

KINGDOM ANIMALIA

Phylum **Porifera**

Phylum **Cnidaria**

Phylum **Platyhelminthes**

Phylum **Nemertina**

Phylum **Nematoda**

Phylum **Rotifera**

Phylum **Annelida**

Phylum **Arthropoda**

Phylum **Mollusca**

Phylum **Bryozoa**

Phylum **Echinodermata**

Phylum **Chordata**

KINGDOM PROTISTA

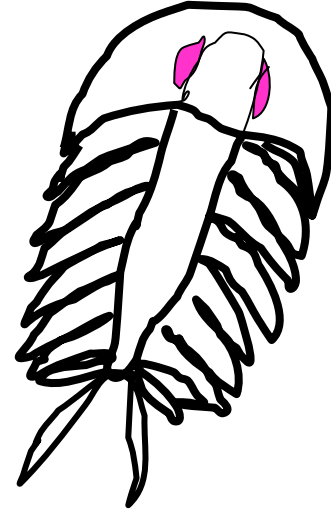
1st half
Worms,
worms &
more worms!

2nd half....
Thankfully a little
more familiar!

Phylum

Arthropoda

Once upon a time there
lived a fossil!?



4 SUBPHYLA:

Trilobitmorpha

Crustacea

Chelicerata

Uniramia

Phylum **Arthropoda**

Subphylum **Crustacea**

Class **Branchiopoda**

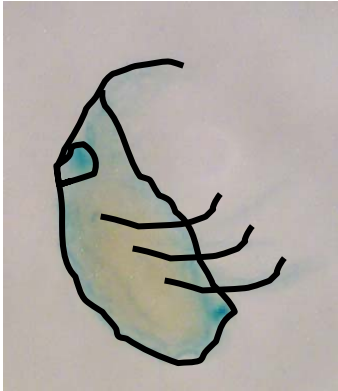
Class **Ostracoda**

Class **Copepoda**

Class **Malacostraca**

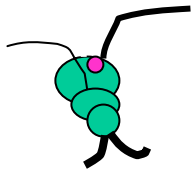
Class **Cirripedia**

Subphylum **Crustacea**

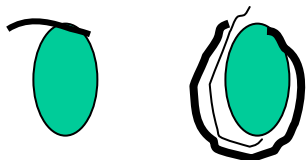


Class
Branchiopoda
“Lung feet”
Fairy Shrimp

Class **Copepoda**



Class **Ostracoda**



Class **Cirripedia**

Acorn & Stalked
Barnacles

Class **Malacostraca**

Largest class
3 ORDERS

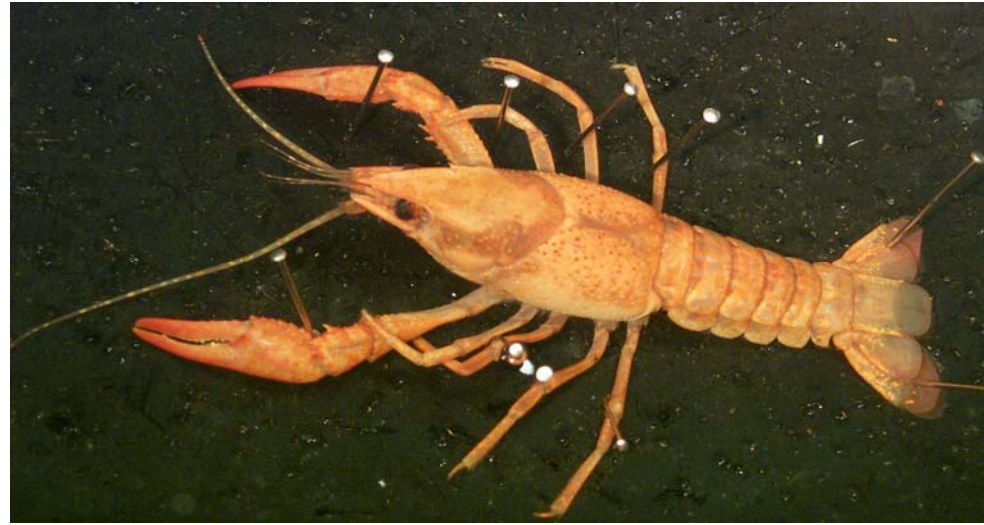
Do not need to know!

Isopoda
Pill bugs

Amphipoda
Beach Hoppers
& Sand Fleas

Decapoda
Crabs, Lobsters
etc..





