Committee(s)	Dated:
Epping Forest and Commons	11 September 2017
Subject: SEF 22/17 Review of Ramorum disease control in Epping Forest	**Public**
Report of: Superintendent of Epping Forest	**For Action**
Report author: Dr Jeremy Dagley – Head of Conservation, Epping Forest	

Summary

Sudden Oak Death, *Phytophthora ramorum*, or more appropriately "Ramorum disease", was discovered in Epping Forest in September 2016 as part of the annual tree health monitoring regime that has been conducted by the Conservation Section for nearly a decade. This disease can kill beech trees and so is considered a severe threat to the internationally-important beech population of Epping Forest Special Area of Conservation (SAC).

In November 2016 a policy of complete removal of rhododendron and larch from Forest and buffer land sites was approved because of the severe risk posed by these Ramorum disease-hosting plants. The highest priority was given to removal work at the infected site at The Warren Plantation, and two nearby sites at Conybury Wood and Oak Hill where the rhododendron was extensive and close to ancient beech trees. The main clearances of rhododendrons at The Warren Plantation, Oak Hill and Conybury Wood were completed, apart from small patches, by March 2017.

However, with the discovery of a second infected site at Wanstead Park it seemed likely that Ramorum disease was more widespread in the environment, rather than being introduced through a single source of infection as had been thought previously. In the light of this new information, a consideration of the significance of the historic plantings at Wanstead Park and an assessment of the level of risk reduction that might be achieved by further clearance work a modified policy is proposed in this report.

Instead of continuing with complete removal at all sites by the end of 2018, it is now proposed to continue removal at key sites close to the beech SAC populations in the northern half of the Forest, whilst monitoring the two historic sites in the centre and south of the Forest, at Wanstead Park and Knighton Woods.

Recommendation(s)

Members are asked to:

- approve a modified policy of partial removal (**Option 2**), which involves the complete clearance of Rhododendron from three key sites over the next 2 -3 years and the retention, for the time-being and with at least annual monitoring, of two historic sites in the Forest;
- approve the annual review of this policy in the light of the Ramorum disease and tree health monitoring results and any new information about the disease.

Main Report

Background

1. Ramorum disease, *Phytophthora ramorum,* was first found in England in 2002 in Cornwall. It is related to Potato Blight and Ramorum disease is not caused by a fungus but by an organism more closely allied to plants. However, it does spread by spores, like a fungus, and spreads faster in damp air. Of greatest concern for Epping Forest, it is known to cause disease and death in mature beech and sweet chestnut trees.

2. Epping Forest is amongst the most important sites for beech conservation in Europe and it is designated as a Special Area of Conservation (SAC) for beech forest and a Site of Special Scientific Interest (SSSI) for beech wood-pasture. Therefore, this disease poses a significant threat to the Forest's status, health and future favourable condition. The Forest, especially Wanstead Park and its environs, is also important for historic Sweet Chestnut plantings, some of which contain ancient trees.

3. As rhododendron has been identified as a key host plant, and is present across the Forest in eight main localities, this has been the focus of monitoring work for the last nine years (see map of rhododendron distribution in the Epping Forest Overview Map in **Appendix 1**). In addition, a full survey of the City Cemetery & Crematorium was conducted last year and this has been included in the list of future monitoring sites. In more recent years, Larch has also been carefully scrutinised for symptoms because of the discovery that Ramorum could produce many times more spores and spread them further from this host.

4. Ramorum disease was discovered in Epping Forest in September 2016 as part of the annual monitoring outlined above. The first discovery concerned three rhododendrons that were found with symptoms at The Warren Plantation

5. Following the issue of a Statutory Plant Health Notice (SPHN) by the Animal & Plant Health Agency (APHA) for Warren Plantation, these infected bushes were removed in November 2016. A recommendation for complete removal of rhododendron from all Forest sites because of concerns about Ramorum

disease's impact on both beech and sweet chestnut populations was approved by Committee in the same month.

6. Following a capital grant application under the Environmental Stewardship Scheme, Forestry Commission (FC) provided £47,409 towards the costs of the removal from three of the main sites within 3km radius (a requirement of the grant) of the infected bushes.

