Biology Study of Click Beetle *Agriotes sputator*

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Click beetles / Wireworms

Adults

Larvae

Objectives

1. Mating behaviour

2. Fecundity information

3. Larvae development

Methods

Beetle Collection

Sex Identification

Mating Observation

Mating Occurrence

Egg Laying

Egg Hatching

Larvae Development

General information

- Both male and female beetles conduct multiple mating behavior.

- Click beetles laid eggs either in batches in the soil cluster or produce single eggs in the dirt.

General information

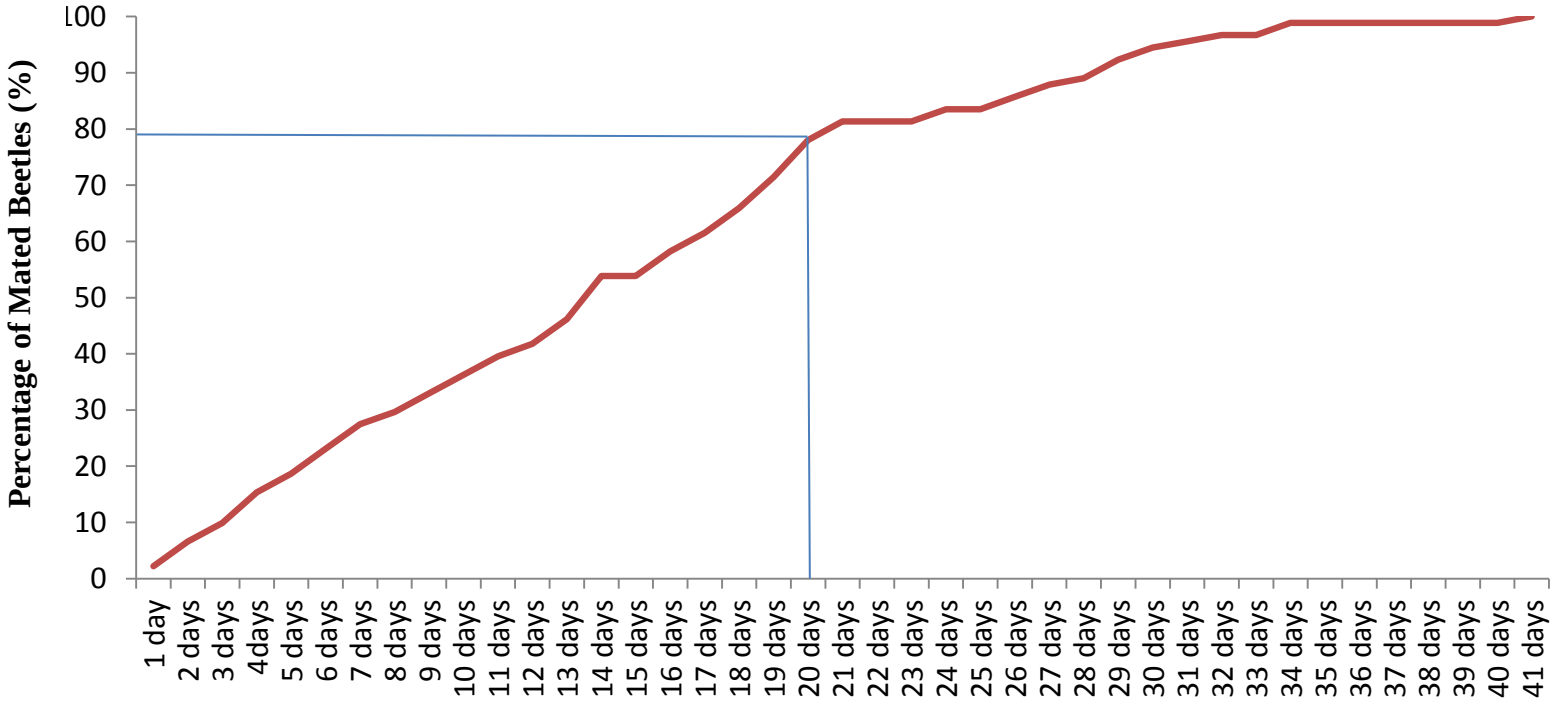
THEY ARE MORE THAN AGGRESSIVE !!!

General information

- Both click beetles and wireworms are phytophagous, carnivorous and cannibalistic.

