

Small Hive Beetle (SHB): *Aethina tumida* Murray



First described in 1867



Native to Africa

In its native range

Secondary pest due to:

- Absconding
- Aggression
- Removal of eggs
- Encapsulation
- Patrolling



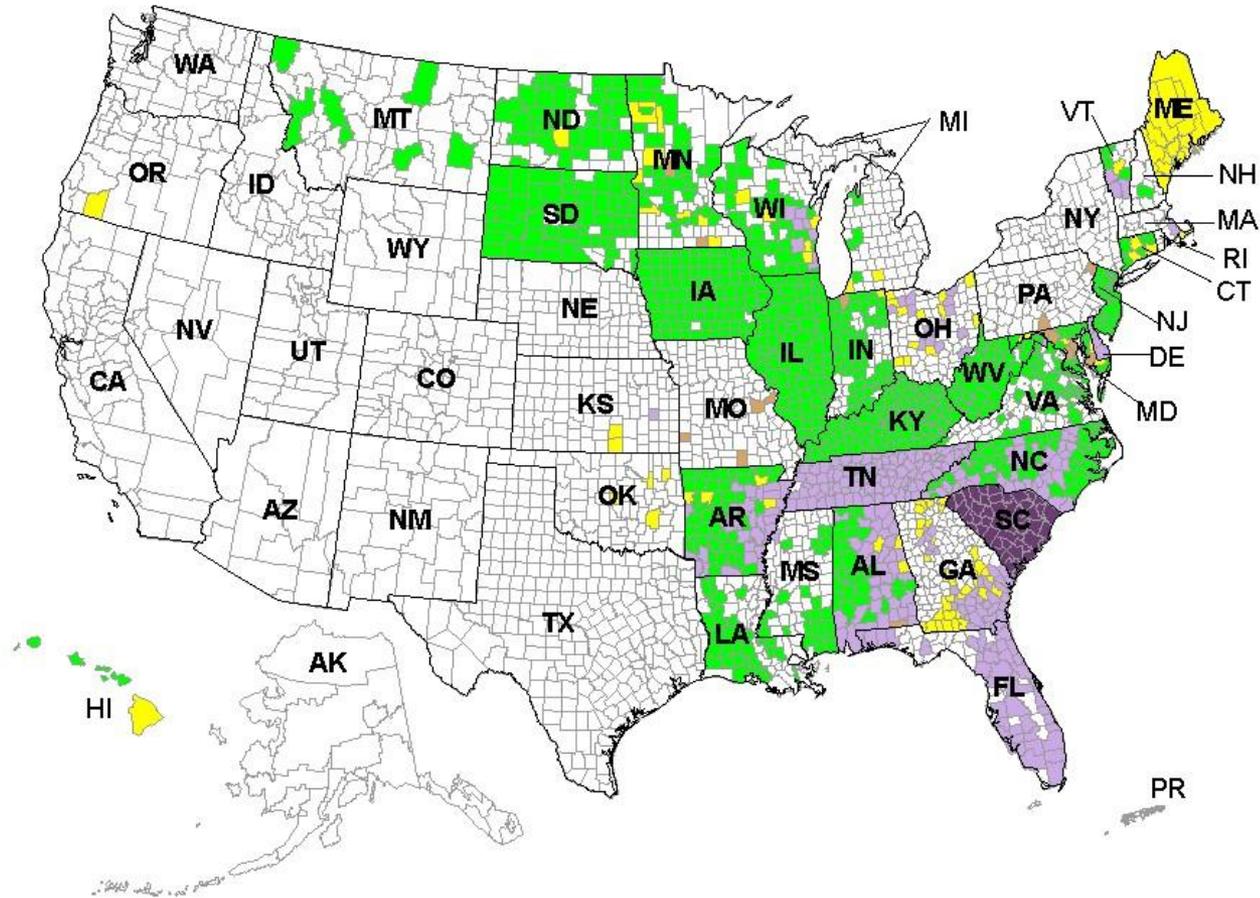
U.S. Invasion History

- First report from an apiary in St. Lucie, Florida in 1998
- Unidentified specimens found in South Carolina in 1996
- Were found in apiaries in Georgia less than one year later



Range

	Established by Consensus		Being Eradicated		Found
	Established by Survey		Eradicated		Not Found



So what's the BIG deal?

