# Insect Adaptations

# What is an adaptation?

## Some types of insect adaptations:

Development:
growth, metamorphosis, voltinism, diapause

Protection
camouflage, mimicry & aposematic (warning) coloration

Lifestyle (ecological niche)

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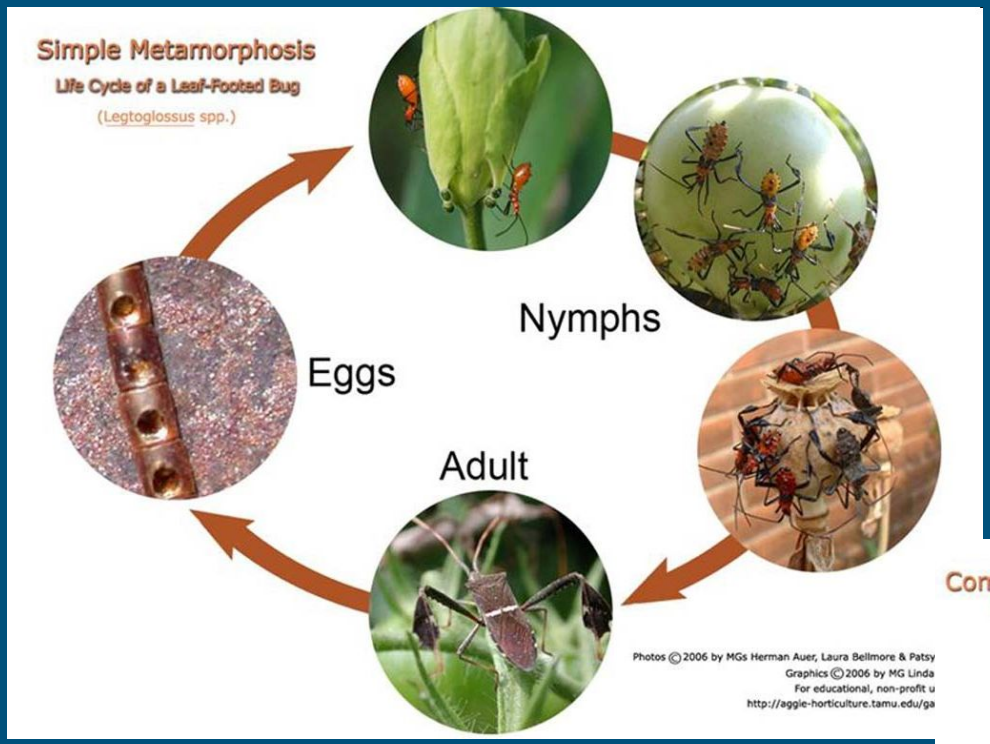
- Exc
- Inst
- Mo
  adu
- Hor
- Rat