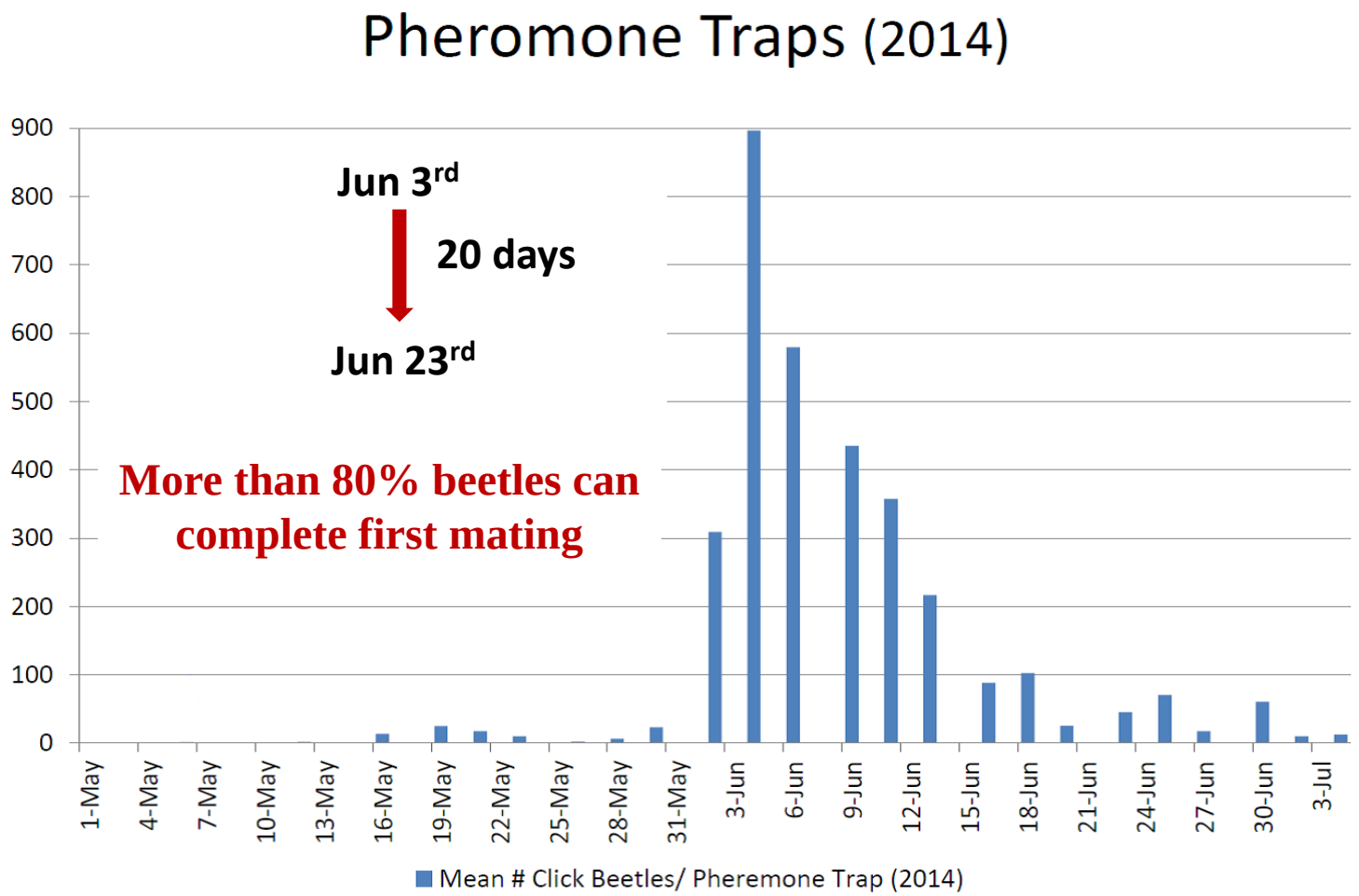
Results-Beetles

Majority beetles had first mating within 20 days after emerging



Required time between emerging and mating of beetles emerged between May 7st - May 24th

