The University of Burdwan
Three/Four year UG course under NEP
Paper ZOOL2011

MODIFICATION OF FEET IN BIRDS

DR. SAGAR ADHURYA

ASSISTANT PROFESSOR IN ZOOLOGY
WEST BENGAL EDUCATION SERVICE

Introduction

- The bird’s hindlimbs are modified according to their mode of action:
  - Locomotion
  - Adaptation to the environment
  - Offence and defence
  - Perching

Cursorial or running feet

- Strong, powerful, number of toes reduced.
- Hind toes may be elevated, reduced or absent.
- **In** *bustards, coursers* **and ratites such as** *emu, rhea* **and** *cassowary,* **only 3 toes, directed forward,** are **present.**
- *Ostrich* **has only 2 toes, of which the outer one is smaller and without a nail.**

Great Indian Bustard

Cassowary

Perching feet

- Characteristics of the order **Passeriformes** or **Perching Birds**, eg., crows, bulbuls, robins, sunbirds, weavers, flycatchers, mynas etc.
- Three toes are anterior and slender, while one toe or hallux is posterior, strongly built and opposable, so that they can securely fasten the foot to a branch or a perch.

Toe of House Crow

Red-whiskered Bulbul

Oriental Magpie Robin

Scratching Feet

- The feet of *fowls, quails, pheasants*, etc., are stout, with strongly developed claws and well adapted for running as well as scratching the earth.
- The foot of a male bird is usually provided with a pointed bony spur for offence and defence.