Crayfish - 1st pleopod in males = specialized intromissive organ. Absent or reduced in females.



Subphylum **Crustacea**

Class **Malacostraca**

Order **Decapoda**

Phylum

Arthropoda

Subphylum **Chelicerata**

Class **Arachnida**

Class **Merostomata**

Class **Pycnogonida**

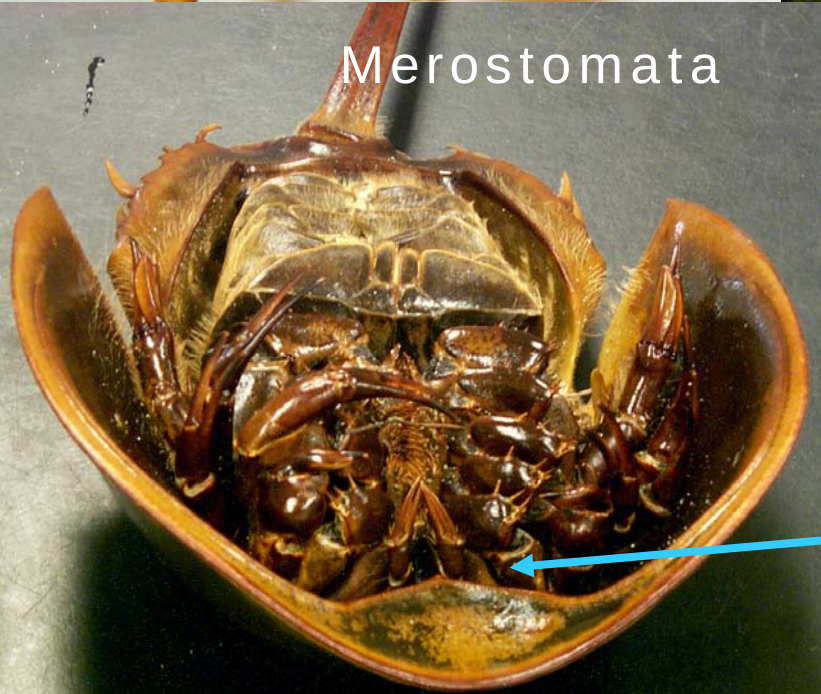
SUBPHYLUM
Chelicerata

Arachnida

Arachnida

Merostomata

Males
clasps
females
with 1st
pedipalp
(boxing
gloves)



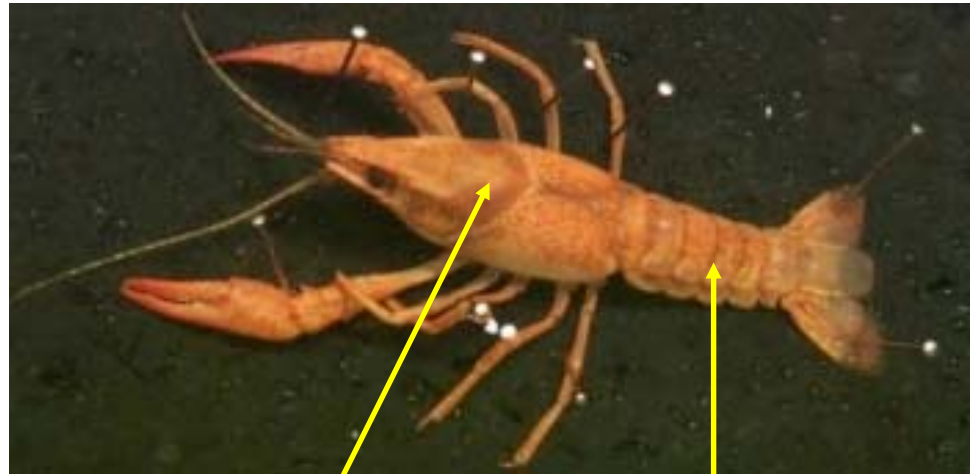
TAGMOSIS

Chelicerata



Prosoma & Opisthosoma

Crustacea



Cephalothorax & Abdomen

Phylum

Arthropoda

Subphylum Uniramia

Class Chilopoda

Class Diplopoda

Class Insecta

Which one has most legs per segment?



Class **Diplopoda**
2 pairs of legs/segment

Subphylum **Uniramia**

Rounded head with no obvious
jaws as it is a deposit feeder



Class **Chilopoda**
1 pair of legs/segment

Vicious jaws of a
carnivorous predator

phylum **Uniramia** Class **Insecta**

Box of “bugs!”

