A Screening Aid for the Identification of the Walnut Twig Beetle, *Pityophthorus juglandis* Blackman

James R. LaBonte
Plant Protection and Conservation Programs, Oregon Dept. of Agriculture, Salem, OR

Introduction: The walnut twig beetle (WTB), *Pityophthorus juglandis* Blackman (Scolytidae), is a small (~2 mm long) bark beetle native to the southwestern United States (AZ, CA and NM) and northern Mexico (Chihuahua). WTB has been responsible for the decline and death of walnut trees outside its native range. It is the vector of a fungus, *Geosmithia morbida*, causing thousand cankers disease (TCD), resulting in twig and branch die-back and, ultimately, tree death. Detection of WTB and TCD in the eastern U.S. raises concerns about the impacts on eastern black walnut and butternut in their native ranges. Early detection and identification of WTB may aid management of TCD in areas where these pests are as yet unknown. This screening aid will help differentiate WTB from other bark beetles from trap samples or specimens collected directly from suspect walnut trees.

Reality check: There are more than 100 species of *Pityophthorus* in North America and identification to species can be difficult since these are very small beetles and the distinguishing characters are often hard to discern without high magnification and good optics. Suspect specimens should be submitted to a specialist for verification.

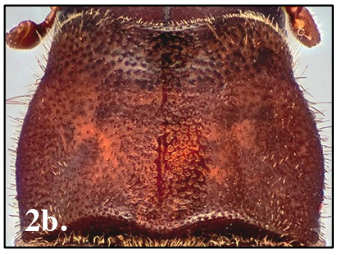
Actual size

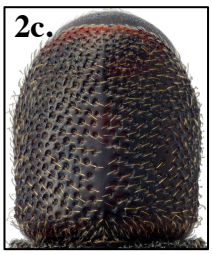
Actual size

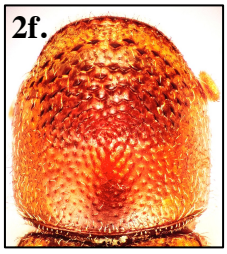
Key:

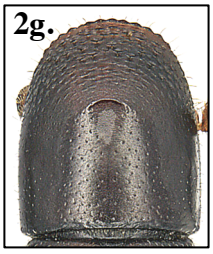
1. Total body length less than 3 mm.....2
   Total body length greater than 3 mm.....NOT *P. juglandis*

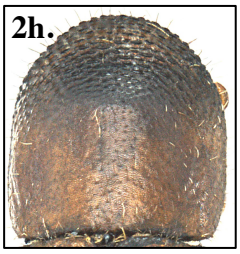
2. The pronotal asperities from the middle to the anterior margin form two or more well-defined concentric rows, adjacent asperities in each row normally in contact basally (2a).....3
   Pronotum lacking asperities (2b-c) or, if asperities present, those from the middle to the anterior margin not in well-defined concentric rows (2d-f), if rows more or less evident, adjacent asperities in each row not in contact (2g-h).....NOT *P. juglandis*

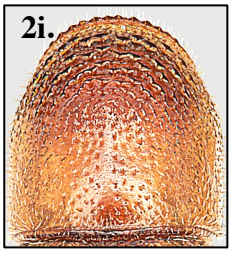




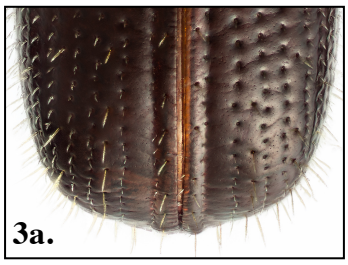


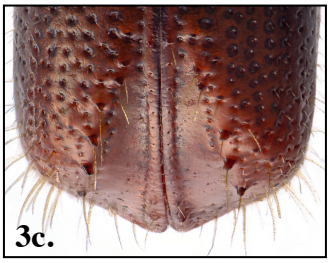




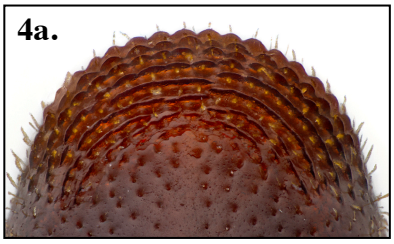


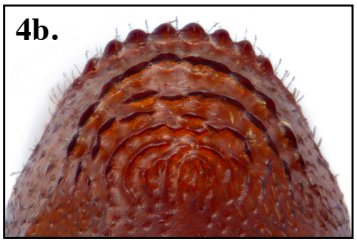
3. Apex of elytra evenly rounded (3a).....4
Apex of elytra not evenly rounded (3b-c).....NOT *P. juglandis*



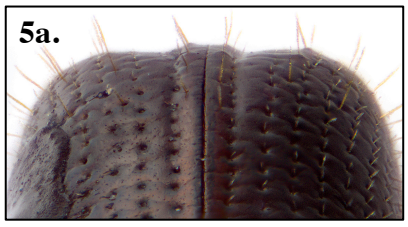


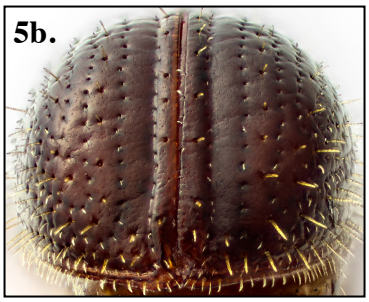
4. Anterior margin of pronotum with more than 10 asperities (4a).....5
Anterior margin of pronotum with no more than 10 asperities (4b-c).....NOT *P. juglandis*

