

Oak Processionary Moth (OPM) Report 2024

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1. Introduction

The Oak Processionary Moth (OPM) programme at the Forestry Commission has been tasked with tackling the OPM outbreak in Great Britain. Introduced accidentally in 2006, the Forestry Commission has been leading the response. OPM causes damage to oak trees when the caterpillars eat the leaves on the tree, making it vulnerable to threats. OPM caterpillars at a certain life stage have long hairs that present a health risk. They can cause painful itchy rashes and allergic reactions, and are a threat to humans, pets and wildlife.

We support areas where OPM is present with advice, operational support, including surveillance, and limited, targeted, treatment. We are attempting to slow the spread of OPM out from London into the wider environment with an aggressive policy of treatment in an approximately 50km zone around the area it is established. Outside of this we actively monitor the wider environment for OPM and take swift and robust action to eradicate outbreaks in the majority of England which is designated free from the pest.

The OPM programme endeavours to educate stakeholders on responding to, controlling and living alongside OPM.

1.1 Resources

The OPM programme is funded by the Forestry Commission, with £1.5 million this year. This is spent on a range of measures to inform the public, control OPM and understand it's spread. Around £858,000 on surveillance work on OPM distribution, with around £329,000 spent on treatment of infested trees.

- Forestry Commission – Team of five full time staff, supported by the wider organisation.
- Southampton University – Led by Dr Julia Branson and Andy Sutton delivering data and mapping services.
- Survey contractors – 5 different contract organisations were employed to survey oak trees to help understand the spread of OPM.
- Treatment contractors- 2 different contract organisations were employed to treat infested oak trees.
- Defra Policy – We liaise on operational matters with Defra (Department for Environment, Food and Rural Affairs) to help inform policy direction.

1.2 Survey methods

Surveying for OPM is largely completed on behalf of the Forestry Commission by professionally trained contracted surveyors. Surveillance is completed throughout Great Britain using the following techniques:

Nest Surveys - Sites to survey are selected by the Forestry Commission to provide the best possible survey coverage based on management zone needs. Surveyors use binoculars to visually inspect oak trees for OPM nests on the trunk or branches. The time spent surveying a tree is variable on factors such as size, branch complexity, in some cases up to 30 minutes is needed to assess a tree. In each instance, landowners are contacted to inform them of the work due to be carried out on their land.

- **Summer nest survey** - conducted from June until October. Surveyors look for current year's caterpillars and nests. This survey helps map the spread of OPM, assess the effectiveness of the prior year's spray treatment and plan next year's treatments.
- **Winter nest survey** – conducted from January to mid-March 2024. Surveyors visually search oak trees for old nests, helping map the spread of OPM and providing insights into the effectiveness of the prior year's spray treatment.
- **Wider environment surveys** - conducted from June until August as a Great Britain wide monitoring and surveillance network in areas where OPM is not known to be. In each wider environment plot a sample of 24 oak trees are visually inspected each year. The surveys are an early warning system to catch OPM outbreaks outside of known populations.

Pheromone trapping – Pheromones are chemicals that OPM females release to attract male moths to mate. Pheromone traps are plastic containers filled with liquid and a pheromone lure. Male OPM moths are attracted to the lure and fall into the liquid solution. They are deployed shortly before OPM moths emerge from July-August. Contractors use a catapult and pulley system to install the traps in oak trees at heights of 10m and above. Traps are checked for OPM moths fortnightly. There is an extensive pheromone trapping network across Great Britain.

Light trapping - Reports of OPM occurrences are submitted to the Forestry Commission by volunteers manning light traps. These are devices that emit a bright light at night which attracts moths into a non-lethal trap. This is not a systematic effort but is greatly appreciated.

1.3 Treatment methods

In response to a finding of an OPM infested tree, we have a range of options to respond with. How we respond is dictated by which management zone the tree is in, and its proximity to Sites of Special Scientific Interest.

Spray treatment. Using a truck mounted sprayer (or sometimes a backpack sprayer), an insecticide can be sprayed into the tree canopy. This is usually *Bacillus thuringiensis (B. t.)*, as this has the least environmental impact while maintaining efficacy.

