Establishment of Four *Native Buzz* Nesting Sites in the Natural Area Teaching Lab

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Introduction

The objectives of having *Native Buzz* nesting sites in the Natural Area Teaching Lab (NATL) are 1) to promote nontraditional STEM (science, technology, engineering and mathematics) learning activities and 2) to gather scientifically viable information on pollinators and any evidence of population fluctuation in the NATL. The presence of these sites can advance scientific understanding of pollinators by providing easy-to-access information and resources that encourage the public to gather data. This project provides an opportunity for the public to participate in citizen science, while helping to collect scientifically relevant data on pollinator populations. The presence of these nesting sites also provide new habitat for native pollinators in NATL. The primary goal of the *Native Buzz* project is to stimulate learning about native Florida pollinators and beneficial wasps and the resources they provide, by expanding knowledge of native pollinators in both the scientific and non-scientific community. The NATL minigrant was used to establish four nesting habitats in NATL for native bees and wasps.

Materials and Methods

Nesting Sites

Four types of nesting sites were installed in NATL. One large site that was built by the *Native Buzz* team, and three smaller sites that were purchased commercially. The large nesting tower site (**Figure 1**) was built using 2 x 12 x 12 treated lumber for the frame, 2 x 6 x 12 untreated lumber, a steel eye and hook screw set to hang a log at the base (collected from

NATL), and bamboo as places for bee and wasp nests. More detailed instructions to the nesting tower can be found on the *Native Buzz* website (http://entomology.ifas.ufl.edu/ellis/nativebuzz/DIY.aspx).

Figure 1. Tower nesting site that was constructed and established in the Natural Area Teaching Lab.

The smaller sites were purchased commercially, and each have a different type of structure for various types of nesting Hymenoptera. The first commercial site is a combination bee house, or the "Insect Mini Motel" (**Figure 2**). This is a different structure than was originally planned for in the minigrant application, due to the originally no longer being available at the time of purchase. The second commercial site is a hanging nest filled with bamboo, or the "Bamboo Bee Drop" (**Figure 3**). The third commercial site is a mason bee house we have named the "HymenopterInn" (**Figure 4**). All of the small nesting sites have been placed along the same trail as the large tower nesting site, and each one is visible from the last.

Figure 2 (Left). The "Insect Mini Motel" nesting site that is attached to a small tree near the large nesting tower.

Figure 3 (Middle). The "Bamboo Bee Drop" nesting site hanging from a tree on the trail.

Figure 4 (Right). The "HymenopterInn" nesting site, attached to a tree stump at the end of the trail.

Signs

Each of the nesting sites that have been established in NATL are accompanied by a sign, which were funded by part of an Operation Pollinator grant. The three small sites each have a sign with a photograph of the site, a QR code linking to a data submission form, the site name, and the *Native Buzz* website (**Figure 5**). These signs are 4" tall x 5" wide aluminum. They will be placed in the metal sign holders currently used in other NATL locations.

Figure 5. The signs to be placed at each of the small, commercially purchased nesting sites in the Natural Area Teaching Lab.

The large sign (**Figure 6**) is more descriptive of the *Native Buzz* project, and includes more detailed instructions on data submission. This sign will be placed at the large tower site. In addition to a QR code to the data submission form, there are also QR codes to our website (www.ufnativebuzz.com), Facebook, and Twitter pages. This sign is printed on Dibond and measures 18" wide x 15" tall. Material has been purchased to construct a stand that the sign will be attached to. The wood for the sign stand will be secured in concrete mix. Full PDF's of these signs are attached in separate documents. All of these signs will be in place by 12 June 2015.