7. By March 2017 rhododendron removal had been completed (except for a few areas immediately around badger setts – see **Table 1** below) by a combination of City of London arborist teams and contractors at Conybury Wood, Oak Hill and Warren Plantation (see also *Financial Implications* below). The remaining rhododendron around the badger setts will be removed before the end of December 2017 under a Natural England licence which has been applied for this summer.

8. In addition, a large amount of work on removing rhododendron at a fourth site, Paul's Nursery, was completed by volunteers organised and directed by Epping Forest Centenary Trust (EFCT – see **Table 1**). This considerable effort has enabled a significant dent to be made in the cover of rhododendrons here, where no grant-aid was available as these bushes lay outside the 3km radius of the original Warren Plantation infection location. Paul's Nursery also lies close to important ancient beech populations and so is a critical site for controlling potential disease vector plants.

Table 1

Site	Area cleared (ha)	Remaining (ha)	Comments
Warren Plantation* (adjacent SSSI)	11.25	0.06	Area around badger sett retained and to be removed before end December 2017 under consent and licence from Natural England
Oak Hill (within SSSI)*	2.2	0.1	Area around badger sett retained and to be removed before end December 2017 under consent and licence from Natural England
Conybury Wood * (Buffer Lands)	1.28	0.11	Area around badger sett retained and to be removed before end December 2017 under consent and licence from Natural England
Paul's Nursery (within SSSI)	Not measured – smaller areas cleared	Majority still to be cleared	Thanks to EF Centenary Trust (EFCT) volunteers for removal of the smaller areas of rhododendron here in 2017. Larger areas to be completed by contractor in 2017-18.
			**Maps available upon request – for internal City of London circulation only*

9. In February 2017 FC scientists confirmed that samples sent in from the Epping Forest monitoring work at Wanstead Park were infected. The infected samples came from one rhododendron bush and a neighbouring holly bush close to Ornamental Water (see map in **Appendix 2**). As a result, a second SPHN was

served by APHA and the two infected bushes and other bushes from within a 10m radius were removed and burnt in March 2017.

10. This second discovery from the south of the Forest suggests that the Ramorum organism is more widespread in the environment than expected and that there have probably been multiple sources of infection into the Forest. The current position and management policy was reviewed in the light of this new information and forms the basis for the proposals in this report.

Current Position

11. This new information on the distribution of Ramorum was discussed with the FC Principal Pathologist this summer. FC agrees that Ramorum is probably in the wider environment now but FC does not have enough data to know whether Ramorum is in quantities that would be a serious threat outside the known infected sites. Therefore, the FC position remains the same, which is to remove all infected plants as soon as they are found, and to also remove a zone of between 10 – 100m around them. This is to keep the level of spores as low as possible and prevent their build up in the air.

12. Ramorum sporulates from living vegetation only and so it is important to maintain regular treatment of any regrowth of rhododendrons or other previously infected plants. Regrowth from the roots of mulched rhododendron in The Warren Plantation will be monitored annually for the foreseeable future and all new growth will be sprayed off. At Oak Hill and Conybury Wood the pulling of plants has reduced the likelihood of regrowth significantly as most of the root mass has also been removed and destroyed.

13. Current information on the spread of the disease from discussions with FC staff suggests that Ramorum does not seem to spread too far from rhododendron host plants onto other host species such as beech – maybe no more than 50 – 100m at a time and often it requires closer contact. However, this is based on limited data from SW England and so caution needs to be exercised in its interpretation. Ramorum does however, spread in very large quantities and for much bigger distances from larch and some other tree host species, including sweet chestnut (see para 15 below).

14. In the north and centre of the Forest rhododendron remains at three main sites, St Thomas's Quarters, Paul's Nursery and Warren Plantation. As these bushes are close to the beech populations, and even intermingled with them at the first two sites, it is recommended that the current policy of complete removal should continue to apply to these sites.

15. The removal of the larches at Warren Plantation has been put out to tender. These trees are particularly susceptible to the disease and have been shown to spread huge numbers of spores very widely in the environment. FC has had a policy of pre-emptive removal of these trees from near infected regions and, therefore, the removal of these trees is still proposed for completion in this financial year 2017-18.

