Ant Test Cases

* Data from “Dynamics of Task Switching In Harvester Ants.” Gordon
* Numbers

Colony has approximately 10,000 ants (we assume a mature colony here)

In the undisturbed state, approximately 25% of ants are outside the nest (though “unusually large” numbers emerge in certain situations)

In large colonies, foraging can peak at about 800 ants (at the most active part of the day)

It’s rare to see more than 100 ants engaged in midden, patrolling, and nest mainentence, each.

So it’s rare to see more than 1100 ants outside the nest at once.

-Note, fewer workers engage in midden than other work, and some younger colonies don’t have midden at all. Fascinating, really, how that task develops, then.

In older colonies, we see high task fidelity in undisturbed colonies

1. Disturbance
2. Foraging

Place small piles of food right outside of nest mound and away from foraging trails. Place this food in front of scouting patrollers early in the morning.

Replenish seeds until 8:30 AM.

Case Study—when this happens, nearly 60% of every other breed switches over to foraging

1. Nest Maintenance

Place 250 toothpicks (we’re assuming an older colony here—Gordon has data on younger ones, too (150 toothpicks in that case)) at nest entrance at the beginning of nest maintenance activity early in the morning.

Ants move toothpicks to edge of nest mound in about an hour, and then ignore them for rest of day

Case Study—gets mostly unmarked ants

1. Patrolling

Place ten ants of a competing species on nest mound and watch patrollers chase them away (could be fun)

Simultaneously anchor two (unmovable) small cardboard cylinders in the nest mound

Case Study—about 60% of active midden and NM switch to patrolling, no foragers switch to patrolling

1. Removal

Foragers are collected returning to the nest, when they have food.

Nest maintenance are collected after they have come out of the nest with sand and have put sand down

Patrollers are collected after antennae contact with at least two other ants (while on the nest mound)

Midden are collected after picking up an object from a refuse pile and putting it on the midden

1. Undisturbed Patrolling

From “Interaction Rate Informs Harvester Ant Task…” Gordon

Patroller return rates

1 Patroller every 180 seconds = .08 of max initial foraging stimulus

1 Patroller every 45 seconds = .17 of max initial foraging stimulus

1 Patroller every 10 seconds = .76 of max initial foraging stimulus

1 Patroller every 1 second = .27 of max initial foraging stimulus