

European mushroom assemblages are darker in cold climates | Nature Communications

British Wildlife is the leading natural history magazine in the UK, providing essential reading for both enthusiast and professional naturalists and wildlife conservationists. Published eight times a year, British Wildlife bridges the gap between popular writing and scientific literature through a combination of long-form articles, regular columns and reports, book reviews and letters.

Professioneller Kundenservice Hilfe und Expertise. This is a photographic guide to 1, of the most important species of fungi of the British Isles and northern Europe. Each specimen is shown in a large colour photograph living on its natural substrate, in its most typical habitat, and in natural light to show its true colours. Accompanying text provides details of form, including microscopic structure, and edibility and culinary value. Michael Jordan is a qualified botanist who has been studying and collecting fungi throughout Britain and Europe for more than twenty-five years.


Click to have a closer look. Select version. About this book Biography Related titles. Images Additional images. About this book This is a photographic guide to 1, of the most important species of fungi of the British Isles and northern Europe. Customer Reviews Review this book.


Mushroom |

Mushrooms are the fruiting bodies of certain species of higher fungi. The vegetative tissues of these fungi consists of immense The Encyclopedia of Fungi of Britain and Europe of microscopic, thread-like hyphae, and their aggregations known as mycelium, which grow in surface soils, organic debris, and in association with plant roots. Strictly speaking, a mushroom is the spore-producing or fruiting body of a fungus in the division Basidiomycetes, a large and diverse group of about 16, The Encyclopedia of Fungi of Britain and Europe, sometimes known as club fungi.

Species of Basidiomycetes can be saprophytic, parasitic, or mycorrhizal in their ecology. Because of the relative complexity of their anatomy and breeding systems, the Basidiomycetes are considered to be the most evolutionarily advanced of the fungi. The mushrooms of these fungi are technically known as basidiocarps.

These structures are formed of specialized mycelium, and are the spore-producing stage of development. The basidiocarp is a relatively short-lived stage of the life cycle, most of which is spent living as microscopic, thread like hyphae, which ramify extensively through the growth substrate of the fungus.

However, in its common usage, the word mushroom is also used to refer to the spore-producing bodies of other types of fungi, in particular a few species in the division Ascomycetes or sac fungi, which includes the familiar, edible morels and truffles. Mushrooms have long been avidly sought-after as a tasty country food in many cultures, although some peoples, notably the Anglo-Saxons of Britain have tended to disdain these foods.

This has not been because of the flavor of mushrooms, but rather because some species are deadly poisonous, and these are not always easily distinguished from nontoxic and therefore edible species. The etymology of toadstool is further compounded by the poisonous nature of toads. In any event, European folk tales refer to toadstools as places where poisonous toads sit on poisonous mushrooms in the forest, a myth perpetuated in whimsical drawings accompanying fairy tales and other stories intended for children.

Mushrooms have many fascinating properties, in addition to the extreme toxicity of some species. Mushrooms can sometimes grow extremely rapidly — in some cases, masses of mushrooms can seemingly appear overnight, under suitable environmental conditions, and usually following a heavy rainfall.
These and The Encyclopedia of Fungi of Britain and Europe interesting qualities were not easily explainable. The Encyclopedia of Fungi of Britain and Europe naturalists in earlier times. As a result, mushrooms have acquired a supernatural reputation in some cultures, and are commonly associated with cold, dark, dangerous, or evil contexts.

Many cultures have similarly regarded a few other creatures, such as snakes, bats, and spiders. Today, however, these various cultural prejudices are much less prevalent, because we have a greater scientific understanding of the biology and ecology of mushrooms and other unusual organisms. As was just noted, mushrooms are the fruiting bodies of certain types of fungi.

Most of the biomass of these fungi consists of fine, thread-like hyphae, which grow extensively throughout the organic-rich substrate of their ecosystem. These fungi periodically develop spore-producing, reproductive structures known as mushrooms, under conditions of a favorable environment in terms of temperature and moisture, coupled with The Encyclopedia of Fungi of Britain and Europe of The Encyclopedia of Fungi of Britain and Europe energy and nutrient reserves to support the reproductive effort.

