

Introduction to Oak

Processionary Moth (OPM)

Identification, Life Cycle Stages, Health Hazards, and Professional Control Strategies

**Started treating Egeprocessinons spindere
(EPS) 2025 may**

**Know from our companies i south
europe**

**Will not take all slides in details but
presentation will be available**

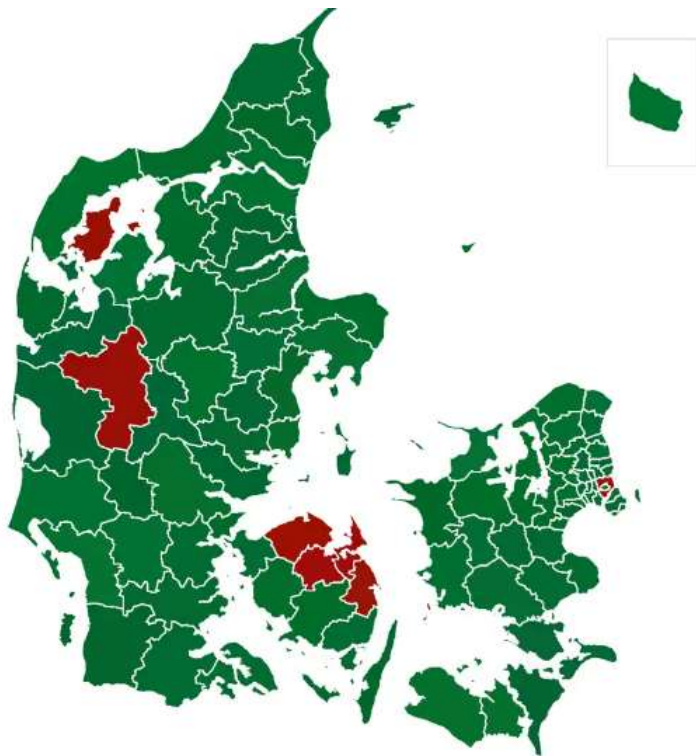


OAK trees- know your tree

- ✓ **Acorns:** The characteristic nut-fruit produced by oak trees, held inside a cup-like structure (cupule).
- ✓ **Oak Leaves:** Typical 5–10 cm long with short stalks. Features an irregular, lobed shape containing 7 to 11 distinct rounded lobes.
- ✓ **Target Host:** OPM caterpillars feed exclusively on oak foliage, making oak stands the sole focus for surveillance.