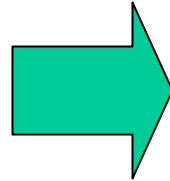
Ah! The smell
of mothballs!



Metamorphosis

is the change
from a to a

**MOLTING,
NON-
REPRODUCING
LARVAL form**



**NON-MOLTING
REPRODUCING
ADULT form**

Holometabolism

4 ORDERS

- Wings on the **INSIDE** therefore must undergo a complete metamorphosis to bring them out.

VS.

Hemimetabolism

5 ORDERS

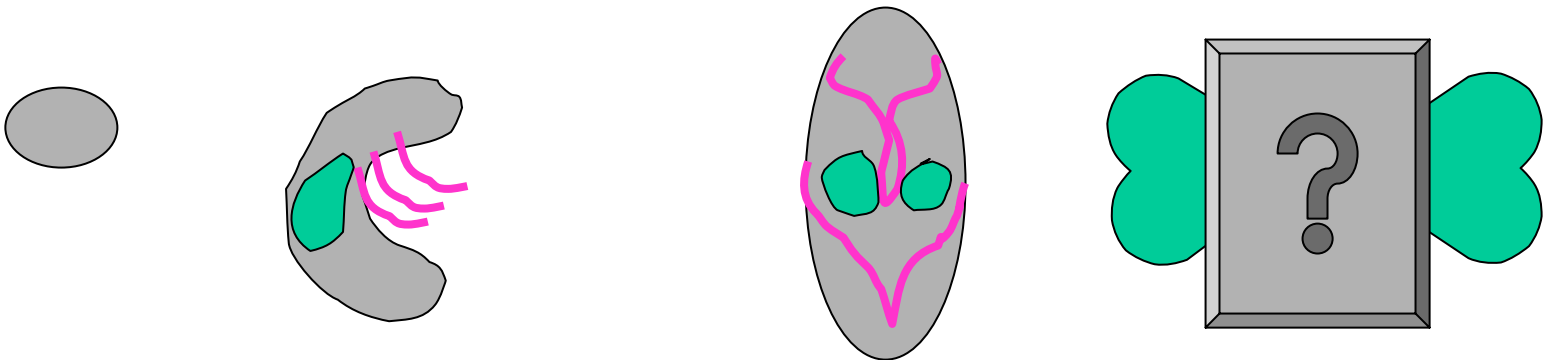
- Wings on the **OUTSIDE**
incomplete metamorphosis.

Holometabolism

Holometabola = Endopterygota

4 ORDERS

Egg -> larvae -> pupa -> adult



Division Endopterygota:

Holometabolous Life Cycle

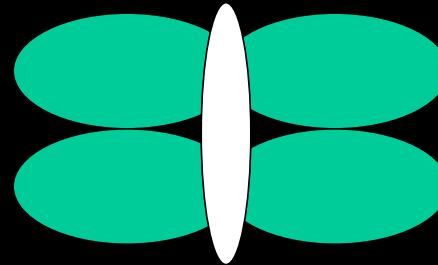
4 ORDERS:

Order Hymenoptera

Bees, ants, wasps

Order Lepidoptera

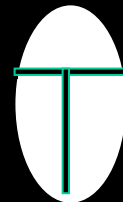
Butterflies, moths



Order Coleoptera

Beetles.

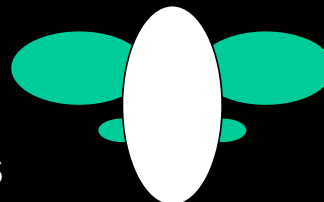
Look for "T" formed by ELYTRA



Order Diptera

True flies

Look for HALTERES



Hemimetabolism

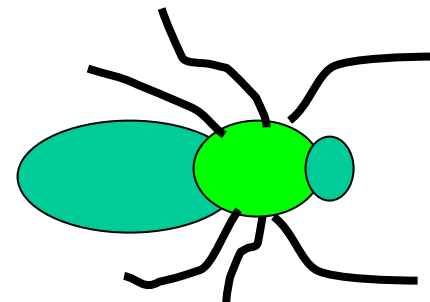
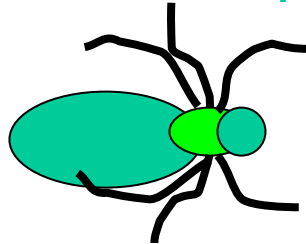
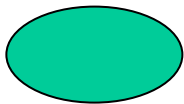
Incomplete metamorphosis Wings on the outside