Results-Beetles



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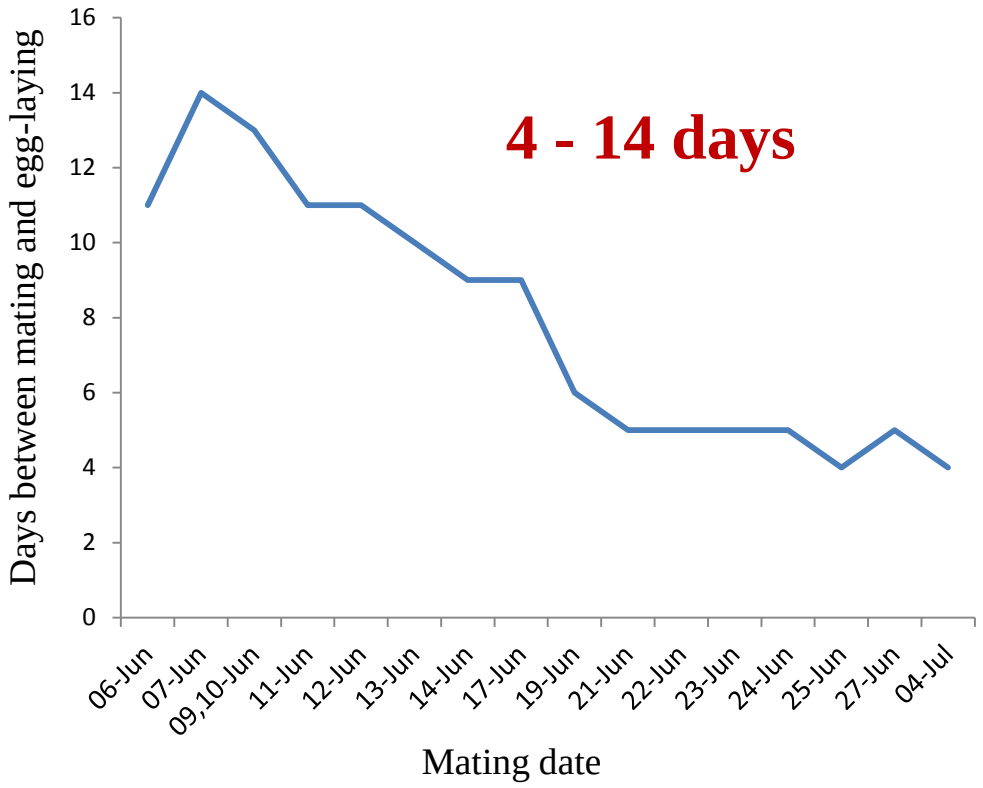
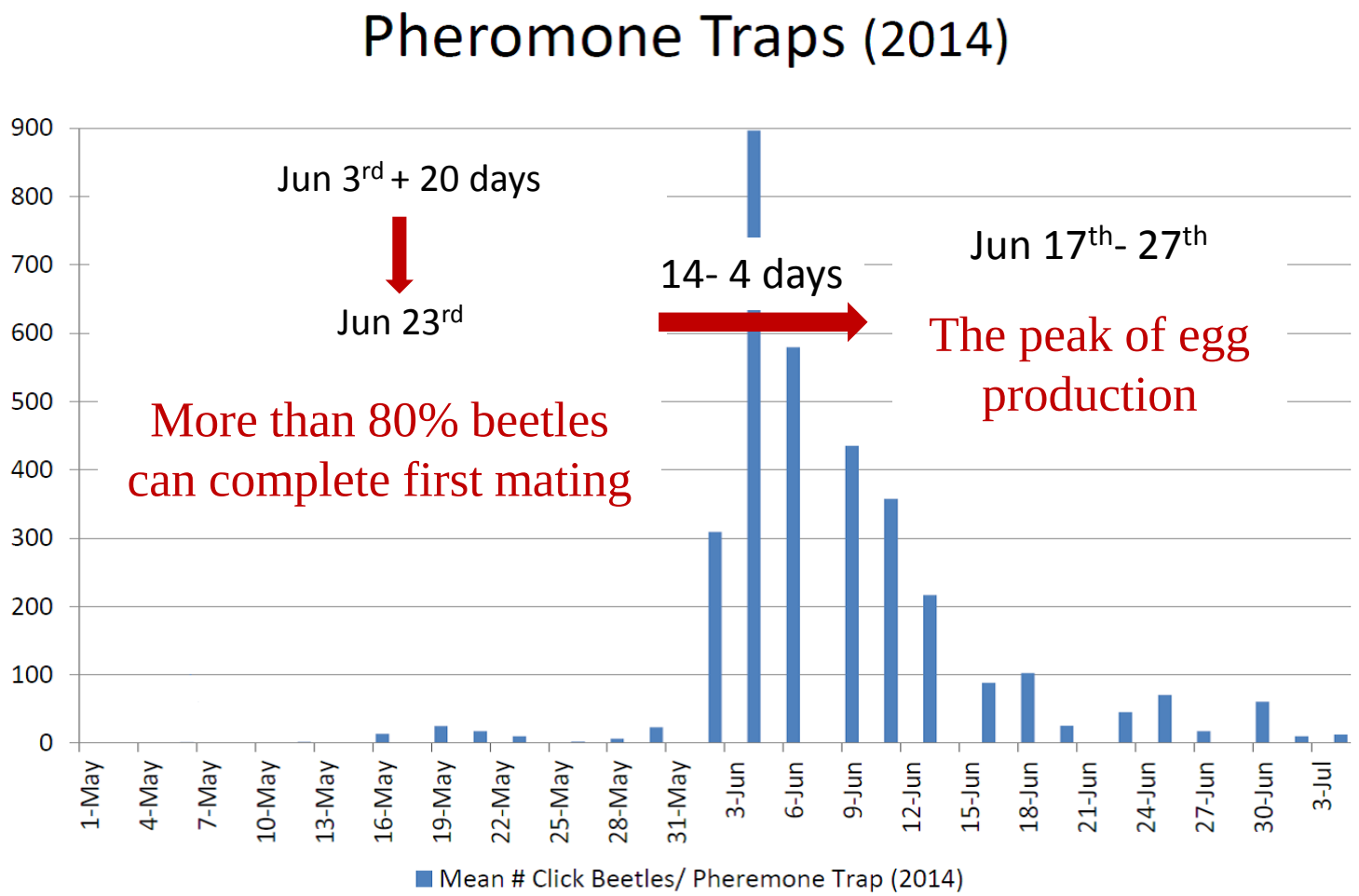
Results-Beetles