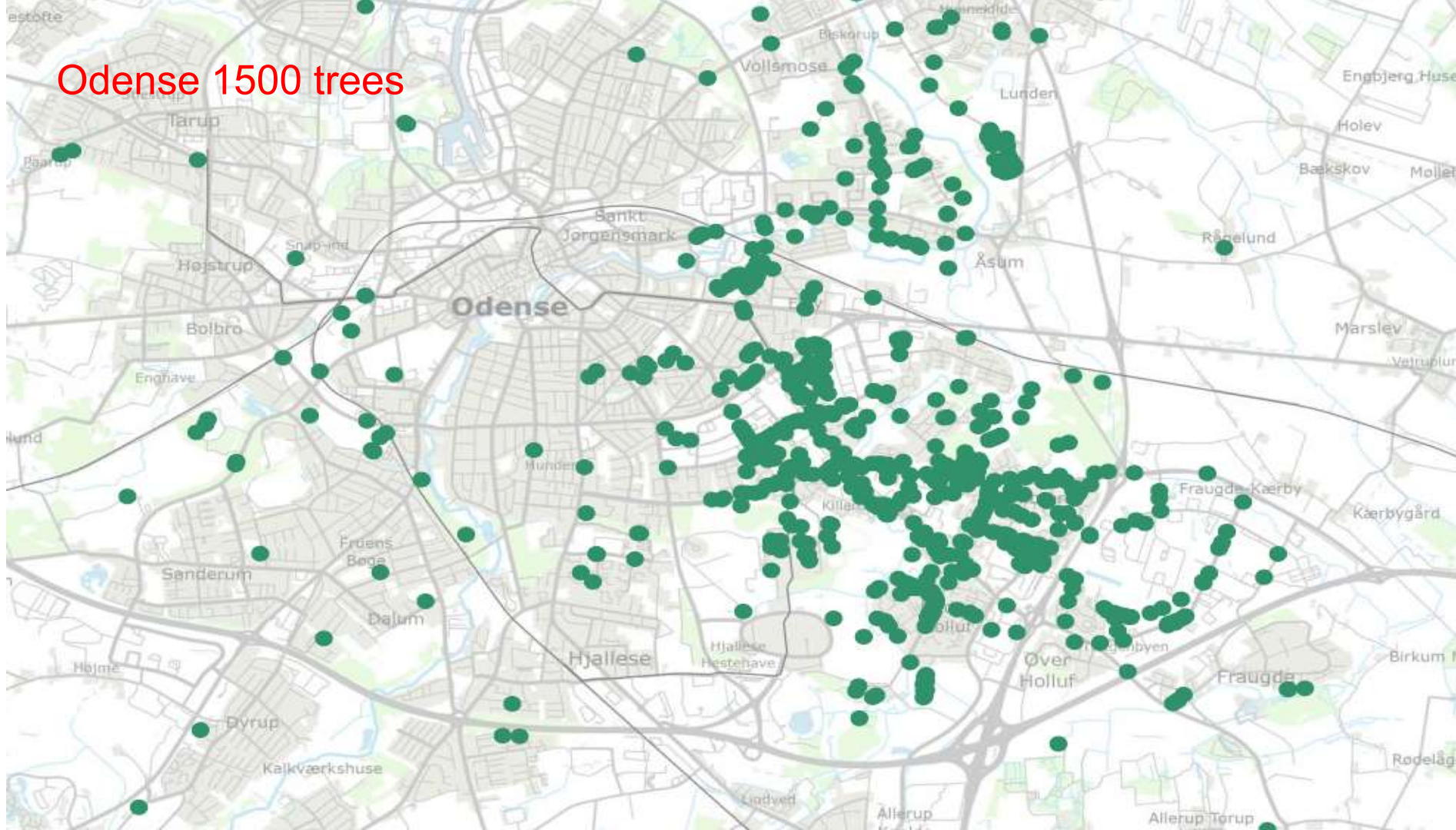
Danmark and now also Sweden



*Derudover har Rentokil også bekræftede tilfælde hos private borgere i Nyborg og Roskilde Kommune.
Kildehenvisning: <https://sgav.dk/temaer/information-om-egeprocessionsspinderen>



Odense 1500 trees



Egg production and overwintering

- ✓ **100–300 Eggs:** Female moths lay 100 to 300 eggs every year in single-layer plaque formations on small twigs.
- ✓ **Protective Scales:** Eggs are covered with greyish protective scales and remain attached to branches through autumn and winter.
- ✓ **Spring Hatch:** First instar larvae hatch from the egg plaques in April.
- ✓ **Limited Dispersal:** Female moths are weak, heavy flyers, rarely laying eggs further than 500 meters from their origin tree.



1st Larval instar

Hatching & Early Behavior

- ✓ **Budburst Timing:** Eggs hatch in April just before or during oak leaf budburst.
- ✓ **Physical Characteristics:** Microscopic larvae (<3 mm in length) feature dark/black heads and orange bodies.
- ✓ **Feeding Habits:** Larvae feed actively at night and shelter directly inside expanding leaf buds during the day.
- ✓ **Egg Plaques:** Old egg plaques remain visible on twigs with empty egg casings after hatching.



2nd larvel instar

Molting & Canopy Growth

- ✓ **Temperature-Driven Molting:** Larvae shed their skin and enter the 2nd instar as spring temperatures rise and food availability increases.
- ✓ **Outer Canopy Location:** Caterpillars remain concentrated on the outermost branches and twigs of the host oak.
- ✓ **Foliage Consumption:** Active feeding on tender young leaf tissues.



3rd larval instar

- The larvae are now between 10–15 mm long.
- They gather in large groups and have begun to produce toxic hairs.



4th Larval instar

Development of Toxic Micro-Hairs

- ⚠ **Larval Size:** Caterpillars reach approximately 20–25 mm in length.
- ⚠ **Nest Construction:** Caterpillars begin constructing initial nests, which appear clean and pale in color.
- ⚠ **Exuviae & Toxic Hairs:** Accumulation of shed skin occurs. Each caterpillar develops approximately 100,000 microscopic toxic hairs that easily break off and become airborne.

Airborne Danger: From L4 onwards, airborne stinging hairs present severe health risks to public health and outdoor workers.



5th larval instar

- ⚠ **Larval Size:** Larvae grow to approximately 30 mm in length and are much easier to identify visually.
- ⚠ **Key Features:** Characterized by a black head, long white sensory hairs, and distinct dark stripes along the back.
- ⚠ **Expanded Nests:** Nests grow significantly larger, covered in dense silk webbing mixed with exuviae and frass.
- ⚠ **Defoliation:** Clear signs of heavy leaf defoliation become visible on host oak branches.