It may take years for these favorable The Encyclopedia of Fungi of Britain and Europe to develop, and consequently mushroom populations in forests, prairies, fields, and other habitats can be highly variable in abundance. Species of mushroom-producing fungi exploit various types of microhabitats. The Encyclopedia of Fungi of Britain and Europe most important of these are the surface soil and organic litter, large-dimension woody debris, mycorrhizae, and animal dung.

These are discussed below. These hyphae are the vegetative tissues of saprophytic fungi, which are an important component of the decomposer food web of their ecosystem. The mycorrhizal mutualism is very important to the nutrition of the plant, because of the greatly enhanced access to nutrients that is provided, particularly to phosphate. These are known as coprophilous fungi. Many species of mushrooms occur in the forests, prairies, fields, and towns and cities of North America.

Obviously, it is not possible to deal with these in a comprehensive fashion. Some of the more widespread of the stranger species are briefly described here, while poisonous and edible ones are discussed in the following sections. The largest mushroom to occur in North America are the giant puffballs Calvatia gigantea and C. These species develop huge, ball-like mushrooms that can achieve a diameter of up to The stinkhorn fungus Phallus indbicus is a saprophyte that grows out of the forest floor.

The white surface of this fungus turns a darker brown when it is bruised. Consequently, the smooth, lower surface of the mushroom is sometimes used as a substrate to record messages and make drawings.

The related sulphur shelf Laetiporus sulphureus also grows out of the side of heart-rotted trees, and is a bright yellow in color. The scarlet elf cup Sarcoscypha coccinea is a lovely mushroom, with a deeply concave cup, that is white on the exterior, and a brilliant scarlet on the interior.

This species occurs on rotting sticks and small logs in forests in the springtime. The white worm coral Clavaria vermicularis occurs in clusters of erect, white, worm-like clubs growing out of the forest floor, and is found during the summer and autumn. The collared earthstar Geastrum triplex grows out of the forest floor. This species has a bulbous spore-case, surrounded by pointed, ray-like structures that gives an overall appearance of a star-burst. Some species of mycorrhizal fungi develop mushrooms that are deadly poisonous.

Perhaps the most famous, and most-rapidly killing species in this respect are the death or destroying angel Amanita virosa and the deathcap A. There are other species of deadly mushrooms in the genus Amanita, and in the genera Chlorophyllum green gillCortinarius web-capsGalerina autumn skullcapsGyrotrita false morelsand Leptota parasol mushrooms. However, these are not, by any means, the only poisonous mushrooms that may be commonly encountered in wild habitats in North America.

There are numerous other species of deadly mushrooms, which are never to be eaten. A number of fungi are used as drugs, to induce hallucinations, feelings of well-being, and other pleasurable mental states. The fly agaric Amanita muscaria is a widespread species of Eurasia, North America, and Central Americaand is a well-known poisonous mushroom.

However, in smaller doses this species can induce pleasant intoxication and hallucinations, and it has long been used by many cultures to induce these effects. It is well-known that prolonged or frequent use of this hallucinogen is damaging to the nervous system and that large doses can be lethal, but this mushroom has nevertheless been important in many cultures, and is still routinely used for certain types of ceremonies.

Various species of American mushrooms known as psilocybin Psilocybe spp. These were used in religious ceremonies by some Amerindian cultures, for example, the Aztecs, who knew these mushrooms as teonanacatyl especially using P. However, these mushrooms are mostly used today as recreational drugs.

Other mushroom-producing fungi that contain the same active ingredient, known as psilocybin, are species in the genera Conocybe, Panaeolus, Psathyrella, and Stropharia. A therapeutic drug is manufactured from the fruiting bodies of the ergot Claviceps purpureawhich is a parasite on the flowering heads of certain grasses, especially rye Secale cereale.

The ergot fungus attacks the young fruits of the grasses, and then develops a bulbous, purplish structure. These are collected and used to make a medicine useful in treating low bloodpressure, hemorrhages, and other maladies.