Nest Removal. Operators can manually remove OPM nests and caterpillars from a tree. This is more time consuming and expensive than spraying but has a lower impact on the environment. This is chosen when the site is within or proximal to a Site of Special Scientific Interest. This technique can also be used in the Area Free from the Pest to maximise control efficacy.

No treatment. When OPM is reported within the Established Area (see Figure 1 below), we do not respond with a treatment. This is because we are no longer actively pursuing eradication, and resources are prioritised in areas to slow the rate of spread to project the area designated free from the pest. There was a pilot scheme to help residential owners with OPM to control it, and this will continue for 25/26.

2. OPM management geography

OPM is predominantly found in London and the surrounding areas. Its known distribution in 2024 has experienced little change from the previous year. As such, the OPM management boundaries for 2025 will remain as they were in 2023 for the Established Area, Buffer Zone and Area Free from the Pest.

Two outlier populations are present: One within the Southwest of the Buffer Zone which was reported in the summer of 2022 and another in the Area Free from the Pest in Long Eaton, Derbyshire, which was reported in June 2023.

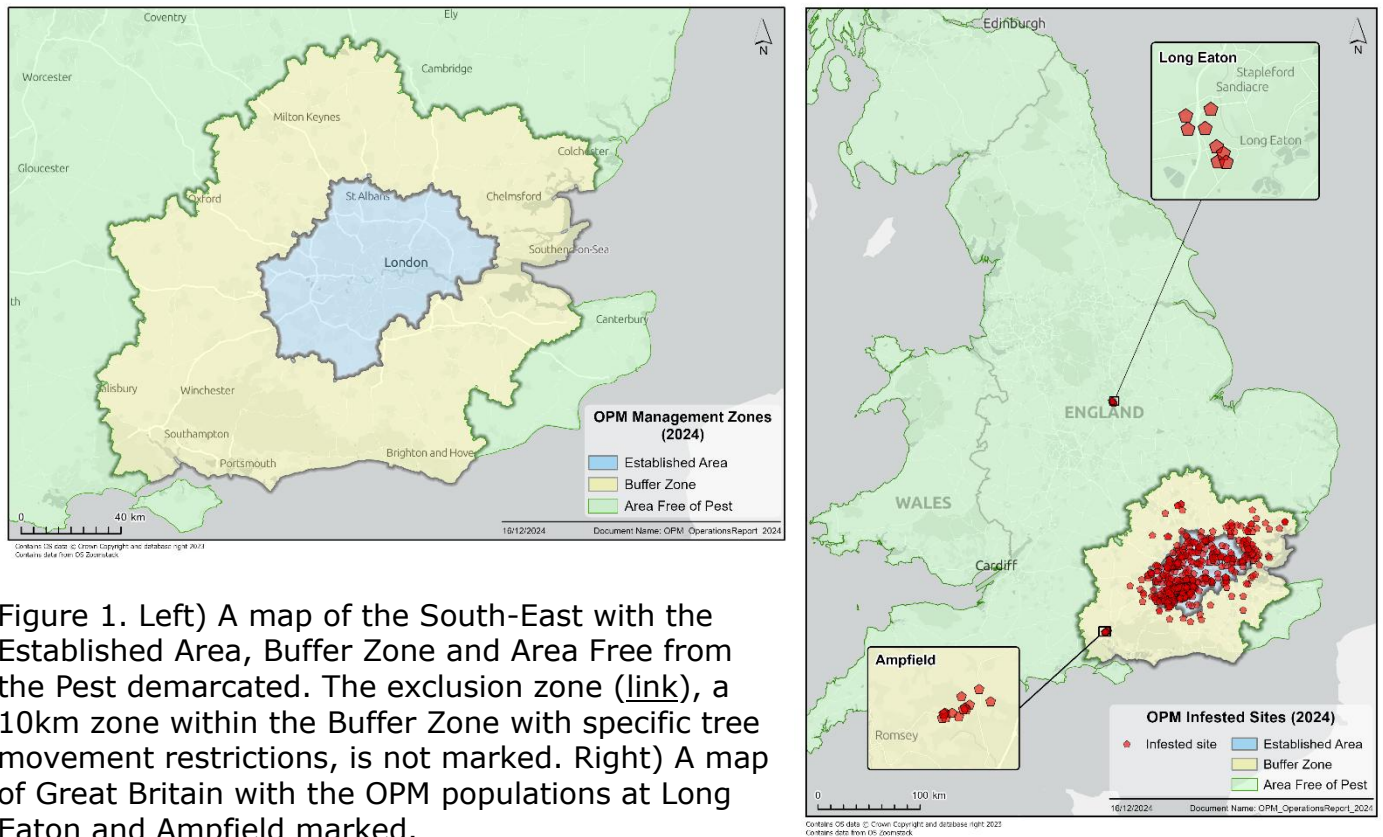


Figure 1. Left) A map of the South-East with the Established Area, Buffer Zone and Area Free from the Pest demarcated. The exclusion zone (link), a 10km zone within the Buffer Zone with specific tree movement restrictions, is not marked. Right) A map of Great Britain with the OPM populations at Long Eaton and Ampfield marked.

2.1 Established Area

