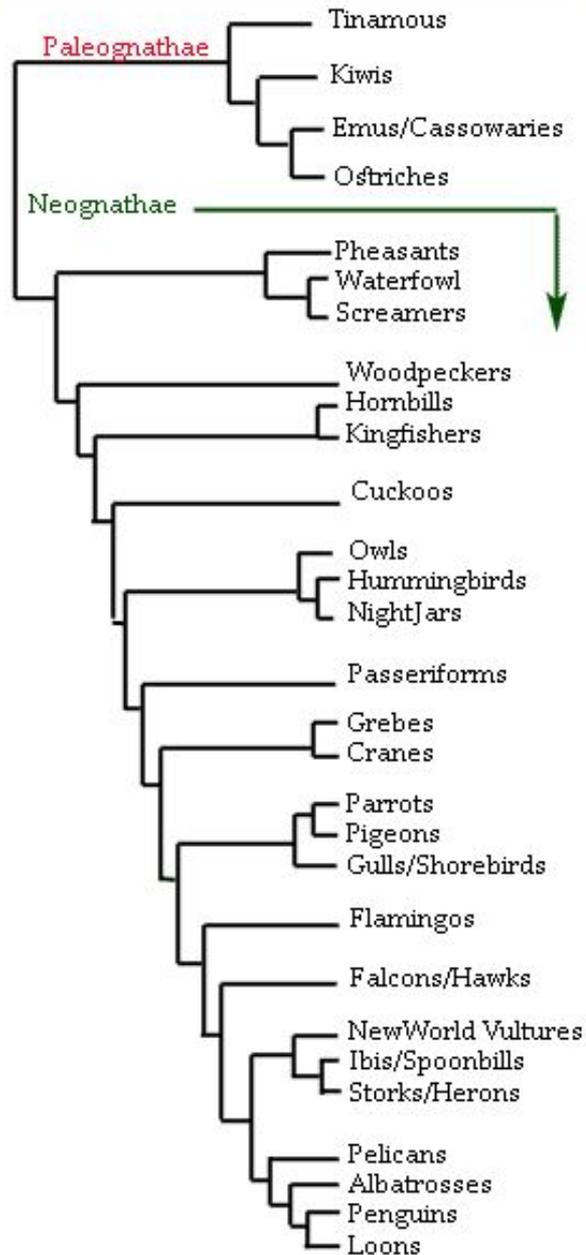


Modern Bird Phylogenetic Tree

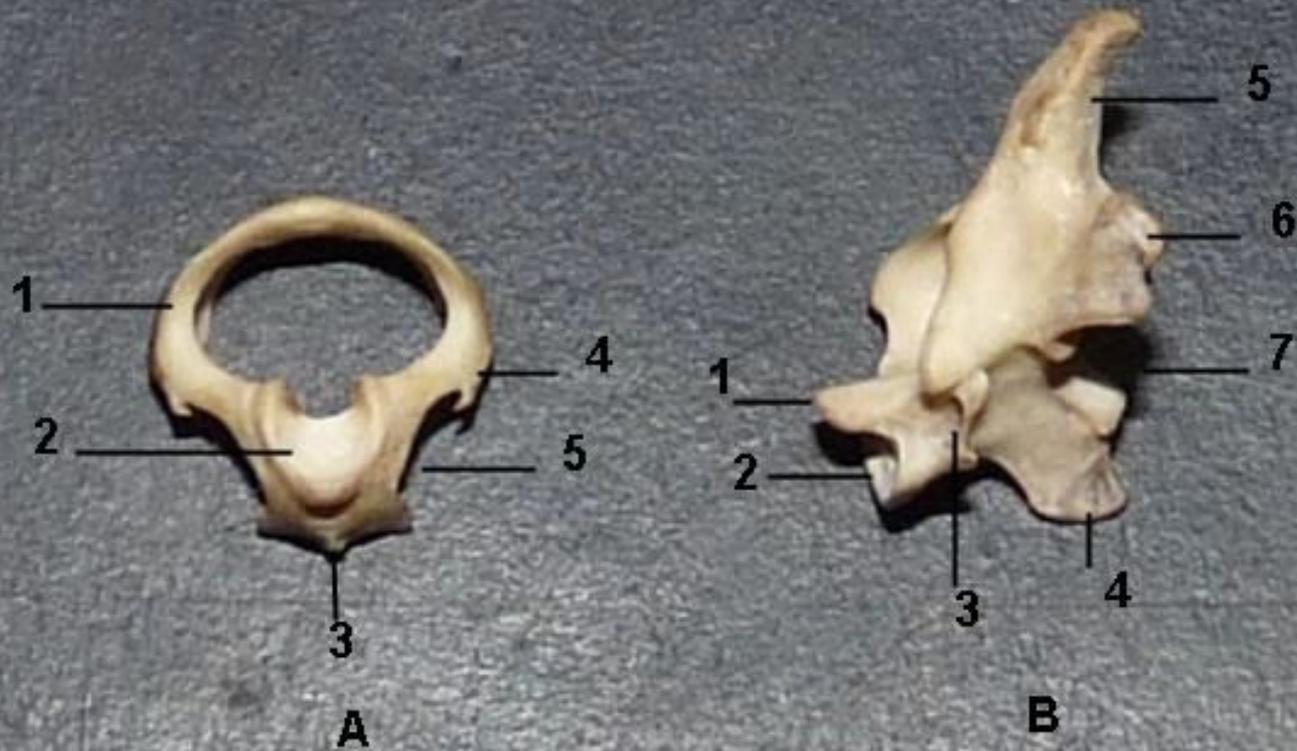


Систематика современных птиц – класс Aves (11,8 тыс. видов) 2015 год



1. Относительное единообразие строения скелета всех современных видов птиц
2. Особенности строения костной ткани