Hemimetabola = Exopterygota

5 ORDERS

egg -> nymph(mini adult) -> adult

(Naiad if aquatic)



Division **Exopterygota**:

Hemimetabolous Life Cycle

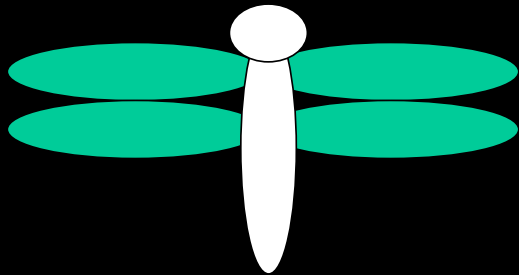
5 ORDERS:

Order **Orthoptera**

Crickets, grasshoppers, roaches

Order **Isoptera**

Termites

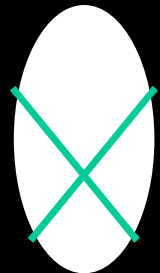


Order **Odonata**

Dragonflies, damselflies

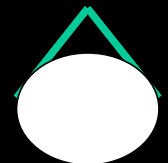
Order **Hemiptera**

Bug allies (assassin bugs, bedbugs)
Look for "X" on back formed by wings
crossing over each other



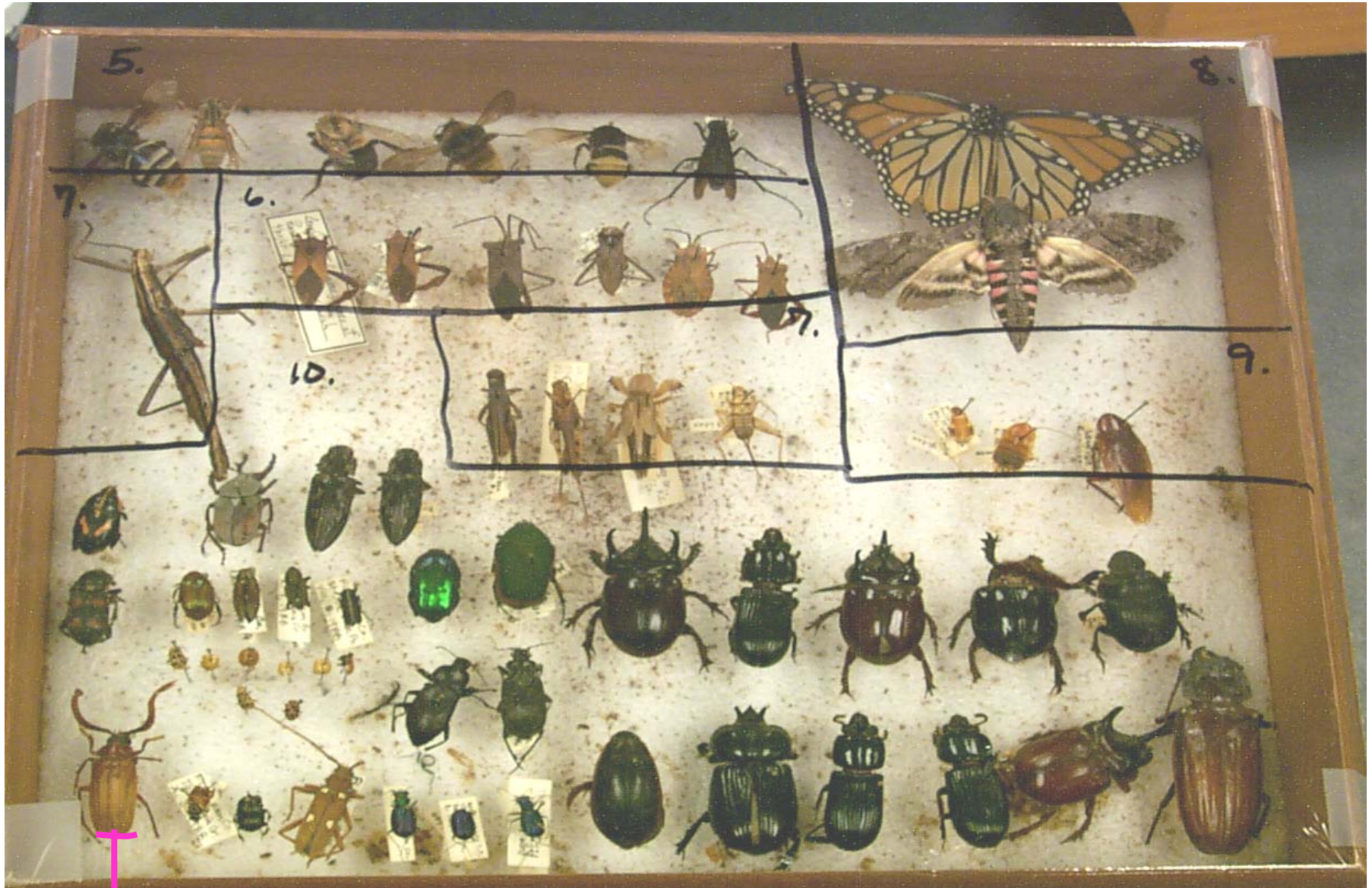
