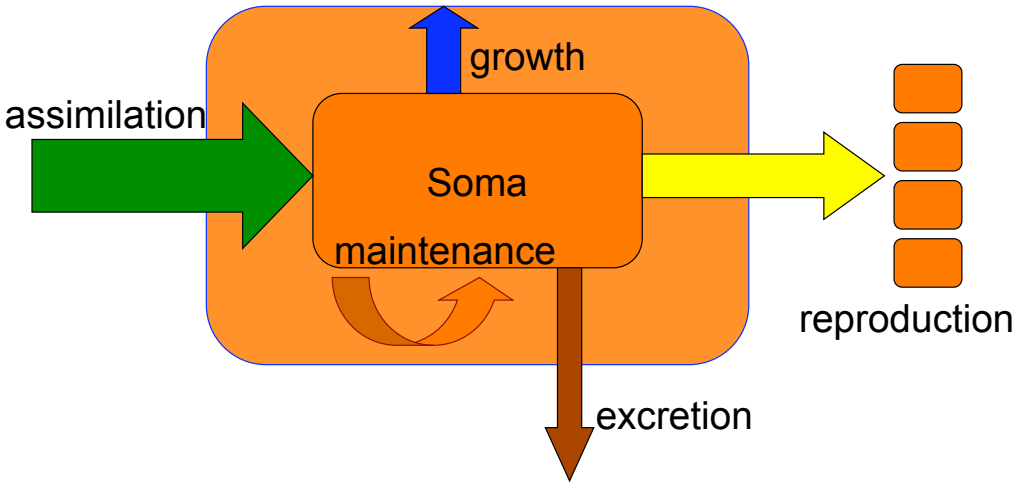
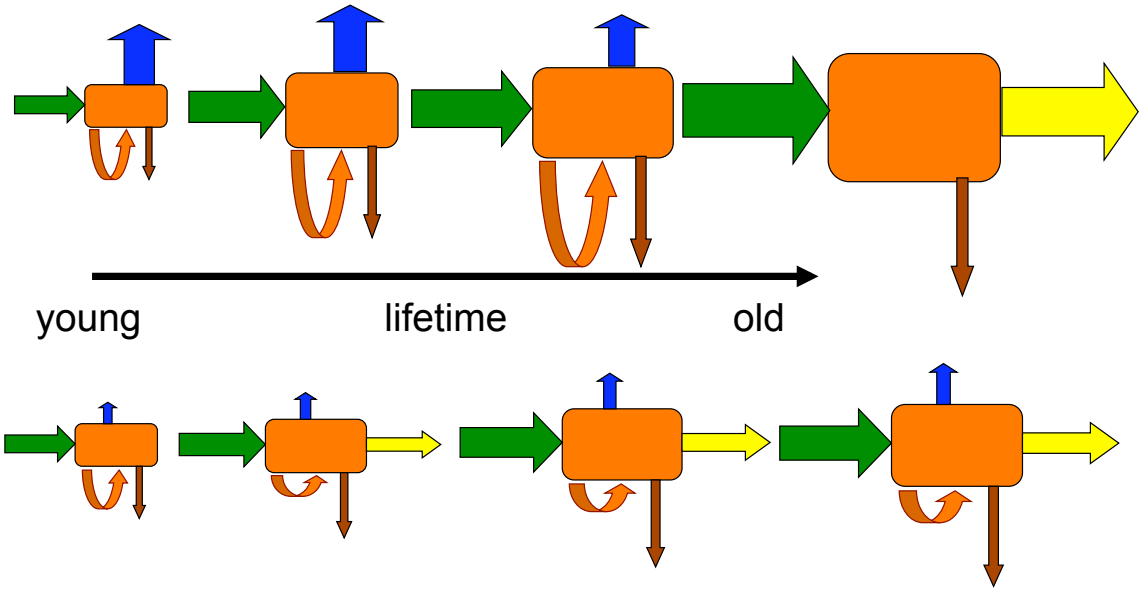
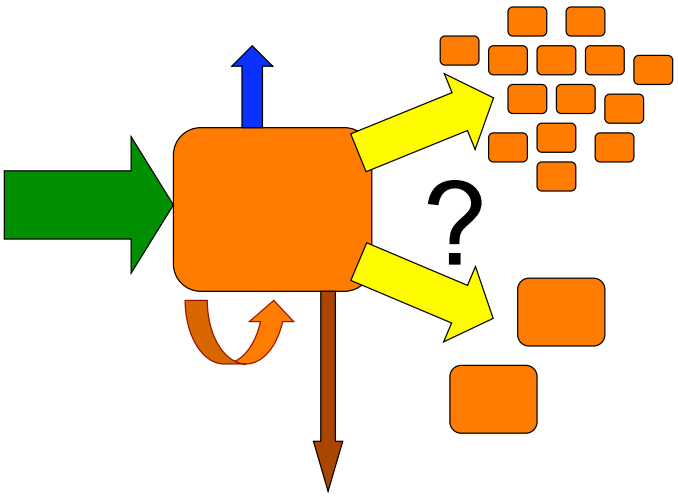
Principle of allocation