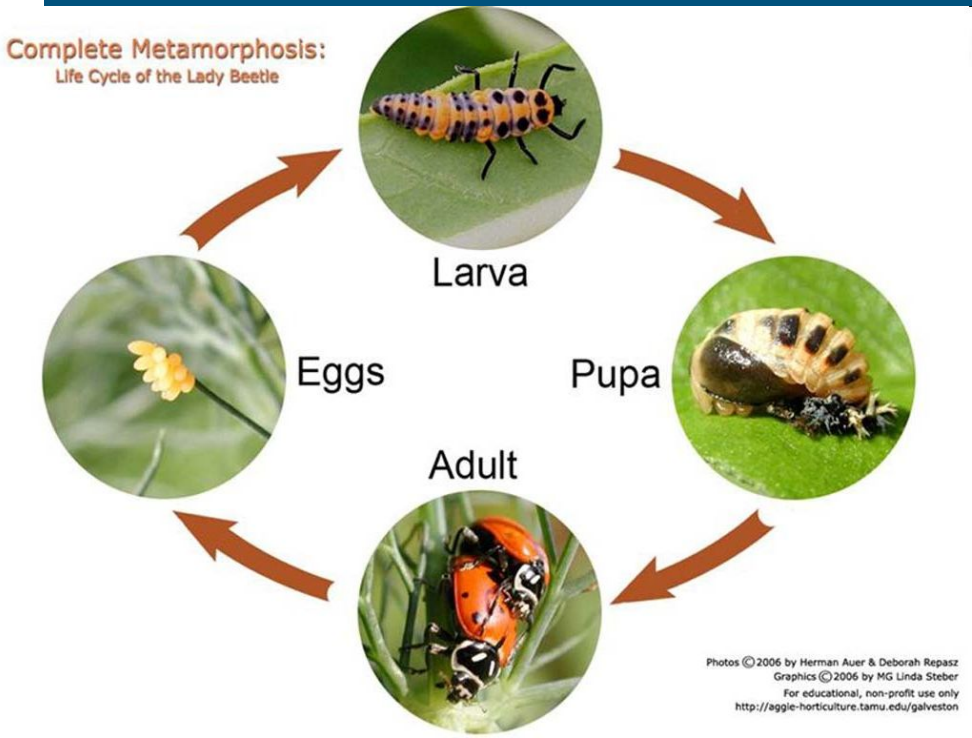


# Metamorphosis

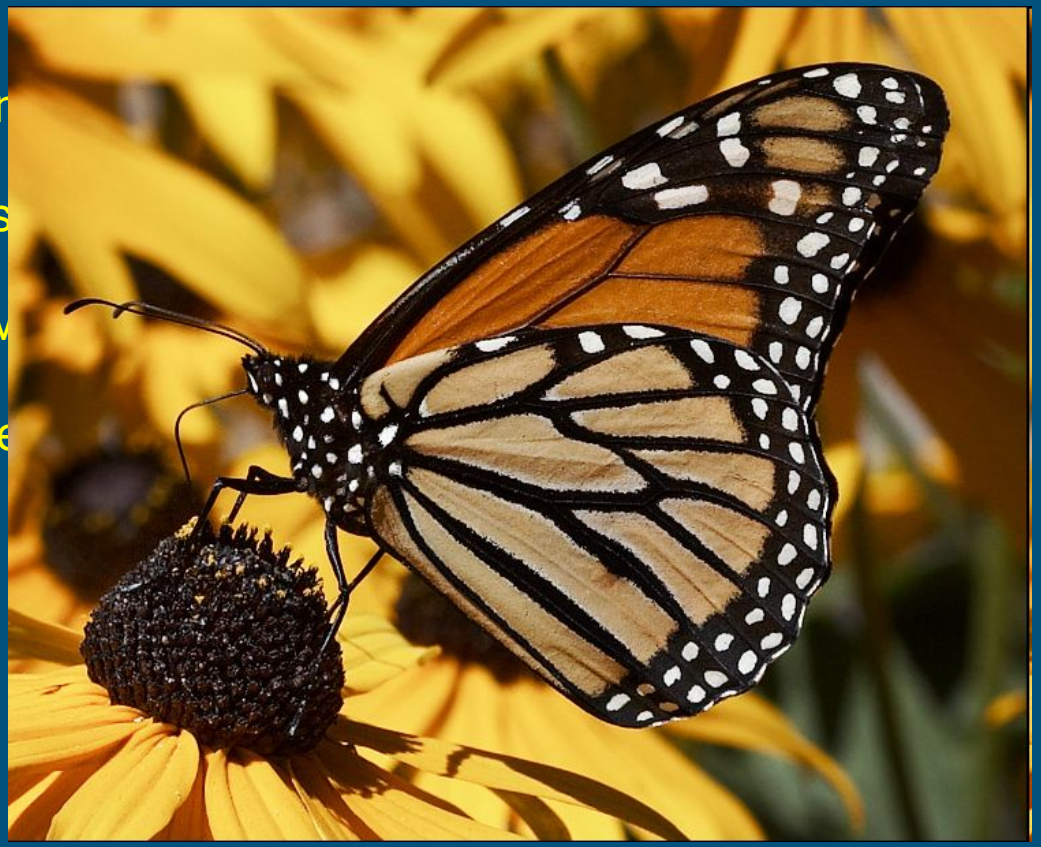



Incomplete/simple or hemimetabolous

Complete or holometabolous



# What advantages does metamorphosis give an insect?



# Voltin ber year

- Un e zones, larger species)
- Biv
- # o
  insect outbreaks (


# Diapause

- env. Condit
- ticular lifest