Grey Francolin

Painted Spurfowl

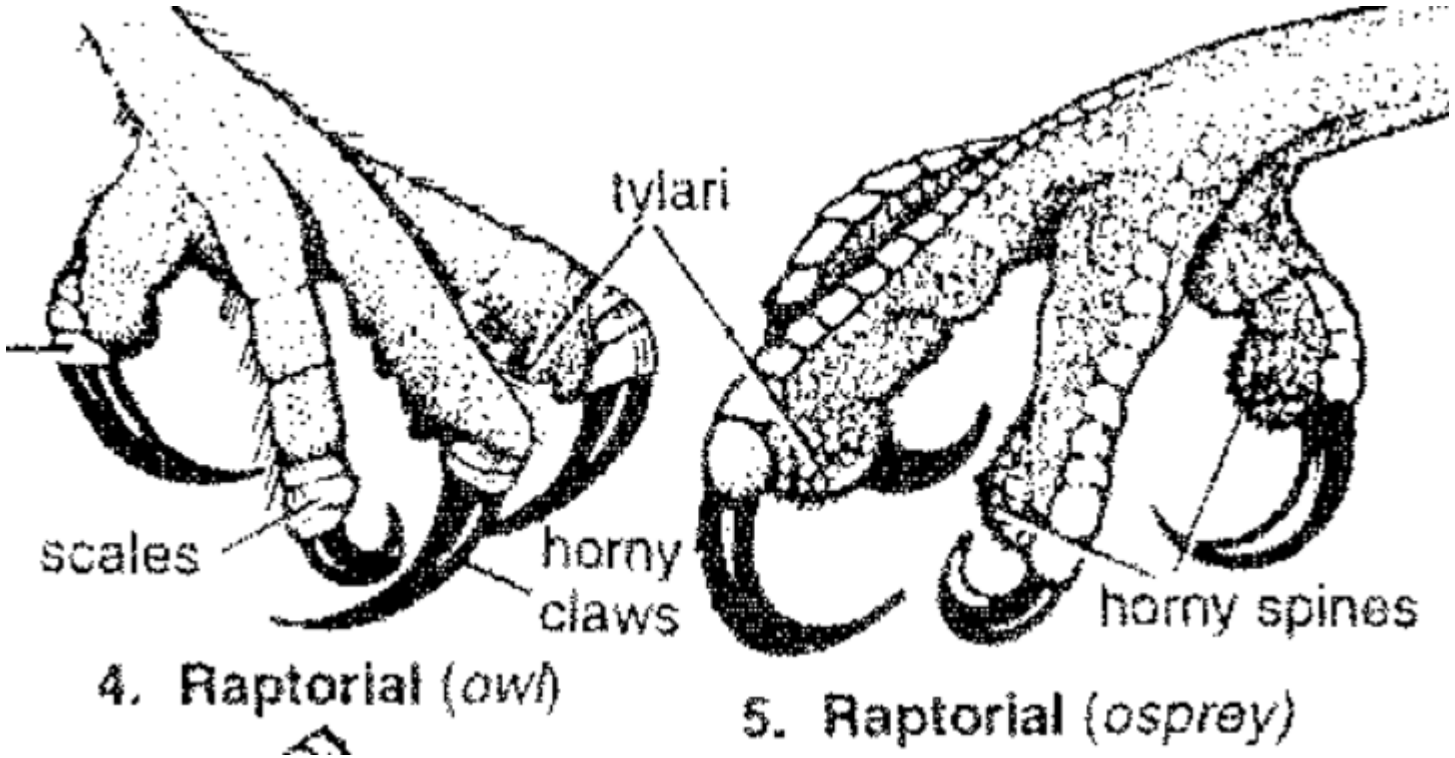
Raptorial Feet

- Predatory or carnivorous birds, such as *eagles, kites, vultures, owls, etc.,* have strongly taloned feet for striking and grasping their prey.
- The toes have strongly developed, sharp and curved claws (**talons**). Large and fleshy bulbs, called **tylari**, are found on the undersurface of the toes, especially developed in the *sparrow-hawk*.
- In osprey and *Ketupa*, tylari are absent, but horny spines are present, which help in gripping slippery prey such as fish.

Black winged Kite

Black Kite

Raptorial feet



Raptorial feet

uffy Fish Owl

Osprey

Wading feet

- The legs and toes are exceptionally long and slender in wading or marshy birds such as *herons, snipes, jacanas, lapwings, etc*.
- These serve to walk over aquatic vegetation or marshes.
- The web is absent or feebly developed.

Grey Heron

Red-wattled Lapwing

Little Ringed Plover

Common Sandpiper

Swimming Feet

- In swimming birds, the toes are webbed, partially or completely.
- In diving birds, like *coots and grebes*, the web is lobate, and the toes are free.
- In swimming and paddling birds, such as *ducks and teals*, only the anterior three toes are united in a web.
- In *pelicans* and *cormorants*, all four toes are enclosed in the web

Eurasian Coot showing lobate feet

Swimming feet

Feet of Cormorant

Clinging Feet

- In swifts, martinets and humming-birds, all the four toes point forwards and serve to cling to steep faces of cliffs or under caves of houses, etc.

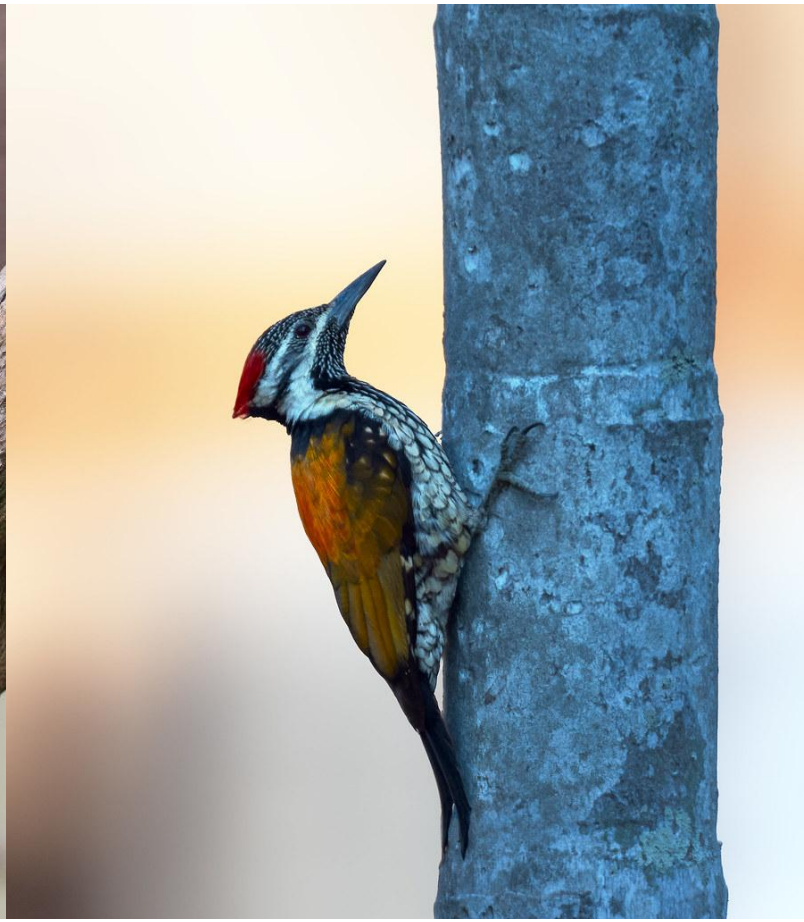
Little Swift

Asian Palm Swift

Climbing feets

- In **parrots** and **woodpeckers** the feet are used as grasping organs and especially adapted for climbing vertical surfaces.
- The second and third toes point in front, while the first and fourth toes point backwards

Alexandrine Parakeet



Lesser Flameback Woodpecker

Water skiing foot

- Jacanas have extremely elongated clawed toes to walk over unstable surfaces such as floating leaves