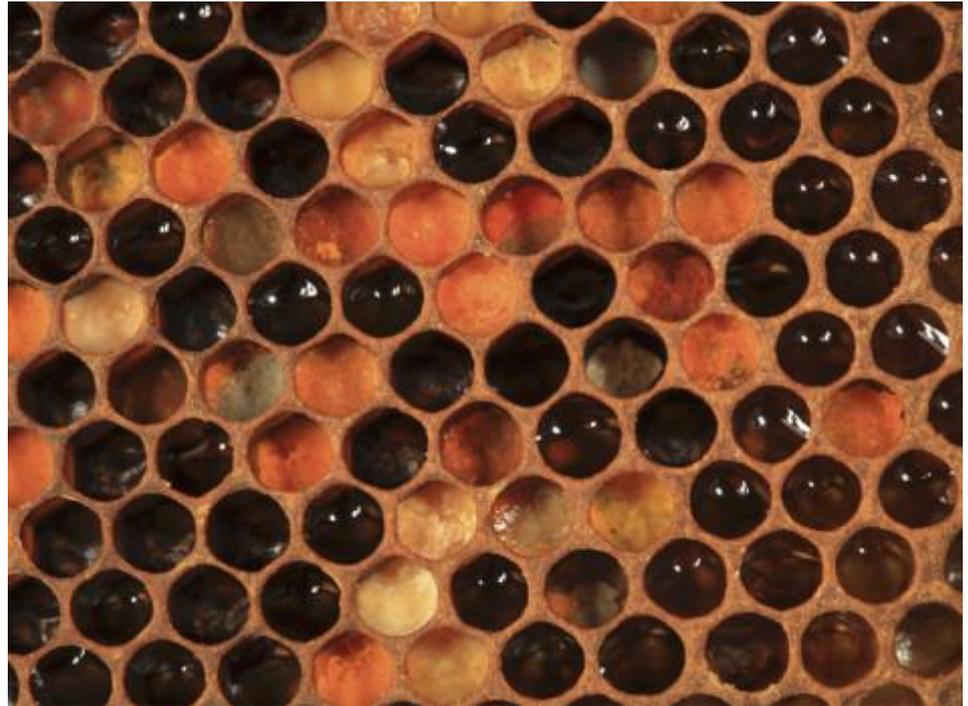
- <http://www.youtube.com/watch?v=rVwZV5xqV5k>

Why so successful?

- European bees have different behavior
- Different climate
- Efficient in long range transportation
 - Movement of infested colonies
 - Migratory beekeeping
 - Package bees
 - Beekeeping equipment
- Overwinter in honey bee cluster
 - Short cut in life history???

Host finding

- Good flyers
- Can detect stressed colonies
13-16 km
- Also attracted to adults, honey and pollen

