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Understanding landowner risk perception and behaviours for future management of Oak Processionary Moth (OPM)

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Executive Summary

- Forest Research (FR) were contracted to conduct social research in two case study areas (Fulham and West Hampstead) to inform the development and piloting of a risk-based approach to Oak Processionary Moth (OPM *Thaumetopoea processionea*). The case study areas exhibited similar geographic characteristics with a mixture of land types that included infested or non-infested oak trees (e.g. parks or public gardens, sports grounds and amenity areas, school grounds, private gardens and cemeteries), and different stakeholders (e.g. private residents, charities, local authorities, transport agencies, businesses and private organisations). A mixed methods approach was used to understand knowledge and awareness, landowner risk perceptions and behaviours regarding OPM, as well as evidence of OPM impacts particularly on human or animal health.
- Interviews covered: 22 landowners in the case study areas; 12 landowners outside of the case study areas across other areas of London; and 5 contractors/practitioners involved with controlling OPM in London. Surveys involved 8 landowners, 433 members of the public and 3 health practitioners – all from the case study areas. Landowners and health practitioners were all contacted via the OPM Control Programme (OPMCP) in the first instance. FR subsequently contacted landowners to arrange interviews either face-to-face or over the phone. The public survey was conducted on behalf of FR by a specialist survey company.

Landowner interviews

- The aim of the landowner interviews was to explore whether there was a variation in attitudes towards, and experience of, OPM risk between different landowners in the two case study areas, and whether this has influenced behaviours.
- Oak is a highly valued tree across all landowner and land manager categories in the case study areas as they are relatively few in number but also symbolise British cultural heritage. People want to protect the oak trees.
- The greatest tree-related health and safety risk, particularly for those managing publicly accessible sites, is related to unstable or vulnerable trees that could break or fall. If OPM does not create health and safety risks in oak trees, it may be considered a lower priority.
- Key risks related to OPM were primarily associated with human health impacts. However, there were no confirmed incidences of exposure amongst respondents. Only one interviewee (private resident) reported a suspected OPM-related rash. There was some scepticism about actual health risks amongst some of the larger land managers, but also a recognition that they risk reputational damage if they are not seen to be actively managing for the pest.

- In publicly accessible areas, key management activities involve monitoring, nest removal and temporary zoning and signage to warn the public and visitors of OPM. One local authority discussed having developed a management plan since the discovery of OPM on one of their sites.
- Land owners or managers dealing with publicly accessible sites are already taking a risk-based approach to OPM management based on the extent to which the public (and their pets) are likely to come into contact with infested trees. This appears to be largely due to financial resource issues.
- Key challenges to OPM management were low levels of knowledge about the pest and how best to deal with it, particularly amongst private residents. Even knowledgeable land managers were still uncertain of OPM behaviour and the full range and efficacy of the management options available. The financial costs of OPM management is a significant issue for all landowners and managers. There is a role for intermediaries to provide advice and recommend contractors so there is an increase in trust and ease in the process. Access to financial support may be an important consideration where landowners are unable to meet the costs of control.
- Most stakeholders interviewed accepted responsibility for OPM management on the trees that they own. There was high degree of support for biological control as a measure, but a lack of knowledge about what this involves. In terms of implementation, there was less support for spraying with the assumption that this method delivers chemical agents (i.e. insecticides/pesticides), although certain land managers such as gardeners and contractors were more accepting due to recent experiences of dealing with other pests and diseases. Nest removal is considered to be an effective measure, whilst there were questions regarding the efficacy of other measures.
- Collaboration is an important component of OPM management, but fragmented ownership, complex land boundaries and clarity over responsibility, as well as constraints related to finding the time needed to develop collaborative working, all reduce opportunities for communication and joint action.
- Trusted organisations (for information provision) include the Forestry Commission, London Tree Officers Association and Royal Horticultural Society. Other local networks could also be harnessed although there may be restrictions on the use of social media for monitoring and information sharing.
- Support is required in four key areas: (1) Regular area updates including early warnings and any new information on management options; (2) Advice on where to get financial and technical support; (3) Comparisons of costs and efficacy of different management options; (4) Regular communication campaigns about OPM to improve knowledge and awareness without causing unnecessary alarm.

Landowner survey

- The land manager survey aimed to test a method for surveying owners and managers of oak trees in Fulham and West Hampstead, as well as building on

insights from interviews with this population. A total of 39 eligible sites were approached for survey by the same team of surveyors who carried out the on-site oak tree surveying in January 2018.

