Bedfordshire
Cambridgeshire
Northamptonshire

Trumpington Meadows

Nature Reserve

Can you help us find a Rust Fungus?

We are running a trail to monitor the effectiveness of using Creeping thistle rust fungus *Puccinia punctiformis* to manage the spread of Creeping thistle *Cirsium arvense* on our nature reserve. Creeping thistle is a native species but is quite dominant and needs heavy management to curtail its growth, so that it does not swamp out other species that we are trying to promote. Early studies from Canada have shown that Creeping thistle rust fungus could potentially offer an environmentally friendly solution to the management of this plant.

The fungus is native, common and widespread across Britain and so there is no concerns around introducing a species which will later cause an imbalance in our ecosystem. The fungus only lives on creeping thistle but has a poor rate of transfer, primarily relying on beetles to move it from plant to plant. Our study will look at the effect of increasing the rate of transfer by manually harvesting infected plants, drying, chopping up and applying the resulting infected material onto stands of creeping thistle within our meadows. At present the study is due to run for five years.

We began the study in 2019 with the first year to be seen as a learning year. It became clear that the most time consuming part of the trial was locating the infected creeping thistle plants. Hence this message.

We would very much appreciate it if when you are out and about on a walk or talk you could have a quick look at the local creeping thistle and see if you can spot the Rust fungus in question.

If you do find it, please contact trumpingtonmeadows@wildlifebcn.org with good quality co-ordinates for the plants. What3Words reference points would be ideal. Our team will then go and confirm the sighting. If we can get the landowners permission we will then harvest the required amount.

Please note the following:

- We DO NOT require you to harvest the plant.
- Please have the land owner's permission before entering their land.
- Please wear gloves while searching through the thistle. They are prickly so and so's! Thicker trousers can also help prevent your legs from being prickled and be careful of uneven ground.
- Please be careful not to create any new desire lines/paths.

The following pages offer some guide as to how to spot Creeping thistle rust fungus.

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How to identify Creeping thistle rust fungus

Creeping thistle rust fungus produces pale to dark spots on the underside of the leaf of infected plants. The images on the following pages show the variation from pale yellowy spots (Fig. 4) when the fungus is newly emerged to the darker brown or red spots when it becomes mature (Figs. 1,2 & 3).

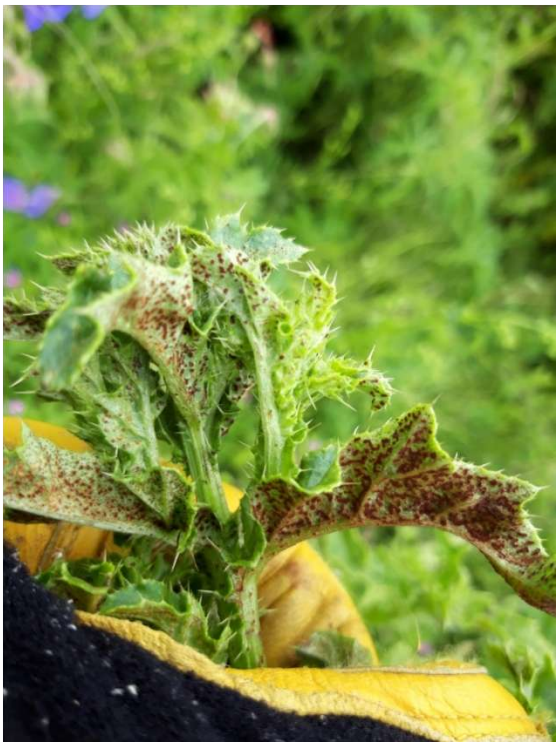

Figure 1 and 2: Underneath infected thistle tip

Where to look:

Infected plants seem to be common around tree/scrub and hedge lines. Plants *directly* in the shade of trees are even more likely to be infected.

If you find one infected thistle, check the surrounding area for others. All thistles on the same rhizome are likely to be infected. The fungus will be found on most leaves of an infected plant.

Looking from afar:

It can be helpful to look at the overall colour and growth pattern of a group of plants before wandering into a patch of creeping thistle. Your legs will definitely appreciate some caution! Infected plants can have indicators which can be seen from a few meters away. Images follow at the end of the document.

- Infected thistles are often pale green/yellow at the tip
- Stem is often deformed – wiggly shape and bent over at top
- There is often no flower at the tip of thistle. If it is present, it can be slightly deformed.

Note: Creeping thistle can also be infected with a separate soil based fungus which causes a bleaching of the top leaves. This is NOT the fungus we are looking for. Pale colour must be accompanied by spots under the leaf.

Up close:

- Underside of leaves have light to dark brown patches/grouping of spots covering most of leaf
- Plant often have dead/dying leaves with dark patches/ grouping of spots
- Plant often has strong sweet nectar-like smell – particularly at tip.

When to look:

Fungus will begin to appear in April (May in a cold year).

Infected thistles start to die off in June and are easier to locate.

Deadline:

We wish to deposit the dried plants on the trial plots in mid July. It can take approximately two weeks to fully dry the plants depending on weather so we would very much appreciate information on sightings by the **mid to late June.**

Reference images

Figure 3: Rust on underside of leaf

Figure 4: Close up of immature - pale brown rust

Figure 5: Healthy thistle flower buds

Figure 6: Infected thistle flower

Figure 7: Infected thistle dying off - note deformed, wavy stem and brown patches.

Figure 8: Infected thistle left, healthy thistle right