- ological & e

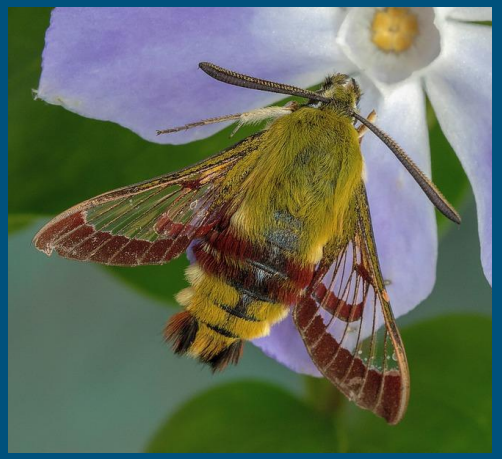
Examp
Bomby e as early embyro
Some use as larvae
Colora e as adult

# Protective adaptations

- Wide range of ways to hid from potential predators or prey

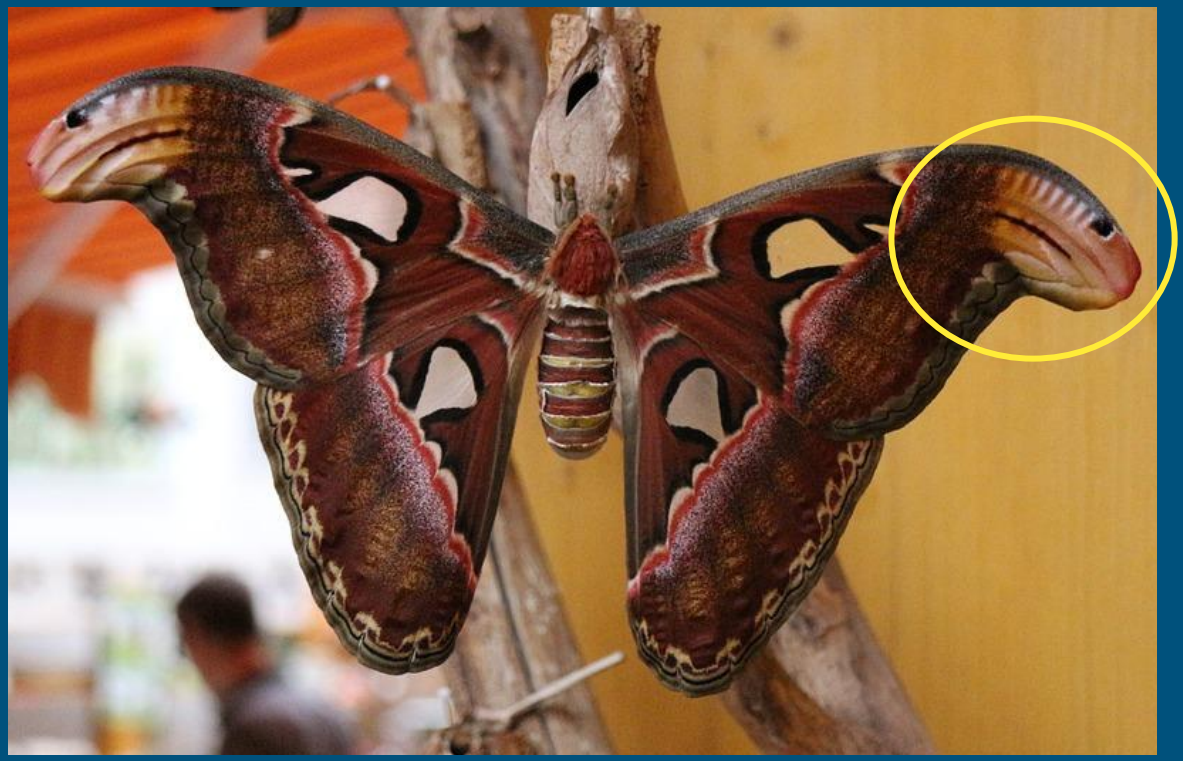
- Camouflage – hiding in plain view; can involve color, shape, behavior to blend into environment (crypsis)