Within the Established Area we carried out limited surveying for OPM, primarily for research purposes through Fera Science Ltd. We also receive reports on OPM presence through TreeAlert. However, we do not actively monitor OPM within the Established Area. Accordingly, our understanding of OPM within the Established Area is not systematic, so the incidence reporting does not reflect a comparable measure of OPM prevalence to that within the Buffer Zone or Area Free from the Pest, where systematic surveys are conducted.

We still encourage reports of OPM within the established area through TreeAlert. However, we do not respond to these reports with Statutory Plant Health Notices (SPHN), or interventions.

Within the Established Area, we operate a pilot scheme for the spraying of oak trees within residential properties. This is called the Private Residents Pilot. This generates some data on OPM incidence, as surveys are done to confirm OPM presence prior to a spray being authorised.

1. Not all applications to the scheme were successful, largely because of ineligibility, but also funding constraints. Approximately 1/3 of all applications were successful. Almost all sites funded were sprayed, with only 7 sites missed due to access issues on the day. Health Reports – 12 this is significantly down from previous years; we are sure this is an under reported figure.

2. Survey numbers:
 - a. Visual – 501 sites and 2,370 trees. (975 infested, 1,395 un-infested).
 - b. Pheromone - 60 (Fera Science Ltd research), 4 volunteer organisations.
3. Residential pilot spraying programme applications:
 - a. Number received – 1,569.
 - b. Number taken forward – 499.
 - c. Number controlled – 492 sprayed at least once.
 - d. 420 property surveys completed prior to spraying.

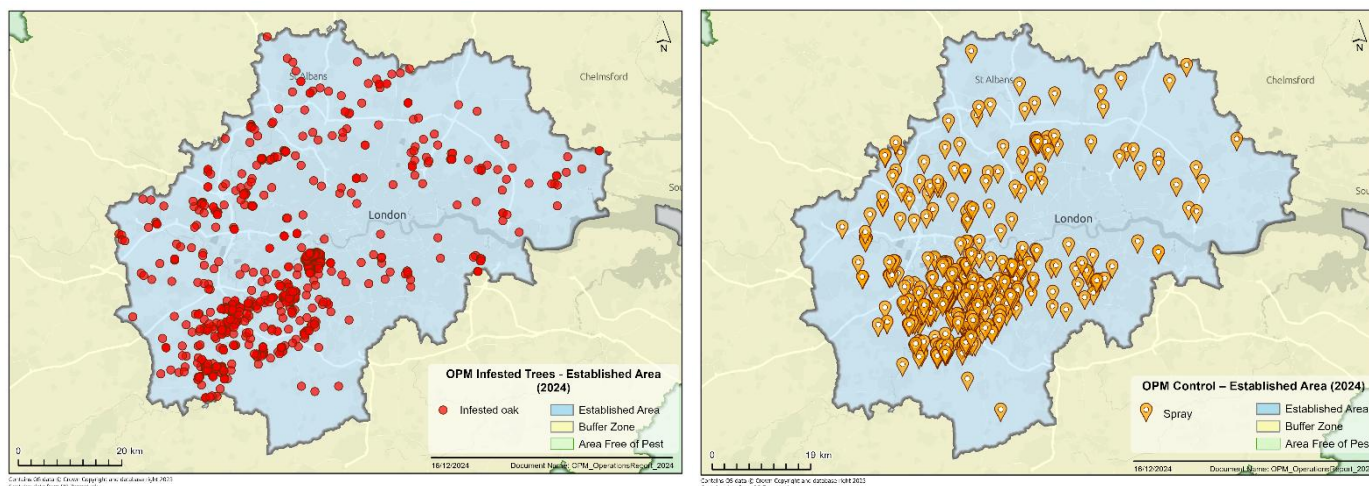


Figure 2. Left) A map of OPM reports within the Established Area. Right) Spray treatments conducted in by the Forestry Commission.

