

Intrinsic Rate of Increase [r] of *Rhyncomimus latipes* and Consequences for Collection, Effective Release, and Biological Control of MAM

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Weevils in the field:

- How long do they live?
- How many adult female offspring does a female produce?
- How do they disperse – speed, distance?

Practical question: how many weevils are needed to “seed” an area – relates to practical question of how many you need to collect – relates to how many are available in a given field insectary?

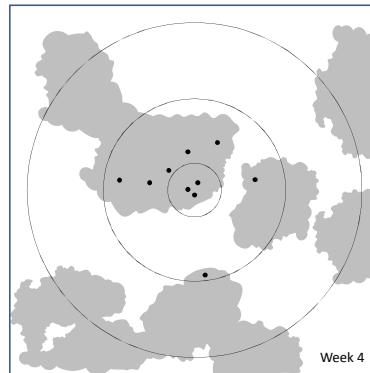
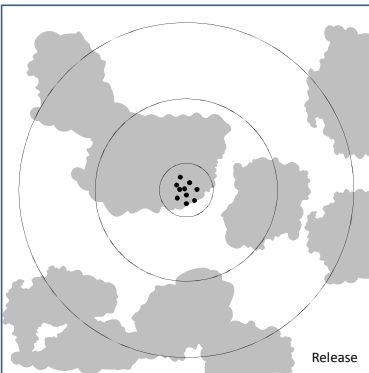
Skellam’s model – this information is needed for weevils **IN THE FIELD**

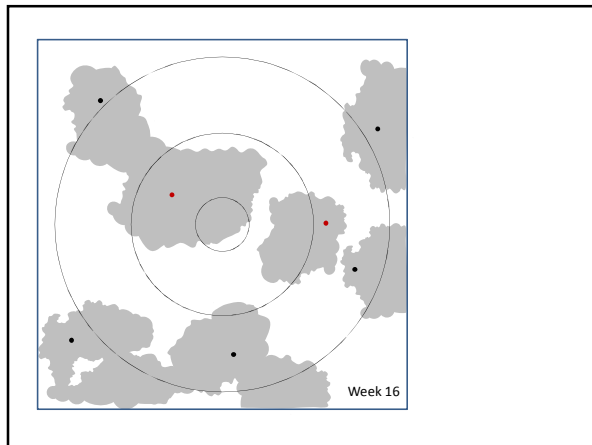
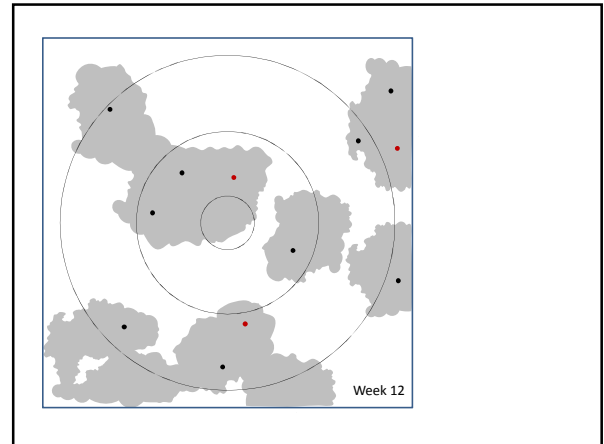
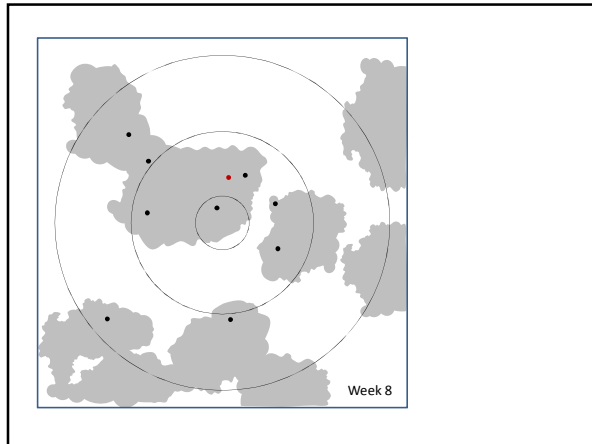
To find out how fast the population will expand from a central point . . .

$$c = 2\sqrt{rD}$$

. . . you need to know their capability for reproduction . . .