- Mimicry – hiding by looking like something else inedible

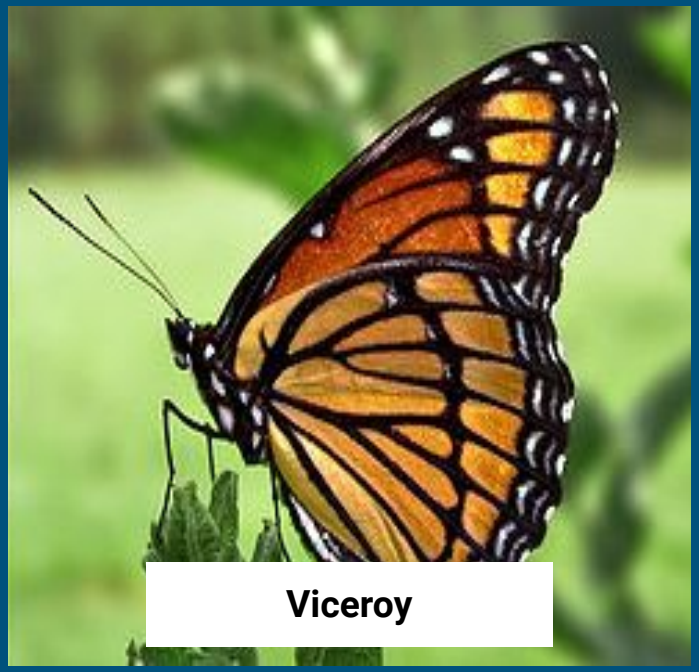


# Protective adaptations: camouflage

# Protective adaptations: mimicry



Monarch



Viceroy

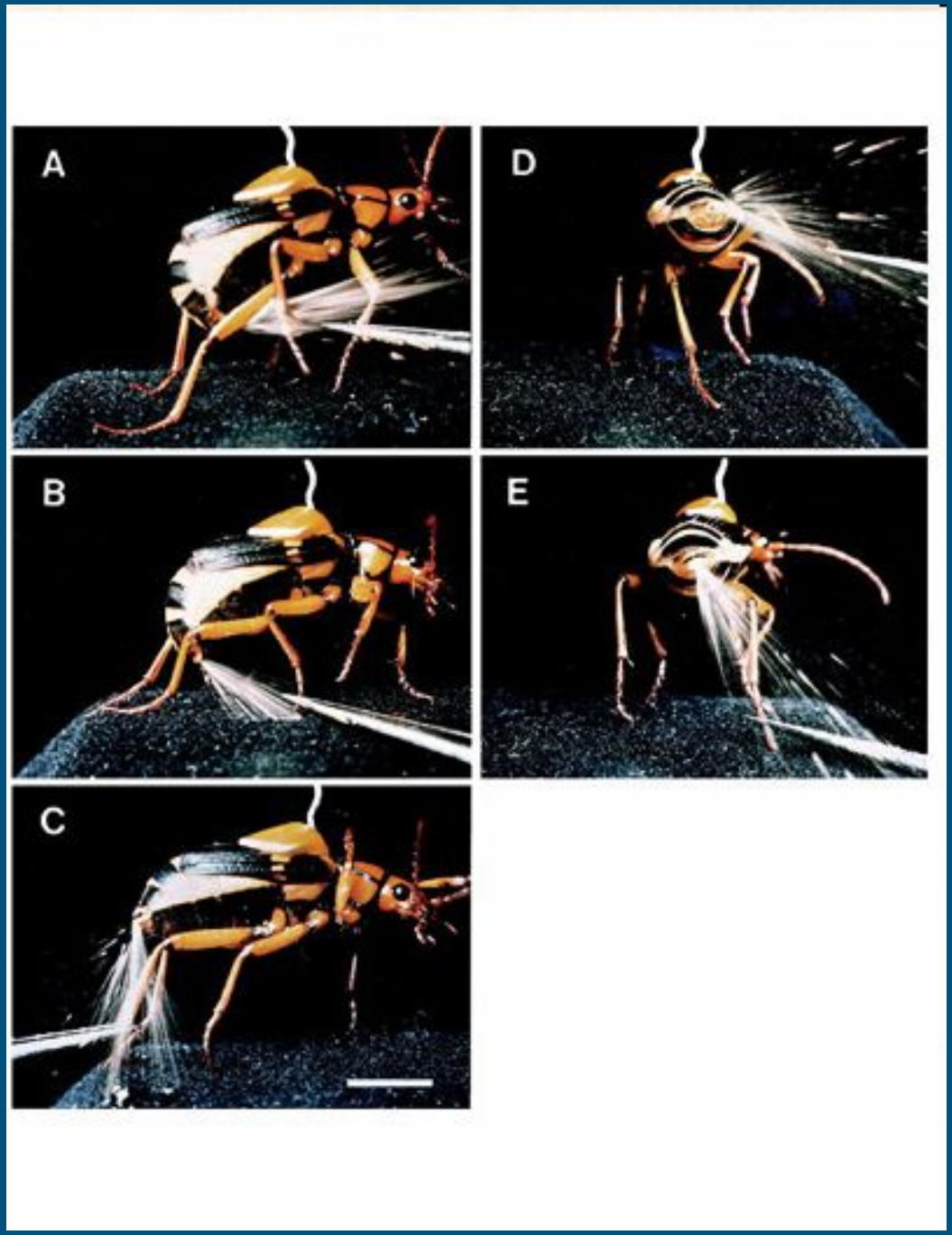
Bumble Bee

Blowfly

# Chemical protection & aposematic coloration

- May also deter predators thru chemical defenses
- He
- So ures to deliver these on