2.2 Buffer Zone

The Buffer Zone is an approximately 50km deep boundary set up as part of the zoning approach to managing OPM. The Buffer Zone separates the Established Area from the Area Free from the Pest. This zone is designed to enable effective management decisions, allowing risk and evidence-based deployment of resources. Within the Buffer Zone we aim to suppress and control incidents of OPM, to reduce the spread and prevalence of the pest. To facilitate this, we issue Statutory Plant Health Notice (SPHN) whenever OPM is found here. Once issued, the Forestry Commission will organise treatment of the affected trees or require a landowner to do this themselves.

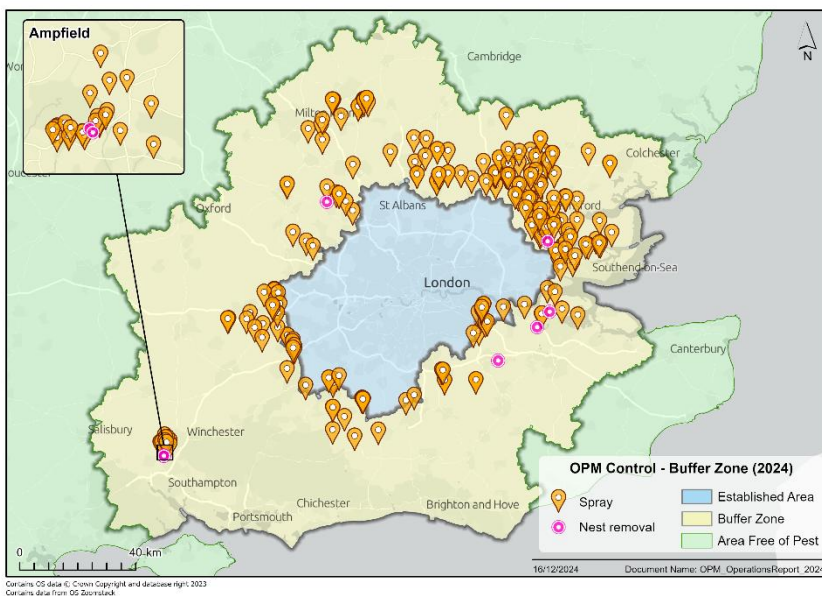
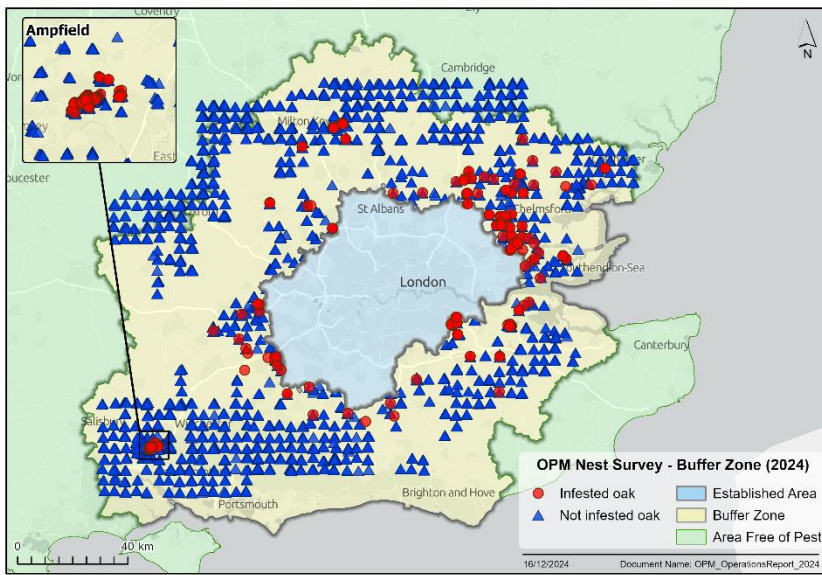
Within the Buffer Zone we systematically conduct nest surveys on a grid pattern, we conduct pheromone trapping and take reports of OPM incidents. See Figure 3 below. We have also conducted 46 wider environment surveys within the Buffer Zone, although this practice is under review for 2025. This systematic mapping effort is designed to track the spread of OPM, as well as detect its presence to allow treatment.

