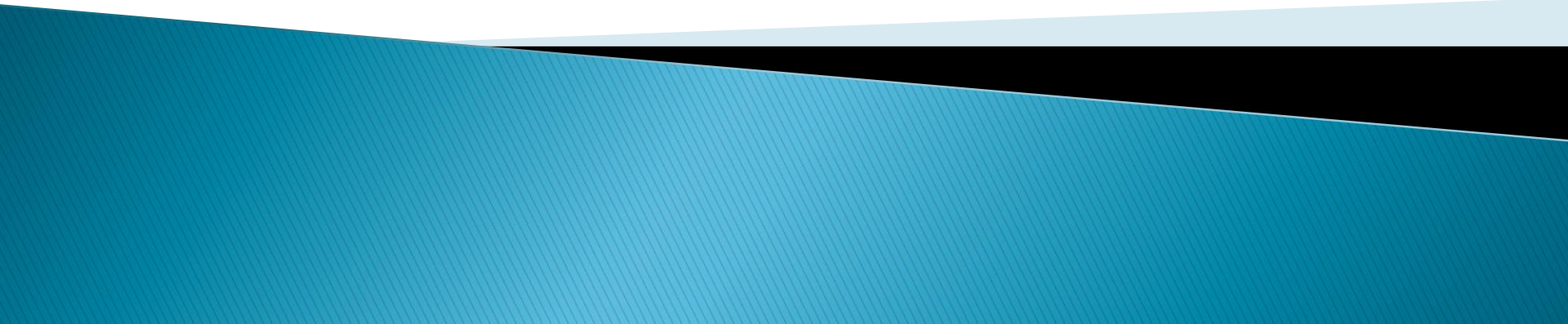
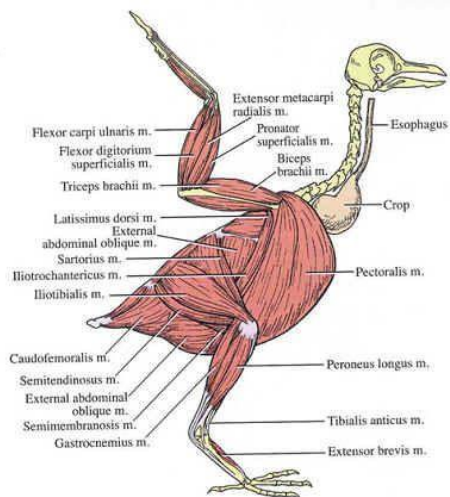


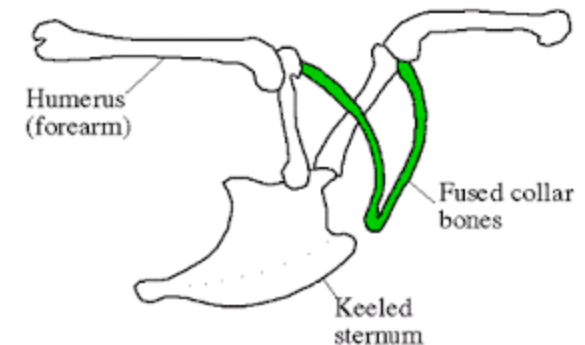
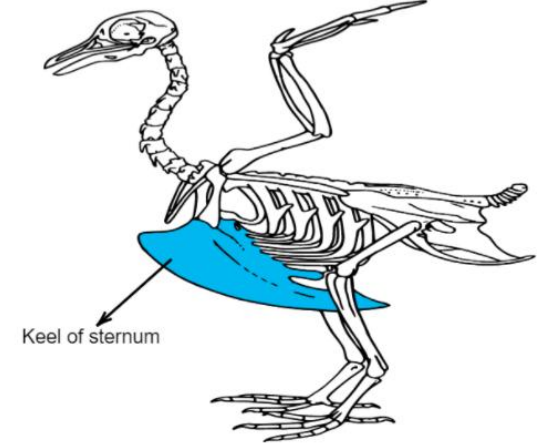
General Characters of Aves