6 th larval instar

Final Instar & Trunk Nests

- ⚠ **Maximum Larval Size:** Caterpillars reach approximately 35 mm in length.
- ⚠ **Massive Trunk Nests:** Large, dirty brown nests form, densely packed with shed skins, silk, and caterpillar droppings (frass).
- ⚠ **Nest Placement:** Nests are primarily located on the main tree trunk and thick structural branches close to the trunk.



Pupal stage and Nest Persistence

- ✓ **Pupation in Nests:** Larvae pupate inside silken cocoons within nests, often located near the tree base at ground level.
- ✓ **Nest Structure:** Nests incorporate grass particles, frass, and dense layers of shed toxic hairs.
- ✓ **Multi-Year Hazard:** Abandoned nests remain hazardous for years due to high concentrations of persistent toxic hairs trapped inside.



Adult moth stage

Mating Flight

- ✓ **Emergence Window:** Adult moths emerge from mid-July through late September.
- ✓ **Short Lifespan:** Nocturnal adults live for only 3 to 4 days and do not feed. Males emerge first.
- ✓ **Flight Range:** Females fly up into the canopy, attracted by oak foliage scents; they rarely travel further than 500m from their home tree.
- ✓ **Visual Identification:** Adult moths can be difficult to distinguish visually from other native moth species.



Control - also birds, Bluetits

Professional Control Options

- ✓ **Distribution Mapping:** Systematic surveillance and mapping of infestation zones.
- ✓ **Biocide Application:** Targeted spraying with biocides approved specifically for OPM control.
- ✓ **HEPA Vacuuming:** Physical extraction using specialized HEPA-filtered vacuum systems.
- ✓ **Hot Foam Treatment:** High-temperature foam application to encapsulate and neutralize nests.
- ✓ **Pheromone Monitoring:** Trapping adult males to detect presence and track population density.
- ✓ **Urban Challenges:** Operations require meticulous planning around busy traffic corridors, cycle paths, and light rail zones.



Safety



Removal operation and Biohazard waste

- ✓ **Hazardous Waste Stream:** Nest removal generates dangerous waste that must be processed as clinical biohazard waste.
- ✓ **On-Site Collection Bins:** Rigid yellow UN-approved containers (UN 3291) are placed in the work zone for sealed waste bags.
- ✓ **Decontamination Routine:** Disposable suits and gloves are tied off in bags at breaks and incinerated as clinical hazard waste.



Oak Moths summary

What is the Oak Processionary Moth?

The Oak Processionary Moth (*Thaumetopoea processionea*) is a moth species whose caterpillars feed on oak foliage.

- ▲ **6 Larval Instars:** Larvae pass through 6 distinct development stages.
- ▲ **Microscopic Stinging Hairs:** In the final instars, caterpillars develop up to 100,000 tiny stinging hairs containing an allergic protein called *thaumetopoein*.
- ▲ **Persistent Nests:** Caterpillars construct communal silk nests on tree bark for shelter. Toxic hairs remain concentrated inside nests long after larvae depart.



Control Strategy Matrix

Method	Optimal Timing	Mechanism & Agent	Target Area / Suitability
Biological Spray	Mid-April to May (L1-L2)	<i>Bacillus thuringiensis</i> (Bt kurstaki) or entomopathogenic nematodes	Large canopy areas; harmless to humans, targets young feeding larvae
Mechanical Vacuuming	May to July (L3-L6 & pupae)	Industrial HEPA / Dust Class H vacuums with pre-separators	Public parks, schoolyards, and urban streets; captures nests & hairs
Controlled Thermal Burning	June to July (Nests)	Precision flame brushing across trunk bark to incinerate hairs	Specialized arborists only; prevents hair dispersal if done properly
Trunk Traps & Pheromones	March-April & July-Sept	Circling funnel trunk traps & female sex-pheromone monitoring traps	Monitoring adult population flight curves and catching descending larvae

Complete Metamorphosis



1. Egg Stage

Females lay 100–300 eggs in flat, camouflaged rectangular plaques on upper canopy twigs from August to September, overwintering until spring.



2. Larval Stage

Caterpillars emerge in April to synchronize with oak bud-burst. They pass through six distinct instars (L1–L6) over 8 to 11 weeks of active feeding.



3. Pupal Stage

In late June to July, caterpillars retreat inside dense, communal silk nests on tree trunks to spin individual cocoons, pupating for 3–5 weeks.



4. Adult Moth

Moths emerge from late July to September. Adults do not feed and live merely 3–4 days solely to mate and oviposit the next generation.