

Exploitation

Questions
Examples (Field and Lab)
Model
Assumptions

Exploiters

Kills Victim:

	Immediately	Eventually	Never/seldom
Predator	YES		
Parasitoid		YES	
Parasite		Sometimes	Sometimes
Herbivore	Sometimes	Sometimes	Sometimes

Detritivores utilize detritus, but do not reduce population growth of resource

The behavioral manipulation hypothesis

Life cycle of Plagiorhynchus cylindraceus

- Adult female *Plagiorhynchus* lays eggs within the intestines of infected birds. The eggs are shed with feces.
- A terrestrial isopod eats the feces of an infected bird. The eggs of *Plagiorhynchus* hatch within a few hours; they develop into a mature larva in 60-65 days.
- The mature larvae of *Plagiorhynchus* alter isopod behavior; infected isopods leave sheltered areas and wander in the open.
- Leaving shelter makes the isopods more conspicuous and vulnerable to predation by birds. When eaten by a bird, the mature *Plagiorhynchus* attaches to the bird's intestinal wall.

No one knows how the parasite causes these changes pill bug behavior

14-2

Influence of *Adelina tribolii* on competition between flour beetles

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In the absence of *Adelina*, *T. castaneum* outcompetes *T. confusum* most of the time.

However, in the presence of *Adelina*, *T. confusum* is usually the better competitor.

Conditions	<i>T. Castaneum</i>	<i>T. Confusum</i>
No parasites	~75%	~25%
With parasites	~30%	~70%

Uninfected beetles | Infected beetles

Conditions

http://openstax.org/r/anna-edu/chapter-13/section-13.1/figure-13.13

Temporal Dynamics of exploitation- Snowshoe Hares (Fig 14.14 Molles)

- Hares in boreal N. A.
- Lynx eat mostly hares
- Eat twigs of shrubs and trees
- Linked cycles?

Abundance

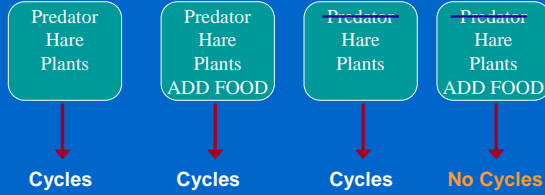
Year

What causes the cycles?

- Hare-plant interactions (with predators tracking hares)?
- Predator-Hare interactions?

Time for an experiment

Experimental Plots



Conclusion: Cycles are caused by Hare-Plant interactions, and by Predator-Hare Interactions. Both, in combination, probably act in the wild.

(See Stenseth et al. 1997 *PNAS* 94:5147)