16. In addition, the SPHNs prohibit the removal of soil and susceptible plant materials from the two infected sites in the Forest – Warren Plantation and Wanstead Park - and these restrictions remain in force. It also makes it a statutory requirement that all and any staff or contractors entering the site and coming into contact with susceptible material – which includes trees and shrubs - must remove soil and plant debris from equipment and footwear and disinfect these with *Propellar* ® or *CleanKill* ®– (standard anti-bacterial disinfectants do not kill Ramorum).

Options

17. Given that Ramorum may be more prevalent in the environment than originally understood, a review of the current policy of complete removal of rhododendron within two years is considered worthwhile and the options are assessed below in paragraph 20.

18. For the areas where rhododendron has been removed, it is recommended that annual monitoring of regrowth should continue and any new live growth should be destroyed by spraying (on-foot with a lance) with herbicide or, if large enough, by uprooting. The August 2017 survey has revealed patchy regeneration of rhododendron which should involve about two days' spraying work this year.

19. It is also recommended that future removal of rhododendron or other susceptible shrubs should be carried out by uprooting rather than mulching where possible, following the success of the work at Conybury Wood and Oak Hill.

20. For the remaining areas of un-cleared rhododendrons (see map at Appendices 1, 2 and 3) there are three main options for your Committee to consider:

    a. **Option 1** – **reactive only** – continue with annual monitoring and no further clearance work other than that required by future discoveries of infected plants and the subsequent SPHNs from APHA or the FC.

       Although the majority of rhododendron has been removed, revising the management approach to *reactive-only* is still not recommended because of the amount of rhododendron that remains close to the internationally-important beech populations at St Thomas's Quarters and Paul's Nursery and to some extent at The Warren (close to Bury Wood keystone beech trees). Some of these rhododendrons are within a few tens of metres of ancient beech trees and the possibility of cross-infection based on the latest information from FC (see above) remains high (see paras 11 & 14 above).

    b. **Option 2** – **partial removal by end of 2018 (or 2019 for Warren House)** of rhododendron from beech sites (St Thomas's, Paul's Nursery and Warren House) only, with complete removal from all sites remaining an option in the longer term. Nearby private properties close to these beech trees may also be contacted through a letter drop to see if the owners would be willing to allow their rhododendrons to be checked.

In the meantime, on the two southern parkland/garden sites of Wanstead Park (0.76 ha plus scattered bushes) and Knighton Woods (1.43 ha), and at the City Cemetery & Crematorium, continue annual monitoring and habitat management clearances of invasive bushes only. Any infected bushes would of course be removed immediately. There would be an annual review of this position in which complete clearance would remain an option for the future should the level of infection indicate such action was required.

In addition the complete removal of larch at The Warren Plantation, and from smaller stands in woods at Copped Hall, would be completed as approved previously (see paragraph 15 above).

c. **Option 3** – **complete removal now**: continue with current policy of complete removal by end of 2018. This would involve clearance from all other remaining sites (see **Appendix 1** map) including Knighton Woods and Wanstead Park and finding and destroying all outlying plants (e.g. escaped into Forest from private gardens or at Forest lodges). To preserve the small number of locally significant varieties identified at Wanstead Park and Knighton Woods, specialists would be encouraged to take cuttings and grow on new plants at suitably-equipped nurseries.

Proposals

21. It is recommended that **Option 2** is adopted as a modification of the previous policy approved last November. This modified position would take account of the good progress with removal from and control of regrowth near the SAC beech sites whilst allowing more time to accommodate further removal work from other sites over a longer period of time (e.g. at Knighton Woods).

22. This modified approach would also allow some of the historic plantings to be retained for the time-being under close monitoring. A recent review of the Wanstead Park rhododendron information, for example, leaves open the question as to whether these plants are remnants of the original plantings. Therefore, whilst not important as individual cultivars they may represent an important historic planting.

23. This alteration of policy also takes into account that in the more urban areas of the Forest, such as Wanstead and Knighton, with Ramorum probably present more widely, there are likely to be multiple sources of infection from external sites within tens or hundreds of metres of the Forest boundary. Of particular significance there are also the historic and memorial City Cemetery & Crematorium plantings to be taken into account. Therefore, rhododendron removal work here may not reduce the risk as much as desired for the effort expended. Nonetheless, annual or more frequent monitoring for the disease here remains critical, as it does at the City Cemetery, especially monitoring of susceptible tree species, like sweet chestnut, as well as rhododendron.

