Dwelling (Paint Branch Creek)
A Habitat Wall for Solitary Bees and Wasps (2015)
at the University of Maryland Arboretum Outreach Center, USA

Lisa Kuder – wall co-concept/design, UMD lead, production, science advisor
Sarah Peebles – wall co-concept/design & Audio Bee Cabinet
Henry Raduazo – wall lead build, design advisor

Assisted by Eric Kuder, Zachary Kahn and a team of UMD students and local volunteers; Audio Bee Cabinet assisted by Mary-Ann Alberga (pyrographic illustrations), Jennifer Rong (cabinetry) and Rob Cruickshank (electronics).

Synopsis

Aesthetically compelling, immersive and informative, *Dwelling (Paint Branch Creek)* intersects habitat interpretation, earthwork, sound installation and sculpture. The installation fosters the art and science of observing native solitary bees and their role in pollination ecology, and solitary wasps and their role in natural insect control, while also creating small-scale habitat for local solitaries. Placed adjacent to a native flower garden (created 2016) and an intimate, quiet shade garden, *Dwelling* brings together our connections to place, nature, horticulture and ecology. The earthwork integrates an amplified bee viewing cabinet which allows the public to safely view and listen up close to native, solitary stem-nesting bees and digger (miner) miner bees — pollinators which are quite different than managed, European honey bees (*Apis mellifera*); solitary wasps, nature's insect control are also a featured inhabitant. *Dwelling* draws from the rich history of earthen building (adobe and cob) in world cultures and recent innovations in clay and earth artistry and "natural building" techniques, which emphasize the use of local and benign (low processed) materials and technologies. We hope this earthwork and its surrounding native plantings will broaden public literacy of bee biodiversity and ecology while inspiring sustainable, bee-friendly landscaping and garden design, land-use planning and "natural building" projects, especially those which benefit indigenous miner bees (Anthophora) and other native solitaries.

Details

Dwelling (Paint Branch Creek) is a habitat wall for native bees which integrates an Audio Bee Cabinet. The wall is a 10-year science outreach project and was created In August, 2015 at the University of Maryland Arboretum Outreach Center by local cob builder Ed Raduazo, UMD PHD student in entomology Lisa Kuder (Dennis vanEngelsdorp lab) and Toronto environmental artist Sarah Peebles, with a team of student assistants and volunteers from the university and DC-area community.

Dwelling creates habitat for miner bees (genus *Anthophora*) — which excavate their own tunnels from vertical earthen surfaces — and habitat for solitary twig and cavity nesting bees and wasps, which seek pre-existing cavities such as vacated beetle bores in wood. Constructed of layers of clay-rich earth, sand and straw, known as cob, the wall's multiple layers of colourful clay sources and varied cob mixes were inspired by the strata of earth which often line river banks and cliff faces preferred by miner bees. *Dwelling's* colourful cob layers are structurally distinct (surfaces have not been plastered) and are made of different ratios of sand, earth and straw to test the likes and dislikes of miner bees, especially the region's native *Anthophora abrupta,* which are distinct from the more common *A. plumipes* (introduced from Japan for agricultural use). The earthwork's 2-foot thick wall also caters to the *A. abrupta's* observed preference for thick nesting substrates. Several small groupings of pre-made tunnels, accentuated with patterned stones for visual clarification, cater to solitary twig and cavity nesters and also appeal to miner bees; the various tunnel diameters accommodate the varying body sizes of these solitary pollinators (bees) and natural pest controllers (wasps).

An Audio Bee Cabinet and viewing seat are integrated into one end of the wall. The cabinet allows visitors to safely listen to nesting bees and wasps using headphones while observing their activities up close with a magnifying lens: the wood nest-plank housed within the cabinet has routed grooves covered with plexiglass and is embedded with a vibrational sensor amplified by a solar panel (BYO headphones or earbuds). The cabinet presents the nuances of solitary, native bees and wasps and their activities within their tunnel nests; pairing magnified views in tandem with amplified sound, it facilitates an enhanced perception of its tiny inhabitants: solitary bees and wasps, and other nest biota in action, up close. In effect, the viewer extends her own senses and enters a micro world which normally takes place in the dark – safely spying on the solitaries' nesting activities, life cycles, parasites, and their dynamic relationships with the surrounding habitat. Wood-burned and painted illustrations adorning the cabinet display featured bees and wasps, native flowers frequented by bees, and aspects of their nesting biology.*

In the spirit of sustainable building, recycled sidewalk concrete forms the structure's foundation and a recycled cedar play set forms the weather-guard above the cabinet and seat area. All earth materials were gathered from the UMD campus grounds.

Dwelling (Paint Branch Creek) continued

Dwelling (Paint Branch Creek) will be complemented by flowers featured in the cabinet's illustrations, as well as a native plant garden serving a bee identification research project with master gardeners by Olivia Bernauer, a Masters Entomology student (Dennis vanEngelsdorp lab).

Paint Branch is a 14.0-mile-long (22.5 km) stream that flows through Montgomery County and Prince George's County, Maryland. It is a tributary of the Northeast Branch, which flows to the Anacostia River, Potomac River and the Chesapeake Bay. We hope this earthwork and its surrounding native plantings will broaden public literacy of bee biodiversity and ecology while inspiring sustainable, bee-friendly landscaping and garden design, land-use planning and "natural building" projects, especially those which benefit indigenous miner bees (Anthophora) and other native solitaries.

Visitors are welcome anytime (maps here and here); BYO headphones and lens or ask at the Outreach Center's office in the adjacent "Apiary" building to borrow a pair. Lisa Kuder is blogging about *Dwelling* as activity unfolds, and the UMD Arboretum outreach Center, acting as the site's steward, will be posting updates on their blog.

Media coverage of "Dwelling":

Back-to-School With Native Bees (by Alison Gillespie, beaconreader.com)

"Bee Habitat Wall" video (by Alexandra Simon, Diamondback)

* Details about Audio Bee Cabinets are at Resonating Bodies (resonatingbodies.wordpress.com).

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