- The survey collected data on: values and attitudes to oaks and tree pests; knowledge and awareness of OPM; experience of communication efforts from the OPMCP and trust in sources; control activities undertaken; health problems experienced; perceptions and attitudes to risk; as well as familiarity with and acceptability of control methods.
- Response to the survey was low, with only 9 respondents (4 in Fulham and 5 in West Hampstead) completing the survey. Problems faced during fieldwork included: being referred to council representatives due to local authority ownership; land managers being unavailable; and no ability to contact the site at all. Some managers were left calling letters and self-completion survey forms, but follow-up for these was unsuccessful.
- Due to the low response rate from the landowner survey, it is difficult to draw out conclusive findings from that dataset. However, the findings appear to support perspectives from the landowner interviews, in terms of a general low level of knowledge about OPM, and the focus of concern for the impacts of OPM were similar amongst respondents for human health, animal health and biodiversity. In terms of those who had encountered information sources about OPM, printed materials (leaflets & letters) and signage were considered most useful, with media (newspapers, webpages and social media) the least useful. Strongest acceptability of control measures was for nest burning or removal, with tree felling not considered acceptable.

Public survey

- This survey sought to gather responses from a representative sample of the resident populations of two case study areas. These stakeholders were surveyed in order to address evidence gaps concerning the public's: acceptability of OPM-relevant control measures; attitudes to the control of OPM in general; and the factors relevant to these attitudes, including knowledge and awareness, values, engagement, risk perception, trust and characteristics of the control methods themselves.
- A doorstep survey was undertaken in the two case study areas by a specialist research company between 30th October 2017 and 13th December 2017. A target sample of 500 respondents was agreed, with 250 in each case study area. Of the target 249 completed the survey in West Hampstead and 184 completed it in Fulham. Lower response rates in Fulham were due to the survey agency unable to fulfil the quota criteria in this area by the time of data delivery. No further specific reason was given for the lower response rates in Fulham.
- In general the public in both case study areas valued public greenspace and residential garden space where they owned it. There was agreement that these

spaces provided a range of cultural, economic, health and wellbeing goods and services.

- Knowledge of OPM was very low, with approximately 70% of respondents claiming to know nothing about the pest. In general most respondents thought it was important to control OPM, based on what they had heard during the survey (i.e. information about OPM provided or inferred through questions).
- There was wide acceptance for currently used control methods such as spraying biological insecticide and physical nest removal. Spraying from the ground was thought more acceptable than aerial spraying. With aerial spraying, respondents in West Hampstead indicated manned aircraft to be more acceptable, but in Fulham the trend was marginally towards unmanned aircraft (i.e. drones).
- A mixed picture emerged as to whether i. knowledge, ii. attitudes to risk and iii. engagement with greenspaces, influenced acceptability of specific control methods. A higher proportion of respondents advocating taking no action against the insect were: female respondents; under the age of 24; did not intend to avoid greenspaces due to OPM; did not frequently visit greenspaces; and had low knowledge of the pest.

Health interviews with contractors

- This set of interviews aimed to identify and document the full range of health impacts experienced by contractors or managers dealing directly with OPM management and removal.
- The major risk from OPM was perceived to be the potential public health impact. Some contractors compared OPM with brown tailed moth and believed OPM to be a greater threat to public health. Contractors also felt that OPM should be framed as a public health issue not a tree health issue.
- OPM was considered to be a significant health risk to OPMCP approved contractors who, regardless of careful use of protective equipment, reported impacts to their health from dealing with OPM. These impacts were reported to increase in severity, i.e. have an increasing cumulative impact, over time.
- Contractors said they rarely reported health impacts from OPM partly because of a culture of machismo, and partly because they felt there was no effective system for doing so. There were suggestions that a reporting system held by a public body might be a good way forward.
- Contractors felt that there was an issue to be addressed around what action to take when they come across OPM unexpectedly whilst working on forestry and arboricultural jobs. Those issues included: training around reacting and managing an incident; clarifying responsibility for action (e.g. who deals with OPM and who pays); training and awareness about the health risks of disposing of OPM waste.
- Contractors believed that because of the relatively significant and recurring costs of OPM control, land managers were already turning to risk based management

limiting spending for OPM control to areas where there was significant potential contact with the public. They felt this meant that OPM occurring in areas of woodland or parkland with little public footfall was less likely to be subject to control measures.