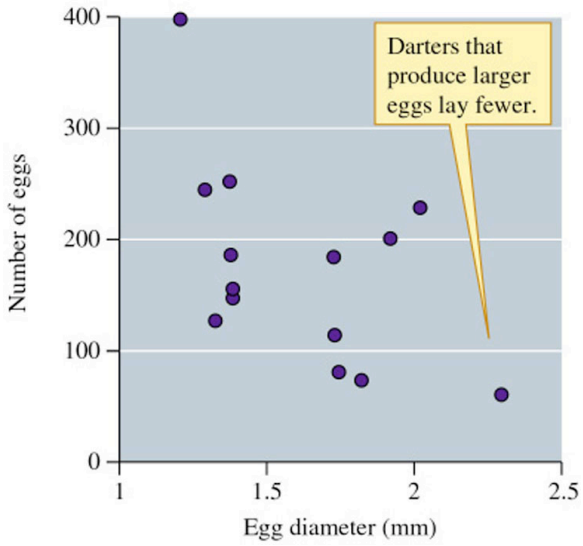
Life history - how allocation changes over the lifetime of an organism.



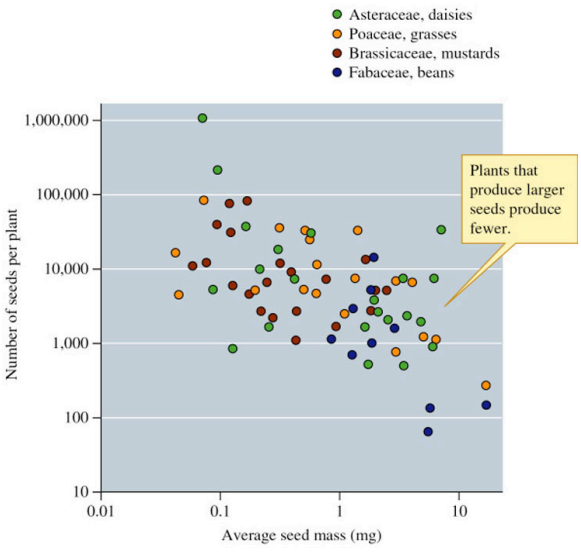
Principle of allocation leads to trade-offs

