

## **Proposal for Oak Processionary Moth Rapid Reaction response prepared by Forest Research on behalf of the Forestry Commission's Plant Health Service**

### **Introduction**

The finding of Oak Processionary Moth, *Thaumetopoea processionea*, in London during 2006 has resulted in considerable press and local authority interest in the threat posed by this moth. This threat encompasses both phytosanitary (the moth is very damaging to a range of oak species) and public health (the larvae possess highly irritating hairs) elements.

This proposal does not directly address the public health issue as this is a matter outwith the competence of the Forestry Commission.

To date, the responses to finding the moth have been fragmented and lack a coherent structure or overall co-ordinating body. Efforts to either manage the moth or to carry out surveys to determine the extent of the infestations have been very local and uncoordinated within London:

- local authority surveys and application of control measures by Richmond Borough;
- surveys and local control by Thames Water;
- surveys and local control by Kew Gardens authorities;
- surveys and local control by the highway authorities responsible for the A40 into London;
- surveys and local control by Railtrack;
- assessment of possible clustering of skin irritation complaints by local health authorities in London.

Meetings have been held with some of the key players, including FR, Kew Gardens, local authorities (Acton, Richmond), local authority health officials, Defra PHSI and with an entomologist contracted to Richmond Borough Council. Arising from a meeting held in November 2006, a Tree Health Forum was organised and took place at Kew on 18 May. While this provided a valuable opportunity to take stock of current knowledge, especially the latest findings from site visits carried out by FR on 11 May (Appendix I) it was also apparent that the need for co-ordination is now acute. This is particularly related to both the lack of an area-wide survey and also the lack of effective control of the larval populations of the moth, which have hatched very early this year. Efforts by Richmond and Kew have so far concentrated on the main areas that were known to be infested during 2006. In addition, the visit by FR THD staff to the area on 11 May revealed infestations in North Sheen cemetery in Richmond; this is about 1 mile from the main infestations in Richmond. Such findings indicate that a systematic survey effort is required to determine the full extent of the OPM infestations. The early egg hatch and rapid larval development also suggests that it may already be too late to carry out effective insecticide control during 2007. However, it also means that visible damage to trees should become increasingly apparent over the next month as the larvae develop through the final two instars which are known to be the most damaging.

Agreeing the need for a coherent and co-ordinated response to this threat, the Head of Plant Health Service has decided to convene an Outbreak Management Team (OMT) following the procedure set out in the FC generic Contingency Plan (drafted, but which not yet formally been endorsed and published). A pest-specific

Contingency Plan has also been commissioned and drafted by the Plant Health Service, and will be published on completion and endorsement by the OMT.

The proposals set out in this paper will be considered by the OMT at its first meeting, to be held on 13 June 2007.