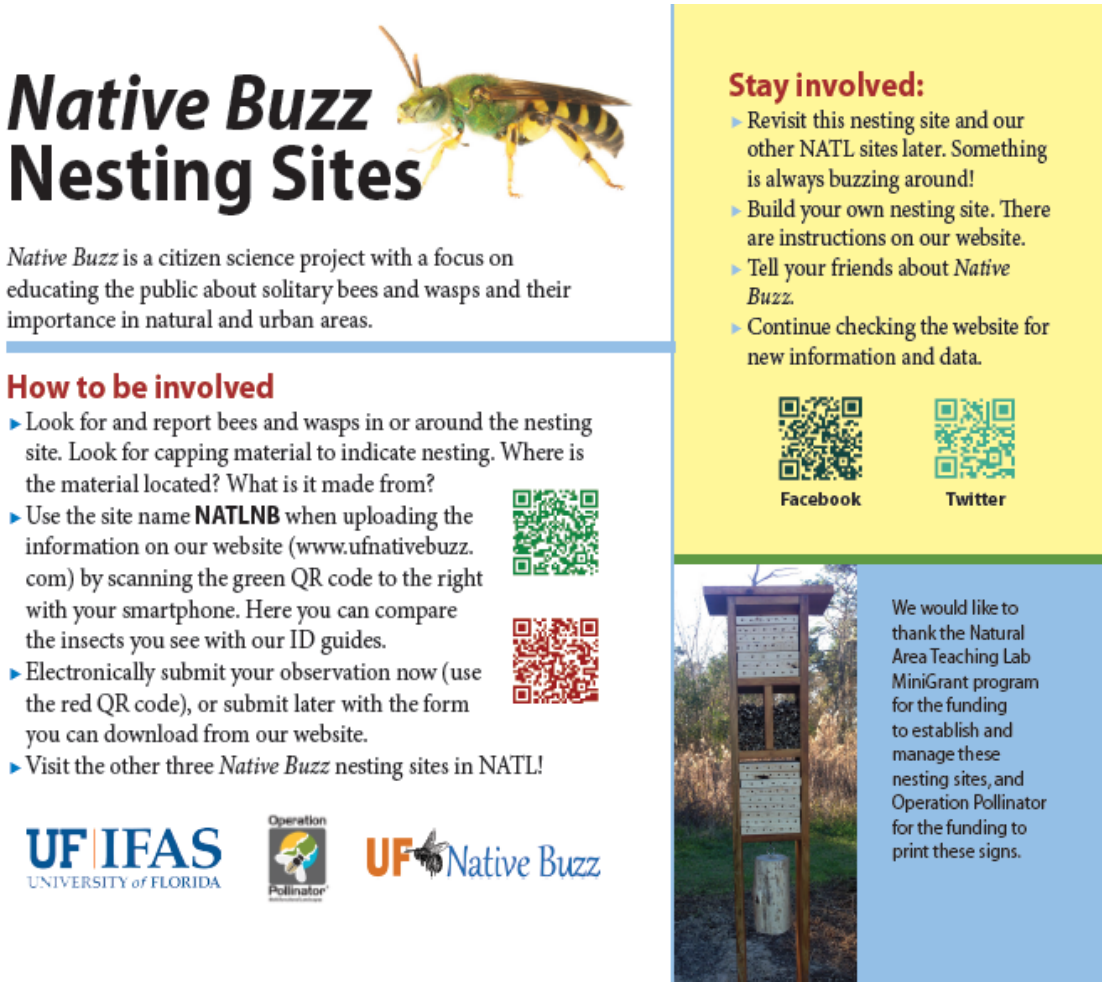

Figure 6. Information sign about *Native Buzz* to be placed at the large nesting tower in the Natural Area Teaching Lab.

Results

To date, activity has been documented at two of the four nesting sites. The first was a small wasp that was seen flying around the tower site and ultimately entering the bamboo, which a graduate TA photographed (**Figure 7**).

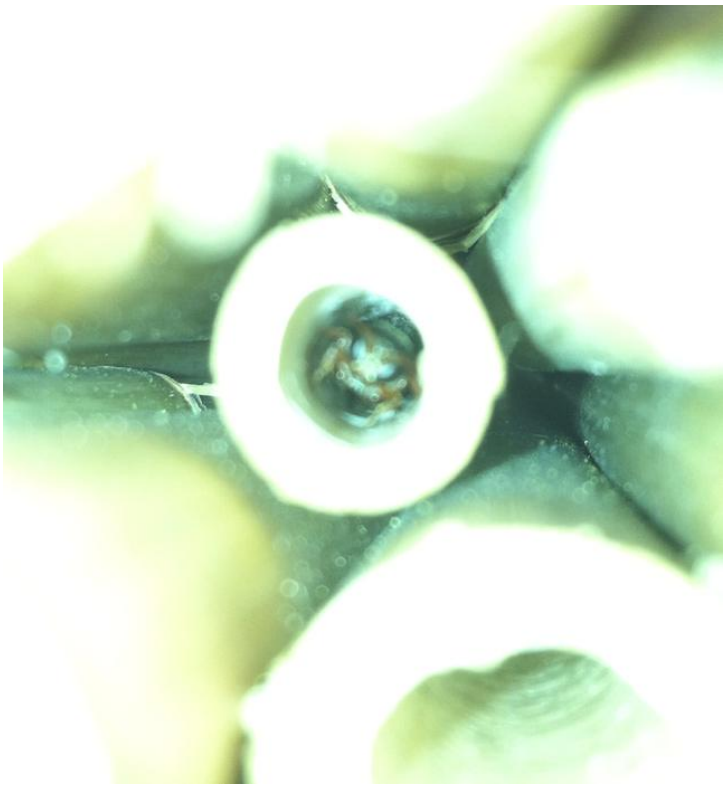

Figure 7. Small wasp in the bamboo of the large tower nesting site.

The other nesting site with activity is the HymenopterInn. There are currently four of the nesting cavities that have been capped, presumably with eggs inside (**Figure 8**). These documents of activity are recent, suggesting that the sites needed to be established for a period of time before the bees or wasps would begin to use them. Now that the sites have been present for a while, we expect the activity level to increase.

Figure 8. HymenopterInn nesting site with four cavities in use.

One problem that has been encountered is the Bamboo Bee Drop site being colonized by ants. A layer of Tanglefoot, a sticky substance used to trap pest insects, was applied to the part of the nesting site that is in contact with the tree it is hanging from to deter ants. This seemed to rid the site of ants for a few weeks. Recently this problem has returned, and the nesting site has been temporarily taken down. After we are sure that the ants have been completely cleared, the site will be returned and further measures will be explored to prevent the ants from again colonizing the site.

Conclusion

So far the *Native Buzz* nesting sites have not had much documented activity, but we hope that with the summer months beginning, there will be more movement by the Hymenoptera and

by NATL visitors. The larger and more eye catching signs being placed at the nesting sites should also promote visitor participation. In addition to updating the signs, we also plan to have an intern working on the *Native Buzz* website this fall, in order to make the website more easily used and encourage repeat participation by NATL visitors. Though there have only been two documentations to date of Hymenoptera visiting the nesting sites, we believe that this project will continue to grow as the bees and wasps become more active around the longer established nesting sites.