Survey with health practitioners

- This survey was intended to complement additional efforts to monitor levels of OPM-related health impacts with public stakeholders, land managers and reported through social media. A list was drawn up of all pharmacies, general practitioner (GP) surgeries and veterinary practices (vets) in the two case study areas of Fulham and West Hampstead. There were 28 practices and pharmacies in total. A short survey was then developed to identify whether the practices and pharmacies were aware of the pest, and if they had any relevant reporting of OPM symptoms. Prior to distributing the survey in February 2018, the practices and pharmacies were contacted on behalf of the OPMCP to brief them about the research and ensure they would be willing to participate. All but two pharmacy sites in West Hampstead were willing to do so. The survey was then administered online to email addresses provided by the practices and pharmacies.
- Questions encompassed whether respondents had awareness of the pest, any experience of symptoms presenting and whether they would be willing to take part in monitoring efforts in the future.
- However, only three surveys were returned (one vet, two pharmacies) to the researchers representing a little over 10% of the small number of relevant public and animal health practices in the case study areas. No GPs responded to the surveys so the extent to which OPM-related health problems have been identified by them is unknown.
- Although results may be indicative, with such a small sample size little can be concluded concerning whether the lack of awareness and experience of reporting OPM symptoms represents the wider experience of veterinary practices and pharmacies in these case study areas.
- Only one pharmacy in Fulham had heard of OPM. This respondent reported using local newspapers and official information leaflets to find out about the pest. They were aware that they would expect to see dermatological symptoms from OPM, and that May to August was the expected period to see people presenting symptoms. The respondent reported that they had no experience of customers reporting OPM symptoms over the past three years. They did not wish to be part of monitoring activities going forward. The remaining two businesses had not heard of the pest but indicated they would be happy to be contacted for future research and monitoring activities.
- It is possible a short face-to-face survey could have been more effective in raising response rates. In the case of pharmacies this may have been highly effective if

conducted at quieter times. Face-to-face access to doctors and vets may be more problematic to arrange.

Using social media to evidence health impacts

- A feasibility study was undertaken to assess whether social media and online data could be used in research, evaluation and monitoring activities around OPM. The study aimed to test whether these data could be used to monitor communication impact, the occurrence of health problems related to OPM and to map potential stakeholders.
- A number of potential data sources were identified using the search term “oak processionary”. It was possible to gather usable data via Twitter and Google trends, using software in R and Python, across these messaging forums (e.g. Mumsnet, neighbourhood forums), Facebook, Google Trends and Twitter. Twitter posts had greater localisability and were a better indicator of sentiment and attitudes. These data were used as the main focus of the study.
- Choices for data collection include official Twitter application programming interfaces (APIs) and using scripts to scrape HTML code. There are some costs associated with the former, though the latter approaches may violate terms of service (with ambiguity around the legal enforceability of these terms).
- It is recommended that short subscriptions to official APIs can be a low cost way to gather historical data. Scheduled data gathering can be set up at no cost to monitor OPM related messaging on Twitter in the future.

Interviews with landowners outside case study areas

- Key landowners across London that have been involved in the OPMCP stakeholder consultations were interviewed to explore their attitudes, risk perceptions, experiences and behaviours relating to OPM management.
- A number of the interviewees highlighted the importance of oak species on the sites or across the areas for which they had responsibility and / or knowledge. Oak trees were highly prized by the interviewees and their comments on the value of oak encompassed many factors including: age and size; biodiversity values; links to the past; importance to the public; local landscape character and integrity of protected areas; and trees representing remnants of previous land use.
- Despite the high and multifaceted value that the interviewees attached to oak trees there was some variation in how certain they were about the number of oak trees in the areas they were talking about. The uncertainty about numbers and locations of oak trees raises important questions about how successful surveying for OPM nests is likely to be across some of the areas and sites.
- Almost without exception when asked what they thought the key risks or impacts OPM were, the interviewees first and foremost mentioned the risk to human health, including public health and occupational health. OPM was acknowledged

to be significant to the health of oak trees only as part of an accumulation of other impacts on tree health.

