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Scientific Note

Distribution and structural infestations by the old and new house borers (Coleoptera: Cerambycidae) in California and the USA

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Abstract. Despite being a well-known species in the Eastern United States and Europe, the old house borer [*Hylotrupes bajulus* (L., 1758) (Coleoptera: Cerambycidae)] has not been reported from the West Coast yet. The idea of its presence on the West Coast may be a myth, likely influenced by some American pest control textbooks that cover this species. On the other hand, the new house borer [*Arhopalus productus* (LeConte, 1850) (Coleoptera: Cerambycidae)] has been reported infesting lumber and dying trees on and west of the Rocky Mountain range for many years. This species maybe underreported and understudied by entomologists and pest control experts. In this article, I will review the biology and distribution of the two species, their morphological differences, and provide new scientific information on a new case study describing the behavior and structural damage caused by *A. productus* in Southern California.

Keywords: wood-destroying organism, *Hylotrupes bajulus*, *Arhopalus productus*.

The old house borer (OHB), *Hylotrupes bajulus* (L., 1758), and the new house borer (NHB), *Arhopalus productus* (LeConte, 1850) (Coleoptera: Cerambycidae), are both pests of structural wood. The OHB is originally from Europe (Hadlington & Campbell 1956; Cannon 1982; Özdikmen & Ali 2017) or Northern Africa (Becker 1979 as mentioned in Cannon 1982). The NHB, on the other hand, is native to and found on western parts of the U.S.A. (Eaton & Lyon 1955). Because several number of important urban pest control books mention the OHB (Mallis & Story 1969; Truman et al. 1976; Ebeling 1978), some pest management professionals and researchers may assume that the OHB is found in California. Up to this date, there has been no scientific record of the occurrence of the OHB on and west of the Rocky Mountains. When it comes to identification, there are several differences between the two species with respect to morphology, distribution, and biology. Here, I will provide a characterization of both species and point out key morphological and behavioral differences. Also, I will describe a case study of a NHB infestation in a residential complex in San Diego County, California.

The old house borer, *H. bajulus*. The OHB is widely distributed in Europe (Becker 1980 as mentioned in Lukowsky 2017a) and got introduced to the U.S. over 200 years ago. It is found in the U.S. states along the Atlantic and Gulf Coast, from Texas to Massachusetts (Cannon 1982). It is also found in South America (Di-Iorio 2004), South and Northern Africa (Cannon 1982), Australia (Bain 2009), and more recently in the Middle East (Özdikmen & Ali 2017).

It was originally described in Europe by Linnaeus. In the U.S., no natural occurrence of OHB has ever been found in the wild, and all the infestations occur in man-made structures (Snyder 1955, as cited in Cannon & Robinson 1982). In contrast to the common name, this species does not attack or infest old homes, but rather emerges from and attacks homes 2-7 years old (Cannon & Robinson 1982). This beetle primarily feeds on the sapwood and studies have shown that pine's heartwood is unsuitable as a food source (Schuch 1937 as cited in Becker 1938). The damage is mostly done by the larval stage, where it tunnels into the sapwood portion of the lumber that is used for construction. Adults are known to live only 4-24 days (Cannon 1982). It is known to attack pine (*Pinus*), spruce (*Picea*), and fir (*Abies*) species. Larval development can take years to complete. In heavy infestations, in addition to the cosmetic damage, the integrity of the wood can be lost as well. The rasping-ticking sounds produced by larvae when feeding can cause anxiety in people residing in the home. There is financial loss as a result of wood damage and the cost of wood replacement can be substantial (Cannon 1982). In lumber yards, adults were found flying in mid-day (Cannon & Robinson 1982). As mentioned above, despite being an important pest in the south and eastern parts of the U.S., there is no record of OHB occurrence in California. Walter Ebeling mentioned the OHB in his famous book "Urban Entomology", but without any indication of its occurrence in California or the West Coast (Ebeling 1978). For the purpose of writing this article, the author retrieved distribution information for the OHB in the U.S. by checking images and data from citizen science databases obtained from iNaturalist.com (47 records) as well as bugguide.net (six records). Both these datasets lacked any records of the occurrence of OHB west of the Rocky Mountains.

Despite of all the historical problems caused by the OHB in Europe, a steady decline in detection rate of this beetle was found between 1920 and 2000 in Sweden and Germany, which is assumingly caused by preventive and remedial chemical treatments, changes in construction practice, the use of attics, reduced introduction of OHB through timber shipments, and changes in wood quality including increased use of planed timber which makes the wood less suitable for egg laying (Lukowsky 2017a).

The new house borer, *A. productus*. On and west of the Rocky Mountains in the U.S., another common, yet significantly less studied long-horn beetle is found infesting buildings. The new house borer (NHB) was originally described by the American entomologist, John Lawrence LeConte, from specimens collected in Oregon. This species is found in the U.S. on and west of the Rocky Mountains, Canada (British Columbia), Mexico (Baja California), and in Guatemala and Honduras. Its known hosts include coniferous trees; including fir (*Abies* sp.), pine (*Pinus* sp.), and Douglas fir (*Pseudotsuga menziesii*) (Mirbel) (Monné & Nearns 2022). Douglas fir is commonly used as structural wood in the western U.S.

