TYPES OF BEAKS AND FEET IN BIRDS

I) Beak modifications in Birds:

The modern birds show absence of teeth. The upper and lower jaws bones become elongated to form a peculiar **beak** or **bill**. The beak is covered by a horny sheath called rhamphotheca.

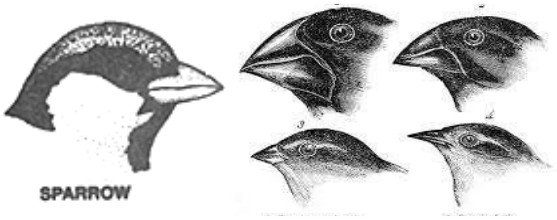
Modification of forelimbs into wings, deprived birds of some of their normal functions which had to be taken over by the beak and feet. So, the beak perform the function of mouth and forelimbs.

Beak plays very important role in:

i) Obtaining and handling food,
ii) Preening feathers,
iii) Gathering and arranging nest materials,
iv) Offence and defence and
v) Feeding the young ones.

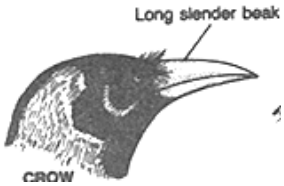
Beaks shows great variations in shape, size and structure. Some important modifications and types are-

1. **Seed eating beak:**
   The granivorous or seed eating birds exhibit very strong, stout, short and conical beaks. e.g., sparrow, finches and cardinals. Strong and powerful beaks are also used for crushing the large and hard seeds. Smaller and weaker beaks are used for picking up small seeds which are either swallowed or crushed.



Finch

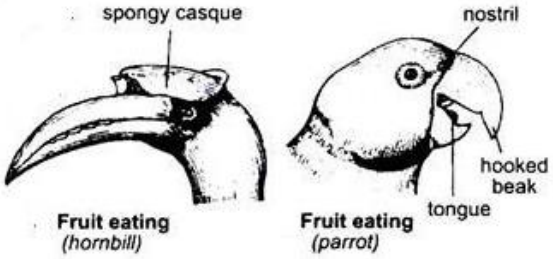
2. **Cutting Beaks:**
   Some birds possess long, sharp and slender beaks with cutting edges. It is used for various purposes like cutting, breaking eggs, cutting fruits etc.
   e.g., Crow.



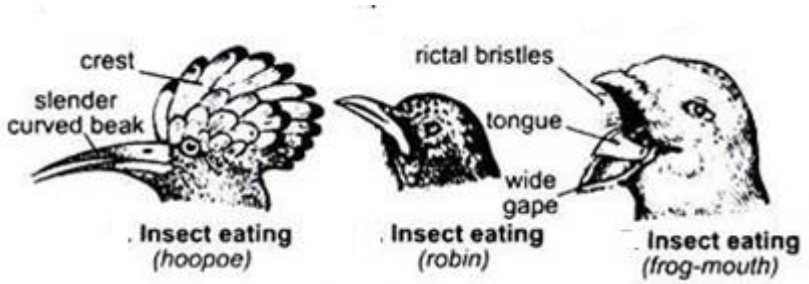
3. **Fruit Eating Beak:**
   Many birds feed on fruits, hence their beaks are adapted for breaking hard fruits, nuts and hard seeds. E.g., Parrot, Hornbill.

   In Parrot beak is very sharp, massive and deeply hooked and extremely strong. It is useful for breaking open hard seeds and nuts.

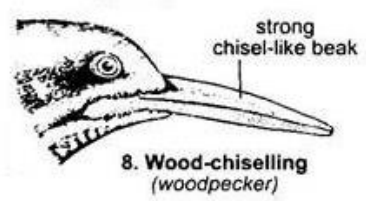
In hornbill beak is very large, enormous, heavy and cubersome. But it is very light and these acts as resonators which enable the bird to produce exceptionally loud cry.



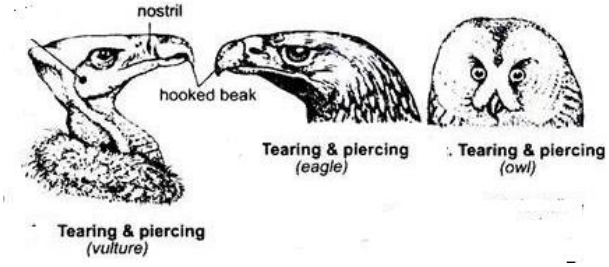
4. Insectivorous Beak: Many birds are insectivorous hence the beaks are adapted for catching the insects when they are flying. The beak is small, wide and delicate.
   e.g., Hoopoe, Robin, King birds.
   In Hoopoe the beak is long, slender and slightly curved and used for turning leaves or probing into soil for insect grubs and pupae.
   In fly catchers (King birds), the beak is short and strong with numerous rectal bristles at the base.