1. Statutory Plant Health Notices (SPHN) issued – 309, each requiring spray treatment or nest removal. Funding for these is split between the FC funded and self-funding.
2. Survey numbers:

- a. Nest surveys completed: 1,228 sites, and 17,548 trees (17,168 uninfested, 370 infested)
 - b. Wider Environment visual survey – 46 sites and 1,103 trees (of which 1 infested in the Buffer Zone).
 - c. Pheromone traps – 60.
3. Control covered (just for FC-funded treatment):
- a. No of sites – 278 sprayed, 7 nest removal
 - b. No of trees – 11,442

There is a significant breeding population in Ampfield, north of Southampton. This is within the Buffer Zone, but is still an area of concern, as it represents the most westerly, and the most southernly known OPM population. Extensive survey efforts have been performed around Ampfield, and we believe we have a strong understanding of the extent of this outbreak, which is under active management.

Figure 3. Top) A map of OPM reports within the Buffer Zone. Bottom) Spray treatments and nest removal conducted by the Forestry Commission are shown.

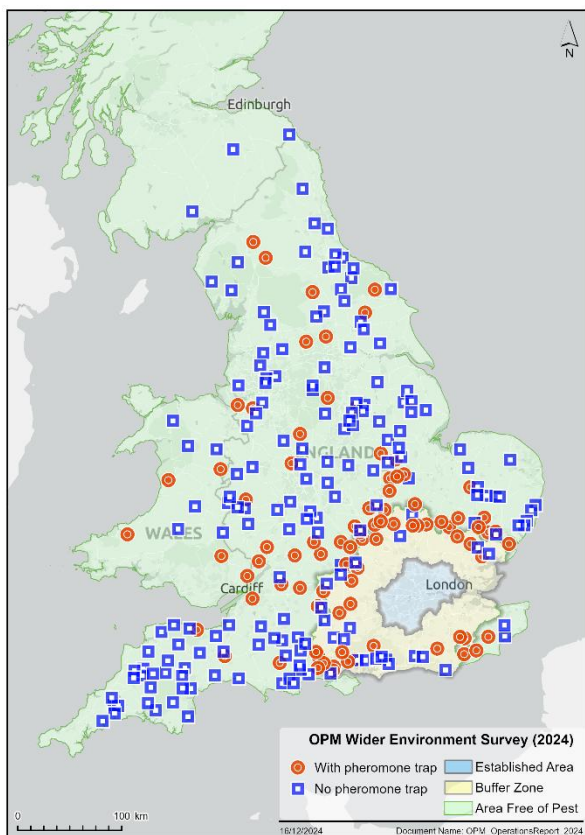


2.3 Area Free from the Pest (excluding Long Eaton)

The Area Free from the Pest is the rest of the country outside of the Buffer Zone. Any detection of OPM within this area is met with a robust response from the Forestry Commission in an effort to eradicate the pest.

We maintain a network of 180 sites systematically distributed over Great Britain (predominantly England, but with some sites in Wales and Scotland). These include both visual nest surveys in summer, and pheromone trapping of male moths.

We detected male moths in 8 distinct Pheromone traps in 2024, all clustered within 75km of the Buffer Zone. No pheromone trap caught more than 5 moths, sharply contrasting the 84 moths found in one trap near a known OPM population within the Buffer Zone. We attribute the detection of these moths outside the Buffer Zone to long distance migration from the Buffer Zone, rather than a local population outside the Buffer Zone.



The Wider Environment visual surveys detected no OPM presence in the Area Free from the Pest, while one of the 46 Wider Environment Surveys in the Buffer Zone did detect OPM. This gives us confidence that there are no widespread OPM populations outside of the Buffer Zone.

1. SPHN's issued – 0
2. Survey numbers:
 - a. Visual – 180 sites, and 1,701 trees (all uninfested)
 - b. Pheromone – 89 sites. (Traps include those installed by FC, Forest Research, and volunteers).

