

# 2. Introduction to class –Aves

2.1 Salient features of class Aves with two examples (names only) – Sparrow, Parrot.

2.2 Flight adaptations in birds.

2.3 Types of Beaks and feet in birds.

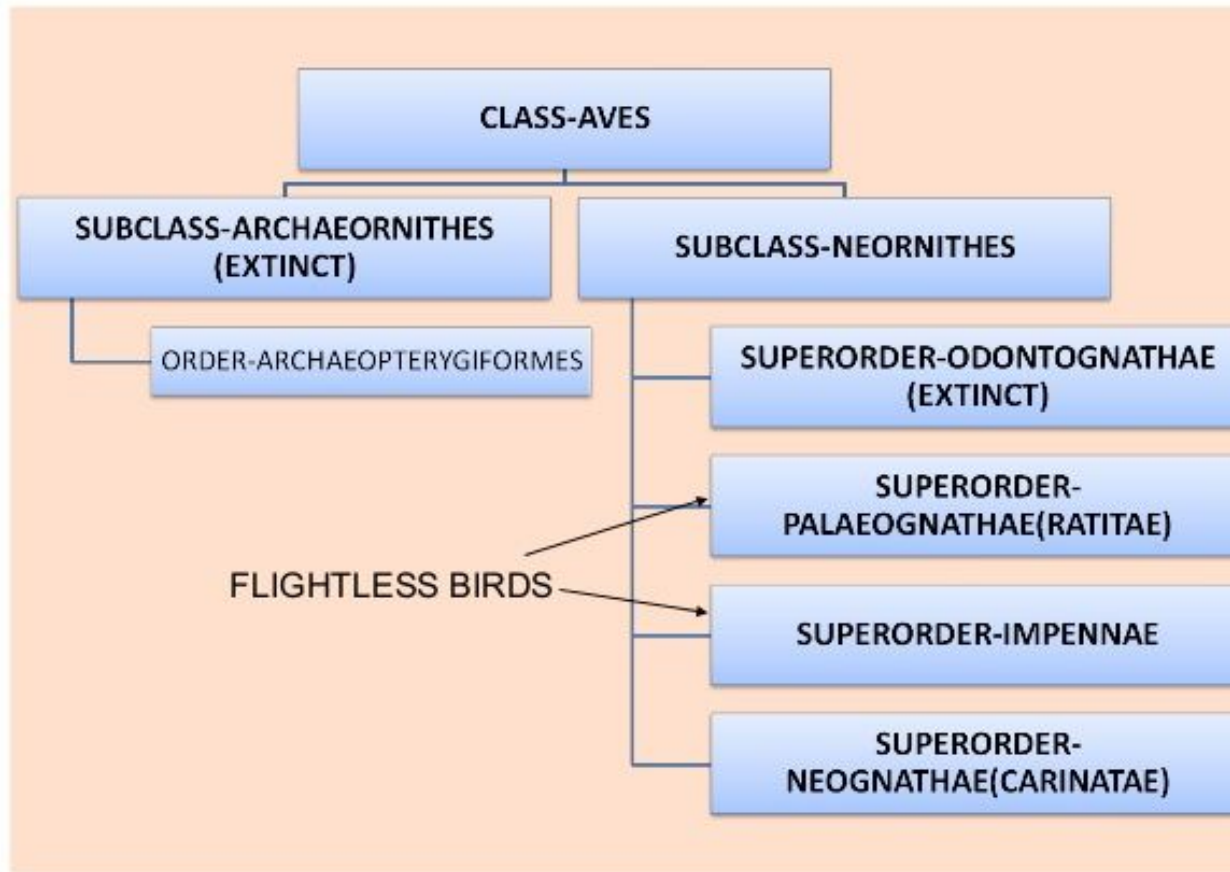
2.4 Migration in birds – Altitudinal, Latitudinal.

# Class: Aves

- They belong to the phylum Chordata.
- Aves are adapted to fly.



# Classification of Birds



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# Characteristics of Aves

- Aves are **Homeotherms** (warm-blooded)
- Bipedal feathered animals.
- The fore-limbs developed into wings to fly.
- Hind limbs are adapted according to habit and habitat for walking, perching, grasping, wading and swimming.
- Epidermal scales present on legs.