Required time for mated beetles to lay eggs

Beetles mating earlier need more time to produce eggs!

Results-Beetles



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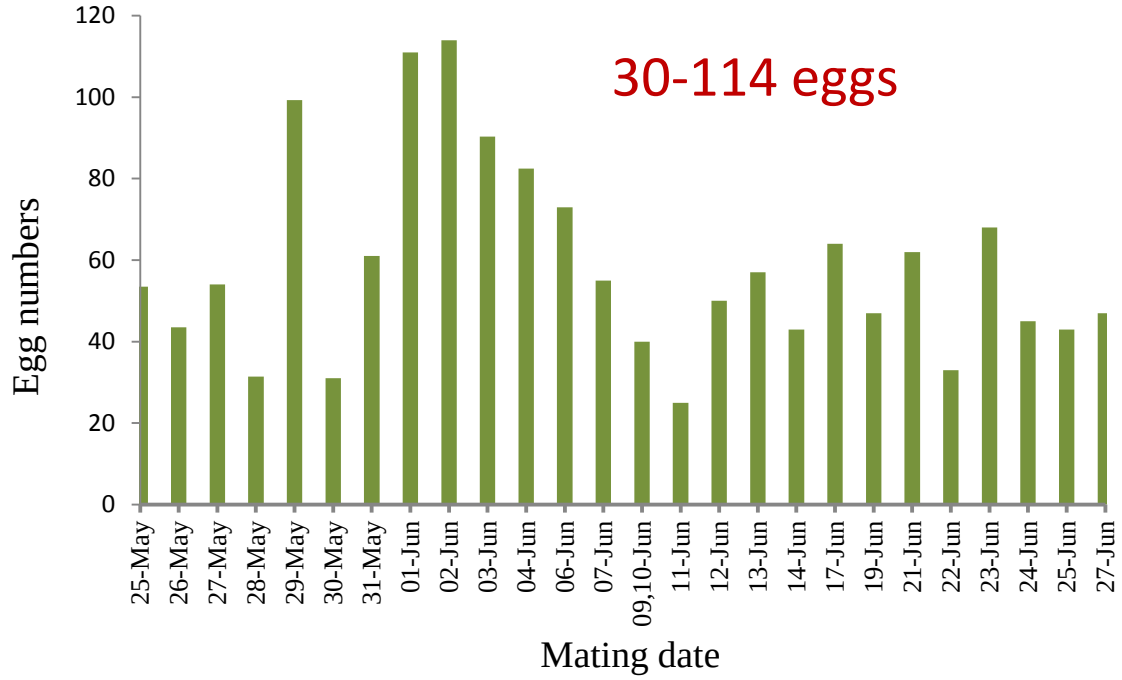
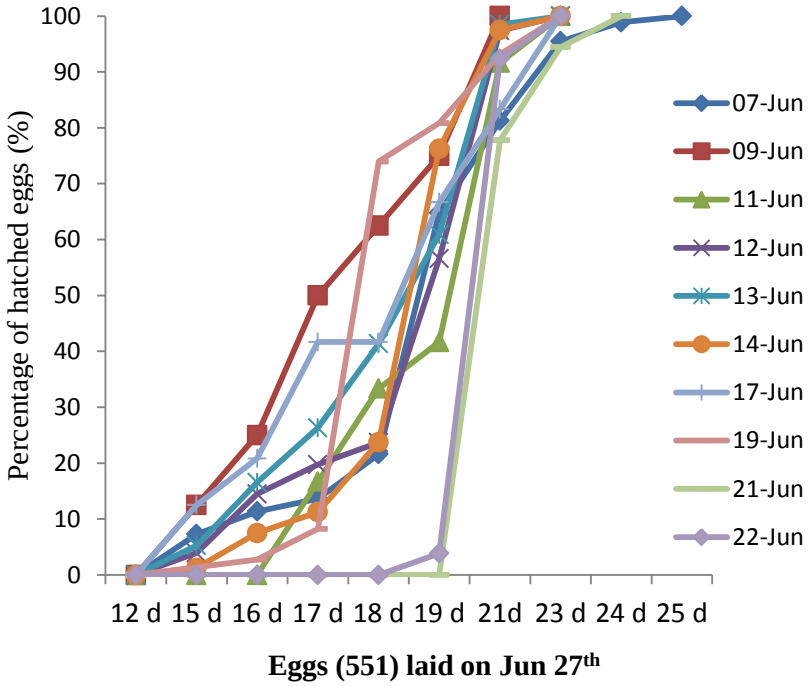
Results-Beetles