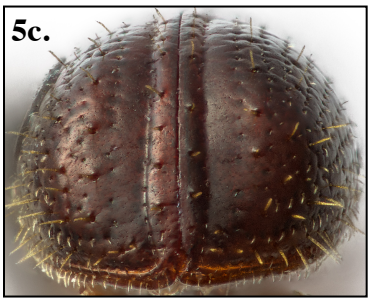


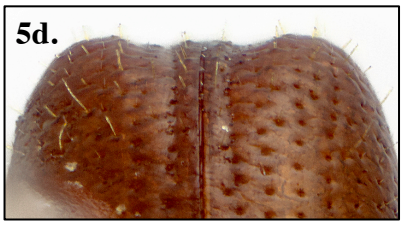


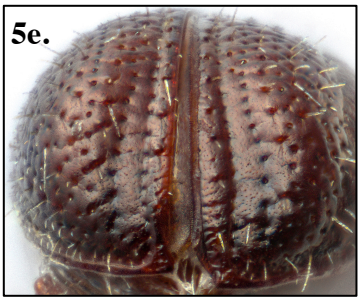
5. Apical elytral declivity flattened on either side of suture laterad of impressed striae 1, interstriae 2 not impressed (5a). Declivity finely roughened and dull (5b, female – tiny asperities on interstriae 1 & 3 and narrower interstriae 1 & 2; 5c, male – larger asperities on interstriae 1 & 3 and broader interstriae 1 & 2).....**YES *P. juglandis***
Apical elytral declivity distinctly depressed on either side of suture laterad of striae 1, interstriae 2 deeply impressed (5d). Declivity shiny (5e-f).....NOT *P. juglandis*



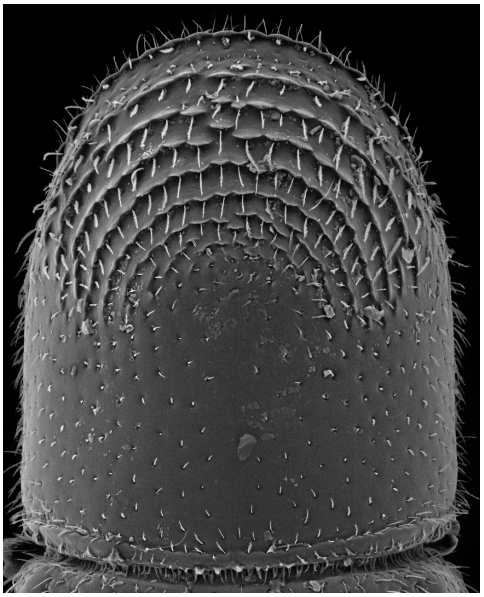




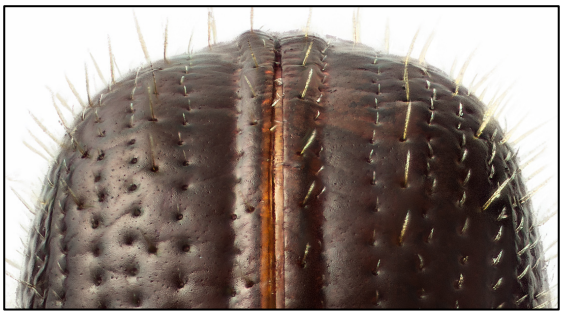




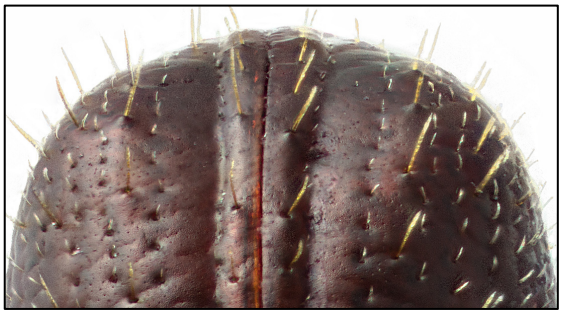
Supplementary Images for Walnut Twig Beetle Screening Aid



Scanning electron micrograph of pronotum of WTB. The asperities are in well-defined concentric rows and are in contact with each other. The left and right sides of each row are slightly misaligned.
Image by Josh Vlach, Oregon Dept. of Agriculture



Dorsal view of elytral declivity of female WTB. The asperities on interstriae 1 & 3 are very small (essentially absent). Interstriae 1 & 2 are narrower than in males.



Dorsal view of elytral declivity of male WTB. The asperities on interstriae 1 & 3 are evident. Interstriae 1 & 2 are broader than in females.

Frons of female WTB. The pubescence is much longer and more dense around the periphery of the frons and the center of the is flattened.

Frons of male WTB. The pubescence is overall short and sparse and the center of the frons is convex.

Images by Thomas Shahan and Steve Valley, Oregon Department of Agriculture