The use of wild mushrooms as a food is an ancient practice. These fungi were undoubtedly well known to pre-historic, hunting and gathering cultures, as they are today to indigenous peoples who continue to live in natural forests. Once the identity of poisonous and edible mushrooms became fixed in cultural knowledge and tradition, the edible species, and sometimes those that could be used to induce non-lethal hallucinogens, were regularly gathered and utilized by people.
The tradition of The Encyclopedia of Fungi of Britain and Europe use of mushrooms as a country food continues today. The collection of edible mushrooms is an especially popular outdoor activity in much of Eurasia, where these foods can be very common in the spring and autumn in boreal and temperate forests. Mushroom collecting has been considerably less popular in Britain and North America. However, under the influence of immigrants from Europe and northern Asia, and the emerging popularity of natural history, more and more North Americans are actively seeking The Encyclopedia of Fungi of Britain and Europe these delicacies in wild habitats.

The major benefit of eating mushrooms is their engaging, sometimes exquisite flavor, and in some cases their interesting texture. The truffles are perhaps the most famous, and certainly the most expensive, of the edible mushrooms, being avidly sought-out for use in gourmet cooking, particularly in France. The best-known species of truffle is Tuber melanosporum, which is commonly mycorrhizal on species of oak, birch, and The Encyclopedia of Fungi of Britain and Europe Quercus, Betula, and Fagus spp.

Other Eurasian species of The Encyclopedia of Fungi of Britain and Europe include Tuber aestivum and T. The spore-bearing mushrooms of truffles develop underground, and are commonly discovered using a specially trained, truffle-sniffing pig or dog. The chanterelle Cantharellus cibarius is a yellow-to-orange mushroom of the floor of autumn forests, and is a delicious wild fungus. The king bolete Boletus edulis is another prized mushroom.

The shaggy mane Coprinus comatus is delicious if picked when young. Puffballs can also be eaten, as long as their interior is still young and white-colored, and include the pear puffball Lycoperdon pyriforme and giant puffball Calvatia gigantea.

Other edible mushrooms include corn smut Ustilago maydis The Encyclopedia of Fungi of Britain and Europe, beefsteak Fistulina hepatica fried chicken mushroom Lyophyllum decastes fairy ring mushroom Marasmius oreades oyster fungus Pleurotus ostreatus and the morel Morchella esculenta.

Some species of mushrooms have been brought into domestication, and are routinely grown on artificial media, to be harvested and sold as an agricultural product. Mushroom cultivation appears to have begun in England in the late eighteenth century, and it has become a major economic enterprise because of the rapidly increasing popularity of mushrooms as food.

The most commonly cultivated species of mushroom is the common meadow mushroom Agaricus campestris; sometimes known as A. This mushroom can be eaten fresh or dried for longer-term storage. This species is cultivated using an organic-rich medium, with the straw- and manure-rich cleanings of horse stables being a preferred material.

The substrate must be sterilized, usually by a natural, high-temperature composting referred to as. Hypha plural, hyphae — Cellular unit of a fungus, typically a branched and tubular filament.

Many strands hyphae together are called mycelium. Mutualism — An intimate relationship between two or more organisms that is beneficial to both. Mycelium — This refers to thread or matlike aggregations of the fine fungal tissues known as hyphae.

Saprophyte — This refers to an organism that derives its energy by decomposing dead organic matter. Many species of mushroom-producing fungi live off the organic debris that is present in the mineral soil and, especially, the surface litter of leaves and woody debris on the forest floor.

Mushroom farms may be developed in specially constructed, barn like buildings, or in caves, worked-out mines, and cellars. Other species of mushrooms are also cultivated, including the shiitake The Encyclopedia of Fungi of Britain and Europe berkeleyanusa popular ingredient in oriental cooking. The shiitake mushroom is cultivated on rotting logs and is typically dried for storage. Many people get great pleasure out of collecting and eating wild mushrooms. Many of the tastiest species are quite distinctive in shape and color and can be collected and eaten without any risk and with great pleasure.

However, some species of edible mushrooms are rather similar to species that are deadly poisonous. When collecting wild mushrooms as food, it is always best to err on the side of certainty of identification and safety. The identification of some types of mushrooms is difficult, and there are no hard-and-fast rules for separating poisonous from edible species.

This is the reason why there are numerous stories about experienced mushroom collectors who were poisoned by eating a misidentified fungus. Therefore, if you are not certain about the identity of a particular wild mushroom, do not consume it.

Eating a poisonous mushroom can quickly lead The Encyclopedia of Fungi of Britain and Europe liver failure and death.