- Many of the interviewees expressed a view that the risks presented by OPM are rather low, and that the degree of risk is dependent on appropriate action to avoid exposure. A different perspective was that the potential risk is actually large and that it has so far been avoided because of effective management. A slightly different view was that the threat to oak trees themselves would not come from the pest but from the way that humans decided to manage OPM. The extent to which land managers had already experienced OPM appeared to influence their perceptions of risk.
- Where perceived risks of OPM were low this may in part be based on a lack of largescale experience, observation or evidence of significant damage or negative impacts arising from OPM in the UK. According to the interviewees, part of the problem about gathering evidence, was that many people may not realise when they have been affected by exposure to OPM.
- Barriers to management of OPM included: issues of knowledge; funding and costs of management; practicalities of surveying; possible shortage of trained contractor resource; conflict with conservation designations; competition with other organisational priorities; and the challenge of reconciling all stakeholder opinions about management.
- Interviewees were asked about future plans and expectations for management of OPM in the years ahead. The desire not to spray for OPM control extended across public, private and third sector land managers. The most frequently mentioned approach to future management of OPM was that of a risk-based approach, also referred to as a “target based approach”.
- Interviewees discussed how best to communicate with the wider community including stakeholders, neighbours, residents, visitors and the general public. One issue that was raised by a number of the interviewees was the need to get the balance right between informing people but not causing too much alarm.
- The interviewees shared their experiences of communicating with, and working with, neighbouring land managers over the issue of OPM. Generally, there seemed to be a lack of active co-ordination of management activities across boundaries and borders.
- Interviewees were asked what support land managers needed to help them manage OPM. Although there was an attempt to encourage interviewees to talk about issues other than funding, this remained the primary focus of responses. Nevertheless, when probed, the interviewees outlined numerous other more practical forms of support including: information provision and training; carrying out of surveying and other practical OPM management tasks; and a central contact point and OPM team to lend support.

Key messages

Value of oak

- Interviews with landowners and managers in the case study areas and stakeholders across wider London have emphasised that oak trees are greatly prized for many reasons including many factors including: age and size; biodiversity values; links to the past; importance to the public; and contribution to local landscape character. This value is important when considering the relatively low number of oak trees across parts of London. Thus, any action to protect oak trees is likely to receive high support.
- However, not all landowners and managers are aware of the location of their oak trees, which may have implications for monitoring for OPM.

Perception of OPM risks

- Concerns about OPM are situated within wider tree health risks (e.g. threats from vulnerable or unstable trees and falling branches), and other pests and diseases currently being experienced (e.g. box caterpillar or *Splanchnonema platani* on London plane trees), or those which have posed a problem in the past (e.g. brown tailed moth).
- There was some scepticism over the potential severity of OPM impacts amongst landowners, particularly from organisations managing multiple sites. However, there was acknowledgement from organisations that they risk reputational damage if they are not seen to be actively managing the pest. Additional interviews with landowners across London suggest concerns about public liability from exposure to OPM on their site.
- Interviews with contractors dealing with OPM suggest that a paucity of reported health impacts may be due to the continued control programme reducing the density and distribution of OPM.
- Additional interviews with landowners across London also highlighted the wider threat to the countryside if OPM continues to spread. Those with the most experience of OPM over longer time period were more concerned about OPM impacts.
- While landowners with oak were largely concerned with human health, the general public felt the biggest risk was to the oak trees themselves.
- The public in both case study areas who frequently used accessible greenspaces, also revealed high concern about tree pest and diseases. A high proportion agreed that it is important for OPM to be controlled. Members of the public who visited greenspaces less were more likely to advocate taking no action.

Health impacts

- The greatest concern amongst landowners was the risk posed by OPM to human health, particularly in sites that are accessible to the public. The greatest expressed concern is for children and other vulnerable groups.
- Evidence from landowners about any health impacts experienced, has been mainly anecdotal. Direct experiences of exposure to OPM and subsequent health impacts are rare. The public survey only provided two examples of people knowing someone (or an animal) that had been affected.
- However, contractors who are involved in control report a growing intolerance to OPM, and increased severity of symptoms from repeated exposure. Reported symptoms include itching, rashes, breathing problems and nausea. Contractors also provided anecdotal examples of people or animals suffering from OPM-related symptoms.
- There is a lack of reporting of OPM health impacts as part of occupational health and safety (H&S) or accident reporting. Contractors interviewed suggested that this was due to OPM not being regarded as a traditional or legitimate H&S issue at their business or organisation, and that some may feel they are making an unnecessary fuss about something as unremarkable as a rash.
- Landowners across London highlight that often people do not know they have been exposed to OPM.
- Also, there is no centralised recording system that could collate reports across London to provide a general picture of OPM impacts.

