

Box elder

ALSO KNOWN AS: Manitoba maple, ashleaf maple, poison ivy tree

COMMON SIGNS OF ISHB INFESTATION: Staining, frass

Box elder (*Acer negundo*) is native of both California and much of North America. A quick growing tree that belongs to the maple family, it was once frequently planted as an ornamental street tree but has fallen out of favor. Natural box elder groves can be found in Central to Northern California. It can grow to a height of 25-50 feet and often has multiple trunks. Its crown is typically broad and ragged. Flowers lack petals and are yellowish green, while seeds hang in long clusters and stay on trees throughout the winter.



Examples of box elder leaves (R), flowers (S), and tree shape (T).



Staining (N, O) and frass (P, Q) caused by ISHB on box elder.



For more information about identification and management of ISHB-FD, visit:

www.ishb.org

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Three Preferred Host Trees of Invasive Shothole Borers

... A Field Guide ...

Invasive shothole borers (ISHB) are beetles that tunnel into trees and introduce a fungal disease called Fusarium dieback (FD). The disease interrupts the flow of nutrients and water within the tree and causes decline, branch dieback, and eventually tree death.

The main sign of infestation by ISHB-FD is the presence of small, perfectly round **beetle entry holes** (~0.8 mm; about the size of the tip of a medium ballpoint pen) located in the trunk and/or branches. Other signs and symptoms, like staining, gumming, sugar-like buildups, and frass (resembles fine sawdust) often accompany entry holes.

Although more than 65 tree species found in California can support ISHB reproduction and fungal growth, the beetles appear to prefer certain host species, including box elder, sycamores, and willows. This guide is intended to be used as an aid in identifying signs and symptoms of ISHB infestation in these hosts, and is **not a reference on what species to plant/avoid planting.**



California sycamore

ALSO KNOWN AS: Western sycamore, California plane, Aliso

COMMON SIGNS OF ISHB INFESTATION: Wet staining, frass

California sycamore (*Platanus racemosa*) is a common tree in the urban forest. It is recognizable by its extremely large leaves – up to 10 inches – and smooth bark that peels away. It is native to California, where it commonly grows in canyons, floodplains, and along streams. It is a large, tall tree with a fast growth rate (can grow to more than 100 feet tall). They typically have a single trunk, but may have multiple trunks.

Other non-native sycamore species present in California (e.g. London plane, Mexican sycamore, American sycamore, and old world plane) are also susceptible to ISHB-FD and show similar symptoms.



Examples of California sycamore tree shape (A), leaves (B), and bark (C).



Wet staining and entry holes on California sycamore (D, F) and London plane (E).



Red willow (G); Goodding's black willow leaves and flowers (H); arroyo willow leaves (I).



Willows

COMMON SIGNS OF ISHB INFESTATION: Dark staining, frass

Although only four of California's 32 native willow species have been confirmed as hosts for ISHB, it is suspected that the other species might also be susceptible. Confirmed hosts are red willow (*Salix laevigata*), arroyo willow (*S. lasiolepis*), Goodding's black willow (*S. gooddingii*), and weeping willow (*S. babylonica*). Willows are generally fast-growing trees commonly found in riparian areas. Branches are long, slender, and often drooping. Leaves are typically elongated, often with serrated edges. Most species are deciduous.

Staining (J, K, L) and frass (M) on willow trees.

