". In 2008 they agreed to complement it with a similar instrument to cover recreational fishing activities and the European Charter on Recreational Fishing and Biodiversity[32] was adopted through Recommendation No. 150 in November 2010.

The principles and the approach of the European Charter on Hunting and Biodiversity and this document are equally applicable to the governance of other consumptive and non-consumptive uses of biodiversity. The IUCN recognized this at its 4th World Conservation Congress in October 2008. In its resolution 4.032 (Trust Building for Biodiversity Conservation and Sustainable Use in line with the European Charter on Hunting and Biodiversity), the IUCN encourages further cooperation between the CoE, governments and other stakeholders to prepare guidelines under the same principles for new European charters to promote conservation through sustainable use of other components of biodiversity.

Following this endorsement at global level and the adoption of the European Charter on Recreational Fishing and Biodiversity, the Standing Committee of the Bern Convention included in its activities for 2012 a "Charter on gathering of mushrooms and other wild biodiversity (in cooperation with IUCN", with the participation of representatives of Parties to the Convention as well as observer organisations (and including the European Council for Conservation of Fungi; the Federation of Associations for Hunting and Conservation of the EU; and the International Union for Conservation of Nature). A Working Group met at the IUCN Species Survival Commission chairs conference in Abu Dhabi during February 2012. The mandate of the Working Group was to prepare a draft Charter for submission to the next meeting of the Standing Committee to be held on 27-30 November 2012, and a first draft was prepared for the meeting of the Bureau in September 2012.

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[27] Dyke, A. 2001. The Scottish Wild Mushroom Forum. Pp. 219-222 in [14].
[28] Pilz, D. 2011. Ensuring sustainable harvests of wild mushrooms. Pp. 144-159 in [5].
[29] Cunningham, A.B. 2011. Fungi and the future. Pp. 175-203 in [5].
[30] European Charter of Hunting and Biodiversity (T-PVS (2007)07)
[31] See at: http://www.coe.int/t/dg4/cultureheritage/nature/WCD/Rec2007_en.asp#
[32] European Charter on Recreational Fishing and Biodiversity (T-PVS (2010)3)

G. Scope

This *European Charter on Fungi-Gathering and Biodiversity* (hereafter referred to as the *Charter*) addresses the gathering (including both recreational and commercial activities) of wild and indigenous fungi (including lichens) in Europe, in accordance with the provisions of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979). They do not address other human activities that may impact populations of fungi or lichens, such as forestry or livestock management practices.

H. Purpose

The main aim of the Bern Convention is the conservation of wild fauna and flora and their associated natural habitats. Gatherers of fungi and lichens can contribute to the fulfilment of this aim through conservation of populations of fungi and lichens by caring for their habitats, assisting in monitoring and research, and raising public awareness for conservation issues. Thus, recreational gatherers of fungi and lichens have, through their activities and engagement, an important role to play in the conservation of biodiversity.

This *Charter* provides a non-binding set of principles and guidelines for recreational and commercial gatherers of fungi and lichens, as well as regulators and managers. These address common principles and good practices for sustainable gathering of fungi and lichen species in Europe, and also aim to help fulfil the commitments of European States on conservation through use of components of biodiversity as laid down in the CBD, as advised by the *AAPG*[33] (see 3.2 Appendix 2) and the *Malawi Principles for the Ecosystem Approach* 51 (see 3.3 Appendix 3).

By endorsing this *Charter*, the Standing Committee to the Bern Convention recognizes and promotes sustainable gathering as a legitimate use of fungi and lichen resources and as an important tool in biodiversity conservation.

I. Goals

The *Charter* promotes principles and guidelines intended to ensure that the gathering of fungi and lichen in Europe is practiced in a sustainable manner, with a positive contribution to the conservation of biodiversity and the needs of society, including life quality.