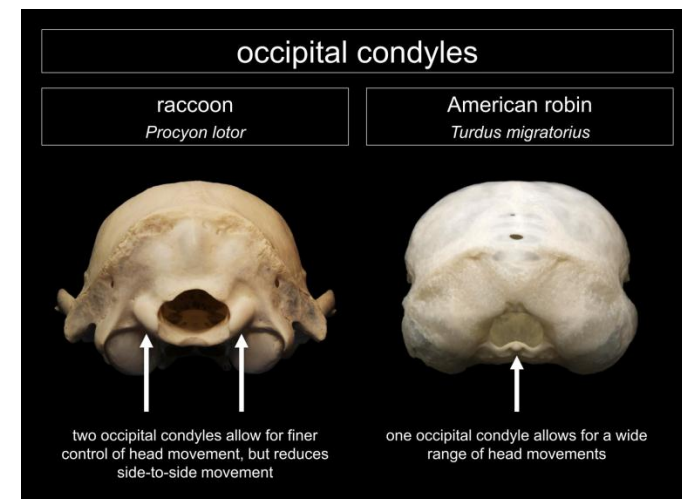
- ▶ **warm blooded**, oviparous, flying vertebrates
- ▶ Body – **boat shaped** – head, neck, trunk and tail.
- ▶ Limbs – two paired, forelimbs modified into **wings** – 3 clawless digits
- ▶ Hind limbs – walking, running, scratching
- ▶ Legs covered by **scales**
- ▶ No skin gland except the oil glands at the base of tail.
- ▶ **Pectoral muscles** are well developed used for flight



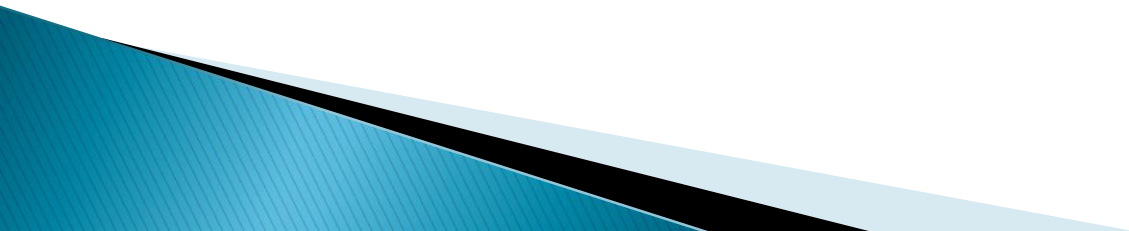
- ▶ **Bones** – spongy, light weight – air cavities
- ▶ **Vertebral ribs** are double-headed with **uncinate process**.
- ▶ **Sternum** is broad with **keel** for the attachment of flight muscles.
- ▶ Both **clavicles** fused to form V shaped **furcula**.



- ▶ Lungs –spongy, air sacs
- ▶ Skull – single occipital condyle
- ▶ Heart – 4 chambered
- ▶ Kidneys – **metanephric** – **uricotelic**
- ▶ Urinary bladder – absent
- ▶ Cerebral hemisphere and cerebellum – well developed
- ▶ Eyes – nictitating membrane and pecten
- ▶ Sexes – separate
- ▶ Fertilization – internal – oviparous
- ▶ Parental care – highly developed



Classification of Aves



Aves– Classification

- ▶ **warm blooded** – flying vertebrates – beak, wings and feathers.
- ▶ **Chordates** – notochord in the embryonic stage.
- ▶ **Vertebrates** – vertebral column.
- ▶ Cranium around the brain– group **Craniata**.
- ▶ **Jaws** – superclass **Gnathostomata**.
- ▶ Embryo develops an amnion – **Amniota**.
- ▶ 4 limbs – group **Tetrapoda**.
- ▶ Class Aves is divided into **two subclasses**, namely
 - **Subclass 1. Archaeornithes**
 - **Subclass 2. Neornithes**

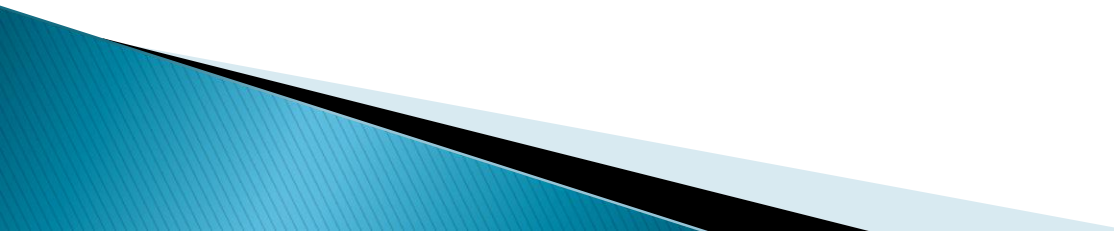
Subclass 1. Archaeornithes

Eg. Archaeopteryx



Subclass 2. Neornithes

Subclass Neornithes is divided into 4 superorders, namely

- ▶ Superorder 1: Odontognathae
 - ▶ Superorder 2: Palaeognathae
 - ▶ Superorder 3: Impennae
 - ▶ Superorder 4: Neognathae
- 