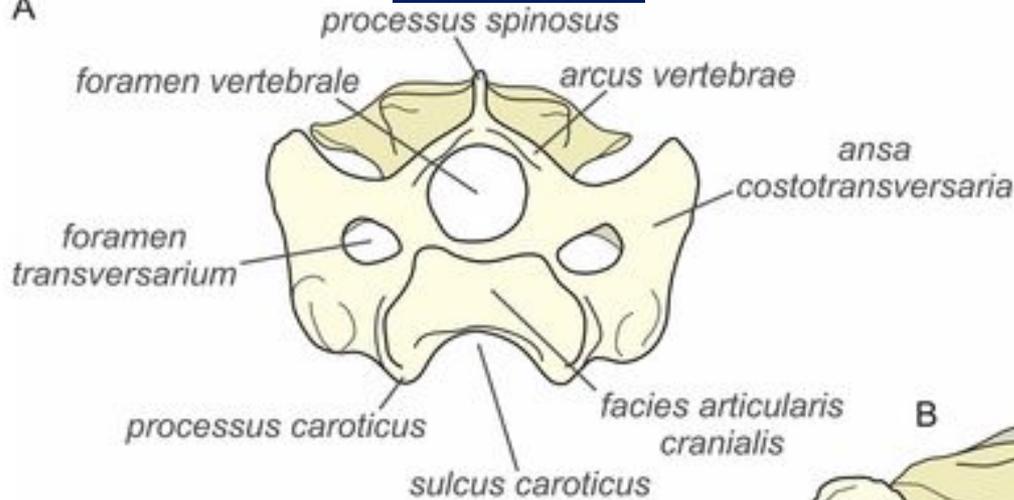




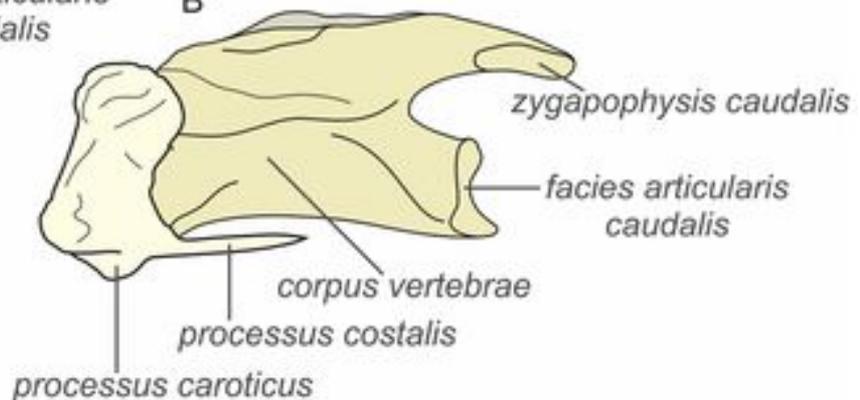
Строение шейных

ПОЗВОНКОВ

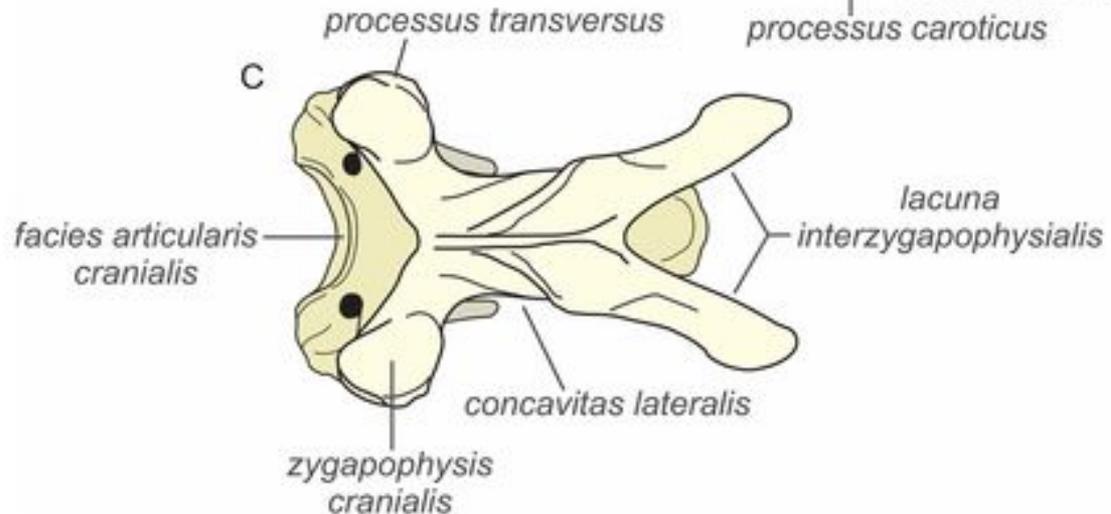
