

Class Aves

Special features for flight

Class Mammalia

3 different reproductive groups

Endoskeletons vs. Exoskeletons

Class Aves

Earth's first birds



- *Archaeopteryx* found in Germany

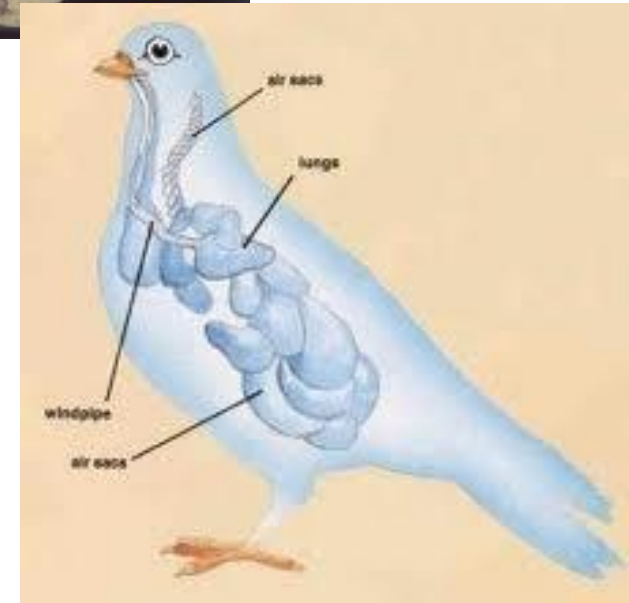
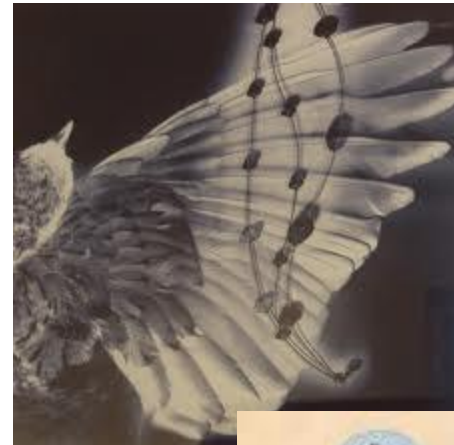
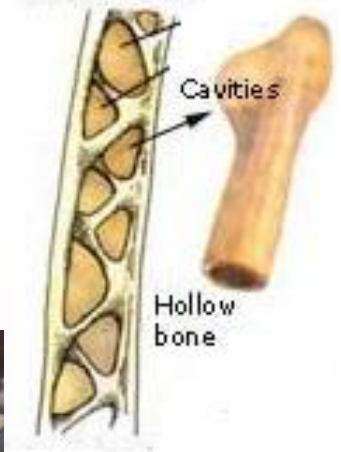


- *Confuciusornis* existed around the same time as *Archaeopteryx* and was discovered in North eastern China.

Special features for flight:

- Hollow bones – strong but light.
- Excretes uric acid (solid), not urine, so this decreases the amount of water & no bladder needed (keeps bird light).
- Elongated wing-like hand.
- Alveoli (air sacs) make the bird more buoyant and allow for more efficient gas exchange (oxygen & carbon dioxide).

Longitudinal cross section of a bone





- Common Pheasant
- Peafowl - colourful displays to attract a mate



- Snowy owl - silent fliers
- Burrowing owl makes its home in the ground



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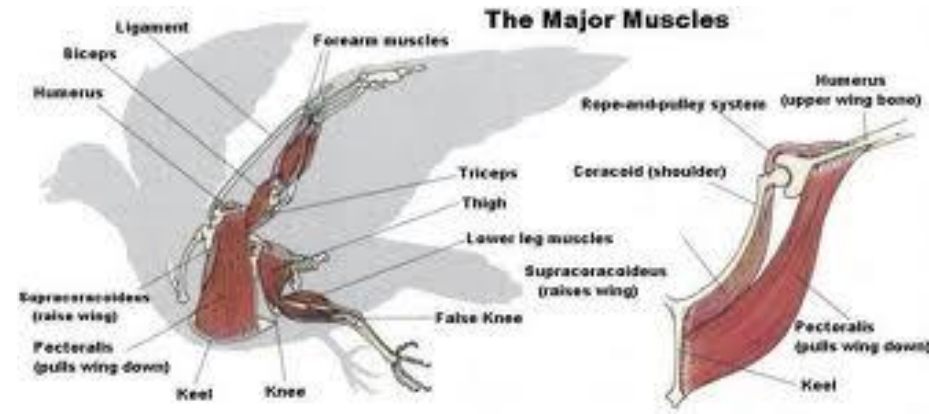
- Bald Eagle
- Cooper's hawk



- Mandarin duck
- Wood duck
- Mallards
- Snow goose
- Canada goose

Special features for flight continued:

- Large muscles in the chest provide power to the wings for flight.
- Ovaries and testes are reduced when it is not breeding season.
- Feathers for flight.