Superorder 1: Odontognathae

- ▶ Order 1: Hesperornithiformes Eg. *Hesperornis*
- ▶ Order 2: Ichthyornithiformes Eg. *Ichthyornis*

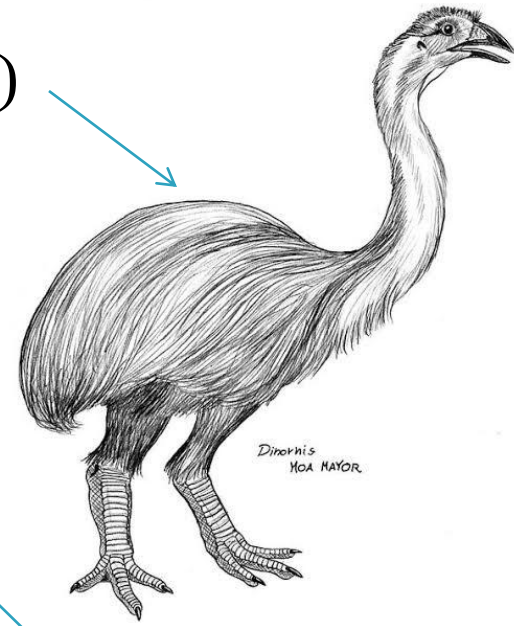


Superorder 2: Palaeognathae

- ▶ Order 1: **Struthioniformes** Eg. *Ostriches*
- ▶ Order 2: **Casuariformes** Eg. *Casuaris* and *Emus*
- ▶ Order 3: **Aepyornithiformes**. Eg. *Elephant birds* (Extinct)



- ▶ Order 4: **Dinornithiformes** Eg. *Dinornis* (Extinct)
- ▶ Order 5: **Apterygiformes** Eg. *Apteryx* (Kiwi)
- ▶ Order 6: **Rheiformes** Eg. *Rhea*
- ▶ Order 7: **Tinamiformes** Eg. *Tinamous*



Superorder 3: Impennae

- ▶ Order : Sphenisciformes. Eg. *Penguins*



Superorder 4: Neognathae

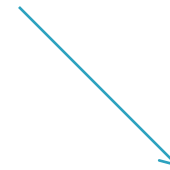
- ▶ Order 1: Gaviiformes Eg. *Gavia*
- ▶ Order 2: Podicipediformes Eg. *podiceps*
- ▶ Order 3: Procellariiformes Eg. *Albatrosses*
- ▶ Order 4: Pelecaniformes Eg. *Pelicans*



- ▶ Order 5: Ciconiiformes Eg. *Hérons*
- ▶ Order 6: Anseriformes Eg. *Ducks, Swans*
- ▶ Order 7: Falconiformes Eg. *Vultures, Falcons*



- ▶ Order 8: Galliformes Eg. peacock
- ▶ Order 9: Gruiformes Eg. Cranes
- ▶ Order 10: Diatrymiformes Eg. *Diatrymas*



- ▶ Order 11: Charadriiformes Eg. *Sand piper*
- ▶ Order 12: Columbiformes Eg. *Pigeons*
- ▶ Order 13: Cuculiformes Eg. *Cuckoos*
- ▶ Order 14: Psittaciformes Eg. *Parrots*.



- ▶ Order 15: Strigiformes Eg. *Owls*
- ▶ Order 16: Caprimulgiformes Eg. *Caprimulgus*
- ▶ Order 17: Apodiformes Eg. *Swifts*.
- ▶ Order 18: Coliiformes Eg. *Mouse birds*



- ▶ Order 19: Trogoniformes Eg. *Trogon*
- ▶ Order 20: Coraciiformes Eg. *King-fishers*
- ▶ Order 21: Piciformes Eg. *Woodpeckers*
- ▶ Order 22: Passeriformes Eg. *Passer*