J. Objectives

The Charter:

- Provides a set of non-binding principles and guidelines for sustainable gathering of fungi and lichens within the context of conservation of biodiversity;
- Encourages gatherer involvement in monitoring, management, and research efforts directed towards stewardship and the conservation of fungi, lichens and their habitats;
- Promotes forms of commercial gathering of fungi and lichens that are sustainable and non-detrimental to biodiversity, while providing local communities with socio-economic incentives to conserve and manage fungi, lichens and their habitats;
- Promotes cooperation between gatherers of fungi and lichens and other stakeholders in the conservation and management of biodiversity.
- Encourages education, awareness and information measures directed at gatherers of fungi and lichens;
- Promotes best practices to ensure the socio-cultural, economic and ecological sustainability of the gathering of fungi and lichens in the long term.

33 http://www.biodiv.org/doc/publications/addis-gdl-en.pdf

EUROPEAN CHARTER ON FUNGI-GATHERING AND BIODIVERSITY

1. PRINCIPLES AND GUIDELINES

The principles and guidelines in this Charter address the role of gathering fungi in the management and conservation of biodiversity. These broad principles include all 12 principles from MPEA (M1-12) and 14 from AAPG (A1-14) grouped into social, ecological and economic focal areas and combinations of these (see Appendix 3.4). These recommendations, which contain the essence of the MPEA and the AAPG, provide a fundament for conserving biodiversity through gathering fungi and other uses of wild resources. They are based upon the internationally accepted standards of sustainability and are to be treated as advisory and non-binding in nature.

1.1 Principle 1: Favour multi-level governance that maximises benefit for conservation and society

1.1.1 Rationale:

Human decisions that change habitats and affect species are influenced by regulatory and financial incentives at several levels, as well as by cultural and social factors. Policies affecting these factors need to be established at the most appropriate geographical level and to remain flexible, in order to accommodate different biological, economic and social conditions and to accommodate adaptive management. Increasing uniformity of culture and markets creates special regulatory challenges in guiding local use of land and wild living resources to retain diverse ecological conditions.

1.1.2 Guidelines:

Conservation will be enhanced if

1.1.2.1 Regulators and managers:

a) Take into consideration the international, national, regional and local – as appropriate - conservation status of fungi and their habitats;

b) For maximum flexibility, encourage the creation of policies and structures that reduce conflicts and create synergies between fungi-gathering and other conservation interests, reward best practices (e.g. with subsidies, privileges or other incentives) and regulate against malpractice;

c) Ensure that the policies and structures accommodate local cultural demands (i.e. multiple use) and ecological conditions as well as higher-level policy;

d) Audit for regulatory or other incentives that are detrimental for conservation of biodiversity and remove, neutralise or compensate for them.

- and -

1.1.2.2 Commercial and non-commercial gatherers of fungi:

a) Assist authorities at all levels to develop and to promote incentives for conserving biodiversity through sustainable use;

b) Strive to attain maximum conservation benefit through use of fungi at all levels.

1.2 Principle 2: Ensure that regulations are understandable and respected

1.2.1 Rationale:

Regulations can have costs for conservation as well as for stakeholders. Costs are least when minimal administration is combined with maximum motivation to comply, through easy compliance and reliable detection of non-compliance. Inappropriate (including incomprehensive or non-applicable) regulation may induce negative effects (e.g. disruption of habitats and microhabitats,

unwitting impacts on other resource beneficiaries, etc.) if non-compliance is simple and rewarding, or if the rationale behind these is not understood. There is generally a lack of coordination of fungi-gatherers at national and regional levels to assist in building understanding of need for regulation.

1.2.2 Guidelines:

Conservation will be enhanced if

1.2.2.1 Regulators and managers:

a) Structure regulations such that these are simple, flexible, logical, locally relevant and address biological principles, (inter)national policy, the socio-economic context, as well as reasonable stakeholder concerns and expectations

b) Impose only restrictions which can be justified from the standpoint of conservation and that will be easily understood by those gathering fungi;

c) Encourage the creation of organisations to guide and represent fungi-gatherers at all levels;

d) Have transparent regulatory processes which allow for the active participation of fungi-gatherers and other stakeholders;

e) Promote subsidiarity and self-regulation by creating regulations that can be adapted to local governance and enforcement needs.