Perching bird  
(cardinal)



Grasping bird  
(woodpecker)



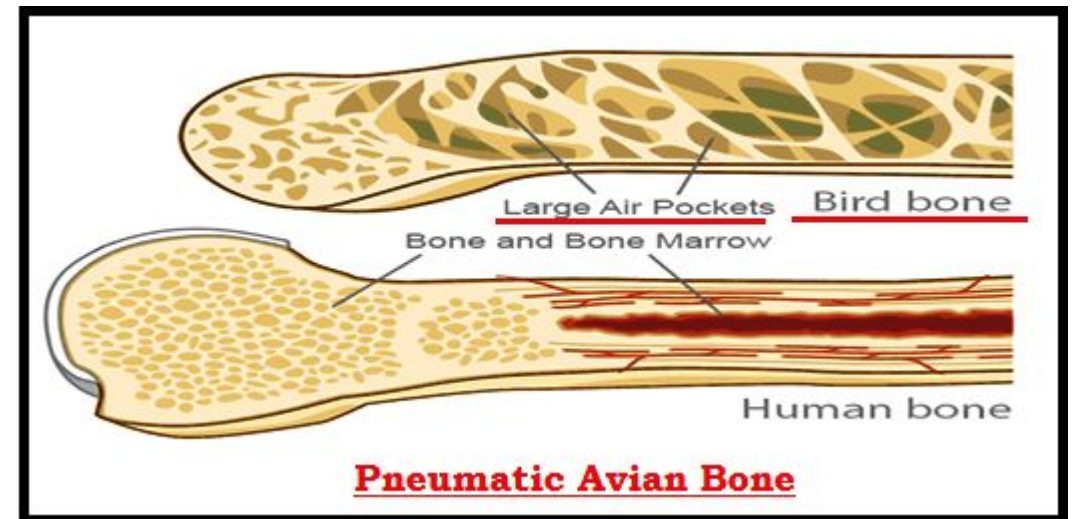
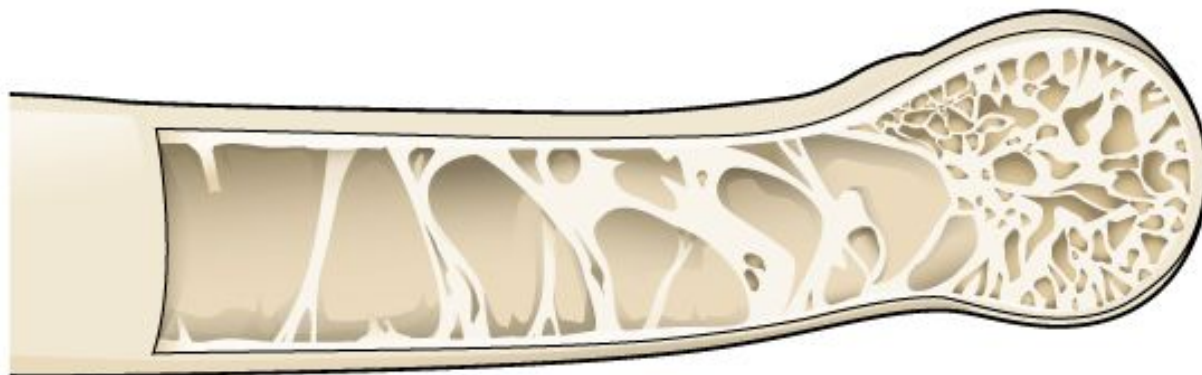
Raptor  
(bald eagle)



Swimming bird  
(duck)



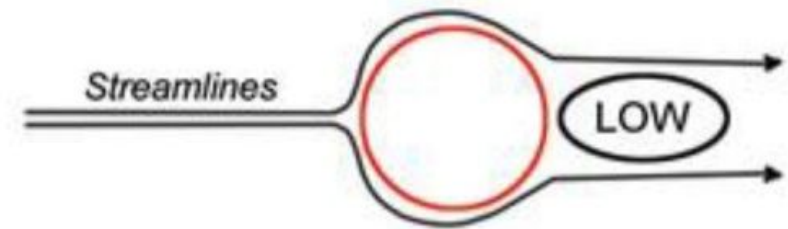
- The endoskeleton is bony with long hollow bones filled with air cavities. known as **pneumatic bones**.