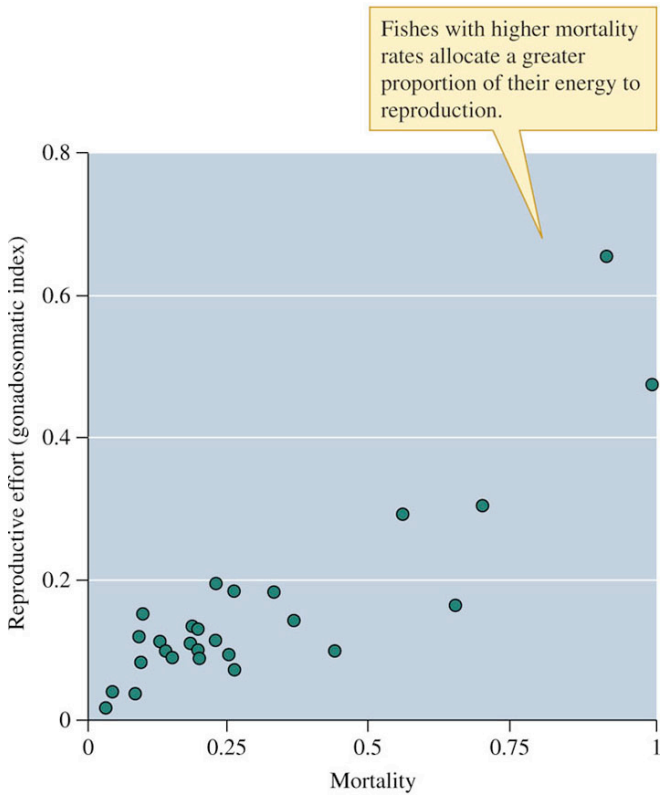


Example: Size vs. number of offspring

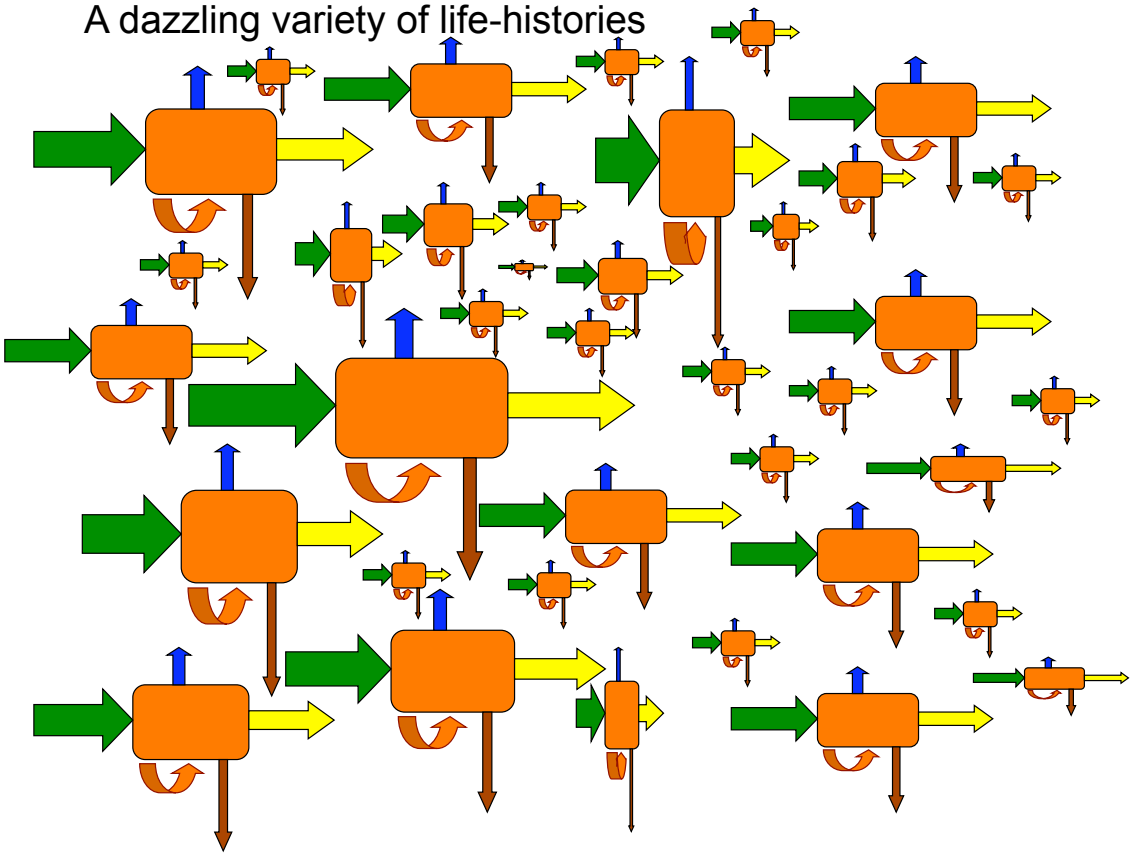


Size-number trade-offs



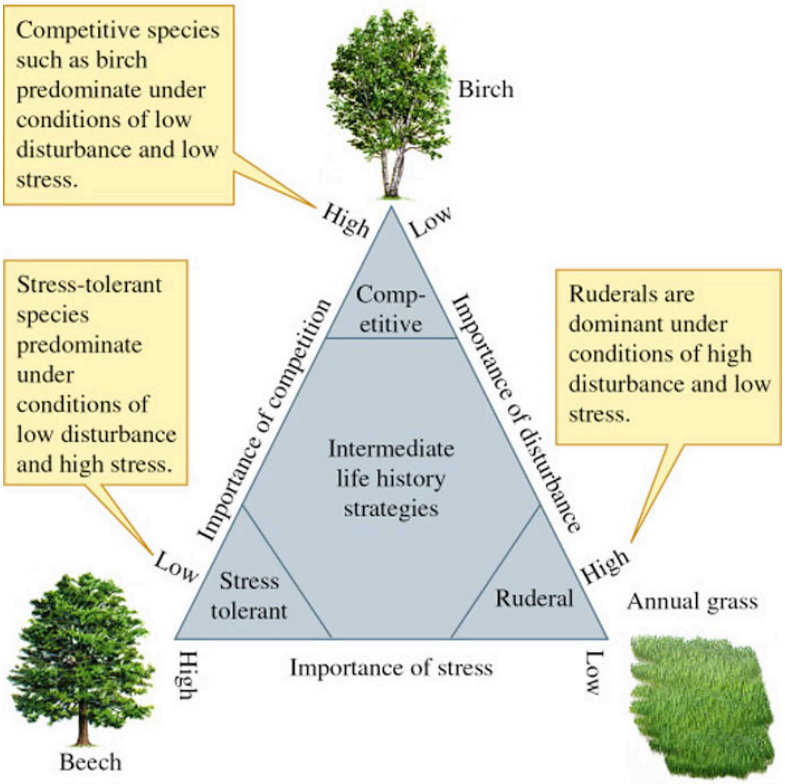