- and -

1.2.2.2 Commercial and non-commercial gatherers of fungi:

a) Assist in development and acceptance of effective regulations;

b) Follow and encourage respect for all rules and regulations pertaining to gathering fungi, conservation measures (including protected species and areas as well as fallow years), and private property;

c) Embrace self-regulation and voluntary best practice where possible;

d) Assist in preventing and reporting illegal or irresponsible gathering of fungi.

1.3 Principle 3: Ensure that harvest is ecologically sustainable

1.3.1 Rationale:

It is important to ensure that any harvest of wild fungi is sustainable. The conservation status of species needs to be maintained at levels which are robust enough to sustain harvest. Sustainable use requires information garnered from research and monitoring, and to be regulated through the active use of reliable science and local knowledge. Although harvest of fungal fruiting bodies or of fungal components for cultivation is in principle sustainable, care is needed to avoid damage to microhabitats through trampling, raking leaf-litter and otherwise disrupting mycelia extensively, or through impacts of collecting lichens or foraging livestock (e.g. pigs). Ensuring sustainable harvest also includes taking into consideration possible food-chain effects of the harvest of fungi. Ensuring social sustainability that benefits a wide base of human consumers may also motivate greatest resources for conservation.

1.3.2 Guidelines:

Conservation will be enhanced if

1.3.2.1 Regulators and managers:

a) Develop conservation rules of thumb for sustainable harvest based on best practice and resilience of different fungal taxa to collection (e.g. leaving some fruiting bodies unpicked, avoid picking of immature fruiting bodies, not picking more than can be used);

b) Where appropriate, develop and implement adaptive management strategies for sustainability of commercial harvest that take into account species behaviour and ecology (including temporal

fluctuations, mycorrhyzal, other symbiotic and trophic effects), their long-term conservation status and possible effects of harvest on ecosystem services;

c) Cooperate with and encourage gatherers of fungi to develop and apply methods for simple and effective monitoring and management of fungi species, habitats and ecosystem services;

d) Cooperate with neighbouring administrative authorities to properly manage and conserve population integrity, in terms of genetics and metapopulation effects, where appropriate;

e) Implement standardised systems for collecting data on harvest participants and characteristics, for use in adaptive management of fungal populations and gathering at all appropriate scales;

f) Recognise that natural and human-induced change is inevitable.

- and -

1.3.2.2 Commercial and non-commercial gatherers of fungi:

a) Implement best practice and conservation rules of thumb when gathering fungi;

b) Assist in data collection, monitoring and research;

- and –

1.3.2.3 Commercial gatherers of fungi:

a) Work to integrate their harvesting activities into the adaptive management of populations and harvestable fungi species, their habitats and communities, and other ecosystem services;

1.4 Principle 4: Maintain wild populations of indigenous species with adaptive gene pools

1.4.1 Rationale:

Native species and their habitats (and human livelihoods derived from them) can be adversely impacted by either the 1) introduction of invasive alien species, or 2) human selection for traits which may jeopardise the long-term viability of their populations.

1.4.2 Guidelines:

Conservation will be enhanced if

1.4.2.1 Regulators and managers:

a) Deter release into the wild of non-native fungi species or genetic variants that could become invasive and/or negatively affect native fungi or their ecosystems;

b) Facilitate and record the reestablishment of originally indigenous fungi species;

c) Where practical, incorporate genetic considerations into any management plans and monitor the genetic characteristics of fungal stocks to ensure genetic adaptability of populations.

- and -

1.4.2.2 Commercial and non-commercial gatherers of fungi:

a) Avoid release of non-native fungi species or genetic variants into the wild;

b) Use only native plants and fungi for restoration initiatives;

c) Where appropriate, aid scientists and managers in monitoring genetic characteristics of populations.