# Bombardier beetle



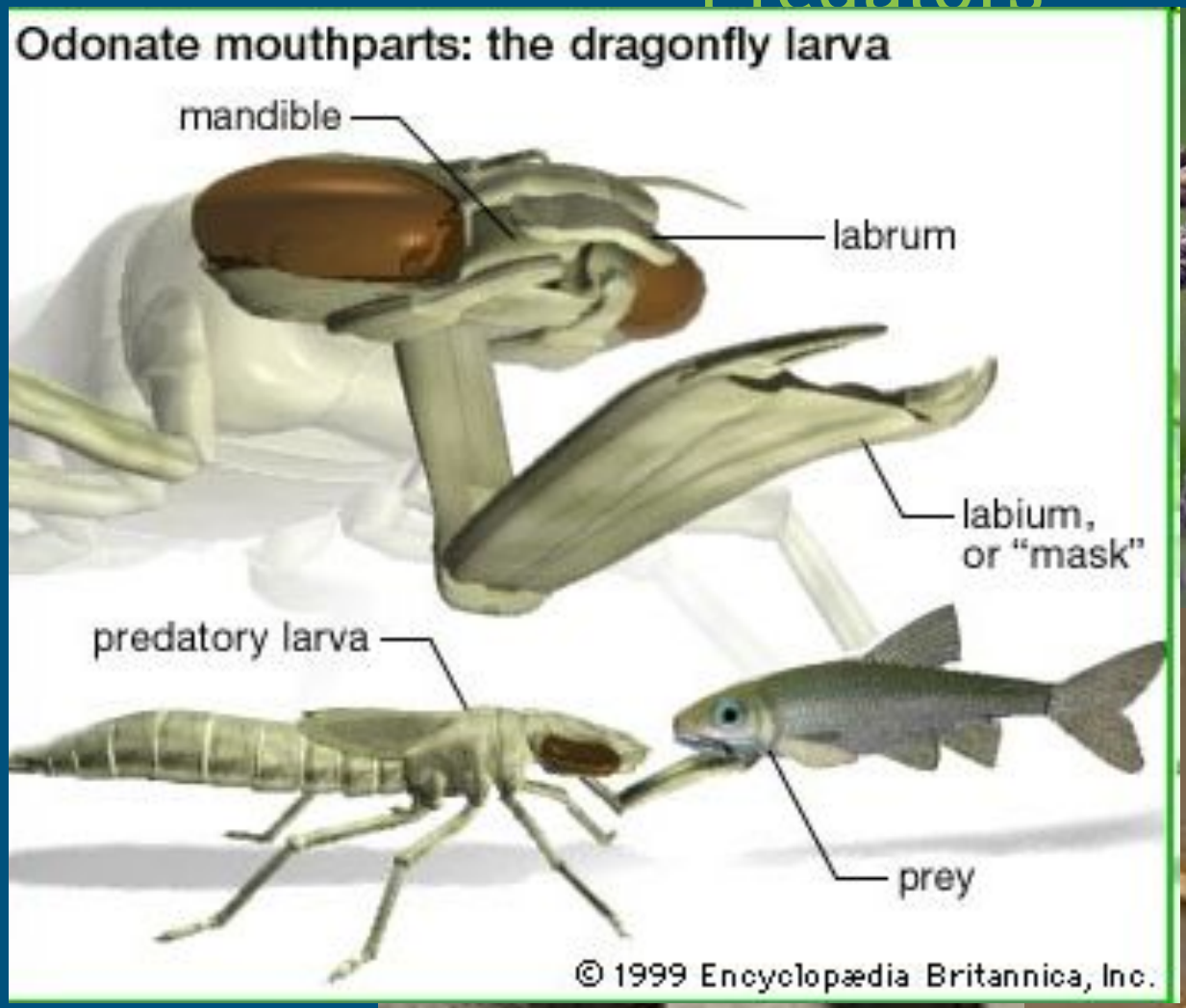
# Lifestyle adaptations

Ecological niches of insects:

- Herbivores
- Predators
- Parasitoids
- Blood feeders
- Detritivores

# Herbivores

# Predators


Odonate mouthparts: the dragonfly larva