NHB infests dead or dying trees. Lumber produced from fallen Douglas fir trees or those killed by fire or insects may bear this beetle, leading to structural wood infestation. Visible damage on the exterior

of the wood caused by this beetle is strictly limited to emergence holes from which adult beetles emerge after completing their development. There is no evidence that such infestation can compromise the integrity of buildings. However, adults may chew other materials such as hardwood flooring, linoleum, plasterboard, and composition roofing, other hardwood and plasterboards to chew their way out of the larval chamber, and that can alarm the residents and may cause great anxiety. Once again, NHB is only known to attack dead or dying trees. The adults are not known to reinfest structural wood in buildings once they emerge (Eaton & Lyon 1955).

Case study. In the summer of 2025, a home in a newly constructed residential complex in San Diego, CA (near Miramar) was found to be infested with a wood-boring beetle. According to the homeowner, the home construction began in January 2025 and was finished in late May of the same year.

In early June 2025, tenants noticed oval-shaped holes in the drywall and observed emergence of beetles from them (Fig. 1). After reporting the issue to the builder of the complex, an inspection team was sent to the site where they removed the drywalls and took samples of the structural wood members. The inspection revealed the existence of an unknown type of wood boring insect larvae inside the wood. Based on a report from the forest product company, the infested wood members were believed to have originated from Douglas County, in Oregon. New holes kept appearing and were noticed by the tenants. In particular, one wall housed most of the exit holes while another wall across the same room also revealed exit holes (Fig. 2).

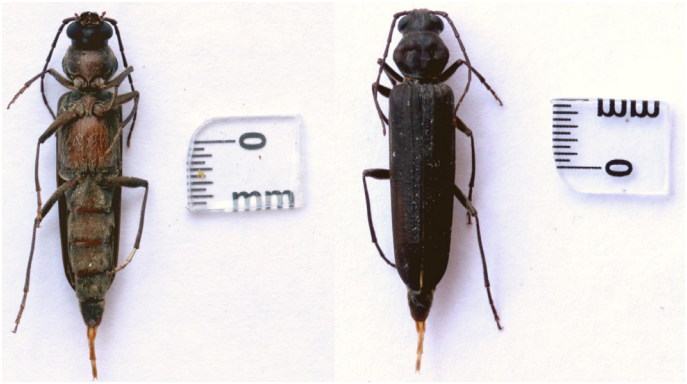

Figure 1. Ventral and dorsal habitus of the new house borer [*Arhopalus productus* (LeConte, 1850) (Coleoptera: Cerambycidae)] specimen collected from San Diego County, CA in 2025. Credit: Siavash Taravati.

In late July 2025, an adult beetle emerged indoors from a wall and was suspected by a pest management professional (PMP) to be an OHB described above. The beetle was collected by the tenants, and an identification request was submitted to the San Diego Agricultural Commissioner's Office, which was eventually forwarded to the author. The author received the specimen and identified it as the new house borer, *A. productus*, instead. While these two species have similarities, there are several differences that can help pest management professionals (PMPs) identify them. OHB adults have a wider body, a hairy pronotum with two hairless knobs, and typically whitish hair patterns on their elytra. The third antennomere of the OHB is more than three times the length of second antennomere. NHBs, however, have a more slender body, are generally hairless, and have two depressions on their pronotum instead of knobs or tubercles. The third antennomere of the NHB is about twice the length of the second segment. NHBs (Fig. 1) lack the whitish hair marks on their elytra. A summary of the differences between the two species can be found in Tab. 1. It is worth mentioning another NHB lookalike, *Arhopalus asperatus* (LeConte, 1859), which also occurs on and west of the Rockies Mountains. This species can be distinguished from the NHB by its shorter four apical antennomeres.

Figure 2. Exit holes detected on the indoor walls of a residential unit in 2025 created by the new house borer [*Arhopalus productus* (LeConte, 1850) (Coleoptera: Cerambycidae)]. Each arrow points to the location of an emergence hole.

Based on the identification and behavior of the NHB, it was recommended to the homeowner not to pursue any pest control treatment simply because the NHB beetles are not known to reinfest structures.

To conclude, using uncured (not dried) wood for construction can introduce various wood-destroying organisms into structures, including long-horn beetles (Lukowsky 2017b). Through their chewing and adult emergence, these insects may cause tenant anxiety and financial loss. To prevent such problems, builders and contractors must first investigate the source and age of lumber they are planning to use in a building, before even purchasing the lumber. Lumber that is harvested within less than two years from the date of construction can easily house both the NHB and OHB beetles. Additionally, there are other wood-boring cerambycids (e.g., *Eburia* spp.) that can survive inside untreated wood for up to several decades as larvae (Haack 2017). As a result, kiln-drying or chemically treating lumber before use in construction projects is of utmost importance.

Table 1. Comparison of the old and new house borers

Scientific name	Old house borer	New house borer
	***Hylotrupes bajulus* (L., 1758)**	***Arhopalus productus* (LeConte, 1850)**
Subfamily	Cerambycinae	Spondylidinae
Distribution	Cosmopolitan	North and Central America
Found in California	No, as of Feb 2026	Yes
Age of homes infested	2–7 years old	1–2 years old
Reinfest structural wood	Yes, but only in buildings under seven years old	Not known to reinfest
Host species	Fir, pine, spruce	Fir, pine, Douglas-fir
Reservoirs	Lumber yards, houses	Unknown, but probably natural woodlands

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Ethical Approval

Not applicable

Data Availability

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