1.5 Principle 5: Maintain environments that support healthy and robust populations of harvestable species

1.5.1 Rationale:

Fungi are vulnerable to pollutants and human impacts on their populations and habitats. It is therefore in the interest of all who enjoy or benefit from fungi to work together to reduce or mitigate the effects of environmental degradation. There is a need for the continued monitoring of the status of harvested species and their habitats, including development of indicators for possible threats to them and their habitats.

1.5.2 Guidelines:

Conservation will be enhanced if

1.5.2.1 Regulators and managers:

a) Develop mutually agreed systems that motivate gatherers of fungi to help conserve habitats, including plant species, soils and other substrates on which fungi depend;

b) Develop and implement standardised systems for monitoring the health and condition of fungal populations, the habitats and ecosystems on which they depend, and the threats to those systems;

c) Account for possible negative impacts of gathering fungi on other ecosystem services and minimise and mitigate these;

d) Consider diversity of fungi species when designating areas for special conservation measures.

- and -

1.5.2.2 Commercial and non-commercial gatherers of fungi:

a) Actively contribute to the conservation and restoration of habitats and fungi stocks at appropriate scales where feasible;

b) Work to ensure that their activities do not adversely impact local environments and habitats.

1.6 Principle 6: Encourage use to provide economic incentives for conservation

1.6.1 Rationale:

Stakeholders can be motivated to conserve wild species and their habitats by recognising their inherent economic value.

1.6.2 Guidelines:

Conservation will be enhanced if

1.6.2.1 Regulators and managers:

a) Understand that suppliers of harvest opportunities (e.g. landowners, reserve managers), especially for commercial use, expect fair compensation for the services and opportunities they provide;

b) Encourage harvest arrangements that provide equitable and just socio-economic benefits to local stakeholders and communities:

c) Where official fees or taxes are appropriate, set them at reasonable levels in order that these do not represent barriers to local participation;

d) Provide local stakeholders and communities with incentives to uphold or improve the diversity of species and habitats.

- and –

1.6.2.2 Non-commercial gatherers of fungi:

a) Are willing to make reasonable contributions and accept management structures for access and gathering opportunity, as well as the conservation and management of fungi and their habitats;

- and -

1.6.2.3 Commercial gatherers of fungi:

a) Acknowledge and accept that their activities should benefit local economies and stakeholders and thereby enhance conservation efforts;

b) Accept that their access can be limited, and/or that they can be subjected to greater contributory requirements than local non-commercial gatherers.

1.7 Principle 7: Ensure that harvest is properly utilised and wastage avoided

1.7.1 Rationale:

Utilising a renewable resource to the fullest possible extent will maximise the economic incentives for local people as well as indicating respect for the environment and in some cases minimising bio-pollution. Fungi can also accumulate radio-nuclides and other pollutants. Consumption of fungi that damage health for these and other reasons has both a human cost and a cost for conservation, if this leads to discouragement of harvesting that motivates conservation. Certification of safe and sustainable origin, e.g. through the Fairwild system, is an eventual option.

1.7.2 Guidelines:

Conservation will be enhanced if

1.7.2.1 Regulators and managers:

a) Encourage the proper handling and processing of harvested fungi;

b) Inform gatherers of fungi concerning risks of natural and anthropogenic toxicity;

c) Ensure that fungal products comply with standards for health and hygiene before sale and/ or commercial consumption.

d) Consider certification for commercial gatherers or products.

- and -

1.7.2.2 Commercial and non-commercial gatherers of fungi:

a) Properly care for harvested fungi in order to ensure against wastage and contamination;

b) Stay informed of existing and new risks arising from collecting fungi;

c) Observe rules for preparation of fungi to guard against detrimental health effects.

1.8 Principle 8: Empower local stakeholders and hold them accountable

1.8.1 Rationale:

With good local knowledge and monitoring, management at local level is most rapidly adaptive. It also both empowers stakeholders and holds them immediately accountable for meeting requirements of resource beneficiaries and conservation. Local management must be in harmony with higher level goals.

