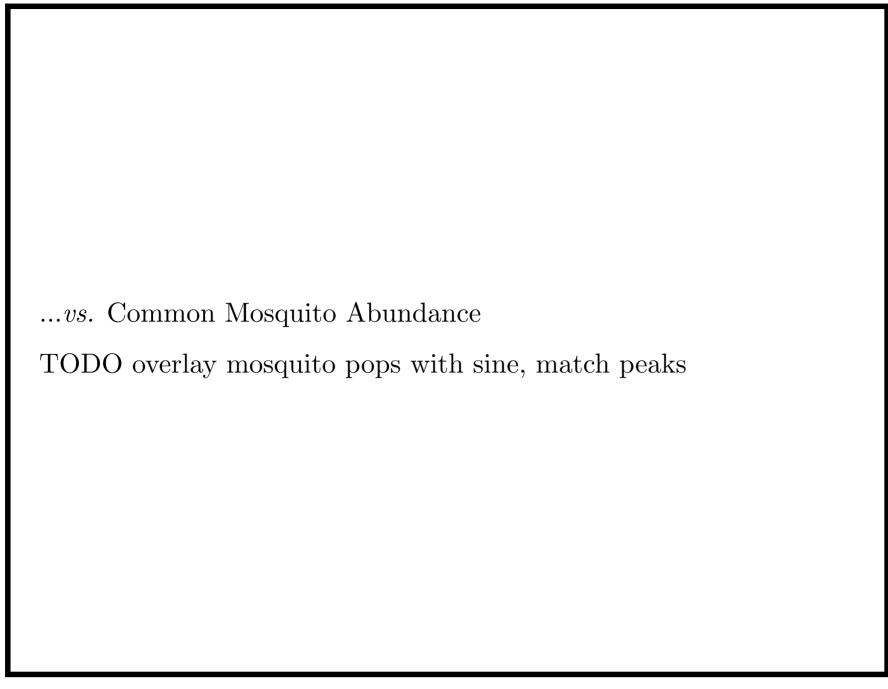
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Topic: Seasonal Vector Populations comparison of continuous, spatially homogenous models Why?

understanding of infection trends can inform interventions, health system preparations, etc.

Common Mosquito Model TODO sine	



So: low hanging fruit

preview: no sophisticated analysis to pick said fruit but these basic analyses provide fertile ground for much more quantitative detail

- 1. useful to write models in terms of measurable parameters,
- 2. measurable parameters are not scale-free,
- 3. mathematics is more useful when scale free, therefore
- 4. dimensional analysis is awesome

where M(t) is mosquito population w.r.t time

$$\dot{M}(t) = E(t) - \lambda M(t)$$

defined on  $t \in (-T/2, T/2)$ 

common usage is  $M(t) \propto$  simple trigonometric What salient observed features does that miss? aside: why replace given M(t) with given  $\dot{M(t)}$ ?

## Salient features:

- short time with appreciable population
- even shorter time for population rise and fall
- ullet low correlation with early and peak populations

Need a spike-like E(t) to replicate these. Candidates?

Spike-like could be more formally $\delta$ -function like. So: use $\delta$ -function approximations.	

TODO list approximate delta functions.	

What should we use for the shape parameters? clue: want oranges-to-oranges comparisons between the options	

I chose to make mosquito total births equivalent TODO  $M_p$  equation and then to apply a subjective "constraint" on  $\Delta t$  TODO delta t stuff