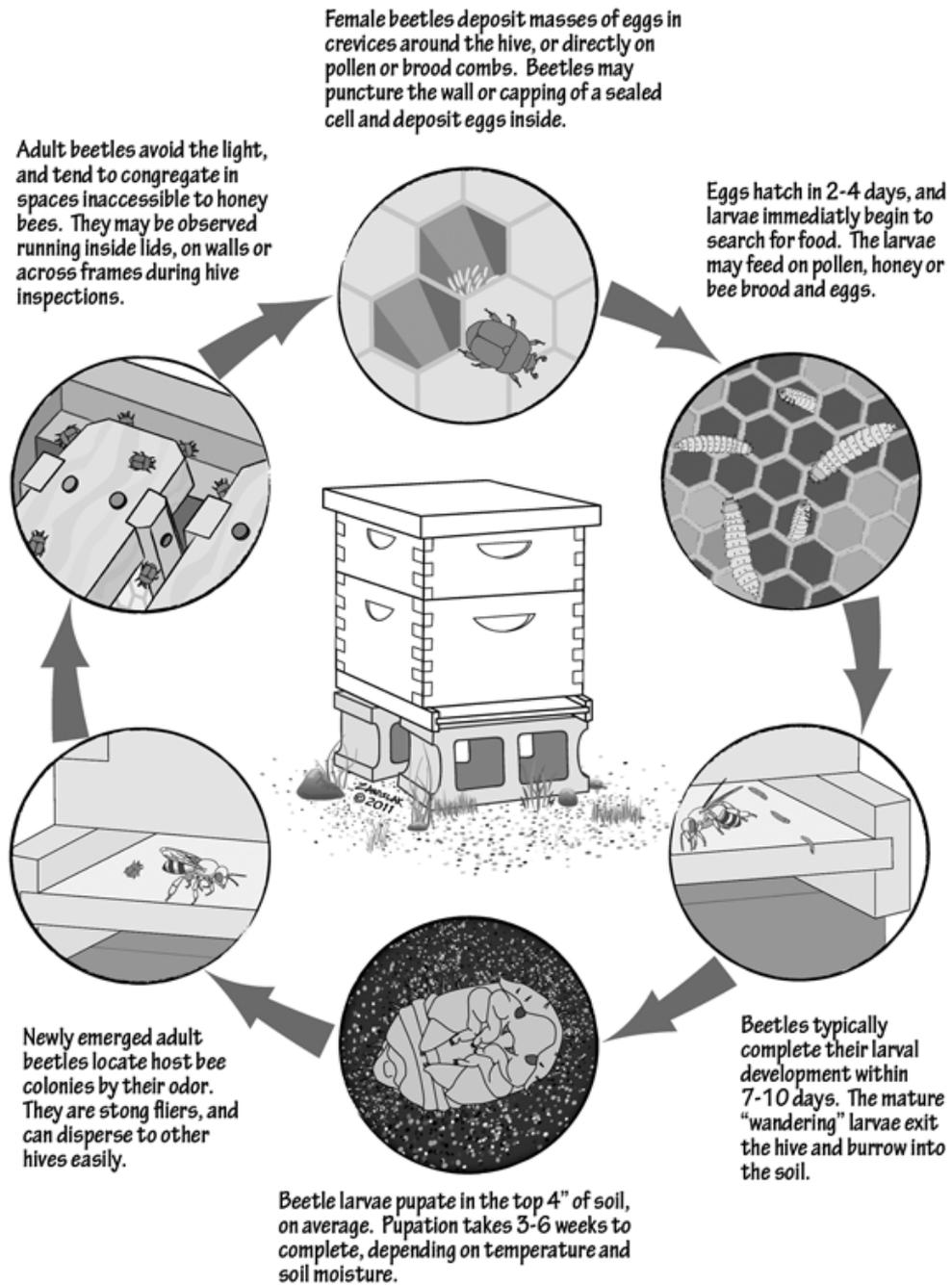


Host intrusion

- Small nest entrances easier to defend
- Beekeeping activities can exacerbate intrusion