Managing for OPM and social acceptability of measures

- Most stakeholders accepted that they were responsible for managing OPM on the oak trees that they own or manage. Social norms around accountability and not wanting to 'pass on OPM' to neighbours were evident, particularly amongst private residents.
- However, the public survey revealed entirely different results. Respondents felt that government departments and agencies should be responsible for controlling OPM.
- There is still a lack of clarity in some sectors over who is responsible for removal of OPM and for paying the costs.
- Many of the larger landowners are already taking a risk-based approach by monitoring sites with higher footfall more frequently. In these cases, action is based on an assessment of likely contact with OPM. Additional interviews with landowners outside the case studies identified support for a risk-based approach but they also wanted control over decision-making and how and where to manage OPM.
- Nest removal is the most common method for managing OPM and is considered to be effective. Biological control was also largely supported but the interviews revealed a lack of knowledge about what this entails. There

was greater knowledge of these control measures amongst landowners outside of the case study areas.

- Preferences for nest removal and biological control were also supported by the public survey.
- Spraying generated the most discussion and concern amongst landowners. Landowner interviewees displayed a general lack of knowledge about what the OPM spraying programme entails. Concern appeared to be mostly about what is being sprayed than the method itself. Efficacy (e.g. that it is targeted and OPM will not return), and safety (e.g. impact of insecticides on vulnerable people and the wider environment), were key considerations. Some landowners and managers noted the general societal move away from chemical use to more 'natural' measures for managing pests. Spraying is generally timed to take place when there are fewer people around.
- Temporary zoning and signage is a common method to warn visitors and residents of OPM risk in publicly accessible areas.
- Despite concerns that people may fell oak trees as a way to permanently solve the OPM problem, there was no support for this measure amongst the landowners and managers interviewed. However, felling of affected trees was considered acceptable by respondents in the public survey.
- There was support during the landowner interviews for the potential use of UAVs (drones), but there is a need for clarity over privacy and data protection issues if this method were to be used.
- There are differences of opinion over whether the OPM control programme has been effective to date. Landowners across London suggest that while they believe control has been effective at the site level, there is confusion over why the pest is still spreading. Some attribute this to the perceived slow response when OPM presence was first identified.

Challenges and barriers to OPM management

- Generally, knowledge and awareness about OPM is low amongst private residents and interviews revealed there is less awareness about OPM in West Hampstead than Fulham. However, while the public survey also revealed low awareness of OPM across both case study sites, a higher proportion stated they had encountered information on OPM in West Hampstead. Land owners/managers with publicly accessible sites have higher awareness of OPM but lack in-depth knowledge about the OPM life cycle and implications of different control measures. There was higher knowledge about OPM amongst landowners and managers interviewed outside the case study areas.
- Financial costs (actual and perceived) are a significant concern for all stakeholders and will have implications for whether OPM control is carried out in the future. Costs to control OPM may be harder to justify where there are no 'duty of care' obligations.

- OPM management, particularly spraying, may conflict with biodiversity and conservation designations.
- There are some potential ethical concerns about repeatedly exposing staff and contractors to the risks involved in removing OPM.

Networks

- It was agreed amongst interviewees that collaboration at the landscape scale is an important component of OPM management but due to fragmentation of ownership/responsibility there is a lack of active co-ordination of management between neighbouring landowners and managers.
- Amongst the landowners and managers interviewed the most trusted organisations to provide information were the Forestry Commission, London Tree Officers Association (LTOA) and the Royal Horticultural Society (RHS).
- The continuation of a dedicated OPM manager to coordinate control efforts and encourage networking could be a useful tool going forward.

Communication, support and information needs

- Clear messages are needed over who is responsible for OPM removal (and paying for it).
- There is a need for clarity over management options, where to find suitable contractors, reliable estimates of the costs of different control methods and what support is available financial or otherwise (and from whom).
- There is a concern that communicating about OPM will create unnecessary alarm. However, most landowners and managers were keen to receive support in the form of: timely reminders about the need for OPM control; reminders about control options; regular updates about the wider status of OPM, including new research; sightings and distribution of OPM including early warning.
- While concern was raised during the landowner and manager interviews about the efficacy of signs at sites (i.e. 'nobody looks at them'), the public survey indicates that signage and printed information were considered to be the most useful sources of information.
- Face-to-face contact with tree professionals who know something about OPM has been highlighted as a useful information source and mechanism for learning across all stakeholder categories.
- Contractors highlighted a need for training on handling OPM waste and how to handle potential health risks to themselves.

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