mandible
labrum
labium, or "mask"
predatory larva
prey
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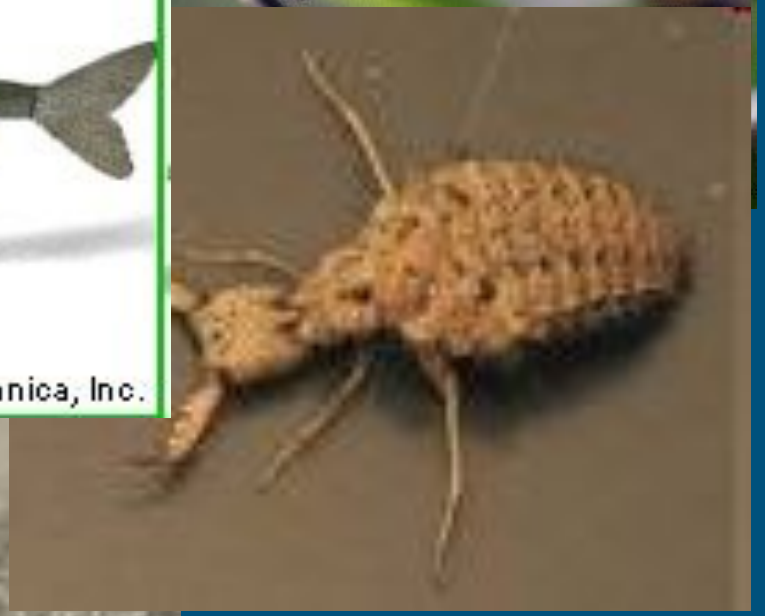
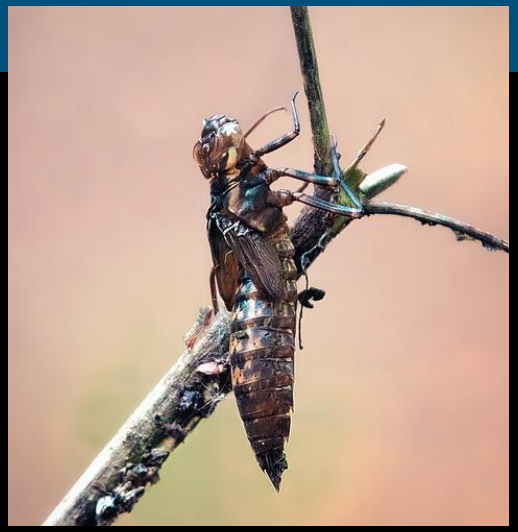