Life cycle



Description= larvae

10-16 days to mature



Description of pupae

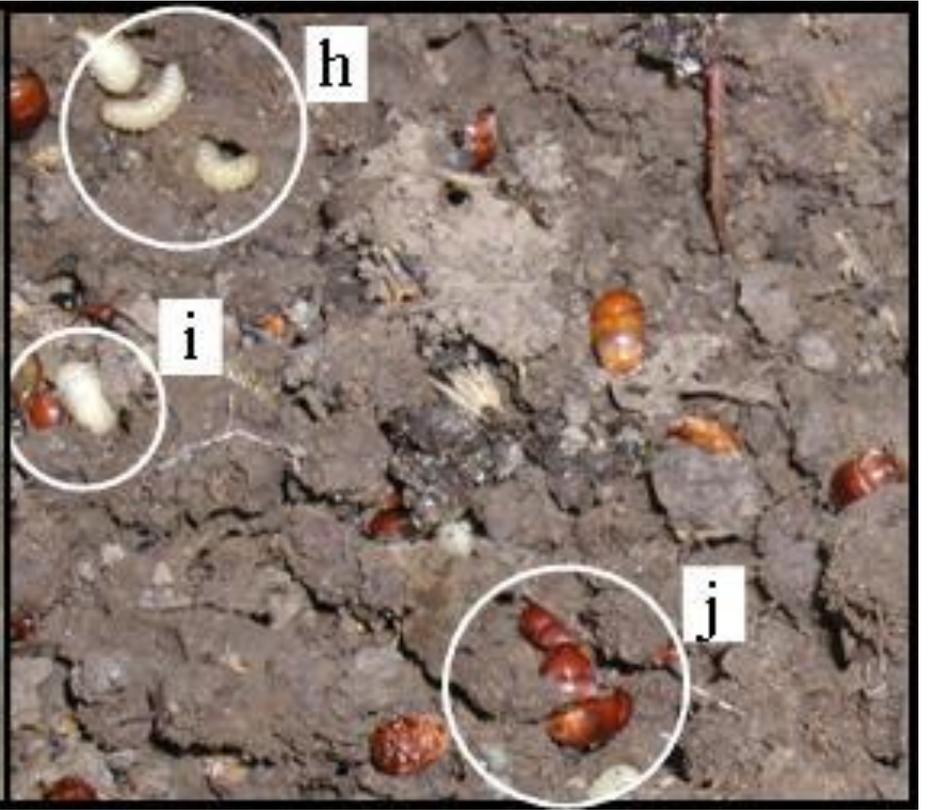


Pupation 3-4 weeks

Description= Adult

- Order Coleoptera: Family Nitidulidae
 - Sap beetles (~2800 described species)
- Adults broad, flattened. 5.7 mm long x 3.2 mm wide
- Move quickly and difficult to pick up
- They like the dark and hide
- Begin egg laying a week after emergence
- Can have 4-5 generations a year





