



European Taxidermy Championships® | Budapest 2021

GHOST ORCHID – the hidden treasure of the forest

Sebastian Brandt & Christian Blumenstein
Category: Collective Artists





Category: Collective Artists

INTRODUCTION:



The mysterious Ghost orchid *Epipogium aphyllum* really is an enigmatic treasure. It's appropriate to claim that it is at the top of floral evolution. It's a complete myco-heterotrophic plant unbelievable rare to find – mostly in old, shady and almost virgin beech forests with old trees, a lot of deadwood, a thick layer of foliage detritus and high moisture.

The soil should never dry out, supplied by shifting ground water channelling out of eroded calcareous ground rocks. In its evolution this bizarre orchid interconnected its metabolism completely to saprobic fungus.



This plant has no own roots, no leaves – not even chloroplasts (no photosynthesis). It is living subsurface in foliage litter without sunlight, and any own nutritious grabbing organs – it is even not depending on seed production as it stabs horizontal stolon shoots with reproduction buds through the beech foliage detritus waiting for a fungal infection to germ. The plant body of *Epipogium aphyllum* is a pale coral- or brain-like structure. As obligate myco-heterotroph it obtains all nutrients from mycorrhizal networks involving basidiomycete fungi that decompose the huge amount of rotting foliage litter at the ground – and further are in turn associated with the roots of the beech trees too. More precisely the fine underground network of fungus hypha (mycelia) spreading through the soil to metabolize rotting floral detritus. By this they also get in touch with *Epipogium* bulbs and enter into their cells by passing special epidermal pores. (Abb. 1)

Inside the orchid cells the hypha entangle to heap structures. By this enlarged inner osmotic surface the orchid is able to withdraw all its need nutrients out of the fungus hypha (epiparasitism) (Abb. 2). The orchid can survive this way for years and decades unseen in the fungal substrate down the surface. Only if the climate conditions are perfect – in rainy years with wet summers and a lot of air moisture – the plants grow special water filled bulbs in mid of July. Out of this bulbs a pale reddish flowering stem erects enfolding one to six yellowish unique beautiful orchid flowers. These for orchids quite unusual not reverse twisted flowers have pale whitish lips with purple sparks and helmet like nectar-less spurs on which they want to attract pollinators like wasps or hoverflies. Unfavourable at the almost vegetation free shady forest floor the delicate orchid is eaten up within hours by patrolling slugs (Abb. 3). So flowering is just a mostly vain luxury for the mysterious Ghost orchid.



DESCRIPTION:

The idea of the authors was to show the Ghost orchid *Epipogium aphyllum* embedded in a scenery of its complex ecosystem. So the presented exhibit is a real “cut out” of that hidden world showing all prominent relationships. The eroded calcareous Muschelkalk-limestones are drenched with sedimentary waters draining the rotting beech foliage detritus home of three beech trees *Fagus sylvatica* different ages (from germ to young tree). Underneath a subterranean *Epipogium aphyllum* is set free showing reproduction stolons and most prominent flowering bulbs with flower stems attracting a hornets-hoverfly *Volucella zonaria*. Also prominent is a colony of Clustered toughshank mushrooms *Gymnopus confluens*, a foliage litter decomposing fungus, with its whitish mycelia entangled with the orchid. The detritus surface is settled by various insects like woodland cockroaches *Ectobius* sp. who try to hide between old leaves on the run of a common shrew *Sorex araneus*. In the shade of an erected beech germ a young beechnut collecting bank vole *Myodes glareolus* looks up to that strange smelling alien-like flowers.





© Sebastian Brandt, September 2021
www.reco-brandt.com

RECO-BRANDT
Sebastian Brandt
Im Schlufter 13
D-99192
Kornhochheim Germany