



## Horsechestnut Leaf Problems

Dawn Dailey O'Brien and George Hudler, Department of Plant Pathology & Plant-Microbe Biology, Cornell University

During this time of year, when the horsechestnut (*Aesculus hippocastanum*) is in full flower—showing its prominent white or pink flowers that grow in up to 12 inch long clusters at the branch tips—it's easy to understand why this tree is so admired. However, *Aesculus* spp. are also threatened by pests and pathogens that are likely to cause premature leaf dieback and abscission, and it's worthwhile now to be thinking about them as we move inexorably (We know! We hate to bring this up so early!) toward the end of summer.

### Horsechestnut Leafminer (*Cameraria ohridella*)

One leaf-feeding pest that is luckily not yet in the U.S. but could show up at any time is the horsechestnut leafminer. This insect was first formally described on specimens from Macedonia in 1986 but further investigation revealed that it had been inadvertently pressed in herbarium specimens in 1879. So who knows how long it's actually been around or where it came from?

The larvae of this small brown moth feed inside host leaves, feeding between the upper and lower epidermal layers to ensure self protection, causing mines to develop between the leaf veins. Initially the mines are light colored and fairly narrow and winding, but later these mines become large blotches. With heavy infestations, entire leaves and trees may turn brown later in the summer. As each affected leaf begins to dry, it curls upwards and inwards at the edges and is shed prematurely. Unlike other leaf troubles described below, there is some concern in Europe that the leafminers may, in fact, be detrimental to tree health. This is because the insects are unusually tolerant of a combination of factors including extremely cold temperatures (that have no effect on survival of overwintering pupae); survival of the pest in hot, dry weather; and inadvertently easy spread by humans. In addition, there are multiple generations of the pest that lead to rapid buildup of populations. (GWH note: I probably took two dozen pictures of infested trees while in Germany several years ago, planning to show NY arborists that horsechestnut leaf blotch was everybody's problem, partly because it was soooo bad! Only later did I bother to look closely enough to discover my grievous error. If you start seeing "blotched" *Aesculus* ever, for goodness sake look twice and call if you see *anything* out of the ordinary.) This, plus our resident leaf blotch could be a real deal-



Horsechestnut leafminer damage on horsechestnut leaves © Milan Zubrik, Forest Research Institute—Slovakia, Bugwood.org

### Horsechestnut Leaf Blotch (19) (*Guignardia aesculi*)

Blotch lesions of this disease, caused by the fungus *Guignardia aesculi*, begin to appear on infected horsechestnut leaves in early June. The lesions first appear as water-soaked irregular areas that enlarge rapidly. Within a few days they turn reddish brown, often bordered by a yellow band. *This yellow band helps differentiate the disease from the brown patches caused by horsechestnut leafminer.* Later, tiny black pimples (pycnidia) appear on the browned spots. This disease disfigures the foliage of horsechestnut and buckeye, and is typically most severe in plantings where tree crowns are close together because dense foliage prolongs leaf surface moisture; thus spore germination and infection. Later in the summer severely affected trees look seriously scorched, and blighted portions of leaves are a bright reddish brown color with a yellow margin. Large lesions coalesce and cause curling and distortion. The leaves may be so severely affected they may fall prematurely.

Although the disease causes extensive damage to leaves virtually every year, it rarely influences tree growth because it tends to develop after most of the annual growth of the plant is complete. To manage minor infections the fallen leaves should be removed and destroyed in the autumn to limit inoculum for next year. Chemical control efforts must be started early the next growing season to prevent recurrence. For severely infected plants, spray with an appropriate fungicide 2–4 times at 10–14 day intervals beginning when buds open. The following species or varieties reported to be resistant include *Aesculus x carnea*, *A. arguta*, *A. glabra* var. *monticola*, *A. glabra* var. *sargentii*, *A. parviflora*, and *A. parviflora* var. *serotina*.



Horsechestnut leafminer damage on horsechestnut leaves © Milan Zubrik, Forest Research Institute—Slovakia, Bugwood.org



Horsechestnut leaf blotch symptoms © George Hudler



Horsechestnut leaf blotch symptoms © George Hudler

### Horsechestnut Leaf Scorch

Occasionally, and without satisfactory explanation, the margins of horsechestnut leaves turn brown and curl up during mid-summer. For a long time, we blamed the symptoms on deicing salt and even featured them prominently on a “Deicing Salt Injury” extension bulletin. Compacted soils and unfavorable weather conditions (either very hot and dry or very wet) seemed to increase the severity of leaf scorch, but despite our best efforts, we just saw too many inconsistencies in scorch incidence to continue to blame it on salt with a clear conscience. Some trees will show symptoms of this problem year after year, regardless of the weather or exposure to salt; less frequently, others will show occasional symptoms but those symptoms won’t persist. GWH note: If I had it to do all over again (and I don’t) I’d do a thorough workup of affected trees for presence of a pathogen that causes marginal scorch in so many other species of trees (e.g. oak, elm, sycamore): *Xylella fastidiosa*. You can read more about that on pages 195–96 of our recently published “features” compendium, but be advised that so far, connection of horsechestnut leaf scorch with *Xylella* is only a hunch! From a diagnostic standpoint, horsechestnut leaf scorch differs from real blotch because the latter have conspicuous—albeit very small—black dots in center of each blotch.

**Some trees will show symptoms of this problem year after year.**



Leaf scorch on horsechestnut © George Hudler

### Horsechestnut Powdery Mildew (*Erysiphe flexuosa*)

Powdery mildew, caused by the fungus, *Erysiphe flexuosa*, is usually a minor disease on horsechestnut. The infection first appears as small white spots on the leaves, eventually expanding until the mat of powdery white coating covers the affected leaves. (Powdery mildew on each host is a different species of fungus but they all look very similar when examined in the field.) Severe infections of powdery mildew can also cause distorted, stunted or yellowed leaves later in the season.

Warm, humid days and cool nights, increase the severity of infection. Unlike most fungus infections, powdery mildew is favored by dry leaf surfaces and high humidity. The fungus causes little long-term damage and rarely needs treatment except in severe cases. Then, relatively benign materials like potassium bicarbonate and horticultural oil seem to provide adequate control. Treat when mildew appears on the leaf surface. Check labels for cautions at various times during the growing season to minimize chances for phytotoxicity.

**Warm, humid days and cool nights, increase the severity of infection.**



Powdery mildew on horsechestnut. © Dawn Dailey O'Brien



Powdery mildew on horsechestnut. © Andrej Kunca, National Forest Centre—Slovakia, Bugwood.org.