Figure 4. A map of the Wider Environment survey sites within Great Britain.

2.4 Long Eaton

A breeding population of OPM was found in the Long Eaton area of Derbyshire in 2023. Long Eaton is in the Area Free from the pest, situated in the Midlands, between Derby and Nottingham. No other known populations are within 110km, with evidence indicating/showing this outbreak resulted from an historical planting of an already infested tree. Significant control measures were made in 2023, reducing the local population. Similar efforts were made in 2024, and we will continue to survey for OPM in 2025/26. The current ambition is to eradicate OPM in the local area.

A single male moth was detected in the area this year. We will be focusing more resource in this location for 2025/26 and if any findings occur, further control measures will be undertaken.

Winter surveys to look for any OPM nests on trees not known to be infested will be conducted in early 2025, which is the first opportunity for us to observe indications of successful control in Long Eaton. This will be followed by extensive visual surveying, active solicitation of public reports and further pheromone trapping. Our knowledge of the population from 2024 will inform our 2025 control measures. Monitoring in the area will be ongoing for a number of years.

1. SPHNs issued – 36 (32 spraying, 4 nest removal).
2. Survey numbers:
 - a. Visual surveys completed – 116 sites, 1,543 trees.
 - b. Pheromone trapping – 24 sites, one male OPM was found.
3. Control covered
 - a. No of sites – 32 sprayed, 8 nest removal.
 - b. No of trees – 309 sprayed.
4. Two light traps were monitored by volunteers on a regular basis, who observed no OPM in 2024.

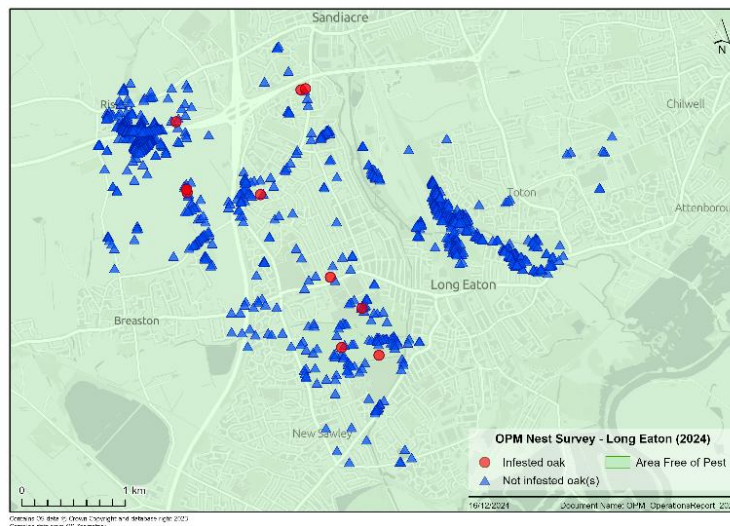


Figure 5. A map of OPM reports in the Long Eaton area.

2.5 Light Trapping

Over the 2024 season 9 OPM moths were caught, identified and reported to us, using light traps. The reports ranged over a 33-day period from 31st July – 01st September. Many of these were outside of the established area. As with our pheromone traps, we do not action report of low numbers of moths as these are unlikely to represent a nearby breeding population. All reports were of individual moths, excluding one trapper who caught two in Wimbledon. Reports this year ranged from Eastbourne, Shoreham by Sea, Kelvedon and Wimbledon.

3. Engagement

The OPM programme ran, and participated, in several events across the country to raise awareness of OPM. We are actively soliciting reports of suspected OPM incidence, as well as acting to raise awareness of OPM management and response. We also work closely with communities in outbreak areas (Long Eaton) to liaise with them directly and gain community backing for action.

1. Central communications: We sent out a range of communications to stakeholders across Great Britain.
 - a. OPM newsletters - 4
 - b. OPM awareness events – 4
 - c. Press releases – 2
2. Local Events: We ran a number of events in priority locations to raise awareness of OPM management.
 - a. Stakeholder engagement event – presenting updates on OPM research, operational ongoings and policy updates.
 - b. Long Eaton local authority’s awareness call.
 - c. Test Valley local authority OPM awareness event.
 - d. Haringey Council event – linked to a grant for OPM management plan.
3. Wide engagement with local authorities, usually through Tree Officers. Keeping them updated on OPM and Statutory Plant Health Notices in their area, and activities on their land.
4. Telecommunications: We provide information to individuals enquiring through our OPM email and telephone line. Over a period of 9 months, from January to September 2024, approximately 2,100 emails were sent and received. The dedicated OPM phonenumber saw over 600 incoming and outgoing calls in this period.

