

Ecology 3

- send answer to iClicker Question 31A now.

Species Interactions 1

- Predation (+,-)
 - GM example
 - consequences
- iClicker Question 31B

Don't forget the Population Growth SimUText (due last day of class)!
* See link at Ecology 2 lecture

Due in lab **next** week:

⇒ Phylogenetic Collection

⇒ Animal Behavior Report

Final Exam Wednesday 5/19 11³⁰ - 2³⁰ here & McCormack Cafe
(info in Ecology 5)

Current Research II due Wednesday May 5

Interactions between species

Ⓐ predation : (+, -) [also parasitism, disease]

one species' fitness increases as a result of interaction

one species' fitness decreases as a result of interaction
= prey, host, "victim"

= predator, parasite, pathogen (disease-causer), etc

examples (t)

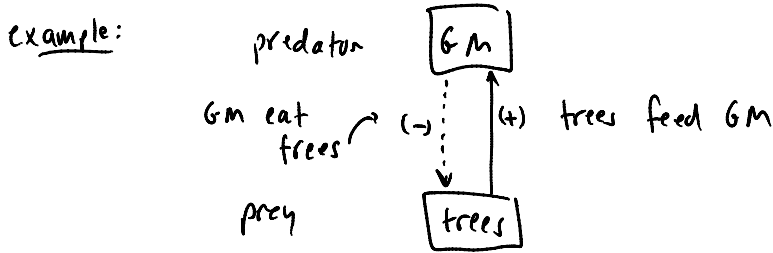
- Ⓐ grassy moth (GM) eats leaves of trees (-) } predation
- Ⓑ birds, frogs, mice, etc (+) eat GM (-) }
- Ⓒ some wasps (+) lay eggs in GM caterpillars (-) } parasitism
wasp larvae grow from GM caterpillars.
- Ⓓ virus (+) infects & grows in GM larvae (-) = disease

consequences

① short-term: predator-prey oscillations (fig 53.19 & 53.20)

→ X = interaction increases fitness of X (+)

---> X = interaction decreases fitness of X (-)



in nature more complex

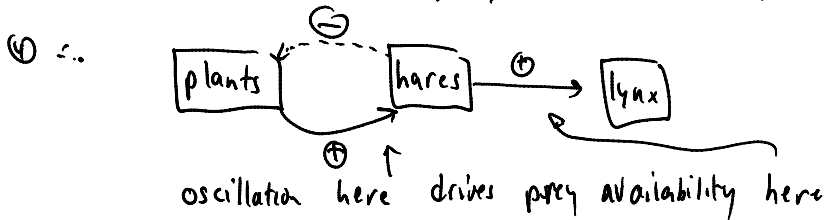
ex. lynx (cat) & hare (rabbit)

① see oscillations of lynx & hare populations (~ 4 year cycle)

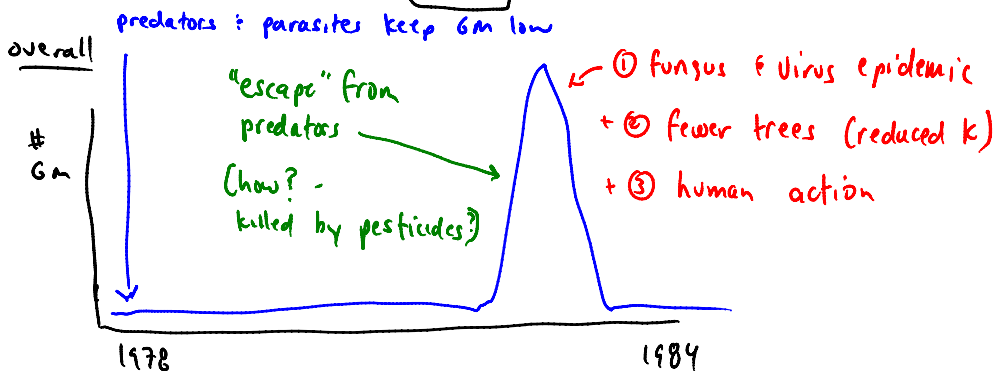
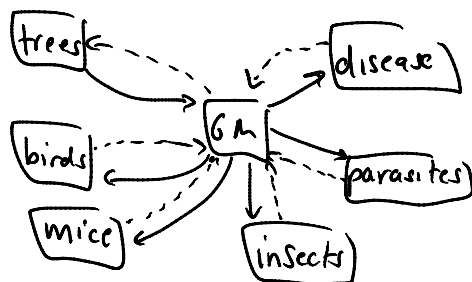
② ∴ maybe



