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Artificial colonization of logs with ambrosia beetles

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1 Works for me dx.doi.org/10.17504/protocols.io.bnufmetn

Bark Beetle Mycobiome Research Coordination Network

ABSTRACT

This protocol describes how to artificially colonize logs with ambrosia beetles.

This protocol is part of the Bark Beetle Mycobiome (BBM) Research Coordination Network. For more information on the BBM international network: Hulcr J, Barnes I, De Beer ZW, Duong TA, Gazis R, Johnson AJ, Jusino MA, Kasson MT, Li Y, Lynch S, Mayers C, Musvuugwa T, Roets F, Seltmann KC, Six D, Vanderpool D, & Villari C. 2020. Bark beetle mycobiome: collaboratively defined research priorities on a widespread insect-fungus symbiosis. Symbiosis 81: 101–113 https://doi.org/10.1007/s13199-020-00686-9.

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Target organism: Xylosandrus crassiusculus
Using sweetgum (Liquidambar).
Cut a fresh branch (50 x 5 cm) of sweetgum or maple, seal its exposed ends with parafilm (or wax, or natural latex) to prevent dessication.

Controlled insertion of beetles

Allows to control the density and distribution of beetles on the log, but since we do not understand the search microsite selection

parameters of the beetles, it can lead to many abandoned attempts and dead beetles.

1. Prepare containment vials – between 1-3 cm, bottom perforated with many miniature holes, or with one large hole sealed over with wire micromesh (for ventilation – water condensation traps and kills beetles).
2. Drill shallow holes of exactly the diameter of your vial.
3. Place beetle in hole, cover with vial.
4. Keep in a humid place.
5. Put the base of the log in a Tupperware with a source of water. Ventilation is ideal, especially in the beginning of gallery development, but not essential. Leaving the log inside a bucket with no air movement often fails.

Beetles colonize log by themselves

1. Take a fresh sweetgum log/branch
2. Add a source of ethanol on it (such as a little bit or ethanol in a mini ziploc bag)
3. Place in the forest. Alternatively, place in a box with beetles.

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