5. Wood Chiselling Beak: This type of beak is long, straight and stout chisel-like which is useful for drilling into the bark or wood for insect larvae or nest building.
   e.g., Woodpecker.



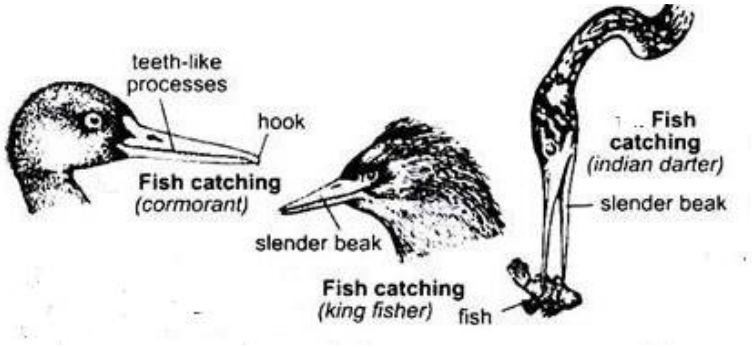
6. Tearing and Piercing Beak:
   The carnivorous birds which feed on flesh such as eagles, owls, kites, hawks, vultures, have short, pointed sharp-edged, powerful, hooked beaks for tearing and piercing flesh. These beaks are operated by well-developed mandibular muscles.
   e.g., Vultures, Hawks, Eagles, Owls, Kites etc.



7. Fish Catching Beak:

The aquatic birds have long, powerful and sharply pointed beaks to capture fish, frogs, toads and aquatic animals. e.g., Herons, Kingfishers.

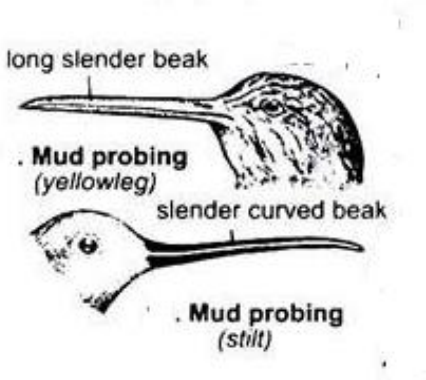
In cormorants, the beak is long and narrow with the edges armed with sharp backwardly directed teeth like processes for capturing fishes.



8. Mud Probing Beak:

The birds with mud probing beaks are lapwing, sand piper, stilt, shipe. Their beaks are extremely long and slender. These are used as a long probe for thrusting far down into water and mud in search of worms and larvae.

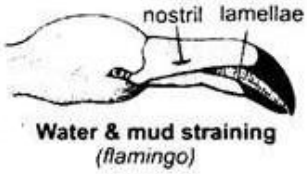
e.g., Lapwing, Sand piper, Stilt, Shipe etc.

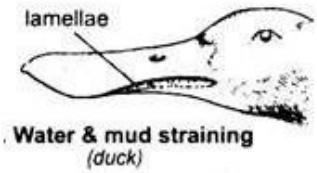


9. Water and Mud Straining Beak:

The type of beak is broad and flat. The edges of the jaws are modified into horny serrations or transverse lamellae. These lamellae act as sieves or strainer. Through these sieves water and mud can easily pass out and food remains in the mouth.

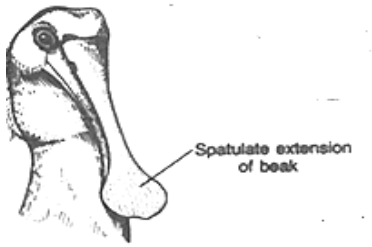
e.g., Ducks, Teals, Geese and Flamingo.





10. Spatulate Beak:

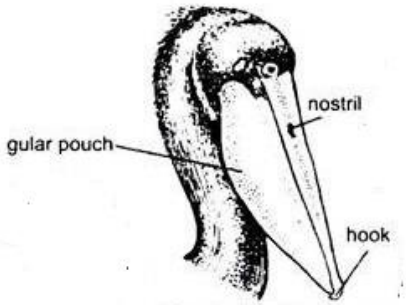
The Spoonbill possess a very specialized form of beak. It is flattened beak throughout its length, but terminates in a broad spoon like expansion. It is developed for dabbling in water and mud in search of insects, fish, worms and molluscs etc.