But there are *Flightless* birds



- Ostrich
- Emu



- Emperor penguins
- Humboldt penguin



- Kiwi bird

Class Mammalia

- There are 3 reproductive groups of mammals:
 - Placental mammals
 - Marsupials
 - Monotremes



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Placental mammals: ex) humans, whales, cats, horse...

- Have a placenta = used for food, waste, and gas exchange.
 - This allows the fetus to develop for a long time inside the mother.
- After birth, care is provided – nursing (food), protection.



Class Mammalia



- Placental mammals



Marsupials: kangaroo, koala, opossum

- Marsupials give birth to very immature young which crawl up into a pouch on the mother.
- In the pouch they will attach to a nipple and feed until they are big enough to leave the pouch.



- Marsupials



Foot Peromyscus wallaby capilla, ...

Monotremes: ex.) 1 species of duckbilled platypus, and 2 species of spiny anteaters (Echidnas)

- **Exception:** the egg has a shell!
- These mammals are egg layers (reptilian), & they incubate their eggs outside of their body.
- When the young hatch, the mom is able to nurse them because she has mammary glands – therefore mammals!!



Næbdyri



Myrepindsvini



Baby Echidna

Monotremes



- Duck-billed Platypus

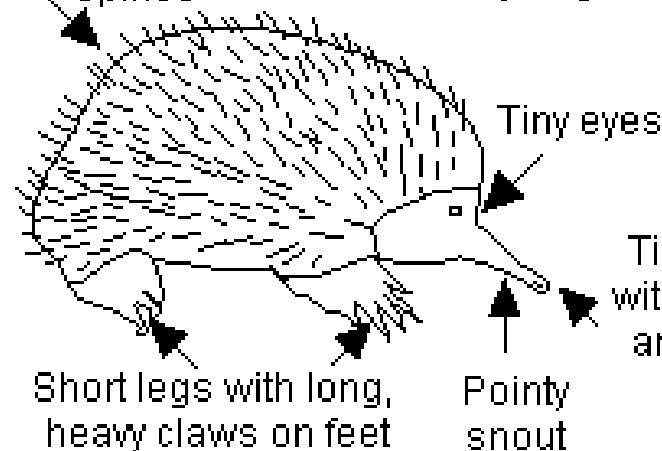
- Echidna (or spiny anteater)





Echidna Spiny Anteater

Black to brown
coat with lighter
spines



Tiny eyes

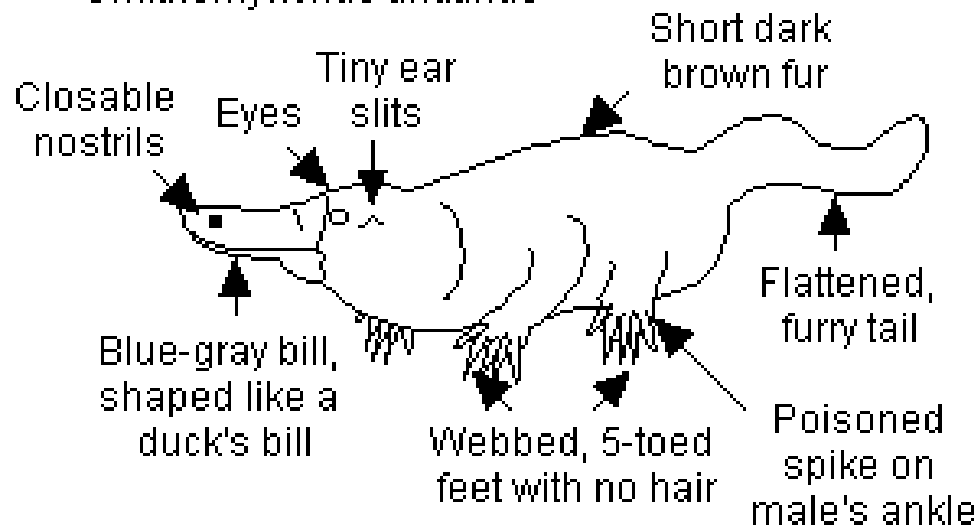
Tiny mouth
with no teeth
and a long
tongue