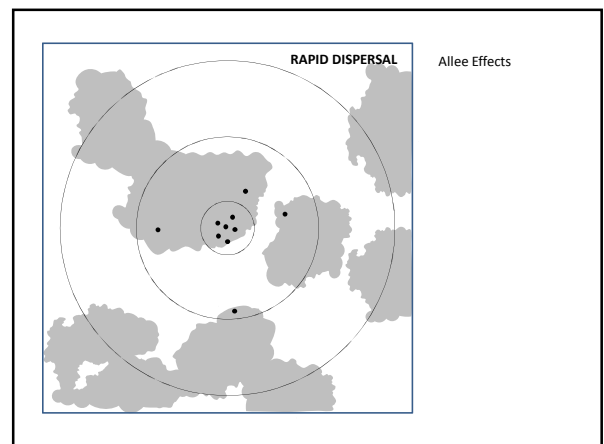
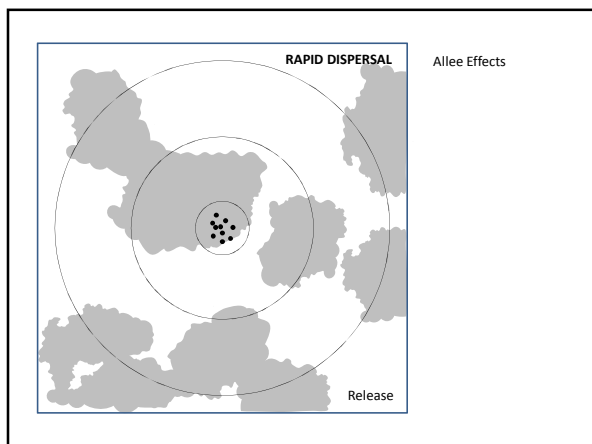
. . . and their tendency to move around