SPOONBILL

11. Pouched Beak:

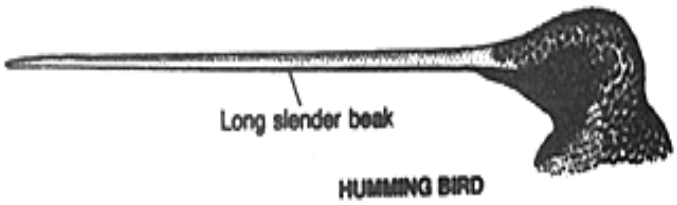
The birds like pelicans require large quantity of food (Fishes). Therefore, their beak is large with large gular pouch of extensible skin attached to the lower mandible. This pouch serves as a fishing net.



Pouched *(pelican)*

12. Flower probing beak:

The birds feeding on the nector of flowers. develops such type of beaks. They develop long and pointed beak for sucking nector and insects. e.g., Humming birds, Sun birds.



HUMMING BIRD

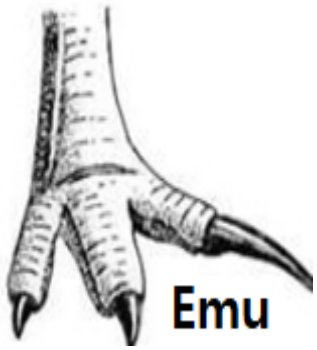
Sunbird

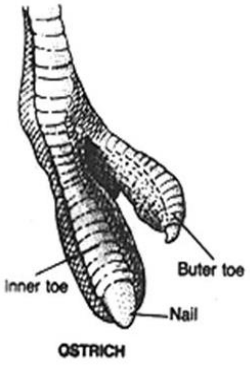
II) Feet Modifications in Birds:

The feet of the birds are modified to fulfil several needs of birds. They are modified according to the character of the environment and the manner of locomotion. The normal number of toes in birds is four to five. The first toe is pointing backwards called hallux and remaining 2nd to 4th toes are pointing forwards.

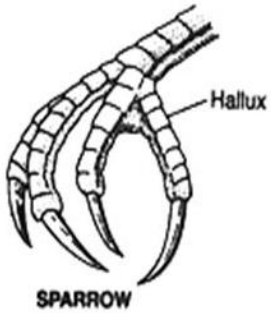
Some important feet modifications are-

1. **Running or Cursorial Feet:** These feet found in birds which are adapted for running. The legs are very strong and powerful and number of toes is reduced.
   e.g., Ostrich has only two toes, outer toe is smaller and bears no nail.
   In Bustards, Emu, Rhea and Cassowary only three toes are present and they are directed forwards.

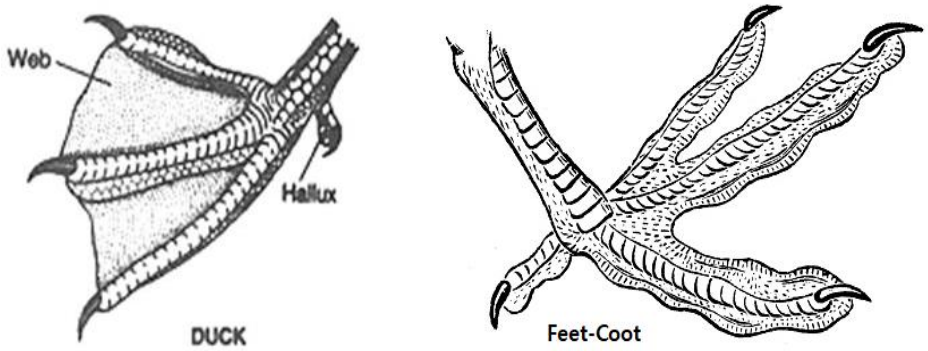




2. **Perching Feet:** Many birds show perching type of feet In this type, three toes are directed forward and they are slender. While one toe i.e., hallux is long, strong and opposable to other three. This arrangement helps for securely fastening the foot to a branch.
   e.g., Crows, Sparrows, Robins, Bulbuls, Mynahs etc.