A dazzling variety of life-histories



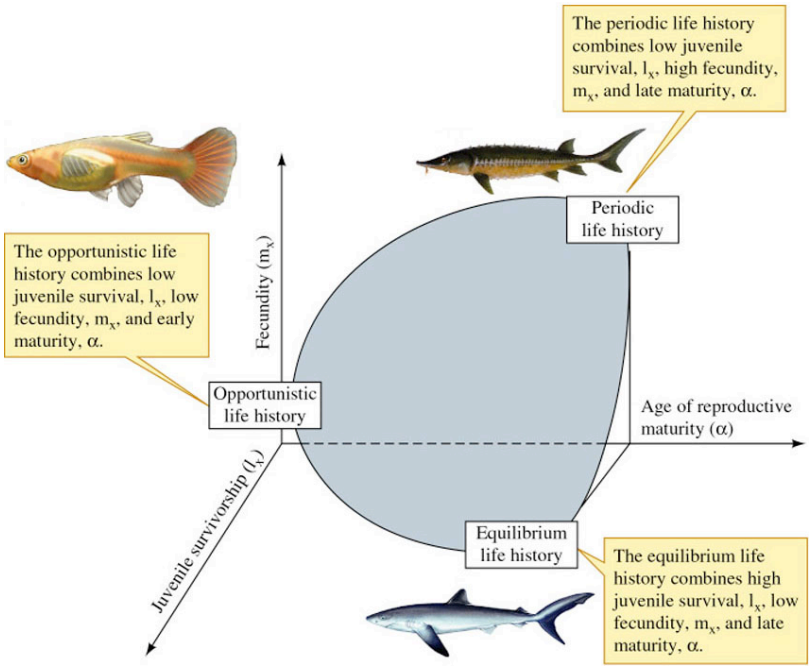
Grime's Triangle

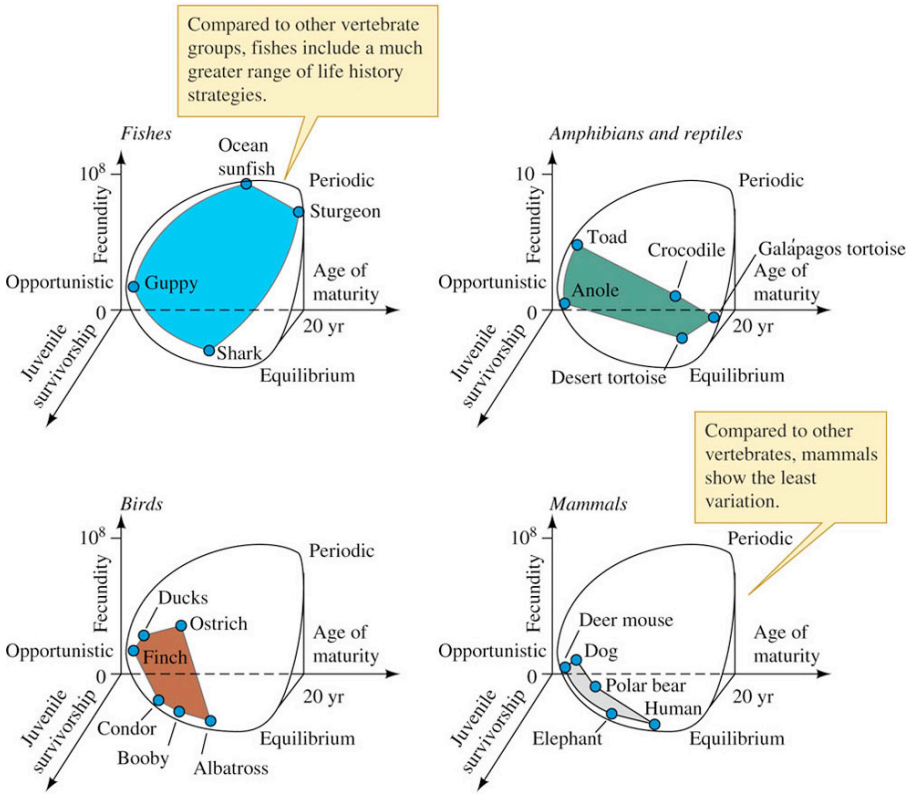
What characteristics would be associated with each strategy?



Winemiller and Rose's classification space

What are the trade-offs involved?





Competition

G.F. Gause

"Competitive exclusion principle"