- Their boat / spindle shaped body, (Streamline) minimizes resistance of the wind.



Non-Streamline Shape



Streamline Shape



- Feathers help to prevent heat loss and provide passage for air.
- There is no skin gland ,the uropygium gland or oil gland. This gland is present near the tail.



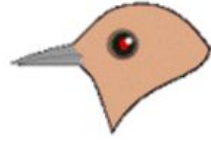


- The jaws are modified into a beak. They have no teeth. Beaks are developed according to feeding habit.





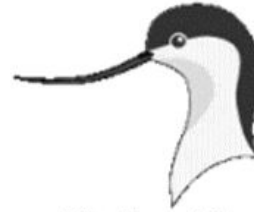
Generalist



Insect catching



Surface skimming



Mud probing



Grain eating



Coniferous-seed eating



Probing



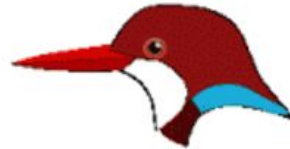
Filter feeding



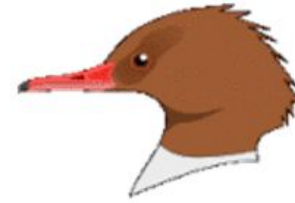
Nectar feeding



Fruit eating



Aerial fishing



Pursuit fishing



Chiseling



Dip netting

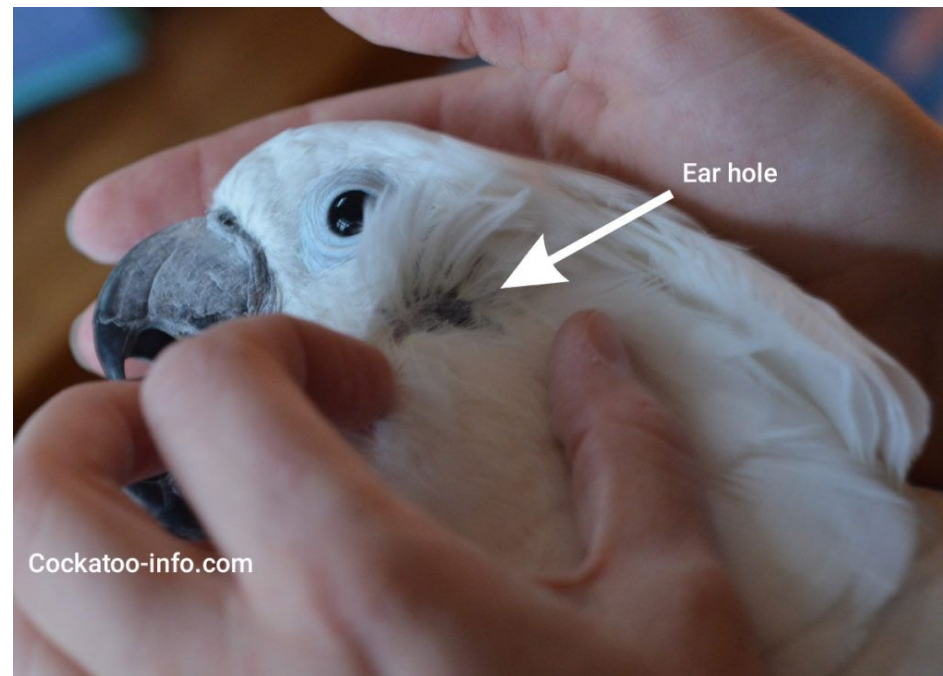


Scavenging

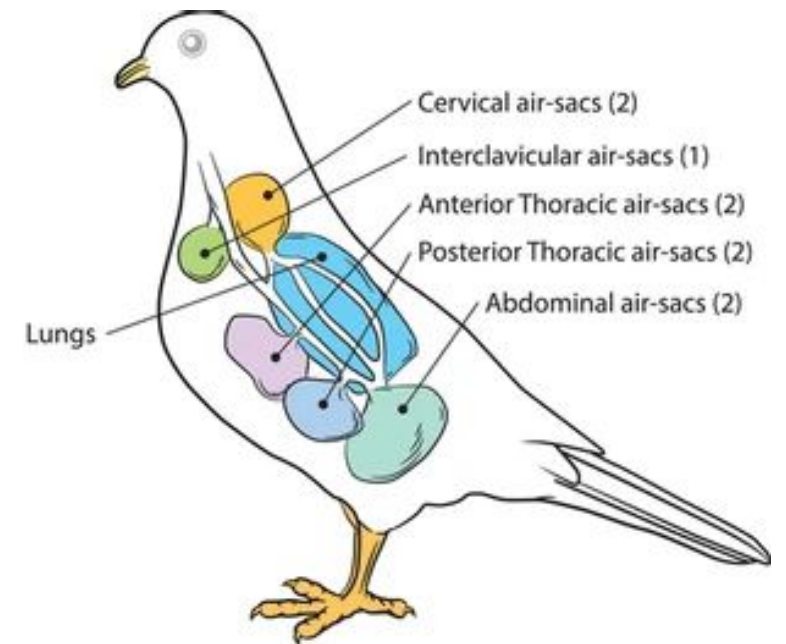
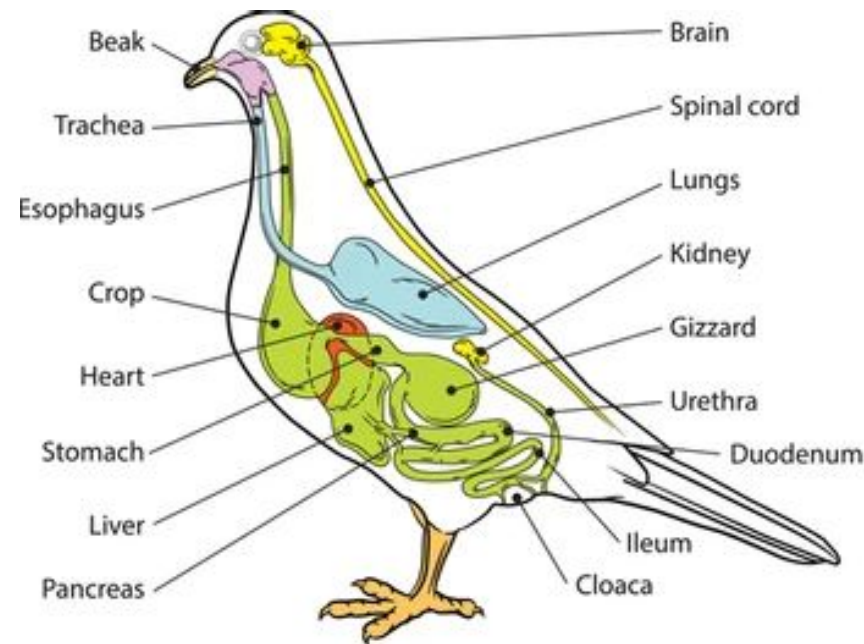
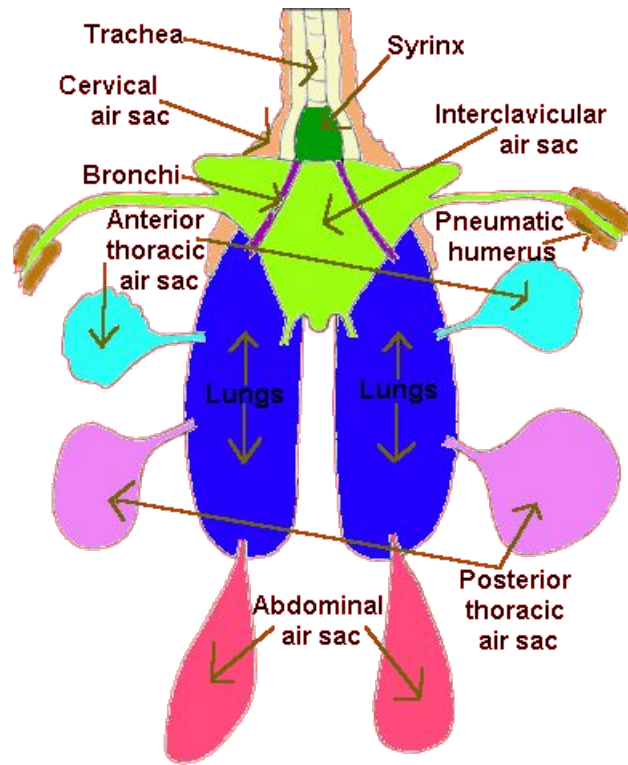