Pointy
snout

Short legs with long,
heavy claws on feet

Duck-billed Platypus

Ornithorhynchus anatinus



Short dark
brown fur

Flattened,
furry tail

Poisoned
spike on
male's ankle

Webbed, 5-toed
feet with no hair

Blue-gray bill,
shaped like a
duck's bill

Tiny ear
slits

Eyes

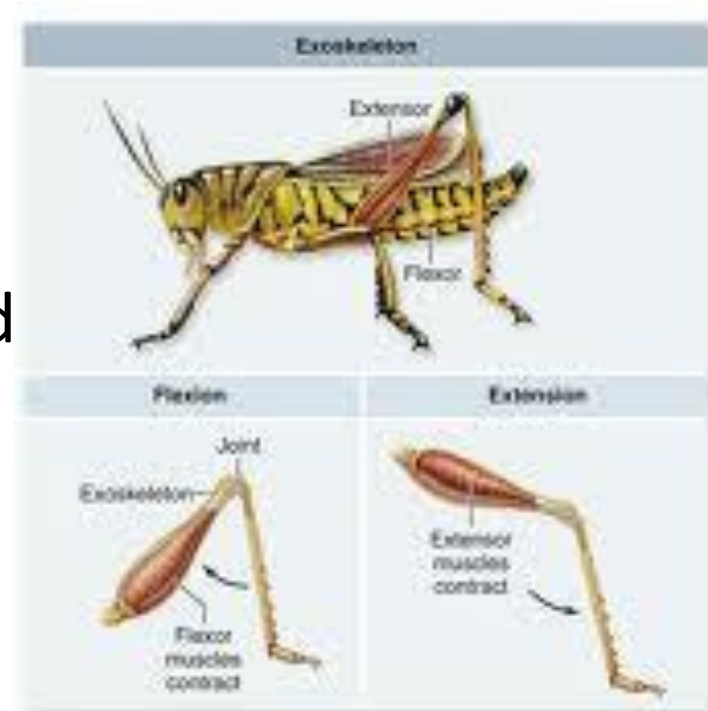
Closable
nostrils

Endoskeleton vs. Exoskeleton

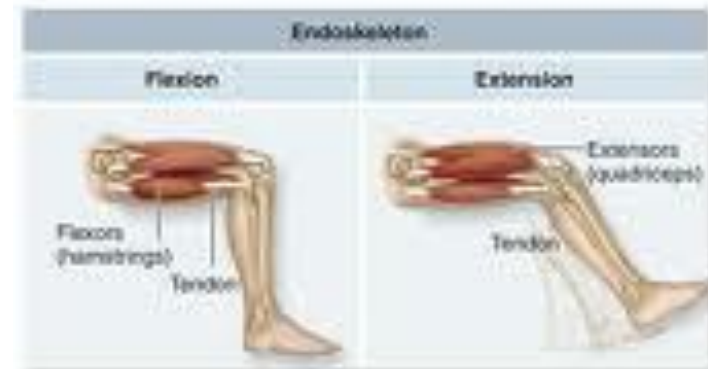
	ENDOSKELETON	EXOSKELETON
	(internal skeleton)	(external skeleton)
Structure	<ul style="list-style-type: none">•Made of cartilage•Strong, rigid (breaks or shears)	<ul style="list-style-type: none">•Made of chitin•Molted as animal grows•Strong, flexible (give to it)
Function	<ul style="list-style-type: none">•Gives shape & support•Protects internal organs•Attachment for muscles•Makes red & white blood cells in the bone marrow.	<ul style="list-style-type: none">•Gives shape & support•Protects internal organs•Attachment for muscles•Prevent the animal from drying out.

Advantages of an Endoskeleton:

1. Grows with the animal (not molted).
2. Energy is not required to grow and entire new skeleton (just add a little bit).
3. Allows the animal to have more flexibility of movement at joints & better use of muscles.
4. Allows animals to be faster & larger (an exoskeleton is heavy & cumbersome).



ii.



ii.

