

Lepidoptera Heterocera

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Moths

- Insects
 - Cute
 - Fluffy Butts
-
- Order in the insect class: Lepidoptera
 - Moths and Butterflies
 - Over 90% of known lepidoptera are moths
 - Estimated thousands of yet to be discovered moth species



History

- Probably evolved alongside flowering plants
- Oldest moth fossil is about 190 million years old
- Evolved before butterflies!



Differences between Lepidoptera

- Antenna



Feathery, cute
(Heterocera)



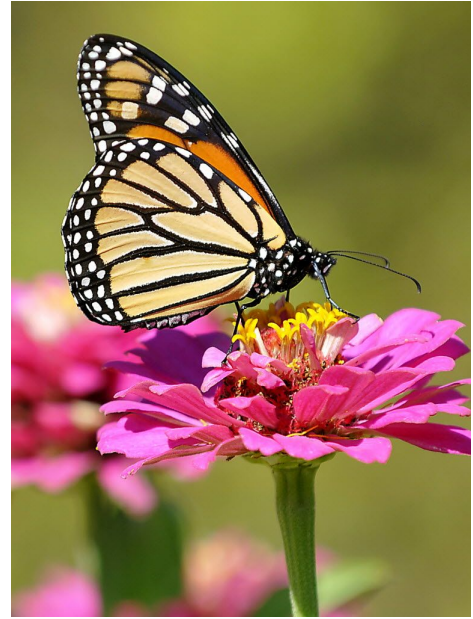
Thin, club-like end,
Not really cute
(Rhopalocera)

Differences between Lepidoptera (generally)

- Wings at rest

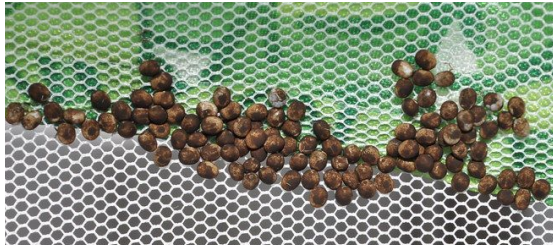


Flat, down the back*



Up and out, “flutters”

Life Cycle



Ecosystem Relevance

- Important pollinators
- Food for various other organisms

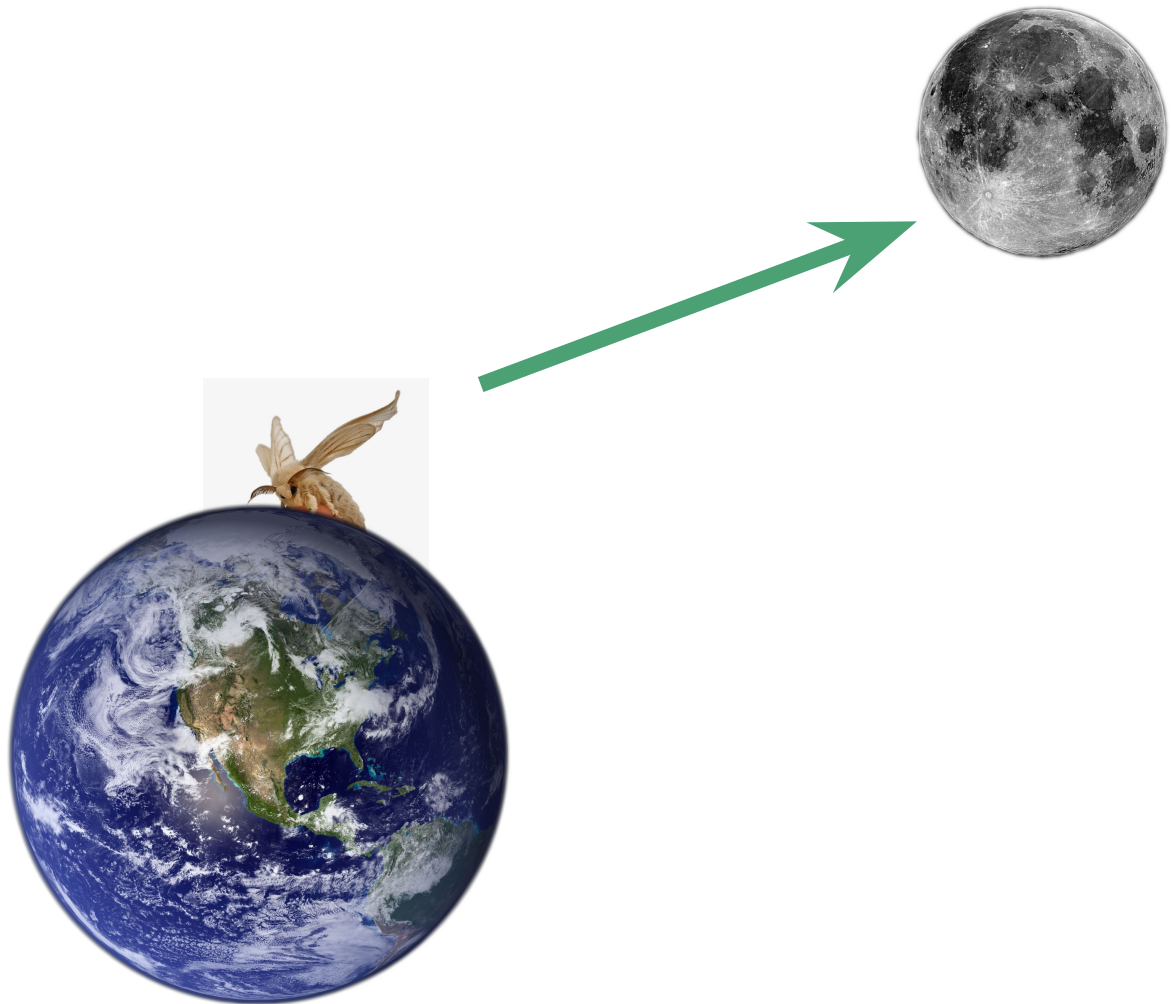
- In some cases, detrimental as they can be agricultural pests as well
- Some moths have been introduced to new ecosystems where they are invasive species, like the gypsy moth damaging forests in the northeast US