3. **Swimming Feet:** In swimming birds, the toes are webbed, partially or completely. The feet are modified as propellers or steering organs.
   In diving birds (e.g., Coots and Grebes) the web is lobate and the toes are free.
   In case of swimming and paddling birds (e.g., Ducks and Teals), only the anterior three toes are united by webs.
   In Pelicans and Cormorants all the four toes are united by web.



4. **Climbing Feet:** In many birds, the feet are used as organs of grasping and they are also adapted for climbing on vertical surfaces. In these birds, the second and third toes are pointed forward, while the 1st and 4th toes are pointed backwards.
   e.g., Parrot, Woodpecker.

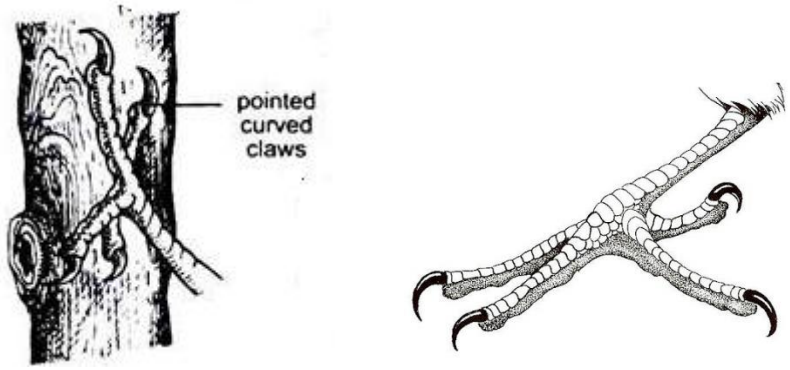
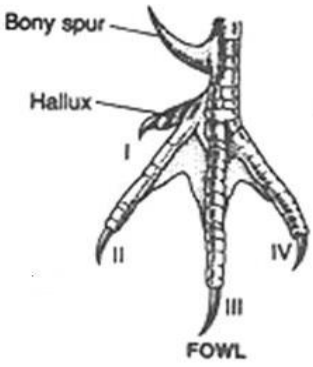


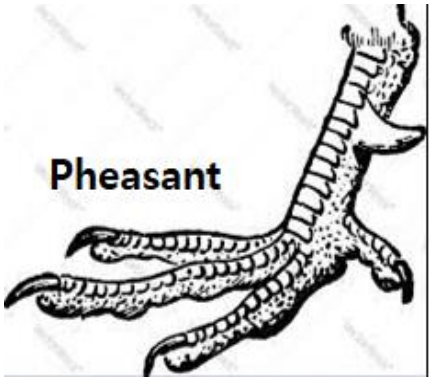
Fig. Climbing feet

5. **Clinging Feet:** In this type of feet all four toes are pointed forwards and serves to cling to steep faces of cliffs or under curves of houses etc.
   e.g., Swifts, Martinets, Humming birds.

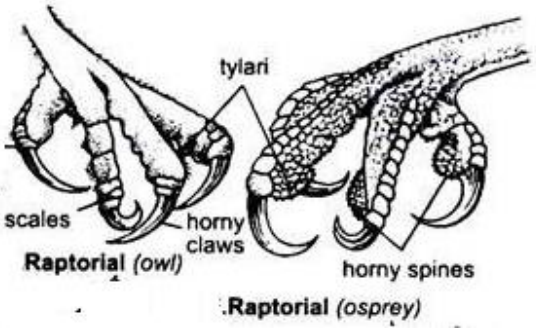
15.Climbing & clinging
(martinet)

6. **Scratching feet:** The feet of this type are strong, stout with strongly developed claws. These are adapted for running as well as scratching the earth.
   In male birds, the foot is usually provided with a pointed bony spur for offence and defence.
   e.g., Fowls, Quails, Pheasants etc.





7. **Raptorial Feet:** These feet are found in carnivorous, predatory birds. These birds have strong feet for striking and grasping their prey. The toes are armed with strong, sharp and curve claws.
   e.g., Kites, Eagles, Vultures, Hawks, Owls etc.
   In hawks and owls, the underside of toes shows presence of large and fleshy bulbs called tylari.
   In osprey and ketupa, tylari are absent but horny spines are present. These spines are useful in gripping slippery preys such as fish and frog.



8. **Wading Feet:** These are found in birds which feed in marshy, muddy places. The birds are also called wading or marshy birds.
   In these birds, the legs and toes are exceptionally long and slender. Thus, the bird can easily walk over aquatic vegetation or marshes. The web is generally absent and if present it is poorly developed.
   e.g., Herons, Snipes, Jacana, Lap wing etc.