

Mosquito Magnet

Formative Evaluation

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THIS IS **NOT** A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

- **are conducted quickly**, which may mean
 - small sample sizes
 - expedited analyses
 - brief reports

- **look at an earlier version** of the exhibit/program, which may mean
 - a focus on problems and solutions, rather than successes
 - a change in form or title of the final exhibit/program

Summary of Findings

- Most visitors (11/12) put a hand into a vent to try the attraction activity.
- Visitors spent an average of 31 seconds with a hand in a vent; the minimum time spent was 6 seconds and the maximum was 1 minute and 5 seconds.
- Most visitors (8/12) did not report attracting mosquitoes.
- The amount of time spent with a hand in the vent did not seem to make a difference in whether a visitor attracted mosquitoes.
- Of the visitors who didn't attract mosquitoes (8/12), only a few (2/8) said that the lack of mosquitoes was frustrating. These visitors both said the exhibit was *not interesting*.
- Of the other 6 visitors who did not attract mosquitoes, 5 said the exhibit was *somewhat interesting*; 1 said it was *interesting*. These visitors reported enjoying trying to attract mosquitoes, even if they didn't succeed.
- For the visitors who did attract mosquitoes (3/12); 2 found the exhibit *somewhat interesting* and 1 found it *interesting*. Some of these visitors (2/3) reported trying more than one way of attracting mosquitoes; some (2/3) saw differences in attraction for different group members.
- Some visitors (7/12) talked about other experiences they'd had with mosquitoes being attracted to them (or not).
- Many visitors (9/12) were observed using a flashlight while looking in the orb.
- A few visitors (2/12) expressed confusion about the way to use the flashlight.
- A few visitors (3/12) mentioned looking in the water; one may have seen larvae.
- No visitors (0/12) reported looking for or observing the difference between male and female mosquitoes.

Based on these findings, it appears that although mosquitoes didn't often approach, the mosquito attraction activity was fairly engaging for most visitors. The observation activity was most likely less appealing to visitors.

Background

Created for the East Gallery, *Mosquito Magnet* features a large orb-shaped terrarium with mosquito larvae, pupae, and adults inside (*Figure 1*). There are two central activities at the exhibit: attracting mosquitoes and observing them. For the first activity, visitors are invited to hold their hands up to vents in the terrarium (*Figure 2*) to investigate whether the mosquitoes are attracted to their smell. For the observation activity, visitors can use the attached flashlights to look more closely at the mosquitoes; the label suggests trying to identify male and female mosquitoes by their antennae, or looking into the water for larvae and pupae.



Figure 1: The mosquito terrarium



Figure 2: Vent



Figure 3: Label

Goals

The purpose of this formative evaluation was to determine:

- Can visitors attract mosquitoes by holding their hands to a vent?
- What reaction do visitors have to the mosquito attraction activity?
 - If they don't attract mosquitoes, how do they react?
 - Might they make connections to their own experience with mosquitoes?
- What reaction do visitors have to the mosquito observation activity?

Methods

An evaluator selected visitors for an uncued interview by looking away, then looking back, and selecting the next visitor over 12 who looked at the exhibit for 15 or more

seconds. When the visitor finished, the evaluator approached and asked him or her some questions about the experience. See Appendix A for the interview instrument.

Data Collected

The evaluator interviewed 12 adult visitors: 5 males and 7 females, on Saturday, March 17, 2012.

Findings

Did visitors attract mosquitoes by holding their hands to a vent?

- Most visitors (11/12) put a hand into a vent to try the attraction activity.
- Visitors spent an average of 31 seconds with a hand in a vent; the minimum time spent was 6 seconds and the maximum was 1 minute and 5 seconds.
- Most visitors (8/12) did not report attracting mosquitoes.
- The amount of time spent with a hand in the vent did not seem to make a difference in whether a visitor attracted mosquitoes.
- One person did not try putting his hand in the vent:

Visitor 1: I was surprised to read about putting our hand in (indicating sign on vent). I didn't try it. [Any reason why not?] I'm not comfortable. [What do you think would happen?] They will approach.

What reaction did visitors have to the mosquito attraction activity?

If they didn't attract mosquitoes, how did they react?

Of the visitors who didn't attract mosquitoes (8/12), only a few (2/8) said that the lack of mosquitoes was frustrating.

Visitor 6: It doesn't seem like there are any mosquitoes in there.

Visitor 12: They didn't come!

These two visitors were also the only two to rate the exhibit as *not interesting* (on a 5-point scale from *not interesting* (1) to *interesting* (5))

Of the other 6 visitors who did not attract mosquitoes, 5 said the exhibit was *somewhat interesting*. These visitors found the exhibit interesting because:

- They enjoyed trying to attract mosquitoes (3/5):
 - Visitor 2: You hear they're attracted to smell. It's fun to try and see if it really works. To see if someone in the family is sweeter.
 - Visitor 9: See if what I put out was attractive to them. I hoped they'd swarm all over it.
 - Visitor 10: We didn't get any mosquitoes. Maybe if we stood longer. It said "the longer you stand..." It's interesting that it's some people more than others.
- They enjoyed other information on the label (2/5):
 - Visitor 3: Reading about mosquitoes. I didn't know females were the only ones that bit. But I knew it was body chemistry that attracts them.

