

SURVEY OF CHEARSLEY HORSE-CHESTNUT TREES

SEPTEMBER/OCTOBER 2019

1. Introduction

Chearsley horse-chestnut trees are being attacked by a variety of pests and diseases leading to early leaf die back and a reduction in the size and number of conkers. The horse-chestnut is not a native tree to the UK, it was introduced from the Balkans and Eastern Mediterranean in the 16th or 17th century. Consequently, most of the trees exist in parks, hedges or gardens, many of them having been planted in their current locations.

2. The Leaf-Mining Moth

This tiny little moth (*Cameraria ohridella*) arrived in the UK from the continent in 2002 and has spread from London to most parts of England and Wales but not further north than Newcastle. The moth produces caterpillars that mine the inside of the horse-chestnut leaves. Each caterpillar living inside the leaf produces a blotch about the size of the cap of a ball point pen. Blotches are initially pale but then turn brown and spread as the caterpillar mines the leaf. The impact of the moth can be quite severe but does not kill the trees. However, it does reduce the photosynthetic capacity of the tree and this impacts on the number and size of the conkers and their viability. It also means that the tree produces less food for itself and this makes it vulnerable to other stress factors such as disease, drought, storms, etc.

Photo of a leaf taken from the big tree on 11 July 2019



The above leaf shows the activity of the leaf miner between the veins of the leaf

The adult moths are up to 5mm in length and are a metallic chestnut brown with white stripes edged in a black stripe. They appear from April mostly from overwintered pupae in leaf litter. Eggs are laid on leaves from May to August and the adults lay hundreds of eggs

which develop into caterpillars after two to three weeks. The larvae develop over a period of about 4 weeks inside the leaf and then pupate. There can be 3 to 5 generations per year depending on the weather.

There appears to be only one means of control at the present time and that is through the use of pheromone traps. The trap contains a pheromone lure that attracts the male horse-chestnut leaf miner moths in large numbers where they are captured and perish which leads to reduced mating and reduced egg laying. The traps do not completely control the leaf miner or totally stop the damage they cause but continued use of the traps over several seasons does reduce the damage caused and can mitigate against early leaf fall.

Traps can be bought from commercial suppliers for about £16 plus the cost of the pheromone lure. Before the trap is placed in the tree the pheromone lure is put into the top of the trap. A small amount of water and detergent is added to the trap to ensure that the adult males do not escape. It is recommended to hang one trap per tree by April. Each pheromone lure lasts about 6 weeks. After this period the traps need to be emptied and a new pheromone lure added before replacing in the tree. This process needs to be repeated at least 3 times from April to the end of August to ensure that all generations of leaf miners are caught. In the autumn the traps can be removed, cleaned and stored for use the following season.

It is also important to remove leaf litter in the autumn and to burn it. This will significantly reduce the number of overwintering pupae.

All of the trees surveyed in Chearsley are infected.

The results of the September/October Chearsley Horse-Chestnut Tree survey are presented at Appendix 1.

3. The Leaf-Blotch Fungus

This fungus (*Guignardia aesculi*) lives inside the horse-chestnut leaf and the only sign of the presence of the fungus is the damage it does to the leaves. It produces brown blotches on the leaves that are irregularly shaped and have a yellow ring around their edge. These brown blotches can be easily confused with leaf miner damage but the leaf miner damage does not have a yellow ring round it. This is not a serious disease although it is unsightly. The damage happens mainly in late summer and it is especially prevalent in the damper climates of western Britain. It was accidentally introduced from North America about a century ago.

No evidence of this disease has been seen in the Chearsley horse-chestnuts and none of the trees surveyed in Chearsley are affected.

4. Bleeding Canker

Many different organisms can cause symptoms called bleeding canker and the current disease is caused by a bacterium (*Pseudomonas syringae* pv *aesculi*). The current epidemic has been in the UK since the year 2000. The most obvious symptoms are the black weeping wounds from the tree trunk and rust coloured stains on the bark. The disease clogs up the internal vascular vessels of the tree (phloem, xylem and cambium) and this is extremely

serious and is likely to cause the ultimate death of the tree. Individual trees may cope with the disease for many years but in serious cases it can cause tree boughs to die and drop off without warning. It will be worth checking the Chearsley horse-chestnut trees on an annual basis to assess the presence of the disease and potential risks.

None of the trees surveyed in Chearsley showed any symptoms of this disease.

5. Recommendations

- 5.1 The Parish Council should make the residents of Chearsley aware of these threats, particularly the leaf miner and encourage them to take control measures. (Note: Virtually all of the trees surveyed are on private land.)
- 5.2 The Parish Council should buy at least one pheromone trap and the necessary pheromone lures to protect the big horse-chestnut tree on the road junction.
- 5.3 A working party should be organised at the end of leaf fall in the autumn to remove and destroy the leaf litter around the big tree – every year.
- 5.4 Appoint someone to place the pheromone trap in the big tree at the beginning of April and replenish the pheromone lure as prescribed up to the end of August – every year.

Ian Houseman

16 October 2019

References:

Conker Tree Science, 2019: University of Newcastle; Centre for Ecology and Hydrology; NERC.

Webster, Ben, 28 September 2019: “Conkers shrink as the horse chestnut fights for survival”; The Times, London.

Horse Chestnut Leaf Miner Trap, 2019: Harrod Horticultural.

APPENDIX 1

LEAF MINER SURVEY – SEPTEMBER/OCTOBER 2019

Aylesbury Road – 26 September 2019

No.	Severity	Location	Conkers
1	VS	Garden	#
2	S	Garden	#
3	S	Garden	#
4	S	Garden	#
5	S	Field hedge	#
6	MS	Field hedge	#
7	S	Field hedge	#
8	MS	Field hedge	# -
9	S	Field hedge	# -

10	S	Field hedge	# -
11	ES	Field hedge	# =
12	MS	Field hedge	#
13	MS	Field Hedge	# -
		Gate to Toby's field	
14	S	Field hedge	#
15	MS	Field hedge	# -
16	M	Field hedge	# +
17	S	Field hedge	# -
18	S	Field hedge	#

Chilton Road – 2 October 2019

No.	Severity	Location	Conkers
1	VS	Garden	# =
2	S	Garden	# -
3	VS	Garden	# -
4	S	Garden	#
5	M	Roadside	#
6	VS	Garden	# -
7	VS	Garden	# -
8	VS	Garden	# -
9	S	Garden	#

Other trees in Chearsley – 29 September/ 2 October 2019

No.	Severity	Location	Conkers
1	VS	Allotment	# =
2	S	Church Piece/Old Chapel	#
3	M	Junction (big tree)	#

Key:

Severity: M – moderate infection, MS – moderately severe, S – severe, VS – very severe, ES – extremely severe

Conkers: # normal numbers and size, # - fewer in number and smaller in size, # = very few in number and very small

Summary:

Thirty trees were surveyed in and around Chearsley and all were infected with leaf miners. Only 3 trees had moderate levels of infection, 5 trees had moderately serious levels of infection, 14 trees had serious levels of infection, 7 trees had very serious levels of infection and one tree was extremely seriously infected with virtually no leaves and two conkers.