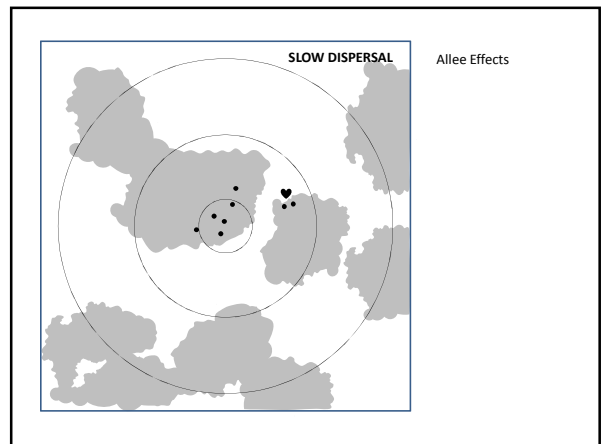
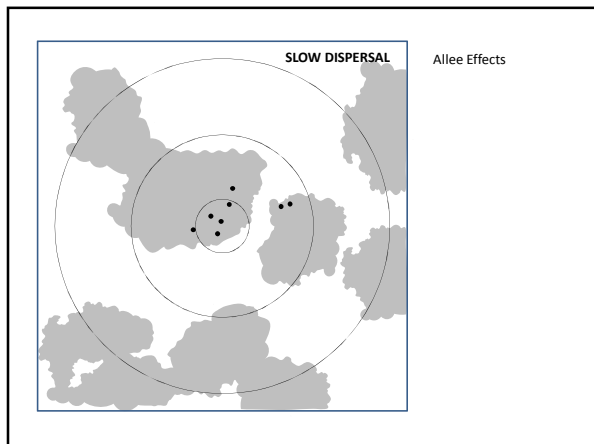
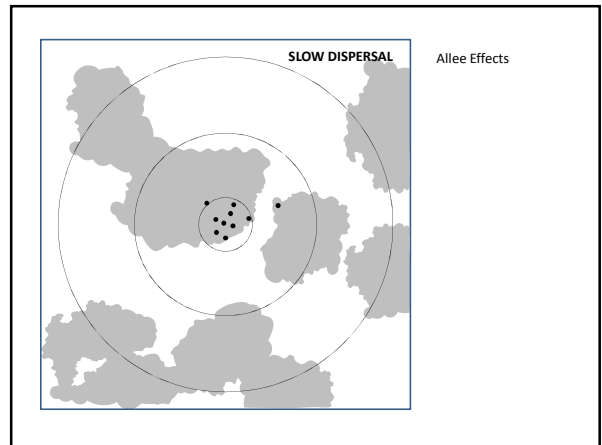
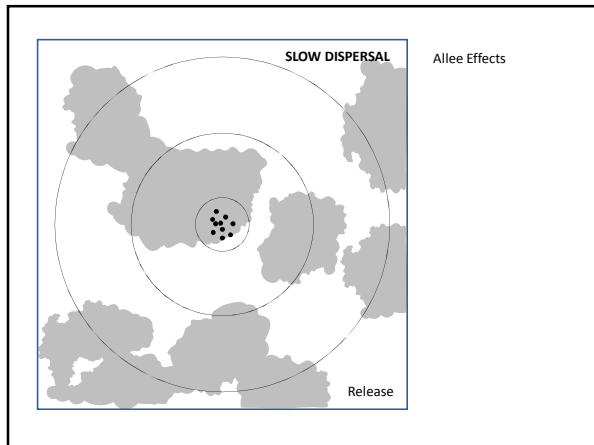
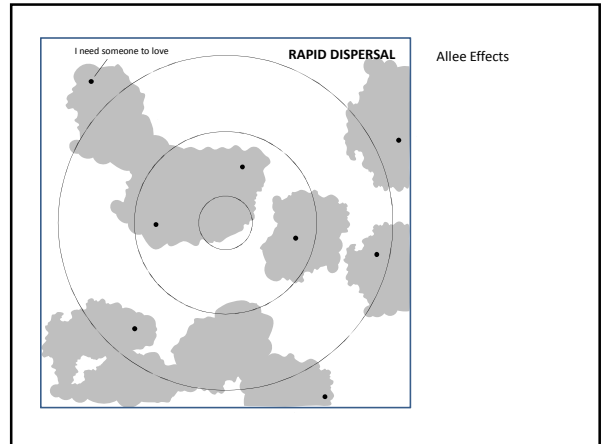
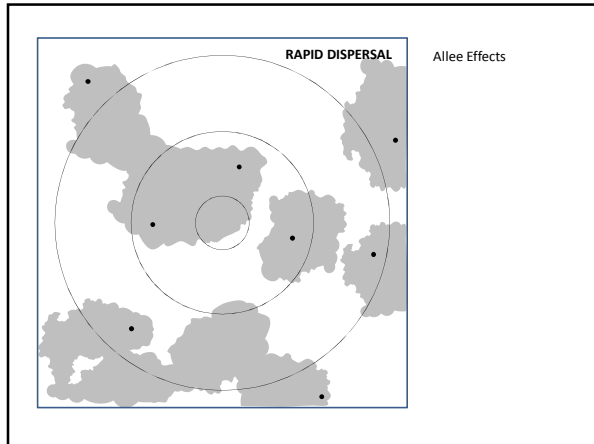




Why is it better to release many as opposed to few?

- Random events
- Speed of effect
- Bottlenecking
- Allee effects (dispersal)





$(\text{Females} \times \text{days laying} \times \text{eggs per day}) - \text{males} - \text{mortality} = \text{Females available for next generation}$