1.8.2 Guidelines:

Conservation will be enhanced if

1.8.2.1 Regulators and managers:

a) Promote and facilitate decentralisation of any management of fungi species that are stable or increasing at local or regional levels;

b) Facilitate the empowerment and accountability of local stakeholders, especially gatherers of fungi, in this decentralised process;

c) Promote systems that ensure equitable sharing of benefits among resource beneficiaries.

- and -

1.8.2.2 Non-commercial gatherers of fungi:

a) Have knowledge regarding ecology of fungi and conservation practices;

b) Recognise their role as resource stewards and actively participate in practical management and conservation measures;

c) Interact with other interests and local authorities to find best solutions.

- and -

1.8.2.3 Commercial gatherers of fungi:

a) Recognise the cultures, traditions and needs of local people (including non-commercial gatherers);

b) Work closely with local gatherers, land managers and other interests to ensure integration of activities and avoid conflicts.

1.9 Principle 9: Competence and responsibility are desirable among users of wild resources

1.9.1 Rationale:

For practices to be ecologically and socially sustainable, those using wild resources are advised to be responsible and proficient regarding methods, equipment and species they utilise. Consumption of poisonous fungi has both a human cost and a cost for conservation, if this leads to discouragement of harvesting that motivates conservation. Capacity and competence may best be encouraged by organisations that are granted privileges to represent resource beneficiaries while informing and encouraging best practise among those beneficiaries.

1.9.2 Guidelines:

Conservation will be enhanced if

1.9.2.1 Regulators and managers:

a) Encourage and facilitate accessible education and training programmes (e.g. fungal identification guides in local languages, fungal forays, talks in local communities) for gatherers of fungi, especially to ensure correct identification of harvestable, poisonous and rare fungi;

b) Promote self-organisation and network creation at local, regional and national levels, encourage such groups to educate gatherers of fungi in identification and other aspects of conservation, and consider approving their certification programmes for gatherers;

c) Cooperate with organisations that coordinate gatherers of fungi to encourage recruitment from both sexes, all ages and backgrounds.

- and -

1.9.2.2 Commercial and non-commercial gatherers of fungi:

a) Are proficient in the methods that can legally be used for gathering fungi;

b) Maintain sufficient knowledge on the identification, habits and ecology of harvestable fungi species as well as poisonous or rare species that can be confused with these;

c Know the laws and regulations governing gathering of fungi and the conservation of fungi;

d) Teach new gatherers of fungi the skills and knowledge they require to be competent and responsible.

1.10 Principle 10: Encourage cooperation between all stakeholders in management of harvested species, associated species and their habitats

1.10.1 Rationale:

All stakeholders, including authorities, state agencies, landowners, gatherers of fungi, other resource beneficiaries and other conservation interests, can contribute positively to the proper management of biodiversity through cooperation. Such cooperation promotes a synergistic role for sustainable use in broad conservation efforts whereas conflicts waste human resources.

1.10.2 Guidelines:

Conservation will be enhanced if

3.11.2.1 Regulators and managers:

a) Seek to engage all who benefit from fungi in efforts to conserve fungi and their habitats

b) Create institutional structures that are inclusive of all stakeholder interests;

c) Encourage public understanding of conservation and economic as well as cultural benefits that can be derived from responsible and sustainable harvest;

d) Seek opportunities and provide incentives for cooperation between different interests;

e) Use all possible measures to avoid and resolve conflicts.

- and –

3.11.2.2 Commercial and non-commercial gatherers of fungi:

a) Seek opportunities to benefit humans, fungi and their habitats;

b) Actively seek alliances with other local stakeholders.

1.11 Principle 11: Encourage acceptance of sustainable and consumptive use as a conservation tool

1.11.1 Rationale:

In order to ensure acceptance by society, it is important for all users of fungi to communicate the positive benefits of their use for biodiversity conservation and for all stakeholders to work together to educate the public regarding important conservation issues. Ensuring social sustainability that benefits a wide base of human consumers may also motivate greatest resources for conservation.

1.11.2 Guidelines:

Conservation will be enhanced if

1.12.3 Regulators and managers:

a) Provide a framework which ensures the long-term acceptance by society of the conservation benefits derived from harvesting wild species;

b) Preserve cultural, historical and aesthetic values related to fungi and fungi gathering.