Raptorial

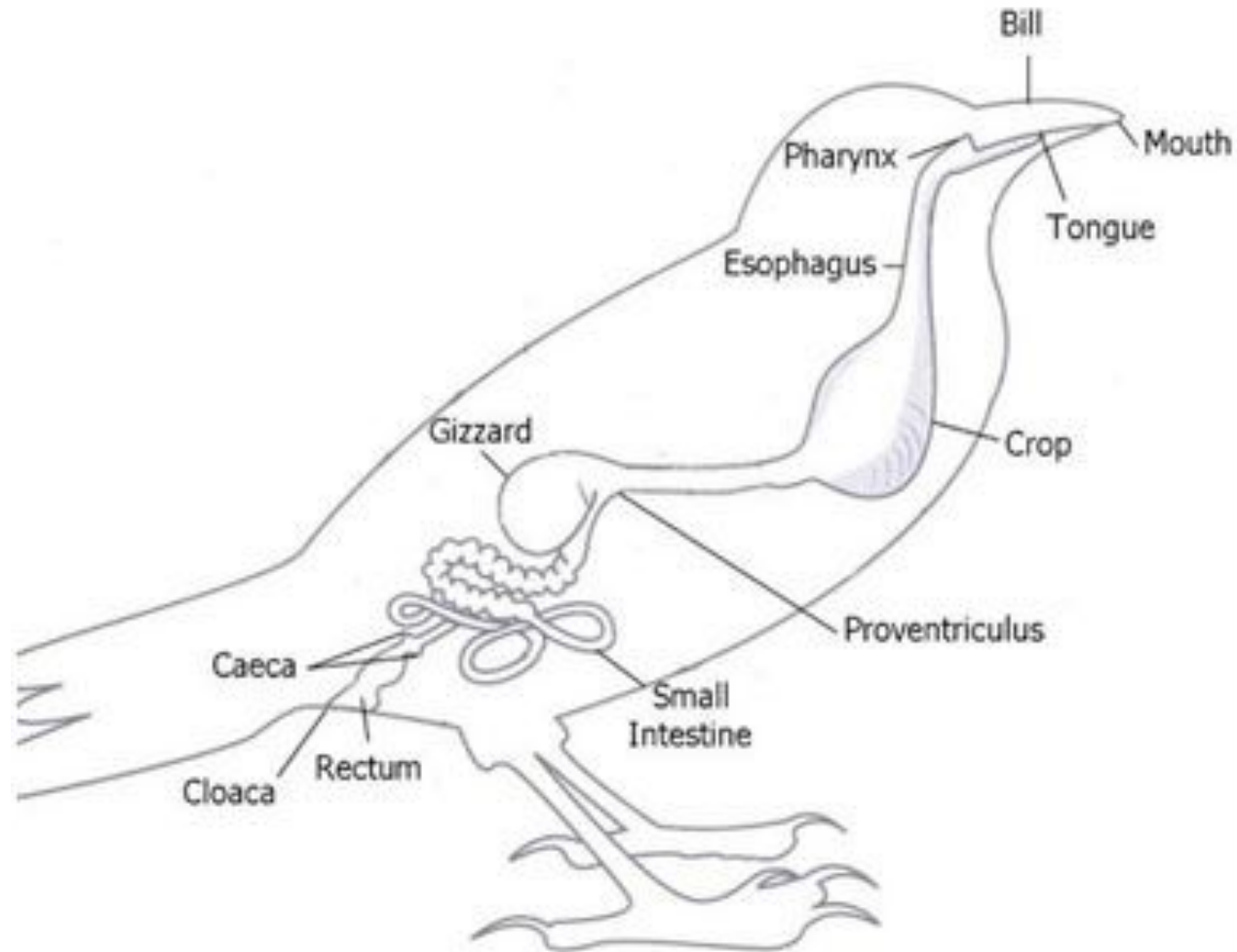
- Birds have highly developed sight, They have pecten in eyes and visible ear openings.
- Their ears are divided into three parts –internal, middle, and external.