Order **Homoptera**

True bugs (cicadas, aphids)
Look for "home" formed by
wings over back of insect



Rear View

Subphylum **Uniramia** Class **Insecta**



Uniramia Class Insecta

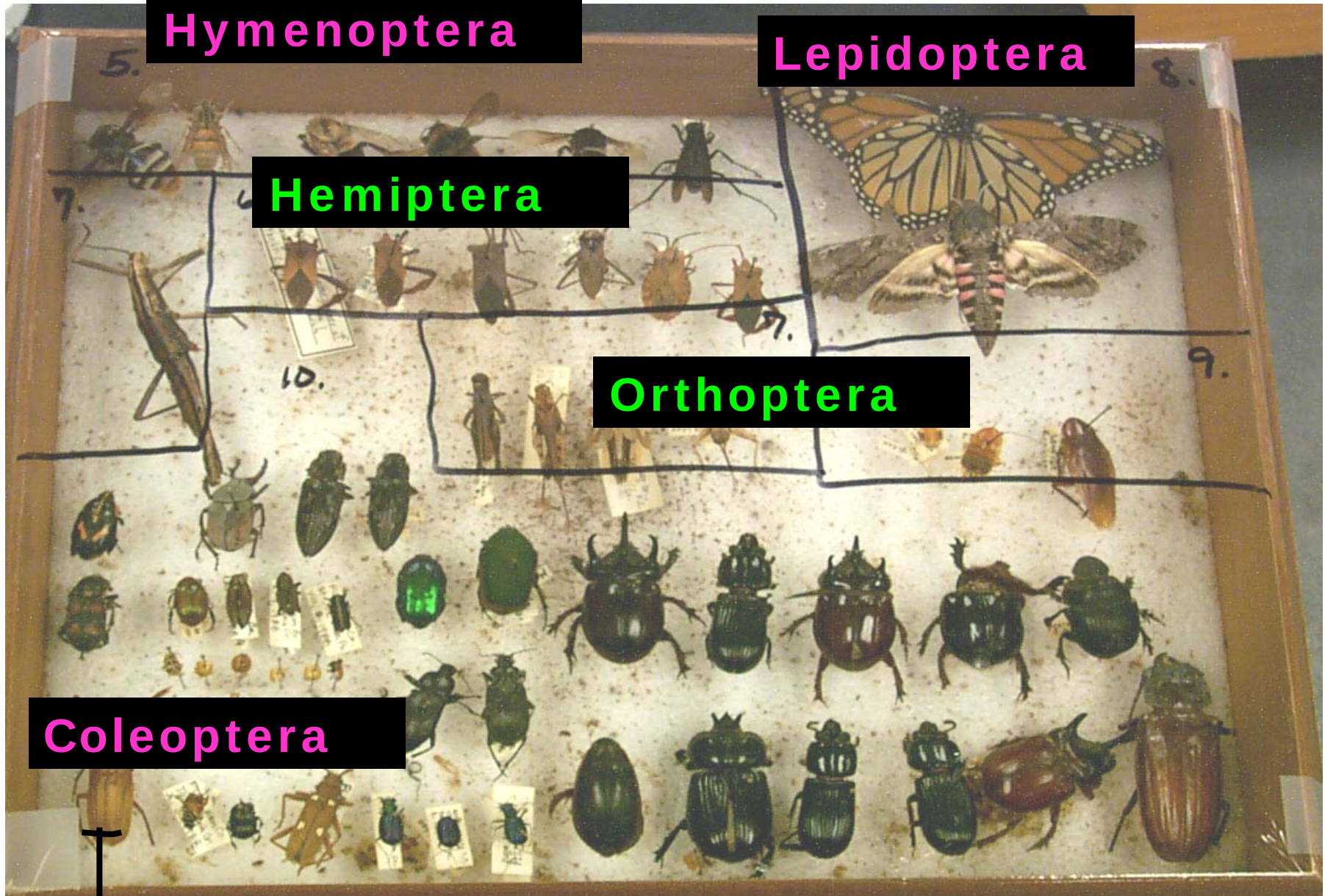
Hymenoptera

Lepidoptera

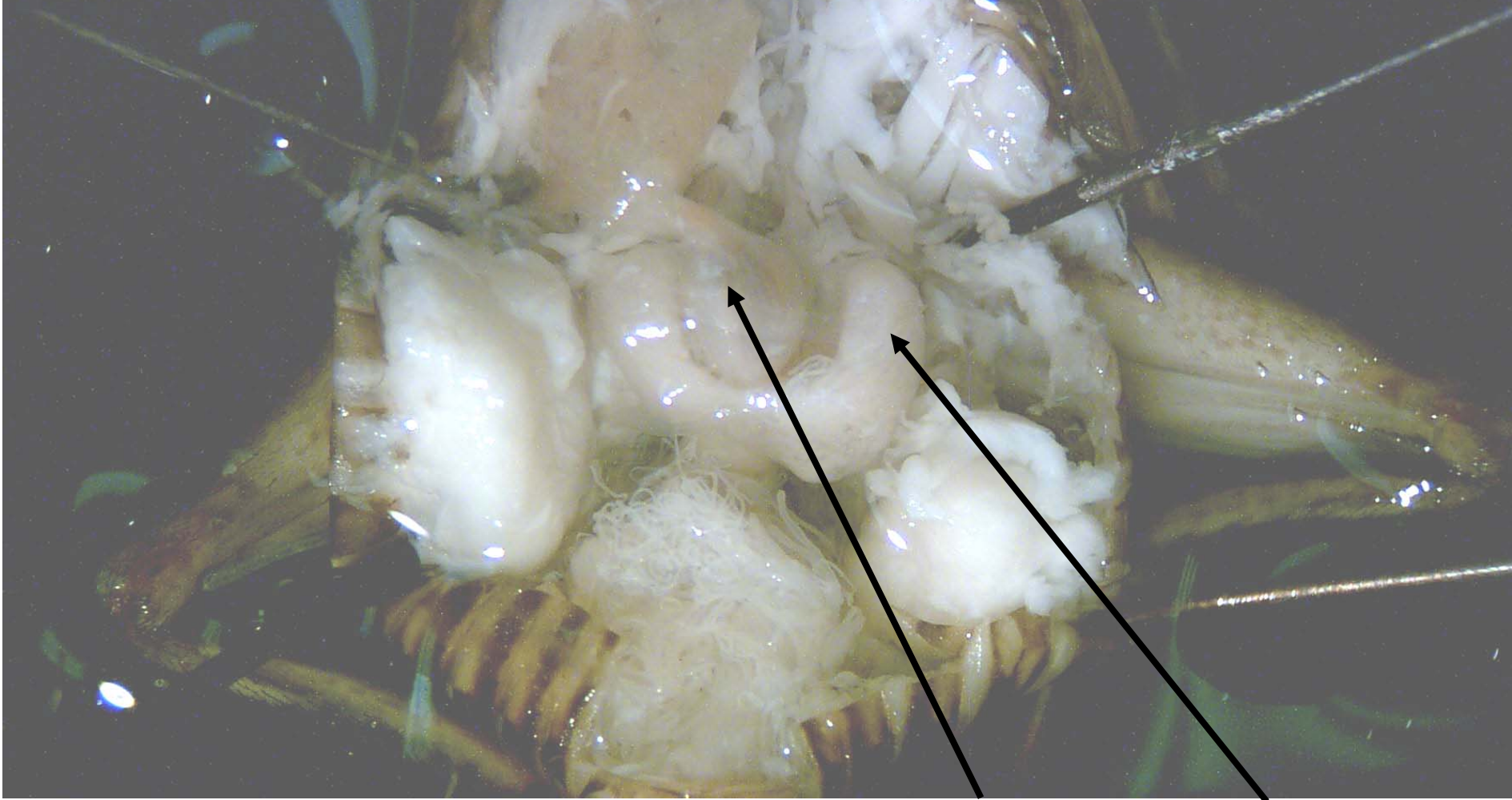
Hemiptera