- and -

1.12.4 Commercial and non-commercial gatherers of fungi:

a) Are sensitive and respectful to local interests and cultures;

b) Strive to be ambassadors for gathering fungi through good behaviour and practices;

c) Respect private property, local restrictions and the needs of those who wish to observe fungi;

d) Educate and inform other interests regarding the benefits of gathering fungi and conservation in general.

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2. APPENDICES

2.1 Appendix 1: Terms and concepts

Best practice: planning, organisation, managerial and/or operational practices that have proven successful in particular circumstances in one or more regions in the field and which can have both specific and universal applicability.

Biological diversity (biodiversity) [34]: The variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (Article 2 of the CBD).

Commercial gatherers: Agents or agencies that directly or indirectly are responsible for the gathering of fungi for commercial purposes.

Ecosystem [35]*: A* dynamic complex of plant, animal and micro-organism commu*nities and* their non-living environment that interact as a functional unit.

Ecosystem services: Ecosystem services are all services humans derive from ecosystems. They comprise four categories: supporting (e.g. nutrient cycling), regulating (e.g. soil quality), provisioning (e.g. harvest of fungi) and cultural (e.g. existence value, spiritual, educational and recreational) services[36].

Fungi: All native fungi species for which gathering is legally permitted in countries that have signed the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979).

Management: The application of science-based and local knowledge in the stewardship of wild fungi species and their habitats in a manner beneficial to the environment and society.

Managers: Private or governmental agents, including landowners, who are responsible for the practical stewardship of wild fungi and their habitats.

Regulators: Government authorities at all levels with a responsibility for formulating, implementing and enforcing legislation and management policies pertaining to conservation and gathering fungi.

Stakeholders: All those with an interest or share in the conservation and sustainable use of fungi, habitats and biodiversity. These include commercial and other gatherers of fungi, landowners, managers, other , regulators, scientists and other conservationists with an interest in the conservation and use of biodiversity.

Sustainable use: the CBD defines sustainable use as "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining the potential to meet the needs and aspirations of present and future generations" (CBD Article 2).

[34] Derived from Article 2 of the CBD.
[35] Derived from Article 2 of the CBD.
[36] See
http://www.millenniumassessmenten.wikipedia.org/documents/document.765.aspx.pdfwiki/Ecosystem_services

2.2 Appendix 2. Addis Ababa Principles and Guidelines

Practical principle 1	Supportive policies, laws, and institutions are in place at all levels of governance and there are effective linkages between these levels.
Practical principle 2	Recognising the need for a governing framework consistent with international/ national laws, local users of biodiversity components should be sufficiently empowered and supported by rights to be responsible and accountable for use of the resources concerned.
Practical principle 3	International, national policies, laws and regulations that distort markets which contribute to habitat degradation or otherwise generate perverse incentives that undermine conservation and sustainable use of biodiversity, should be identified and removed or mitigated.
Practical principle 4	Adaptive management should be practiced, based on: 1. Science and traditional and local knowledge; 2. Iterative, timely and transparent feedback derived from monitoring the use, environmental, socio-economic impacts, and the status of the resource being used; and 3. Adjusting management based on timely feedback from the monitoring procedures.
Practical principle 5	Sustainable use management goals and practices should avoid or minimise adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems.
Practical principle 6	Interdisciplinary research into all aspects of the use and conservation of biological diversity should be promoted and supported.
Practical principle 7	The spatial and temporal scale of management should be compatible with the ecological and socio-economic scales of the use and its impact.
Practical principle 8	There should be arrangements for international cooperation where multinational decision-making and coordination are needed.
Practical principle 9	An interdisciplinary, participatory approach should be applied at the appropriate levels of management and governance related to the use.
Practical principle 10	International, national policies should take into account: 1. Current and potential values derived from the use of biological diversity; 2. Intrinsic and other non-economic values of biological diversity and 3. Market forces affecting the values and use.
Practical principle 11	Users of biodiversity components should seek to minimise waste and adverse environmental impact and optimise benefits from uses.
Practical principle 12	The needs of indigenous and local communities who live with and are affected by the use and conservation of biological diversity, along with their contributions to its conservation and sustainable use, should be reflected in the equitable distribution of the benefits from the use of those resources.
Practical principle 13	The costs of management and conservation of biological diversity should be internalised within the area of management and reflected in the distribution of the benefits from the use.
Practical principle 14	Education and public awareness programmes on conservation and sustainable use should be implemented and more effective methods of communications should be developed between and among stakeholders and managers.