Attraction to light



Attraction to light



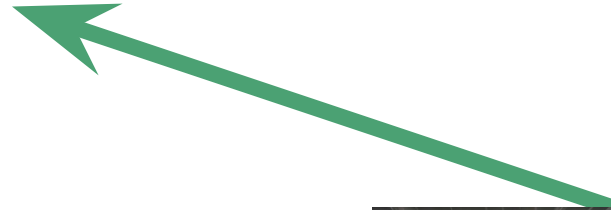
Attraction to light



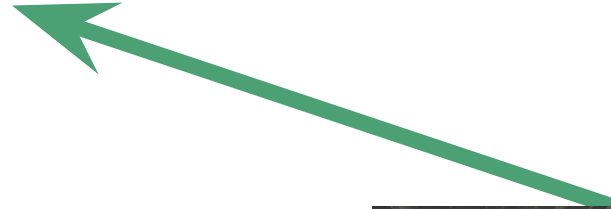
Attraction to light



Attraction to light



Attraction to light



Notorious Eaters?

- Moths are known for eating clothes
- Most do not!
- Some don't even have mouths
- They sustain themselves with food stores from when they were a caterpillar



Moth Predators

- A lot
- Birds
- Bats
- Mammals (including humans)
- Other insects
- Parasitoids



Evolutionary Ecology

- Moths have evolved various mechanisms to increase the fitness of their species



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- Camouflage



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- Mimicry



Hummingbird

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Wasp

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When you find out there are oil lamps



American

Evolutionary Ecology

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- Camouflage
- Mimicry
- Aposematism



Milkweed Tiger
Moth

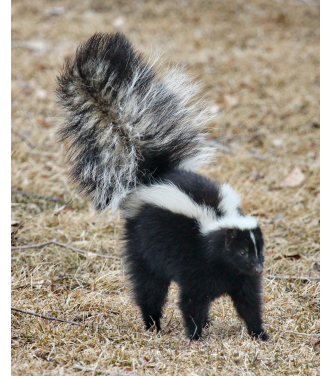
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- Camouflage
- Mimicry
- Aposematism
 - Found in other species!



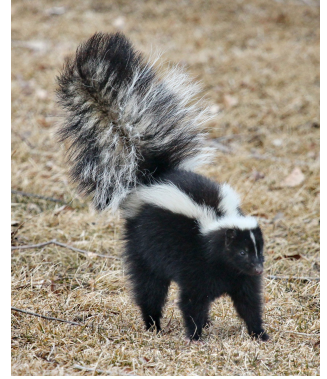
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Evolutionary Ecology

- Moths have evolved various mechanisms to increase the fitness of their species
- Camouflage
- Mimicry
- Aposematism
- And more!
 - Fooling bat's echolocation



Noteworthy Moths - Atlas Moth



Noteworthy Moths - White Witch Moth



Noteworthy Moths - Mothra



Noteworthy Moths - *Bombyx mori*

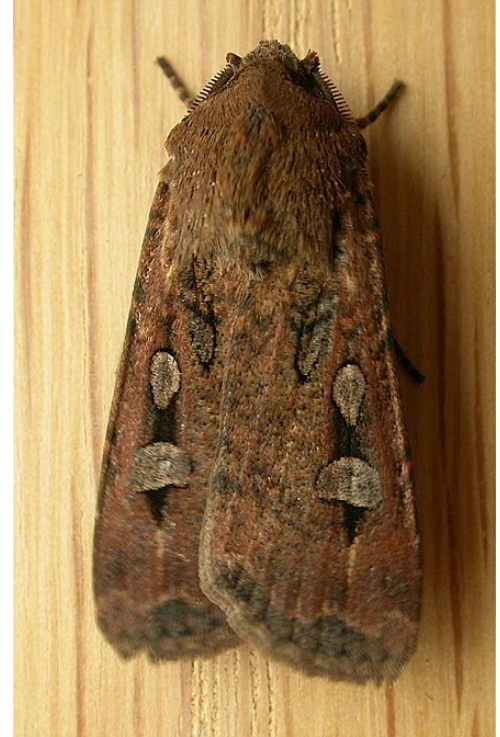


Noteworthy Moths - *Bombyx mori*

- Domesticated Moths - cannot survive in the wild
- Other moths produce silk as well
- As of 2002, the silk industry produces more than 130 million kilograms of raw silk, worth about 250 million U.S. dollars, each year

Noteworthy Moths - Bogong Moth

- Icon of Australian wildlife
 - Named derived from Aboriginal language
- Significant food source for aboriginal people
- Aboriginal peoples would gather at moth migration areas and eat and hold intertribal gatherings
- Gunai/Kurnai people were one such group, that passed down stories of traveling to mountains for the Bogong Moth in their oral history



Noteworthy Moths - Death's-head hawkmoth



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Noteworthy Moths - Madagascan sunset moth



Noteworthy Moths - Hawk (Sphinx) Moths

- Darwin discovered an orchid on Madagascar, foot long flower tube to nectar
- Hawk Moth discovered after his death confirming his hypothesis
- Fastest flying moths, also one of the fastest flying insects



National Moth Week



- This week!!
- Global event centered around citizen science



Questions?

Lamp Salesman: *slaps top of lamp*

Lamp Salesman: *slaps top of lamp again

Lamp Salesman: *slaps top of lamp again

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