③ but on islands without lynx, hare population still oscillates



real world of GM very complex community:



consequences ② long term evolutionary
predation is strong factor in natural selection

- ⇒ camouflage (peppered moth) 54.5
- ⇒ defenses (spines, speed, toxins, etc.)
- ⇒ deceptive coloration
- ⇒ warning coloration (bees, poison frogs) 54.5
- ⇒ mimicry (54.5)

also co-evolution - reciprocal evolutionary changes in interacting species

ex

- ① long ago: caterpillars (+) ate plant leaves (-)
- ② mutant plants make nicotine (a neurotoxin)
- ③ mutant plants eaten less ⇒ reproduce more
- ④ ⇒ plant population mostly mutant eventually tobacco
- ⑤ mutant caterpillars exclude nicotine from nervous system
∴ can eat tobacco
- ⑥ mutant caterpillars reproduce more ⇒ caterpillar pop. mostly mutant
eventually tobacco hornworm moth

now

- ⑦ mutant tobacco makes more nicotine or new toxic chemical
etc etc etc. ⇒ never static
no "optimal state"
- (longer time scale than predator-prey cycles)

Gypsy Moth Diseases

Caterpillar



Killed by Virus



Killed by Fungus



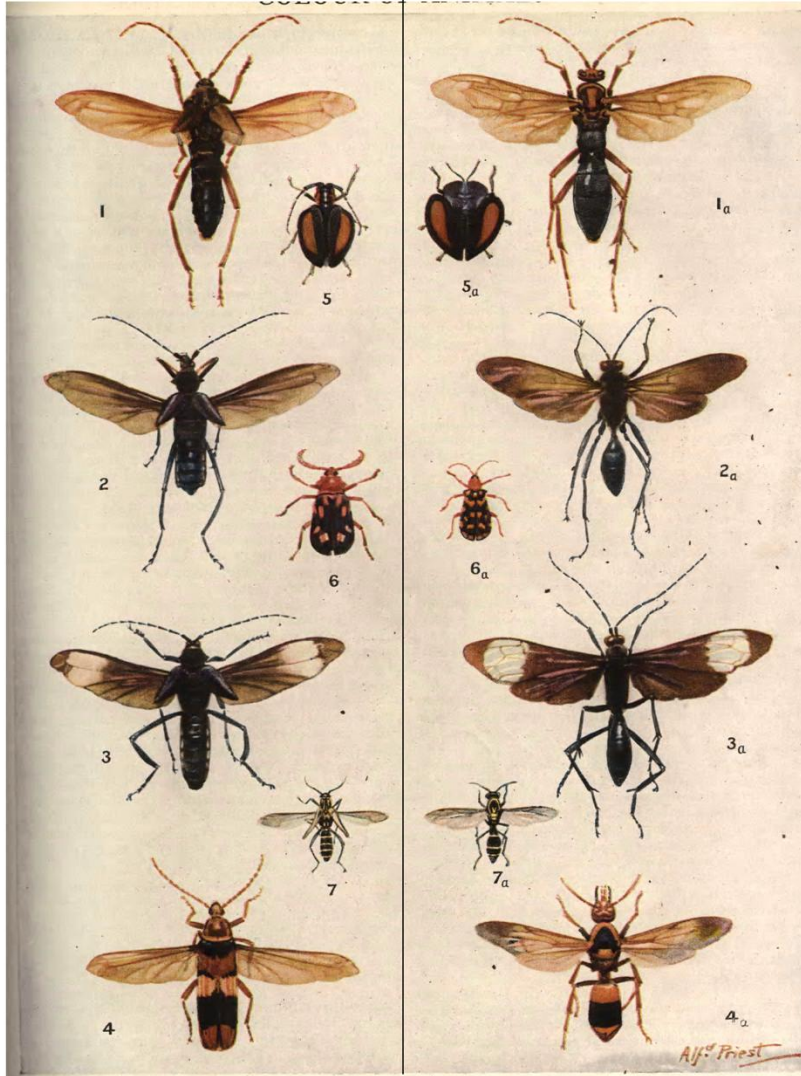
Bio 112 Mimicry

Palatable Beetles (Mimics)

- look like nasty ones but are perfectly edible {1-7}

"Nasty" insects

- wasps (stinging) {1a-4a & 7a}
- unpalatable beetles (taste bad) {5a & 6a}



Ecology 3 - 2