Infestations



Damage

- Destruction of stored bee products
- Slimy comb!
- Fermented honey



Alternative food sources

- Fruit: cantaloupe, avocado, grapefruit

However, they develop and **reproduce** on honey bee pollen



Behavior

- Defense posture- turtle like



Behavior

- Dropping



Behavior

- Hiding



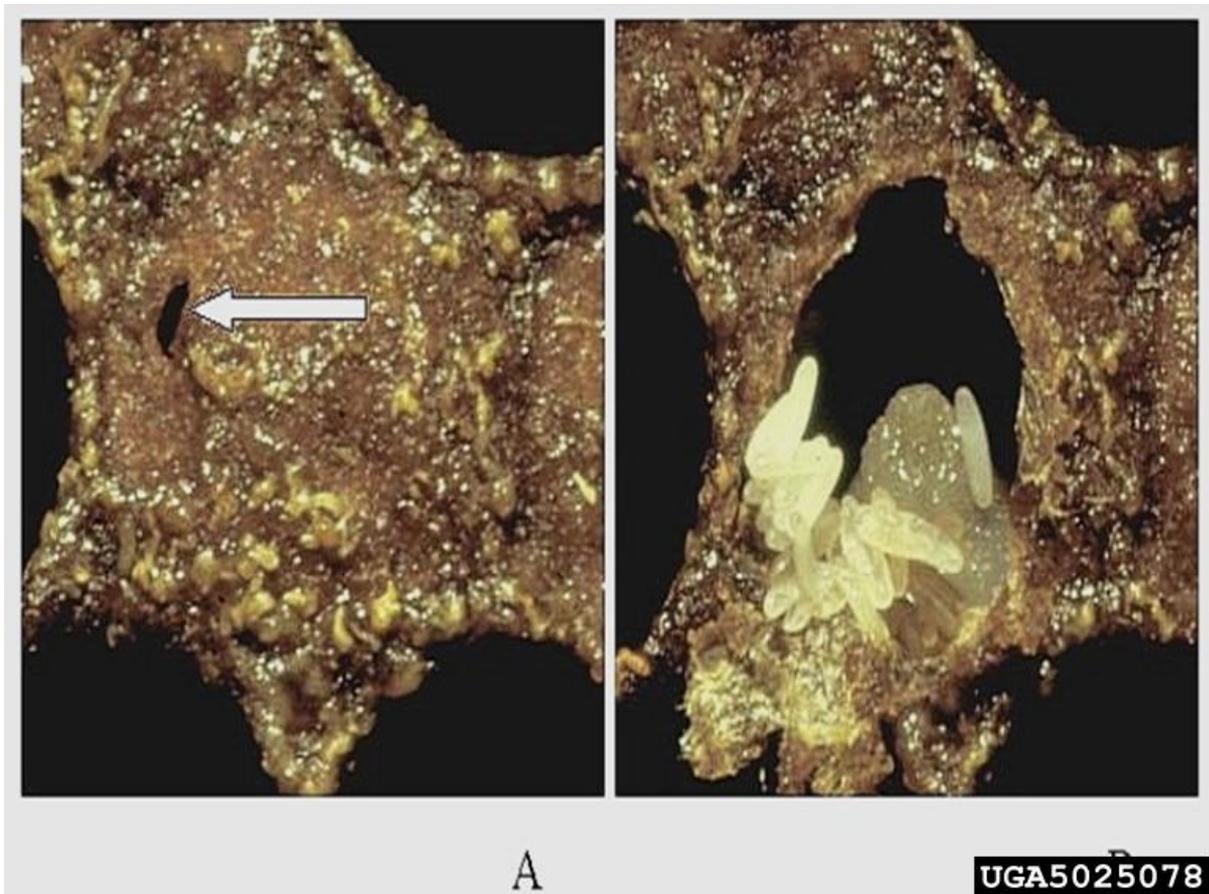
Behavior

- Escape



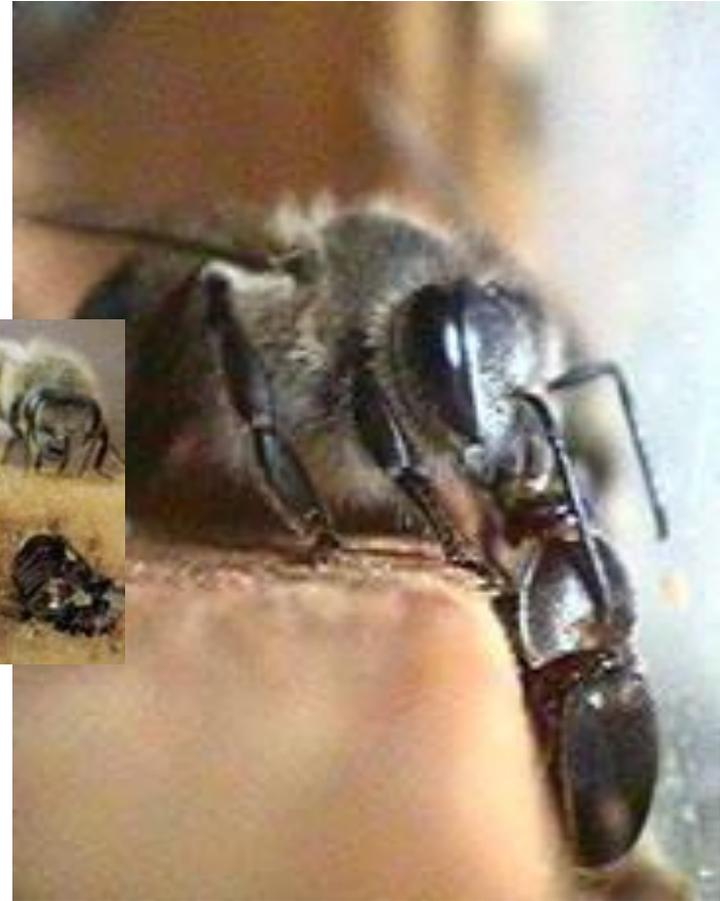
Behavior

- Egg laying in small gaps