### **Proposals for co-ordination and rapid response activity**

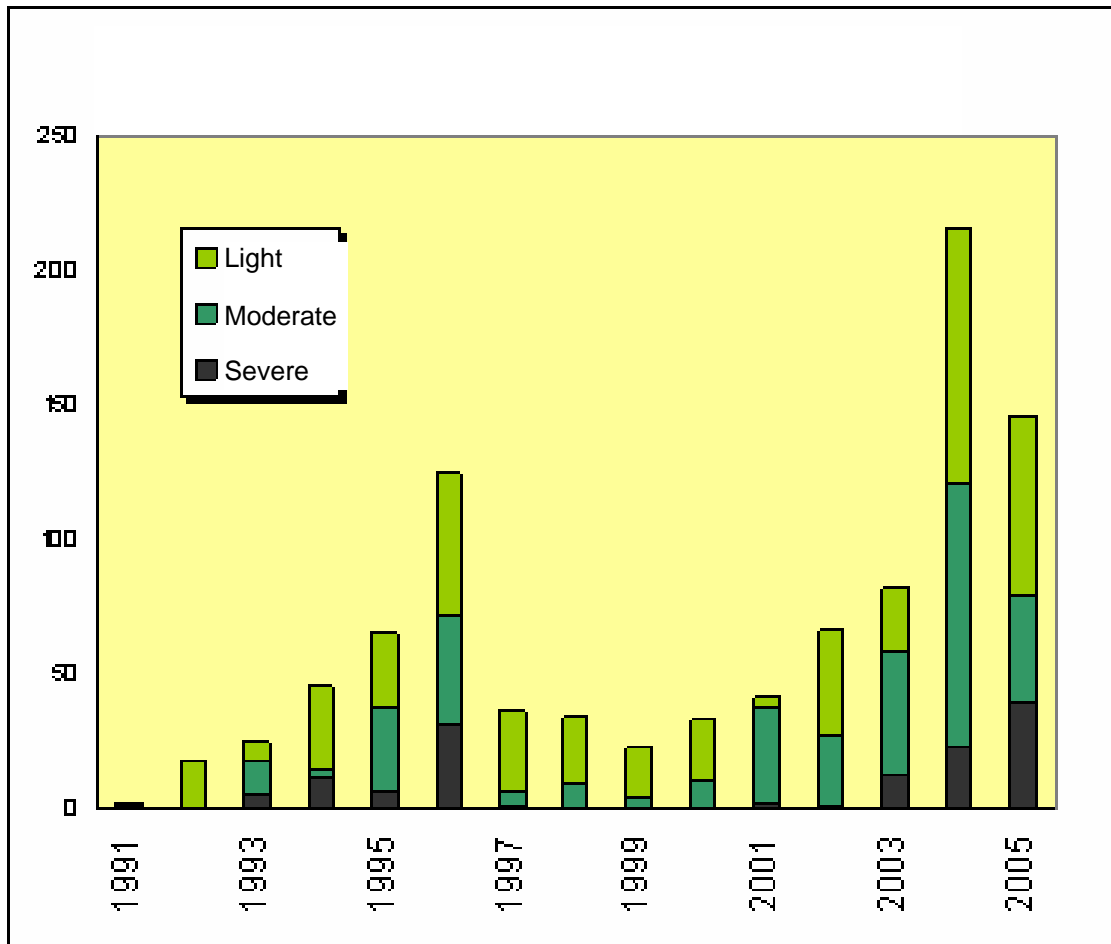
There are uncertainties, particularly in Defra, concerning the potential of OPM to cause damage and, therefore, to potentially be classified as being of quarantine significance to Great Britain and consequently subject to phytosanitary controls. Data from its northward progression in Europe and, particularly, experiences in The Netherlands since its first appearance there in the early 1990s, provide unequivocal evidence of the damaging impacts of this moth. In particular, Dutch scientists and authorities recognise a progression from early establishment to full scale damage once the moth arrives and establishes in a new location; this is summarised in Table 1 and confirmed from field observations since 1991 in Figure 1.

Table 1: Phases of development of OPM populations following initial establishment. The likely current situation in London is shown in grey.

<b>Phase</b>		<b>Duration (years)</b>	<b>Damage to oak</b>	<b>Health problems</b>	<b>Status</b>
0	Exploration (pre-colonisation)	-	None	None	Migrant male moths only
1	First infestation	1-2	None	None	Larval nests small, difficult to find
2	Colonisation	2-3	+	+	numbers increase, large nests
3	Plague stage	1 (2)	+++	+++	epidemic numbers, severe defoliation
4	Population collapse	1	+++	++	larvae starve, mortality increases

Based on the limited data available from the infestations in London, it would appear that the British populations of the moth are between phases 1 and 2 (shown in grey in Table 1). It is important, therefore, to determine whether the moth populations are expanding both numerically and geographically, which would be predicted by experiences on mainland Europe. While it is not certain whether decisive control action would halt the progression described in Table 1 and Figure 1, the fact that the moth is probably in an early phase of population increase could offer the prospect of eradication if populations are identified and effective insecticide application planned and implemented during spring 2008. Consideration also needs to be given to whether *T. processionea* should be classified as a quarantine pest requiring phytosanitary controls to prevent further accidental incursions via imported planting material. Clearly, this needs to be assessed by the FC PHS, and by Defra and SEERAD, whose inspectorates are responsible for monitoring imports of trees intended for planting to ensure compliance with the requirements set out in the Schedules to the Plant Health (Forestry) Order 2005. Information to support decision making must, therefore, be based around a Pest Risk Analysis as is normal practice for determining phytosanitary measures.

Figure 1: Number of light, moderate & severe infestations of OPM recorded in The Netherlands since the moth was first recorded in 1991.



Powers for the immediate management of the pioneer populations in London are already available to the FC under article 31(4) of the Plant Health (Forestry) Order 2005.

The public health implications arising from the known severe skin and other allergic reactions from the larval hairs were highlighted at the Kew Forum on 18 May. Discussions with staff from Richmond Health Authority indicated that there are strong concerns about both dissemination of information on the moth and mechanisms to identify clusters of health problems that may have been detected by GPs and hospitals.

### **Proposed action**

1. Carry out a formal Pest Risk Analysis on OPM to provide FC Plant Health Service with a structured evidence base for considering and making a decision on whether OPM should be classified as a quarantine pest, thus requiring action through the EU Standing Committee on Plant Health.

**Action: Add to THD Schedule. Funding from PHS emergency contingency fund.**

2. FR provide scientific advice and support to the Outbreak Management Team to aid the assessment and co-ordination of a campaign to manage moth populations to eradicate or reduce OPM in Britain. Attend an early meeting of the Group to discuss tactics and agree action and assess sources of funding for the work of the Group and, particularly, publicity and survey activities.