Implications

24. **Corporate & Strategic Implications:** the options and proposals in this report meet the *City Together* Strategy by contributing to "*a world class City that promotes and enhances our environment*". In relation to the Open Spaces Department's Business Plan Improvement Objectives, this report meets the objective to "*promote sustainability, biodiversity and heritage*"

25. **Health Implications:** there is no public health risk from Ramorum disease.

26. **Financial Implications:** of the FC grant, £46,528 was received from FC for the works completed by March 2017. The remaining £881.60 is pending and will be claimed once the final works around the badger setts is carried out. This work will be carried out under a Natural England licence, which has been applied for this summer, and will need to be completed before the end of December 2017 to ensure that there is no disturbance during the badger's breeding season. The final claim under this grant will then be made in this Financial Year ending March 2018.

27. The costs of maintenance of these cleared sites by spraying of regrowth with herbicide or its removal by flailing will need to be covered by annual local risk budget expenditure. However, the evidence from surveys this summer suggests that the regrowth from the mulched areas is patchy only and the uprooted areas remain clear. There should be no more than two days' hand-spraying work to be done and the estimated cost of this herbicide spraying for 2017 would be less than £2,000.

28. Further grant aid may be possible for removal work within 3km of an infection site and so a grant application for the area at St Thomas's Quarters is to be made to FC. The area covered is less than 1 hectare and so any grant sum would be less than £2,000. Any work at Wanstead Park may also attract a grant in future and any application will be reviewed in the light of proposed management. However, as the area covered is around 0.76 ha, any grant-aid would be no more than £2,500.

29. The proposed rhododendron removal sites at Paul's Nursery and Warren House are not open for grant aid. Therefore, dependent on the level of clearance work that the EFCT may wish to agree to undertake, the costs of the remaining removal work, especially of large blocks, will need to be found from current Local Risk budgets. The rhododendrons cover about 1.3 hectares at Paul's Nursery and 0.15 hectares at Warren House and based on last year's operation the likely cost for uprooting and removal work here would be around £5,000 depending on how much volunteers' would consider tackling and over what period.

30. The proposed larch felling and removal in The Warren Plantation is currently out to tender through City Procurement. As the larch is not currently infected the aim is to sell the wood for a small profit or, at least, for it to be removed at cost.

31. Further *Rhododendron* clearances are likely to be carried out by a combination of mechanical and hand clearance work (the latter by volunteers where possible).

The use of contractors with a 360 digger to pull the rhododendrons up by their roots proved highly successful and it reduces the requirements to treat re-growing stumps with chemical herbicides in future years, thereby reducing the costs of future maintenance.

32. **Legal Implications:** the requirements of the current Statutory Plant Health Notice (SPHN) and any subsequent SPHN as served under the Plant Health (Order) England 2015 must be adhered to in all operations by staff and contractors. In addition, any clearance and tree work must receive the required consents and permissions under the other relevant legislation protecting the Special Area of Conservation, Site of Special Scientific Interest, Registered Parks and Gardens and Conservation Areas. The work around the badger setts will be carried out under a specific time-limited protected species licence from Natural England.

Conclusions

33. Following the discovery of a second site of infection of Ramorum disease at Wanstead Park, a review of the disease control policy was undertaken. In the light of the success of rhododendron removal work from sites close to the internationally-important beech populations, which attracted significant Forestry Commission grant support, it is considered that clearance work at the three key remaining sites close to ancient beeches must be completed. In addition, the removal of larch at The Warren Plantation would be carried out alongside this work. However, for the remaining two sites at Wanstead Park and Knighton Woods it is proposed that the rhododendrons here should not be removed this year and instead that detailed monitoring of their health should continue instead.

34. It is further proposed that this modified policy is subject to an annual review by Committee to take account of the monitoring results and all other new information on the disease.

Appendices

- Appendix 1 – ***overview map*** *of the locations of main rhododendron areas in the Forest and buffer lands*
- Appendix 2 – *map of rhododendron areas and notable individual rhododendrons at* ***Knighton Woods***
- Appendix 3 – *map of rhododendron areas and notable individual rhododendrons at* ***Wanstead Park***

Dr Jeremy Dagley
Head of Conservation, Epping Forest
T: 020 8532 5313
E: jeremy.dagley@cityoflondon.gov.uk