Orthoptera

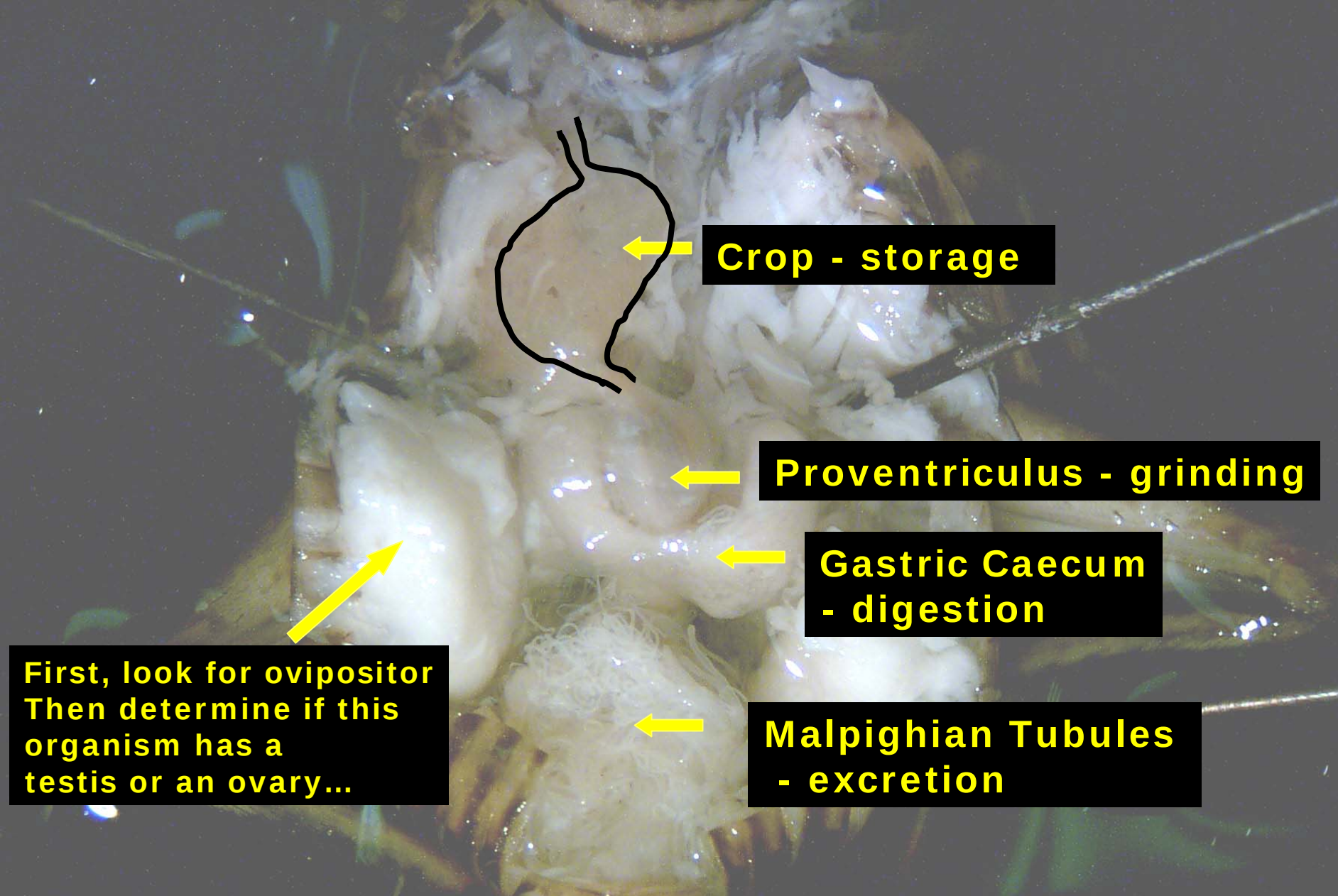
Coleoptera



Don't forget that the fore- and hind gut portions are from ectodermally derived tissues!



Inside a Grasshopper... Remember the baseball and glove?



**Phylum Arthropoda, Subphylum Uniramia,
Class Insecta, Order Orthoptera**