Behavior

Trophollactic mimicry



Control

- Sanitation



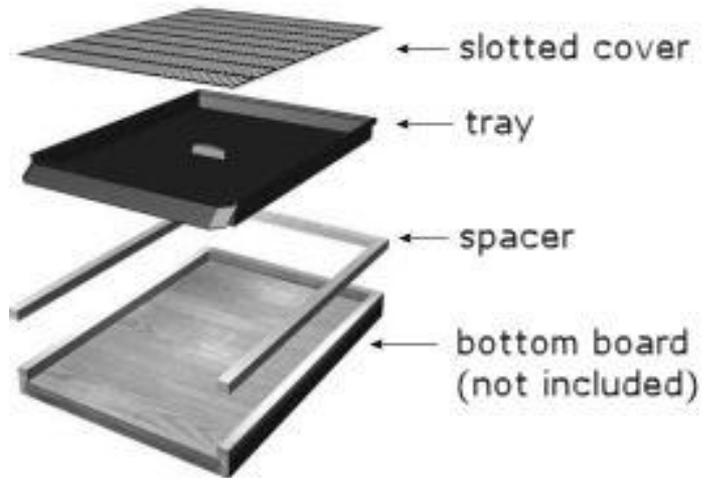
Control

- Apiary location



Control

- Trapping



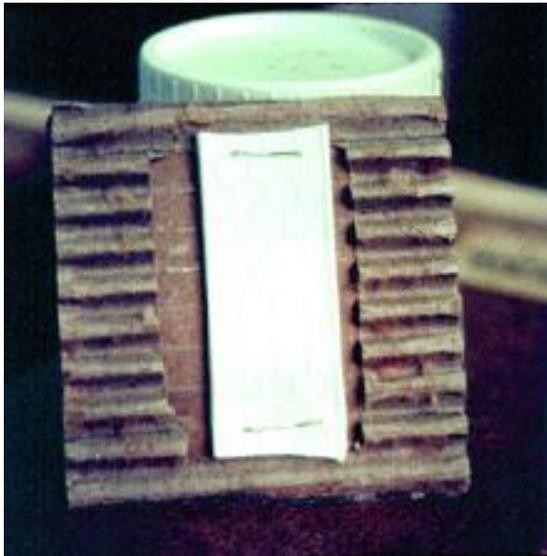
Control

- Trapping



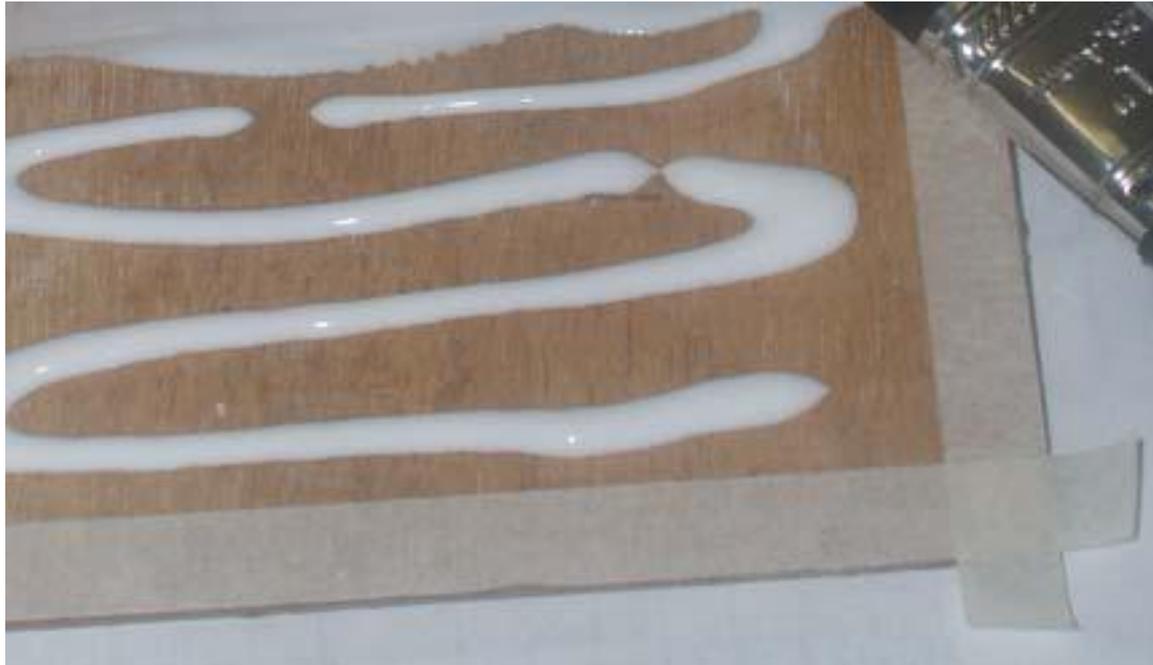
Control

- Chemical



Control

- Mechanical: diatomaceous earth



Control

- Biological
- five million nematodes treats ~10 hives
- Genera Steinernematidae & Heterorhabditidae