- Lungs are primary respiratory organ in birds spongy. Lungs **have air sacs** to supplement respiration

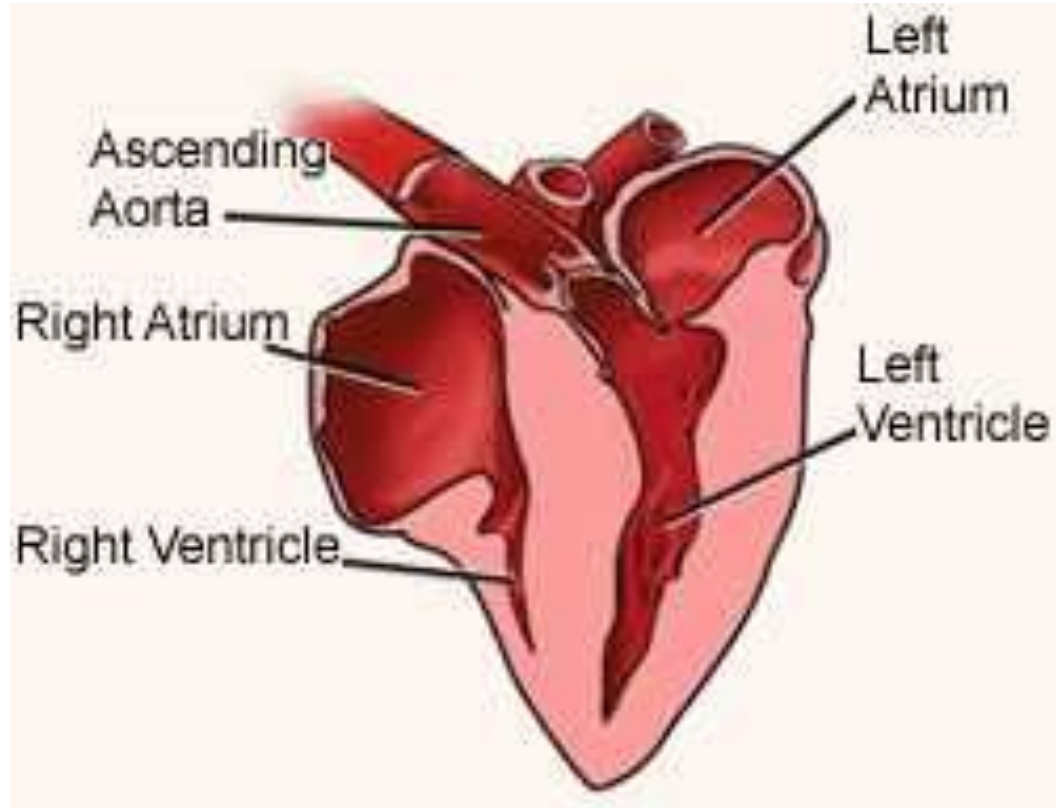


- Alimentary canal is complete. The crops help in softening food, and the gizzard helps in crushing the food.

