

Nest-site preference and founding success of the western drywood termite, *Incisitermes minor* in six commercial timbers

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Abstract

An evaluation of nest-site selection preference and founding success of the western drywood termite, *Incisitermes minor* (Hagen) in natural conditions was conducted. Three Japanese timbers: Hinoki (*Chamaecyparis obtusa* Endl.), Karamatsu (*Larix leptolepis* Gord.), and Sugi (*Cryptomeria japonica* D. Don); and three USA timbers: Douglas fir (*Pseudotsuga menziessi* Mirbel), Western red cedar (*Thuja plicata* Donn ex D. Don) and Spruce (*Picea sitchensis* Bong. Carriere), with 80 pieces for each species, were used in this study. All timbers were made up of a combination of sapwood and heartwood with dimensions of 50 (R) x 50 (T) x 300 mm (L), and were laid at random positions in a highly infested attics in four houses in Wakayama Prefecture, Japan. Timbers were arranged in “a close gap (CG)” on the edge of two timbers and “an open gap (OG)” on the other edge. CG is a position in which the edge of two timbers are touching each other, while OG is a position in which the two timber edges are separated by a ~1 cm gap. Annual monitoring was conducted in November, two months after the *I. minor* swarming season, from 2012 - 2015. We recorded a total 344 *I. minor* nest founding events with 99.1% infestations from nuptial flights and 0.9% from colony invasion. The results suggest that the ranking of nest founding preference was Hinoki > Spruce > Western red cedar > Sugi > Douglas fir > Karamatsu. About 79.8% nest-founding activities were found in sapwood, while heartwood and borders encountered 16.0% and 4.2%, respectively. *Incisitermes minor* most preferred CG at 81.7%, followed by the bottom side, OG, upside, and cross section by 10.8%, 4.1%, 2.3% and 1.2%, respectively.

Key words: nest founding, nest-site selection, commercial timbers, *Incisitermes minor*