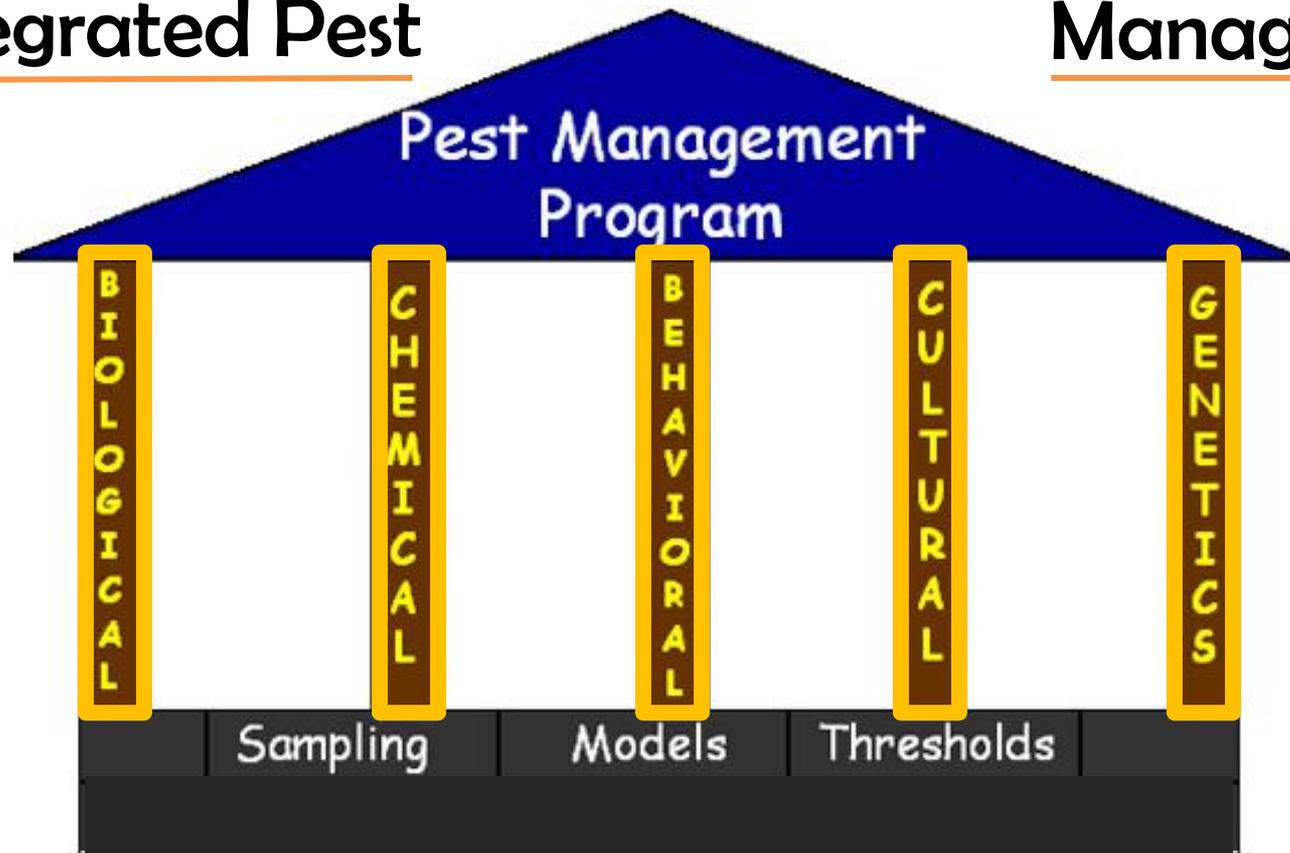
Control

- Biological





I brake for
small hive
beetles !



IPM coined in 1972

- An approach that combines the use of chemicals, biological control methods and cultural control methods to keep pest levels below the economic threshold while having minimal effects on biological complexes.

My Method: BEETLE BOPPING



Questions