4. Research

Work is ongoing at several institutions, advancing our understanding of OPM. Future work is funding contingent. The key findings and ongoing work are listed below.

1. **Alternative control methods:**

To supplement, or replace, the use of pesticides alternatives are being developed.

- a. *Bio pesticides* are being explored at *Fera Science Ltd*. These are biologically derived or inspired chemicals which could be effective in treating OPM. Treatment is being trialled on egg plaques and some substances are being found to have efficacy against OPM. *Fera Science Ltd*.
- b. *Pheromone disruption*: OPM males locate females to mate using chemical signals known as pheromones. It is possible to replicate the female pheromone chemically. Releasing these pheromones in large quantities is hypothesised to disrupt the ability of males to locate females and thus disrupt the OPM lifecycle.

Work over 3 years is giving early indications of efficacy, although OPM populations naturally vary greatly year to year, so further work is being conducted to establish a firmer link. *Fera Science Ltd.*

- c. *Drones* are being trialled for spraying hard to reach trees. This is addressing the issue of particularly large oak trees 20+m tall, which traditional ground-based sprayers are not thought to be very effective at totally covering. A Forest Research team has trialled their deployment for control within the Long Eaton outbreak within the Area Free from the Pest. However, the spray has different qualities because of the type of sprayer, and the impacts of these on control efficacy needs investigation. Future work is planned, funding dependent, to further develop this idea. *Forest Research.*

2. **Nature based solutions:** Currently only two control methods are used, a bacterial based pesticide known as *B. t.*, which is what is used in the vast majority of cases. And a pyrethroid called deltamethrin, which is not commonly used due to its toxicity to the wider environment.

- a. *Nature based solutions* are being explored, these involve promoting more biological enemies of OPM, leading to natural suppression of the population. Currently some birds i.e. blue tits are known to feed on OPM while two species of fly parasitise young OPM larvae. Both are also non-native to the UK. Promotion of favourable habitats in the vicinity of OPM populations could possibly help promote these natural enemies, although we presently have limited evidence for this. Research from the EU funded Life-Programme funded project is investigating natural control of OPM. *LIFE Oak Processionary Project*
- b. *Forest Caterpillar hunter:* a species of beetle (*Calosoma sycophanta*) is known to predate OPM and is thought to be previously native to the UK. *C. sycophanta* is being trialled for efficacy of control of OPM in European laboratories, while Forest Research establish if it was native to the UK. Forestry Research are also investigating if it's reintroduction would impact other populations of moth, or whether it would survive within the UK climate. *Forestry Research.*

3. **Human response to OPM:** OPM is as much a human issue as a tree issue, and how stakeholders and citizens respond to it determines how we live, and combat, with the moth going forward.

- a. *Social Science:* The Tree Council has completed a survey of attitudes and knowledge of OPM in all three management areas. They found key differences in the level of understanding of OPM in each area, as well as different attitudes towards it. Crucially, low awareness was found in the Area Free from Pest, which may hinder action if outbreaks occur, or if the pest continues to naturally spread outwards. Concern was noted over contractor availability and cost in many areas. *Tree Council.*

4. **OPM biology-** : there is an ongoing project, seeking to better understand the genetic diversity of OPM populations. These research programmes are not directly targeted at

developing responses to OPM, but will provide invaluable information to broader control planning

- a. *OPM genetics*: Research is nearing completion on a project using the DNA of OPM to understand how it has travelled through Europe and to the UK. Using DNA from OPM from across Europe and the UK, researchers are hoping to better establish genetic differences within varying OPM populations, to help determine the origin of outbreaks discovered within the UK. This will tell us about the genetic diversity of OPM, which will be useful information for designing control measures. *Forestry Research*.

5. General Observations

The 2024 OPM season appears to have been a poor season for the moth, and conversely a good season for OPM control. Butterfly Conservation report an unusually poor year for butterflies, driven by a wet spring and cool periods during key months.