

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the left and right sides of the frame, creating a modern, layered effect. The central area is a plain white space.

Welcome

FLIGHT ADAPTATIONS IN BIRDS

- ▶ Birds are called “Masters of the air”
- ▶ The organs and various systems of the birds are modified for flight purpose.
- ▶ Most of the birds are well adapted for terrestrial mode of life. For example -Ostrich, Kiwi, Emu
- ▶ Other birds became well developed for aquatic as well as terrestrial mode of life. For example-Duck

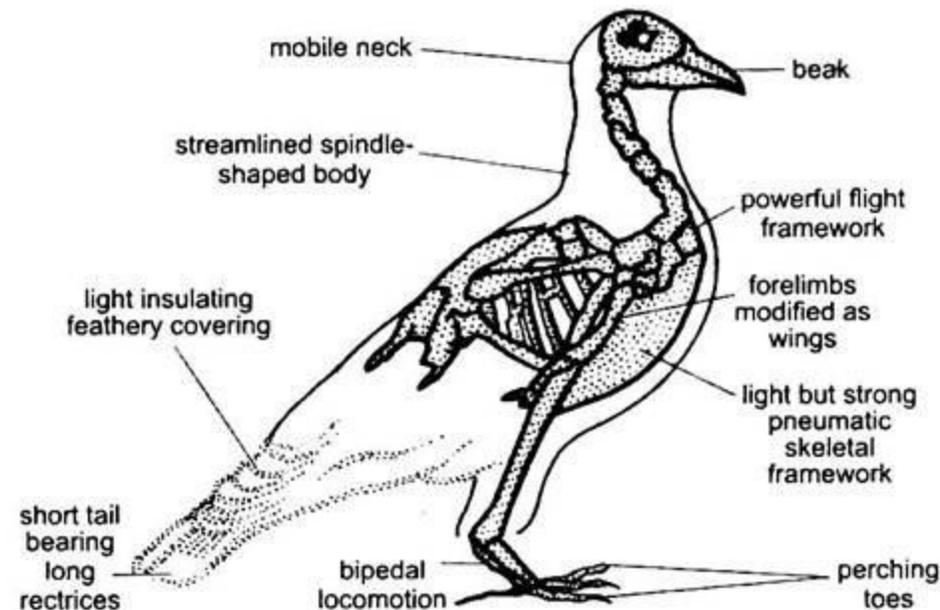


Fig. 28.5. Diagram showing the streamlined body of bird.

(A) Morphological Adaptation

1. Body shape: For aerial mode of life body shape of the birds plays important role.

2. Compact body: The birds possess compact and light body. Dorsally body is strong and heavier ventrally. This arrangement of compact body helps in maintaining balance in the air.

3. Body covering of feathers: Body of the birds is covered by smooth, compact, closely fitted and backwardly directed integumentary derivatives called feathers

• Following are the advantages of feathers for birds:

a) Feathers covering make the body light

b) Feathers are bad conductor of heat hence useful for maintaining the body temperature

4. Flight organs: The forelimbs are modified into wings which are powerful unique and powerful propelling organs

5. Mobile neck and head: The neck of the birds is very long and flexible. The mobile neck is useful for reaching the food

6. Beak: The mouth of the birds is drawn into a horny beak which acts as a pair of forceps in picking up the things

7. Short tail: The birds possess very short and reduced muscular tail.

8. Bipedal locomotion: The forelimbs are modified into wings. The flightless birds retained the habit of walking on two legs.

9. Equilibrium: It is an important requirement for flight in the air.

10. Integument: The skin or integument of the birds also shows modification for flight

(B) ANATOMICAL ADAPTATIONS

Flight muscles: The muscles which help in flight are very well developed and control the flight of the birds. The neck muscles are greatly reduced.

(C)LIGHTNESS AND RIGIDITY OF ENDOSKELETON

- 1.The lightness is essential for aerial mode of life
- 2.It has been achieved by birds in many ways.
3. It achieves strength with lightness which is one of the essential in successful flight.
- 4.Many bones either rod like or T-shaped.
- 5.Skull bones are reduced and paper like.
- 6.The skeleton of forelimbs is completely modified. These are only three digits, which are more or less fused.

(D)DIGESTIVE SYSTEM

- 1.The flying birds show high metabolic rate and their food requirements are also great and digestion is very fast**
- 2.The digestive system is compact and effective.**
- 3.The rectum becomes much reduced in length and nerves stores the undigested food**
- 4.The absence of gall bladder in birds minimize the body weight to some extent**

(E)RESPIRATORY SYSTEM

- 1.The flying birds require great and sustain power.
- 2.The respiratory system of the birds is highly specialised.
- 3.The air sac helps in regulating body temperature by internal respiration.

(F)WARM BLOODEDNESS

- 1.The birds are warm blooded animals.
- 2.The perfect aeration of blood is responsible for the high temperature of the body.
3. The birds shows body temperature 40-46 °C.which is essential for flight.

(G) CIRCULATORY SYSTEM

- 1. Rapid metabolism and warm bloodedness required a large oxygen supply and efficient circulatory system.**
- 2 The heart of birds is large sized and powerful.**
- 3. The heart is four chambered.**
- 4. The blood cells of bird contains large amount of hemoglobin.**

THANK YOU

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