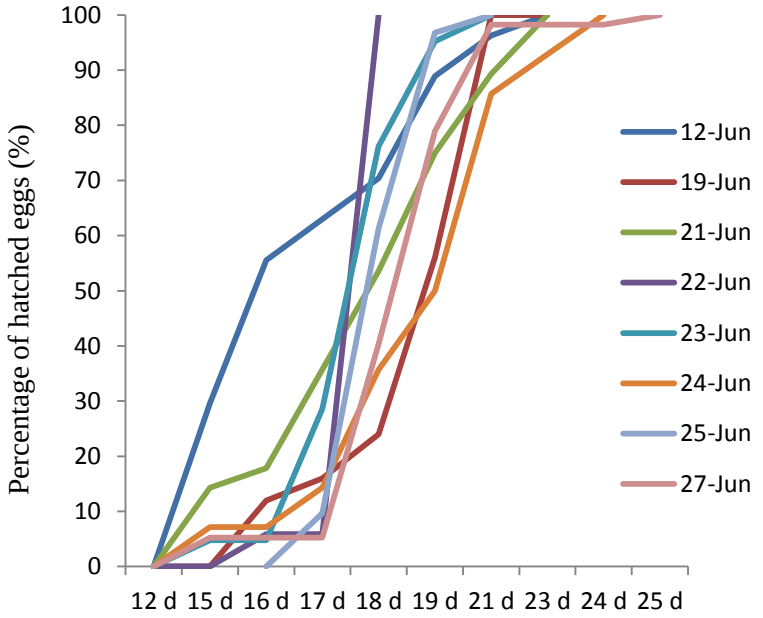
Average egg numbers per female beetle produced after first mating

- Average egg number produced by one female beetle is 59 after first mating.
- More than 90% eggs can successfully hatch!!

