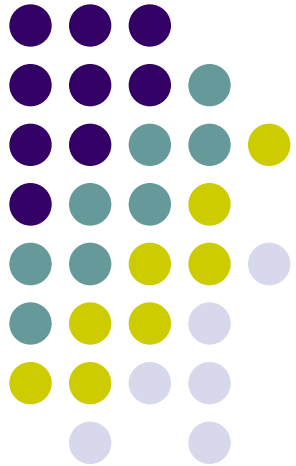
Diapause studies 2014



Introduction

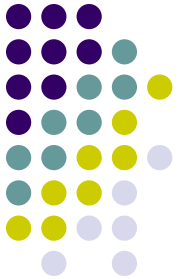
- Understanding the diapause cycle and how to mimic it in the lab so that we can successfully trigger bugs into and out of diapause is crucial to keeping a colony running all year long
- There are a number of variables that need to be considered, including:
  - Length of diapause cycle
  - Effect of crowding
  - Optimal temperature
  - Location of collected insects

Experiment Collections 2014

- Bugs collected end of September/ October
  - WREC Western Maryland
    - Off buildings
  - CMREC Clarksville
    - Off buildings
  - Ruppert Nursery
    - From pheromone traps
  - Sugarloaf Mountain
    - From structures, boulders, etc.

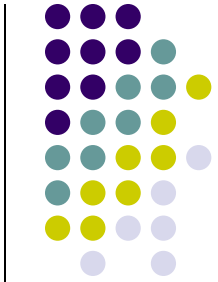
In total 10,000+ bugs!!!

Experiment 1: Effect of Temperature



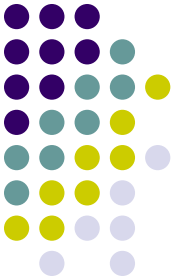
- From each of the 4 previously mentioned locations:
  - Bugs were set up in paper containers with packing material for insulation
    - 25 bugs/ container
  - Cups were randomly assigned to a rearing chamber set at either 3, 6, or 9 degrees Celsius
  - Kept for 7 weeks, and then a subset was removed to break diapause

Experiment 1: Effect of Temperature



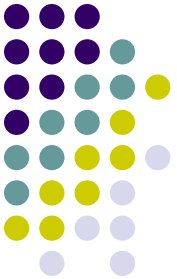
- Data collected on each bug:
  - Gender
  - Dead or alive
  - Pronotal width
  - Body length

Experiment 1: Effect of Temperature



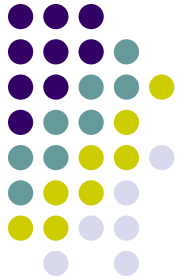
- About 120 bugs/location/temperature were combined in a mesh rearing cage to track mortality and egg laying
  - 3 locations * 3 temperatures * 2 reps = 18 cages running

Preliminary Results of Experiment 1



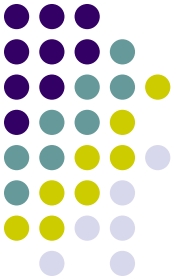
- No noticeable difference in size of bugs from a given location stored at different temperatures so far
- Ruppert Nursery bugs were mostly dead and therefore not set up in mesh cages
  - Pheromone traps?
- Western Maryland bugs had lower survival than Clarksville (opposite of 2013 study)
  - Surrounding crops and presence of pheromone traps?
- Survival in mesh cages is stable so far

Experiment 2: Crowding



- Bugs collected from Sugarloaf Mountain all reared at 9 degrees Celsius
  - Half in containers of 25 bugs, other half in containers of 50 bugs
- After 7 weeks half of the bugs will be removed to assess survival
- 2 weeks later the other half will be removed and survival will be assessed again

Experiment 3: Lab feeding vs. field fed



- Will compare bugs from Clarksville and Western Maryland
  - Bugs collected off of buildings (searching for shelter after having fed in the field)
  - Bugs collected as late instar nymphs from field and brought into the lab to be reared and fed 3 weeks before putting into diapause
- Difference in survival/ size based on where they fed?