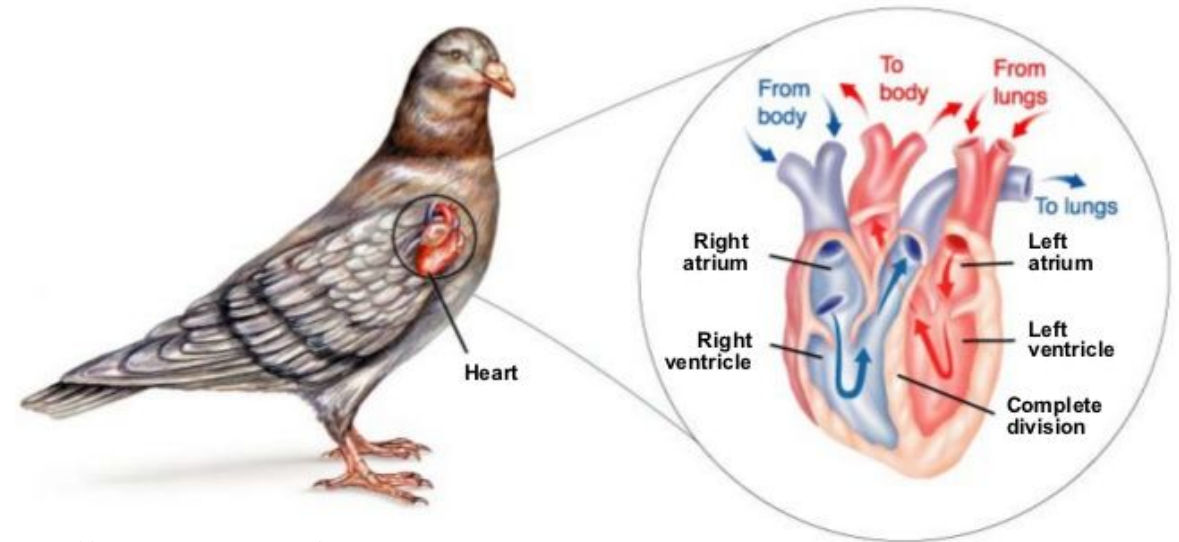


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- Their heart is four-chambered. RBCs are oval, nucleated and biconvex

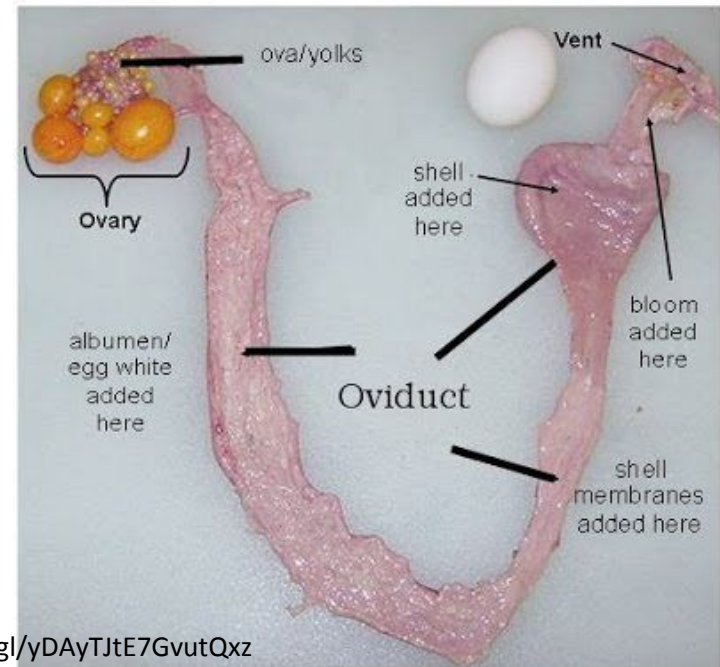


- Double loop circulatory system
- 4 chambered heart



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- Metanephric that help to filter the nitrogenous fluid waste via the ureters, into the cloaca and renal system lacks a urinary bladder.
- Birds have a single ovary and oviduct on the left side
- Oviparous .
- The eggs have four embryonic membranes- amnion, chorion, allantois, and yolk sac.



sexual dimorphism.



**Wrens** (*male on left*)



**Ducks** (*male on left*)



**Peacock** (*left*) + **Peahen** (*right*)

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# Migration in birds – Altitudinal, Latitudinal.

- Bird migration is the regular seasonal movement, often north and south along a flyway, between breeding and wintering grounds.
- Birds migrate to move from areas of low or decreasing resources to areas of high or increasing resources.
- The two primary resources being sought are food and nesting locations.
- Migration of Birds-TYPES
  - **Latitudinal.**
  - **Longitudinal.**
  - **Vertical or Altitudinal.**
  - **Partial.**
  - **Total.**
  - **Vagrant or irregular.**
  - **Seasonal**

# Latitudinal

- The latitudinal migration usually means the movement from north to south, and vice versa.
- Most birds live in the land masses of the northern temperate and subarctic zones where they get facilities for nesting and feeding during summer. They move towards south during winter.
- An opposite but lesser movement also occurs in the southern hemisphere when the seasons are changed. Cuckoo breeds in India and spends the summer at South-east Africa and thus covers a distance of about 7250 km.

# Vertical or Altitudinal.

- Birds that breed in tall mountains often shows altitudinal migration.
- In this type of migration is the **move to lower elevations in winter, when harsh weather and deep snowfall may make staying at upper elevations impossible.**
- The altitudinal migration occurs in mountainous regions. Many birds inhabiting the mountain peaks migrate to low lands during winter.
- **Examples:**Golden plover (*Pluvialis*)

