

CARMARTHENSHIRE'S STATE OF NATURE – FUNGI



Violet Coral Fungus



Bearded tooth Fungus



Hazel Gloves © Jon Hudson

HEADLINES

- Over 740 species of fungi have been recorded in Carmarthenshire.
- There are 27 'Section 7' Priority Species and eight have been recorded in Carmarthenshire.
- The county is home to sites of international importance for grassland fungi, such as waxcaps and earthtongues.
- Carmarthenshire has an outstanding diversity of rust fungi, particularly on rush, poplar, willow, sedge and salt marsh plant species.

OVERVIEW

Fungi are extraordinary organisms that are neither plants nor animals. They are present in most of our habitats, from our uplands to the coast, including woodlands, grasslands and sand dunes.

Complex fungal systems live below ground. Known as mycorrhizal networks, they are deeply interconnected with trees, plants, microbes and other organisms and are nature's recyclers, breaking down dead organic matter to be reused by organisms in the soil. They are essential to the operation of our ecosystems. It is now thought that over 80% of all plant species have a mutualistic symbiotic relationship with fungi.

Fungi can exchange essential nutrients with plants through the roots, help with the absorption and retention of water, protect plants against pathogens, and hold the soil together by acting as a giant underground net. New research suggests that mycorrhizal fungi may be an important sequester of carbon in the soil, including meadows.

Research by Aberystwyth University suggests that the UK has the best examples of waxcap grasslands in the world, and that Wales has the highest proportion of high quality waxcap grasslands in the UK. In Carmarthenshire waxcaps and associated grassland fungi are associated with low-nutrient grasslands, including graveyards. The ability to record their presence through soil DNA is becoming increasingly useful in the assessment of the ecological status of grassland habitats.

Conifer plantations, a particularly new feature of the county's landscape over the past 200-300 years, have provided a new habitat for fungi associated with conifers, many fascinating but non-native to this area. However, these plantations have been planted in more upland areas which would have had a rich native fungi community that would have been lost.

Fungi have not been recorded as extensively as plants in Wales, so knowledge of their distribution is more limited. Increased awareness of the importance of grassland fungi in Wales has, however, led to an increase in recording, especially of the charismatic waxcap communities.

Non-native fungal Ash dieback is a highly destructive disease of ash trees - caused by a fungus named *Hymenoscyphus fraxineus* (of eastern Asian origin) – it could have a significant impact on the landscape of Carmarthenshire and species dependent on ash trees.

CURRENT PRESSURES

- Habitat loss, the intensification of agriculture, atmospheric pollution and the loss of deadwood in woodlands, have had a significant impact on our fungi communities.
- Due to the continued loss of unimproved grassland habitats, waxcap grasslands generally and certain waxcap species in particular have become more restricted in their distribution.
- Grassland fungi such as waxcaps are sensitive to soil disturbance and nutrient enrichment of the soil, and continue to be under threat from ploughing, the application of fertilizers and herbicides, and of nutrient enrichment caused by leaving cut grass to rot.
- Tree planting on grasslands that are rich in grassland fungi.
- Loss of veteran trees, dead wood and hedgerows. There has also been a dramatic decline in the traditional management of deciduous woodlands.
- Climate change – as mycorrhizal networks are so deeply interconnected with trees, plants, microbes and other organisms, the adverse impacts of climate change (drought and flooding) on fungi may be significant (potential both positively and negatively).
- A lack of knowledge about Carmarthenshire's fungal communities.
- Pollution and excess nutrients (e.g. nitrogen, phosphorous and potassium) from agriculture - local air and soil quality have a large impact on mycorrhizae of fungi species.
- Potential spread of commercially grown non-native fungi.

RECOMMENDATIONS FOR LOCAL ACTION

- Maintain and restore high-quality, resilient habitats through landscape-scale projects, e.g. species rich meadows.
- Where necessary use species-focused conservation to help conserve key specialist threatened fungi species.
- Promote the survey and description of habitats of high nature conservation interest for fungi.
- Promote awareness for the sympathetic management of key habitats for fungi by issuing guidance and advice.
- In woodlands increase the amount of fallen deadwood, retain stumps and reduce the loss of veteran trees.
- Increase awareness and identification skills of fungi by holding guided walks, displays and workshops to ensure accurate identifications.
- Encourage people to record fungi species in the county either directly to WWBIC, on the LERC app and IRecord, or via the British Mycological Society. Although over 740 species have been formally recorded in the county, that is less than 10% of all fungi known to exist in the UK. There are obvious recording hotspots around where mycologists in the county live or work, strongly suggesting that most other areas have yet to be properly recorded. There is also a lack of records attributable to some mycologists who are known to have recorded extensively across the county.

KEY AREAS

- National Botanic Garden Wales - especially the Waun Las National Nature Reserve
- Mynydd Du SSSI (BBNP)
- Burial grounds and churchyards



CASE STUDY

- Burial grounds can be important habitats for fungi and can be the last refuge of waxcaps and associated grassland fungi in agriculturally intensive areas. Surveys of Carmarthenshire's burial grounds in 2000 and 2011 suggest that over half of all burial grounds in the county support at least a few grassland fungi, with at least ten having grassland fungi of high conservation value. Some rare grassland fungi, such as the Violet Coral *Clavaria zollingeri*, now seem largely confined to burial grounds.



WANT TO FIND OUT MORE?

[Priority Fungi in Carmarthenshire](#)

Wales Biodiversity Partnership - [Fungi](#)

[Ash dieback disease \(gov.wales\)](#)

[Waxcaps of Wales](#) – Plantlife

Rust Fungus Red Data List and Census Catalogue for Wales (Woods, Stringer, Evans and Chater)

Conservation of Churchyard Fungi in Carmarthenshire Report (2011)

Commented on by Fungi Group, National Botanic Garden of Wales