# Bioindicators



**Aquatic insect communities are often used as bioindicators of our environment**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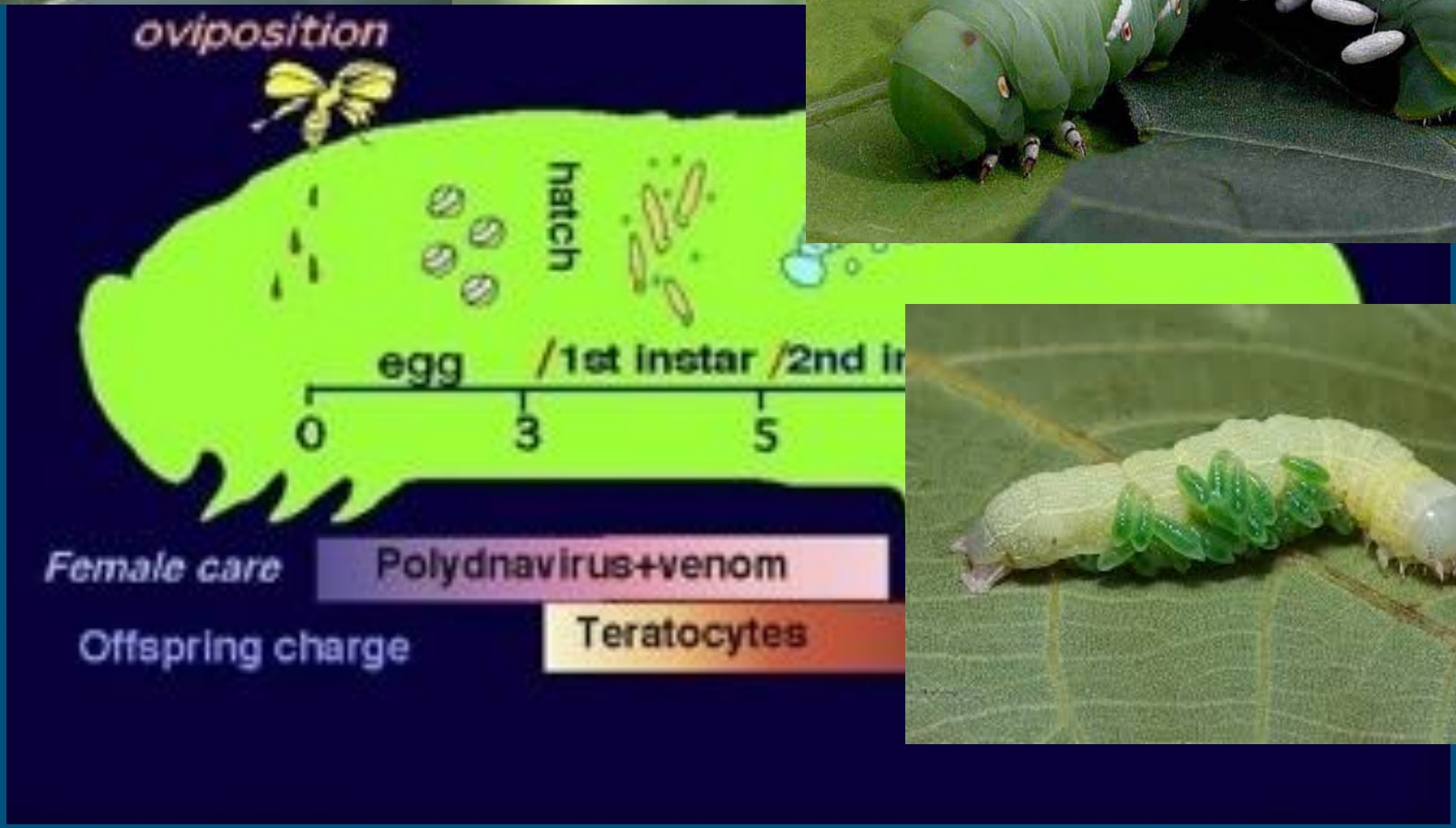
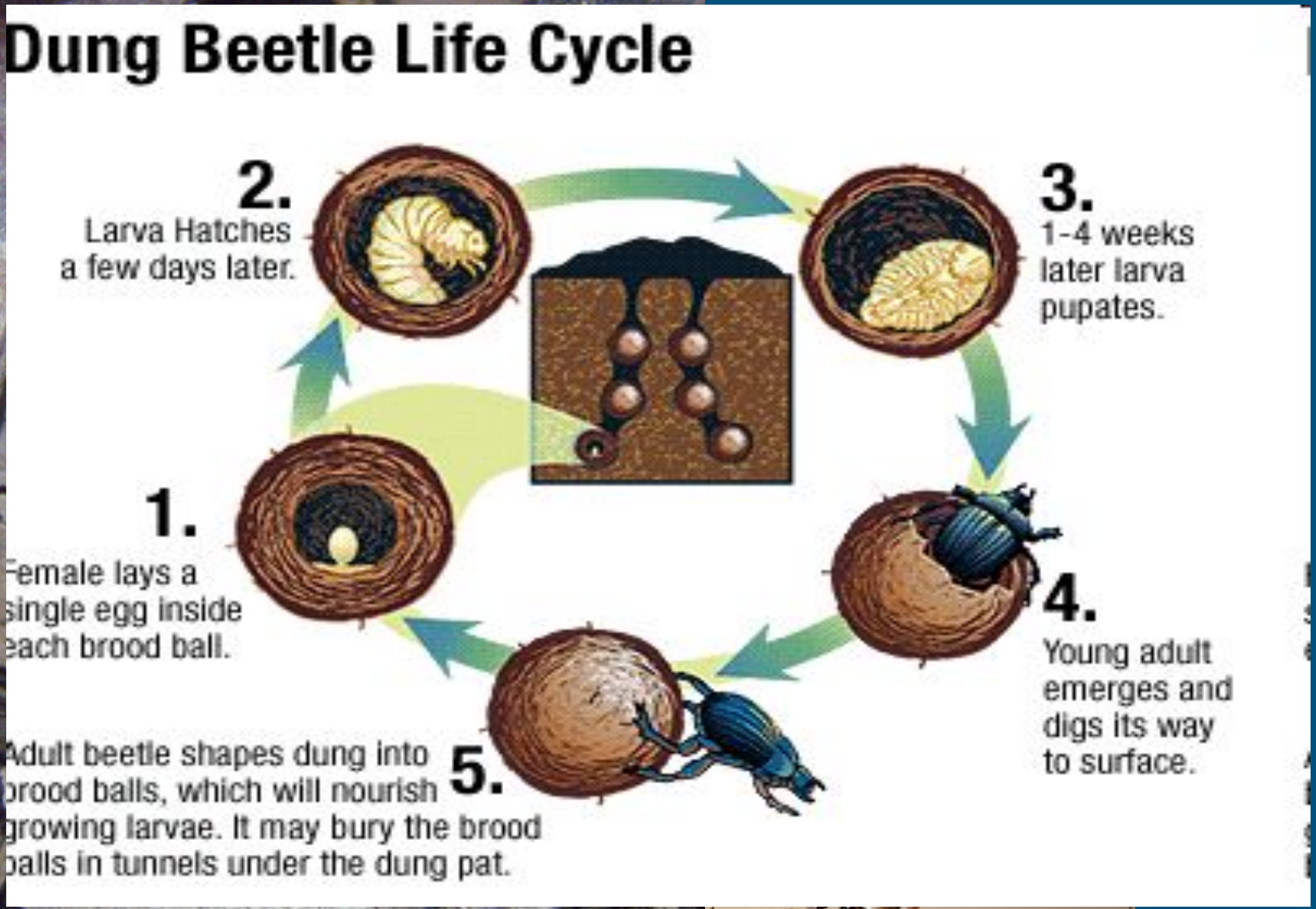

oviposition
hatch
egg
/1st instar /2nd i
0
3
5
Female care
Polydnavirus+venom
Offspring charge
Teratocytes

# Blood feeders

# Detritivores



# Adaptations Activity

- Leg parts
- Mouthparts
- Wings
- Morphology & Coloration

In groups, work out which types of body parts these insects have and what it’s function?