**Action: Discuss and propose to key players to sit on the Outbreak Management Team.**

3. FR to design and co-ordinate a survey across London, based on the current epicentre, for OPM, combining visual surveys and, particularly, an extensive pheromone trap network. This will need to set up by mid-June.

**Action: Source pheromone lures and traps and identify network of locations and seek local authority and other support to inspect and service the traps. Combine with use of contract specialist support (contract entomologist) to carry out visual surveys and formal identification of infestations. Link to publicity in item 4. Funding from the PHS emergency contingency fund.**

4. FR, in collaboration with Communications and Design Branches of CFS, to design, print and arrange distribution of a leaflet to request interested parties and the wider public to both identify potential infestations (based on symptoms, etc.) and to warn of the health risks from contact with the larval stages of the moth. This would need to be done in close liaison with local authority tree officers and environmental and public health officers.

**Action: implement design, printing and distribution of leaflets. Enhance FR website and link to the Plant Health other relevant sites to enable PDF distribution of the leaflets.**

5. FR to provide regular updates on progress and to ensure that the website is the main portal for information flow and dissemination.

**Action: Update website at regular intervals to keep information flow as up to date as possible.**

6. FR to strengthen links with European researchers to assess information on the biology and, particularly, sustainable control of Oak Processionary Moth.

**Action: FR to contact European researchers and consider best options for control (ranging from eradication options to longer-term sustainable management procedures).**

The above provides an action plan for implementation during 2007. Depending on findings, the development of a strategy for 2008 and the future should follow. This will have implications for both longer term responsibility and for funding for research and management of this potentially serious new insect pest.

Hugh Evans  
Head of Tree Health Division  
21 May 2007

## **Appendix 1: Report on visit by THD staff to London on 11 May – prepared by Nigel Straw.**

### **North Sheen Cemetery, Richmond**

Trees in the cemetery were searched for larvae of oak processionary moth (*Thaumetopaea processionea*) which was reported here in 2006. There are a number of medium sized *Quercus robur* planted either side of the main north-south drive through the cemetery, but no other oaks in the grounds or around the perimeter as far as could be seen. Two colonies of OPM larvae were found, on 2 separate *Q. robur* trees about 20m apart, in the middle of the cemetery (about 50m north of the office) (at TQ197762). One of the colonies, of about 50 larvae, formed a dense group sat underneath a large horizontal branch beneath the canopy at about 1.5m. A small area of feeding damage was visible further out at about 2m above the ground. The second group of about 20 larvae was clustered together around a green shoot at the end of a branch in the lower canopy, on the south-facing, sunny side of the tree (see photos by CT & DTW).

### **Kew Riverside Development & Thames Water treatment works**

Severe feeding damage and large numbers of dead or dying OPM larvae were visible on nearly all of the fastigate *Q. robur* planted around the outside of the Thames Water treatment works behind the Kew Riverside development (TQ198768-TQ198769). These trees, which were planted in a single row along the outside of the perimeter fence of the treatment works, were sprayed by Scotscape (Dippel/BT applied by mist blower) on 3<sup>rd</sup> May 2007. Some of the trees in the main row along the west side of the treatment works were quite heavily defoliated.

The majority (>95%?) of OPM larvae were dead or appeared to be dying, but groups of apparently healthy, mid-late instar larvae were also found, in clusters on the lower leaves and on the lower stem. Therefore, a significant number of larvae appear to have survived and looked likely to complete development. **A second insecticide application would appear necessary to kill these surviving larvae.**

Large numbers of old egg plaques, fixed to the smaller diameter twigs and stems, were visible in the lower canopy.

Larvae were also found on small non-fastigate *Q. robur* amongst a mixed broad-leaved planting leading south from the treatment works parallel to the river. These trees look as though they were planted recently, probably at the same time as the fastigate oaks around the treatment works fence. Patches of leaf damage, showing the characteristic skeletonising defoliation caused by the larvae (the main veins of the leaves are left uneaten) were visible on ca. 8 of these trees and larvae were present. Some of the larvae (ca. mid instar) appeared dead, suggesting that the trees had been sprayed, but other larger larvae were alive and some were processing up the stems.

## **Time Frame**

In view of the rapid development of the moth during 2007 and the known relatively short period of larval development, action to carry out visual surveys for damage (including location of larval colonies) and to plan, source and place in the field pheromone traps is urgent. A decision on whether to proceed should, therefore, be made by the end of May 2007. If the proposals are approved, most of the monitoring activity will take place between early June and mid August, followed by data analysis and detailed planning for monitoring and insecticide applications during 2008.