No two species sharing identical niches can coexist indefinitely…

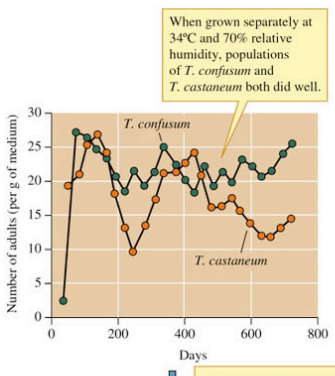
Tribolium flour beetles

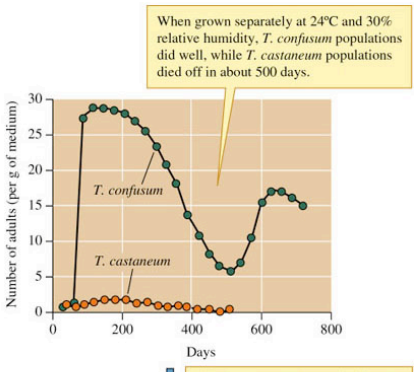
Park's flour beetles

Warm and humid

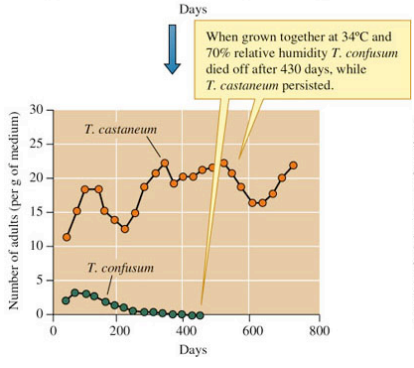
Cool and dry

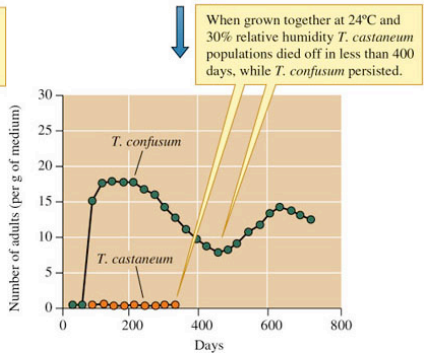
Growing separately

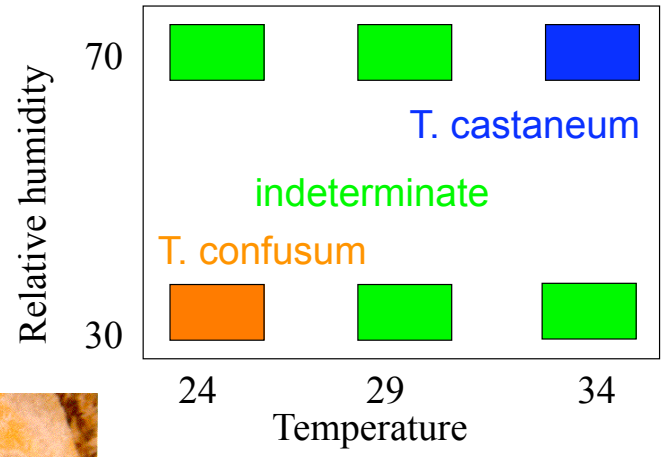




Growing together





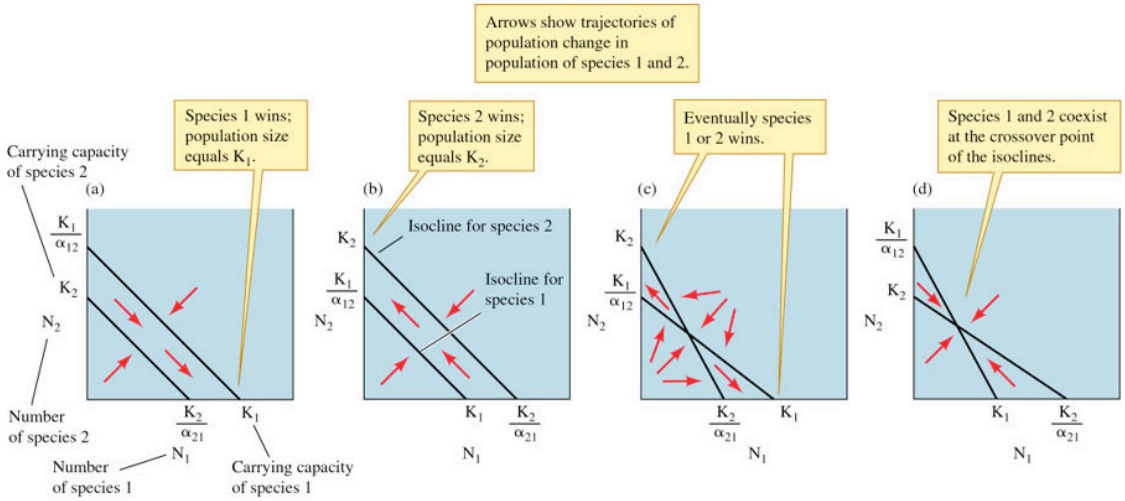


Theory of competition

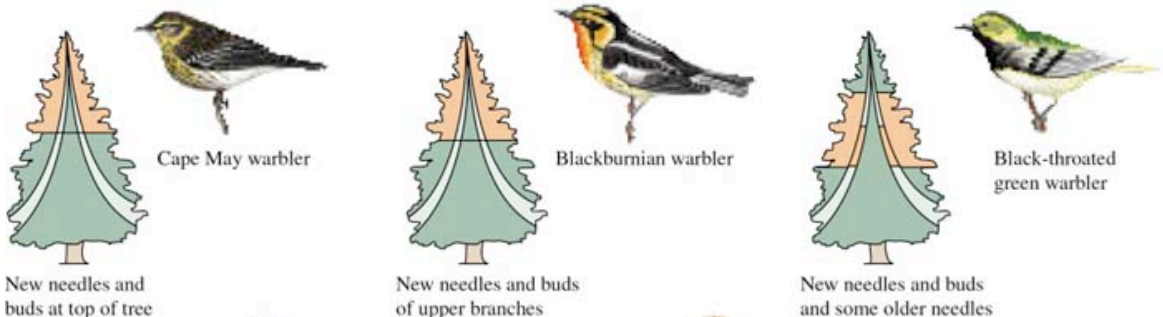
Alfred Lotka

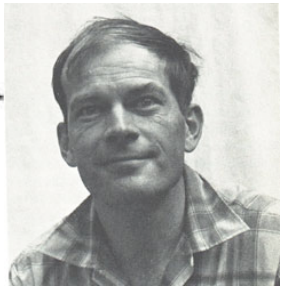
Vito Volterra

ZNGIs in the Lotka-Volterra models



Warbler Feeding Niches limit competition





Robert MacArthur