

Boletus edulis - eating mushroom

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Boletus edulis is a mushroom that grows in a symbiotic relationship with the roots of suitable host plants and in autumn can be found fruiting on the soil around them. Common names include cep and penny bun mushroom (English), steinpilz (German), cepe de Bordeaux (French), porcino (Italian), zhutui mo (North China) and dajiao gu (South China).



As *B. edulis* is a very variable species some mycologists split the species into *B. aereus*, *B. aestivalis*, *B. pinicola*, *B. reticulatus* and true *B. edulis*. However, all the species have the same characteristic very wide barrel-shaped stem which has a fine raised reticulate pattern on its surface.

B. edulis is found throughout North America as far south as Mexico and in Europe from Northern Scandinavia to the southern tips of Greece, Italy and Afghanistan. It is found throughout China from the North-eastern Hilongjiang Province to the south-western plateaus of Yun-Gui and Tibet. In England *B. pinicola* is primarily found on *Betula palustris* (birch) and *Pinus sylvestris* (Scots pine); true *B. edulis* on birch, *Quercus robur* and *Q. petraea* (English oak), and *Fagus sylvatica* (beech); and *B. aestivalis*, *B. reticulatus* and *B. aereus* in Southern England on birch. In China it grows under mixed forests of Pinaceae and Fagaceae. For example, in Liaoning Province it can be found under mixed forests of *Pinus tabulaeformis* (Chinese pine) and *Quercus mongolica* (Mongolian oak), in Shanxi Province under *Picea* and *Quercus*. It can be found growing around the bases of single trees although it is more likely to be found in woodland situations where grazing animals are absent. While it is often found on mature trees it can also be found in birch woodland only 10 years old with about 75% cover.

Fruiting occurs in late summer or autumn and generally before other Boletaceae such as *Suillus*, for example, Slippery Jack and the Larch Bolete. The trigger for fruiting seems to be late summer rain during a warm spell of weather (to get the

myceliumgrowing) and then downpours in autumn. No fruiting occurs if there is a dry summer and early autumn and frosts occur before autumn rains.

While *B. edulis* does not occur naturally in the Southern Hemisphere, in February 1993 it was collected from various sites around Christchurch. This is probably the first time that it has been found in Australasia, if not the Southern Hemisphere. In an attempt to determine its distribution in Christchurch, articles were inserted in The Press and the Christchurch Star asking people who thought they had found the mushroom to telephone Ian Hall or to send one or two of their mushrooms to him at Invermay. These articles were augmented by television reports on Christchurch TV and TV3. While most of the mushrooms sent to Invermay were species of a similar genus, *Leccinum*, several specimens of *B. aereus* were identified.

Market information

Mushrooms of these fungi have a very strong flavour and unlike most mushrooms they maintain their flavour after drying or cooking at autoclave temperatures. They can be eaten fresh, dried or salted and are in great demand domestically and by chefs, soup, stew and mushroom stock manufacturers throughout Europe, North America and Asia. It is considered a good edible mushroom in China and is widely collected for domestic and overseas markets. *B. edulis* is also used as a Chinese medicine. For example it is the major ingredient of Shujin Wan, a pill made in Taiyuan, Shanxi Province, which is reputed to stimulate blood circulation and to relax the muscles and joints.

The main markets for cepe de Bordeaux are North America, France, Italy and Germany although there are markets elsewhere. The majority of supplies originate in Western Europe, Eastern Europe (eg, Poland), China, Indonesia, USA, Canada and India although other countries such as the old soviet bloc countries, and Morocco also supply small quantities. There is also a small demand from restaurateurs and domestic consumers in New Zealand. Manufacturers prefer to use *B. edulis* which has been dried, frozen, canned or pickled in brine because they can guarantee themselves a round the year supply of a predictable quality.

Culture

Like most symbiotic edible mushrooms, fruiting bodies of *B. edulis* have never been produced in culture. Unlike the Perigord black truffle, its fruiting bodies have never been obtained from plantations established using inoculated plants. Consequently the commercialisation of this mushroom is dependent on its collection from natural forests during late summer and autumn in Europe, North America and parts of Asia including China.

Research is being conducted on the culture of this mushroom by the Edible Fungi group at Invermay Agricultural Centre near Dunedin. It is likely that the soils and climates of the North Island and central and eastern South Island should be conducive to the growth of *B. edulis*.

Consumption and prices

Because of the large quantities of this mushroom which are picked and consumed by individuals it is not possible to gain a good estimate of the current

annual world consumption. However, officially 1049 tonnes were sold in France in 1987 (value of Ff53,496,000), 2387 tonnes in Italy in 1988 (L28,132,006,000) and >1000 tonnes in Germany in 1987 (>DM10,000,000). Consequently we estimate that worldwide several tens of thousands of tonnes of this mushroom are consumed annually.

Prices paid for *B. edulis* depend on quality and whether the mushrooms are sold fresh, dried or preserved. The highest prices are commanded by European fresh button grade mushrooms which in September 1991 retailed in Hamburg for DM120 per kilogram, while dried, broken and discoloured pieces, and discoloured pieces in brine fetch the lowest prices (approximately US\$30 per kilogram).

Currently the chanterelle (*Cantharellus cibarius*) is being treated as the "glamour mushroom" in Europe and North America. However, this is not because the chanterelle has superior culinary qualities but because its longer shelf life and freedom from mushroom flies makes it an easier mushroom to harvest and distribute.

Further information

Carluccio, A. 1989: A passion for mushrooms. Salem House Publishers.

Carrier, R. 1992: Feasts of provence. Weidenfeld & Nicolson.

Grigson, J. 1978: The mushroom feast. Penguin Books.

Phillips, R. 1981: Mushrooms and other fungi of Great Britain & Europe. Pan.

Montagne, P. 1963: Larousse gastronomique. Hamlyn.

If you find this mushroom please contact Dr Ian Hall who is trying to map its distribution -

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