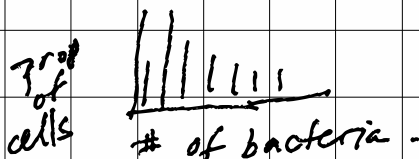


31 Jan 2022

Brown et al 2006 (Friday)

- distribution of the number of bacteria/cell

0, 1, 2, ...



↓



↓ lysis

AIC → Akaike Information Criterion

goodness of fit ('badness')

Smaller AIC (more negative)  
is a better fit to the data.

homogeneous AIC -27

heterogeneous AIC -30  $\leftarrow$

$\Delta AIC$  : difference between AIC

$\Delta AIC < 2$  : small

$\Delta AIC > 10$  : Very strong

Poisson, negative binomial, Gamma ...  
possible distributions

# effects of parasites on host demography

in modern human populations  
infectious disease is USUALLY not an  
important demographic factor  
(except HIV/AIDS)

• historically - it does!

1347 Black Death -  
bubonic plague,

Yersinia pestis .

25-50% of pop of Europe .

---

Pop regulation .

processes that control / determine  
eg. population size .

macroparasites - seem to have little impact  
(little direct mortality)

CHRONIC ~ fecundity .

• interaction w/ starvation

lab studies:  $\approx$  90% reduction in  
mouse populations

hard to detect in field:

chronic effects.

effects on fecundity

complex life cycles.

## BIOCONTROL

- might be host-specific? \*

- self-reproducing

(provided it doesn't go extinct)

- parasite goes extinct

- host + parasite both extinct

\* host + parasite coexist but host pop reduced

- coevolves

- EXAMPLES

European rabbits

↳ introduced. &

↳ (cats.) - eradicate. bio control

in other places...

Spain: lynx

↓  
rabbits

↑ myxom.

myxomatosis

calicivirus

Opuntia cactus

cactoblastis moth &

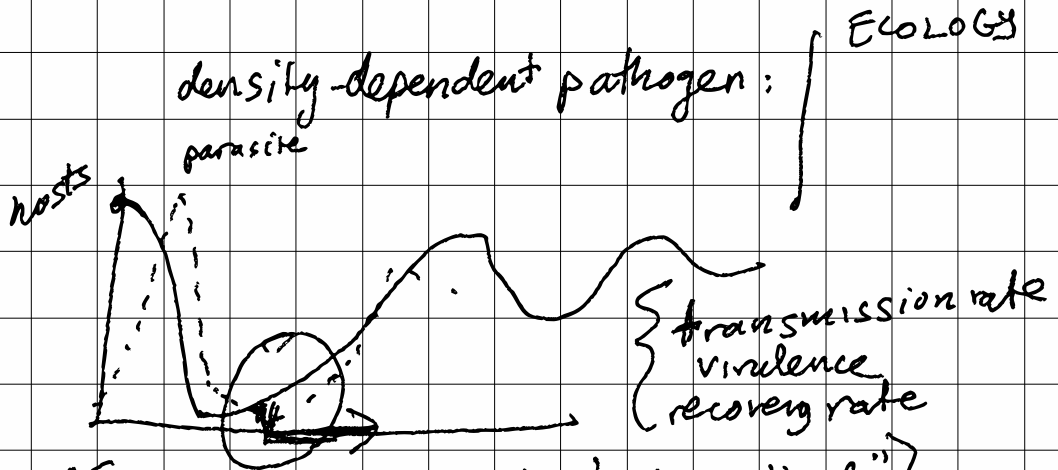
↳ FLORIDA

South American

evol of reduced virulence

tolerance rabbit

# • EXTINCTION •



"(parasites won't drive hosts extinct)"

- Stochastic extinction - (large crash)
- frequency-dependent transmission
  - ↳ behaviour - compatibility filter.
  - ↳ bees?

• [reservoir hosts / generalist parasites]

↳ (tolerant) - spillover

↳ avian malaria,  
Hawai'ian bird species