Results-Eggs



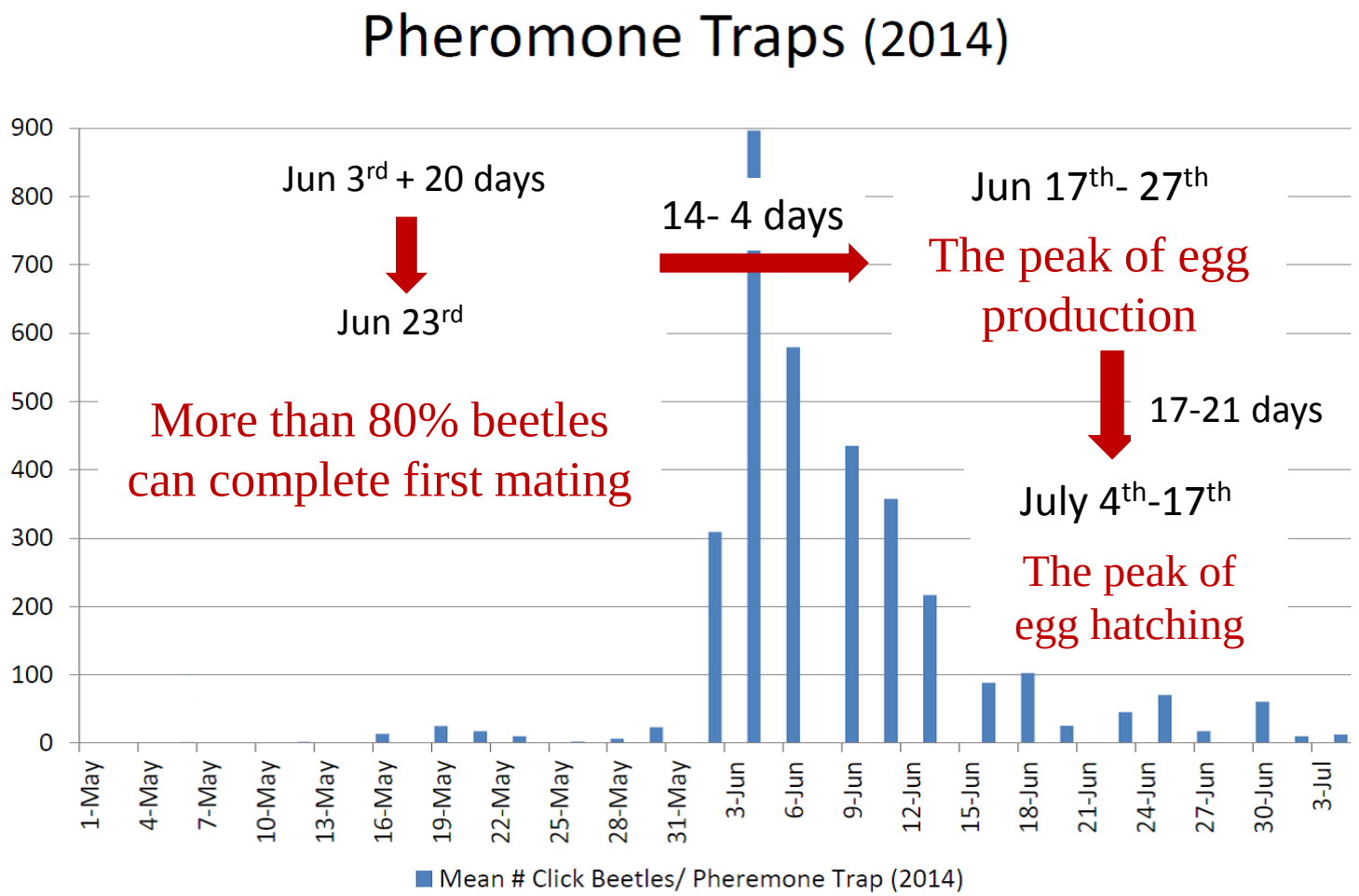
Eggs (551) laid on Jun 27th



Eggs (220) laid on July 4th

Majority eggs (total of 5910) hatched between 17-21 days after being laid

Results-Eggs



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Results-Larval Development

At least six larvae instar occurred during the first year of the development

4th or 5th instar larvae

3rd or 3rd and 4th instar

2nd instar larvae

1st instar larvae

Width of wireworm's head capsule (mm)

0.52 0.5 0.48 0.46 0.44 0.42 0.4 0.38 0.36 0.34 0.32 0.3 0.28 0.26 0.24 0.22 0.2 0.18 0.16 0.14

1 6 7 8 9 10 11 13 14 15 17 19 20 21 23 25 28 29 30 34 37 39 41 44 46 47 48 49 50 52 55 56 57 58 60 63 65 71 100 110

Days after wireworm hatching (days)

Results-Larval Development

Conclusion

- On average, one female beetle produced 59 eggs after first mating under the laboratory condition.
- Multiple mating behavior of adults indicates the high fecundity rate.

Conclusion

- More than 90% eggs were produced before end of June and 90% hatch rate was recorded.
- A large number of neonate larvae hatched before mid July.
- At least six instar larvae stages were observed during the first year of development.

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Thank you

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