2.3 Appendix 3. Malawi Principles for the Ecosystem Approach

1. *Management objectives are a matter of societal choice.*
2. *Management should be decentralised to the lowest appropriate level.*
3. *Ecosystem managers should consider the effects of their activities on adjacent and other ecosystems.*
4. *Recognising potential gains from management there is a need to understand the ecosystem in an economic context, considering e.g., mitigating market distortions, aligning incentives to promote sustainable use, and internalising costs and benefits.*
5. *A key feature of the ecosystem approach includes conservation of ecosystem structure and functioning.*
6. *Ecosystems must be managed within the limits to their functioning.*
7. *The ecosystem approach should be undertaken at the appropriate scale.*
8. *Recognising the varying temporal scales and lag effects which characterise ecosystem processes, objectives for ecosystem management should be set for the long term.*
9. *Management must recognise that change is inevitable.*
10. *The ecosystem approach should seek the appropriate balance between conservation and use of biodiversity.*
11. *The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.*
12. *The ecosystem approach should involve all relevant sectors of society and scientific disciplines.*

2.4 Appendix 4. Relationship between Fungi-gathering Charter and AAPG/Malawi Principles

Three pillars of sustainability	Addis Ababa/ Malawi	Focus	Number	Principles in this Charter	AAPG/ MALAWI MAP
Socio-cultural	Supportive & linked governance at all levels with harmonised regulations that promote societal benefits from conservation and avoid perverse effects.	General	1	Favour multi-level governance that maximises benefit for conservation and society.	(A1,A3,M2,M4)
		Regulatory and rights	2	Ensure that regulations are understandable and respected.	(A1,A8,A13, M10)
Ecological	Avoidance of adverse impacts within or between ecosystems, and of short-termism, especially when faced with inevitable change. Transparent and adaptive management along a use-protection continuum, based on interdisciplinary science, monitoring and timely feedbacks.	Demographic	3	Ensure that harvest of fungi is ecologically sustainable	(A4,A6,A9,M7-12)
		Genetics	4	Maintain wild populations of indigenous species with adaptive gene pools	(A5,A9, M11-12)
		Ecosystem services	5	Maintain environments that support healthy and robust populations of appropriate species.	(A4,A6,A9,M7-12)
Economic	Encouragement of economic/cultural incentives with sharing of benefits (and costs) especially at local level, while avoiding waste.	Economic incentives	6	Encourage use to provide economic incentives for conservation	(A4,M10)
Socio-cultural, Ecological, Economic	Decentralisation of management to an appropriate bio-economic scale, especially to empower, assess and access knowledge of local users. Where possible adopt means that aim toward delegating rights, responsibility, and accountability to those who use and/or manage biological resources.	Local management	7	Empower local stakeholders and hold them accountable.	(A2,A4,A9-10,A12-13, M2,M4,M7, M11-12)
Socio-cultural	Education, awareness and inclusion of managers, resource users and society at large.	Conduct and proficiency of resources beneficiaries	8	Encourage competence and responsibility among users of wild resources	(A11,A14)
		Horizontal trust	9	Encourage cooperation between all stakeholders in management of appropriate species, associated species and their habitats.	(A2,A9,A14, M1,M12)
		Social acceptance	10	Encourage acceptance of sustainable and consumptive use as a conservation tool by the public and other conservation interests.	(A14, M1,M12)