Visitor 9: Reading was interesting too.

1 visitor said the exhibit was *interesting* because:

Visitor 11: I backpack a lot and get attacked by mosquitoes. I wondered if it (that effect) would show up here. But they didn't like my scent! That surprised me.

If they attracted mosquitoes, how did they react?

Of the visitors who did attract mosquitoes (3/12), 2 said the exhibit was *somewhat interesting*, because:

Visitor 4: The fact you can watch mosquitoes in their natural habitat, without your smell. Then you put your hand and you can see if they're attracted.

Visitor 8: They didn't come for us (self and toddler) but they did come for my 4 year old.

1 visitor found the exhibit interesting because:

Visitor 3: You watch mosquitoes and see what happens when they get a whiff of you.

Notably, two of these visitors observed that the mosquitoes had different reactions to different members of their group:

Visitor 3: (This visitor attracted mosquitoes, but) She (daughter) was surprised she didn't attract them. She's normally bitten a lot too.

Visitor 8: They didn't come for us (self and toddler) but they did come for my 4 year old.

Some visitors (2/3) who had some success attracting mosquitoes also tried more than one method for attracting them:

Visitor 3: I put my hands. I saw they weren't attracted, but I know they (normally) bite me like crazy. So then, I rubbed my neck and put my hand up again; they seemed more attracted. Maybe it's because I just washed my hands?

Visitor 4: They're attracted to my hand. Then I tried to see if they're attracted to light. I took my hand away to see what happened with just light, no hand. They went back to the plants. I wish I had some garlic. We had a theory overseas that garlic would keep them away. It seemed to be effective in the swampy areas.

Did visitors make connections to their previous experiences with mosquitoes?

Some visitors (7/12) talked about other experiences they'd had with mosquitoes. For example:

Visitor 2: I don't get bit as much as they (family members) do. Is it the hemoglobin? I'm lower than others, as a woman of a certain age.

Visitor 3: I saw they weren't attracted, but I know they (normally) bite me like crazy.

Visitor 11: I backpack a lot and get attacked by mosquitoes. I wondered if it (that effect) would show up here. But they didn't like my scent! That surprised me.

Visitor 12: That they didn't come! I'm surprised. Usually they're all over me. Maybe because they're American mosquitoes they don't know me yet.

These findings suggest that most visitors found the exhibit fairly engaging, whether or not they attracted mosquitoes. Visitors reflected on their own experiences with mosquitoes and enjoyed the process of trying to attract them.

What reaction did visitors have to the mosquito observation activity?

Many visitors (9/12) were observed using a flashlight to look into the orb. (However, one flashlight burned out halfway through the observations. While there was still one flashlight working, this may have affected visitors' use of the flashlights.)

A few visitors (3/12) talked specifically about using the light to find mosquitoes.

Visitor 1: We used the light to find mosquitoes.

Visitor 2: I put my hand up and used the light to see if they're coming closer.

Visitor 10: Used the light and held our hands up.

Notably, two of these visitors reported using the light to watch for mosquitoes approaching the vent, but didn't talk about observing them generally.

A few visitors (2/12) expressed confusion about the way to use the flashlight:

Visitor 5: The flashlight. I guess it's to look up close. It said "use a flashlight" and it should say "use THE flashlight." [TMM?] I thought you'd need your own light.

Visitor 8: What is supposed to attract them, the hand or the light? What's the point of the light if you're supposed to put your hand up there?

A few visitors (3/12) mentioned looking in the water:

Visitor 2: The idea of the life cycle is neat. You see the water base. [Did you see anything in the water?] Yes.

Visitor 10: There might be some larva. [Did you see that?] Maybe? I didn't try very hard.

Visitor 12: Just plants and the little black things (pointing to snails in water).

No visitors (0/12) reported looking for or observing the difference between male and female mosquitoes.

These findings suggest that the observation activity was not as appealing to visitors as the attraction activity.

Next Steps

Because the attraction activity got a fairly positive response from visitors, we plan to highlight it on the label as the central purpose for the exhibit. We may add text explaining more about this phenomenon, perhaps discussing the chemistry behind mosquito attraction. To help visitors see the mosquitoes approaching, and reduce visitor confusion, we'll add small labels near the flashlights to clarify their purpose.

The observation activity was not as appealing, so we plan to make it a less prominent option by removing the part of the label about distinguishing male and female mosquitoes, and minimizing the part about looking for larvae and pupae. To support the optional observation activity, the Lab may change its protocol in order to frequently stock more larvae in the terrarium.

Acknowledgements

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Appendix A

Protocol and Interview Questions

Observations:

Did visitors put their hands in one of the vents? Y N

Time with hand at vent in seconds:

Did visitors use a flashlight? Y N

Other observations:

Questions

1. How interesting did you find that experience? Would you say that was ...

Not interesting	Somewhat not interesting	Neutral	Somewhat Interesting	Interesting
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2. What made it _____ for you?

3. Can you tell me a little about what you did at this exhibit? Anything else?

4. Can you describe what you noticed while using this exhibit? Anything else?

5. Did anything surprise you at this exhibit?

6. Was there anything confusing or frustrating about this exhibit?