A

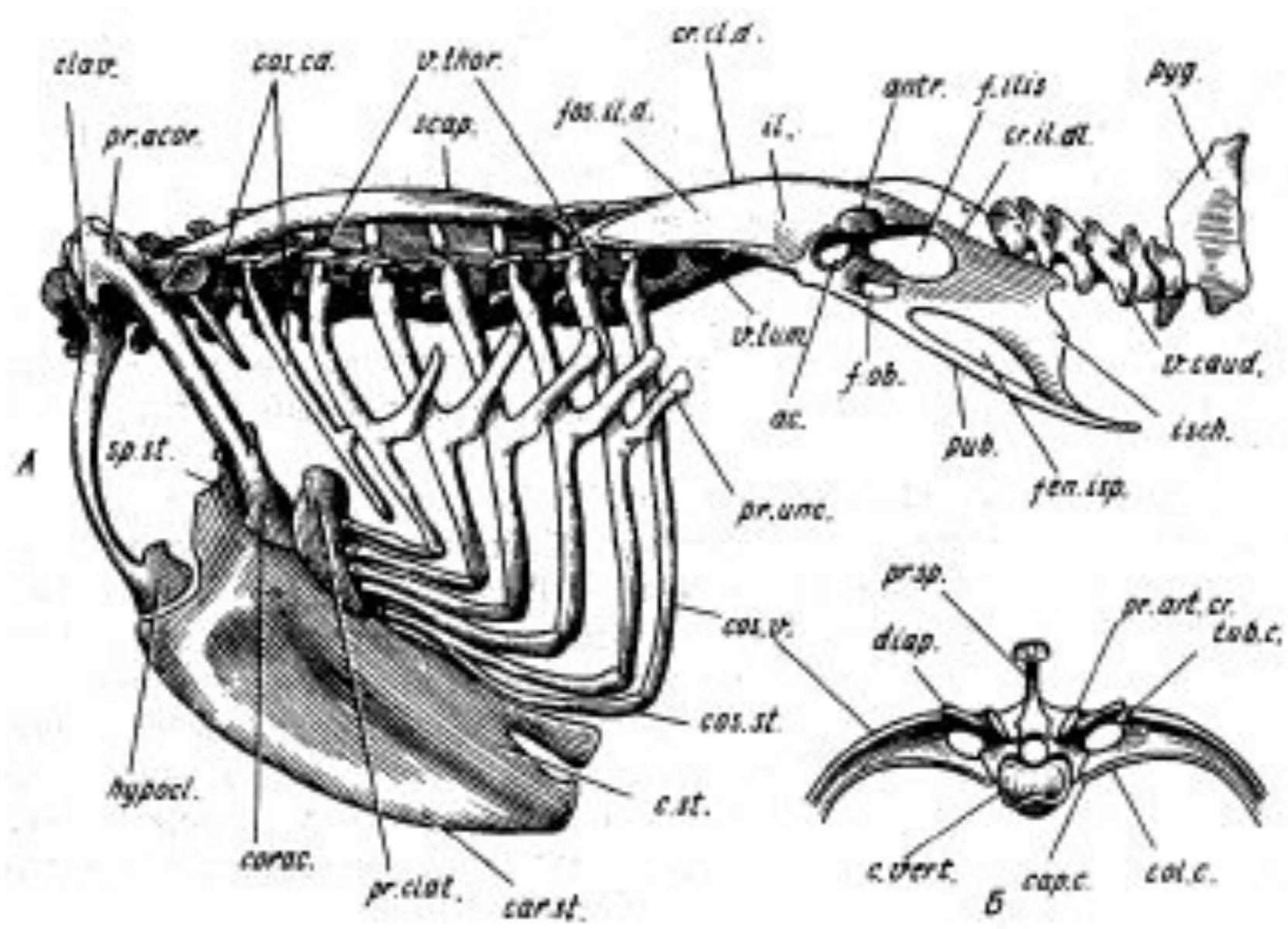


B



C





Пояс передних
конечностей

Scapula

Trioeseal canal

Glenoid fossa

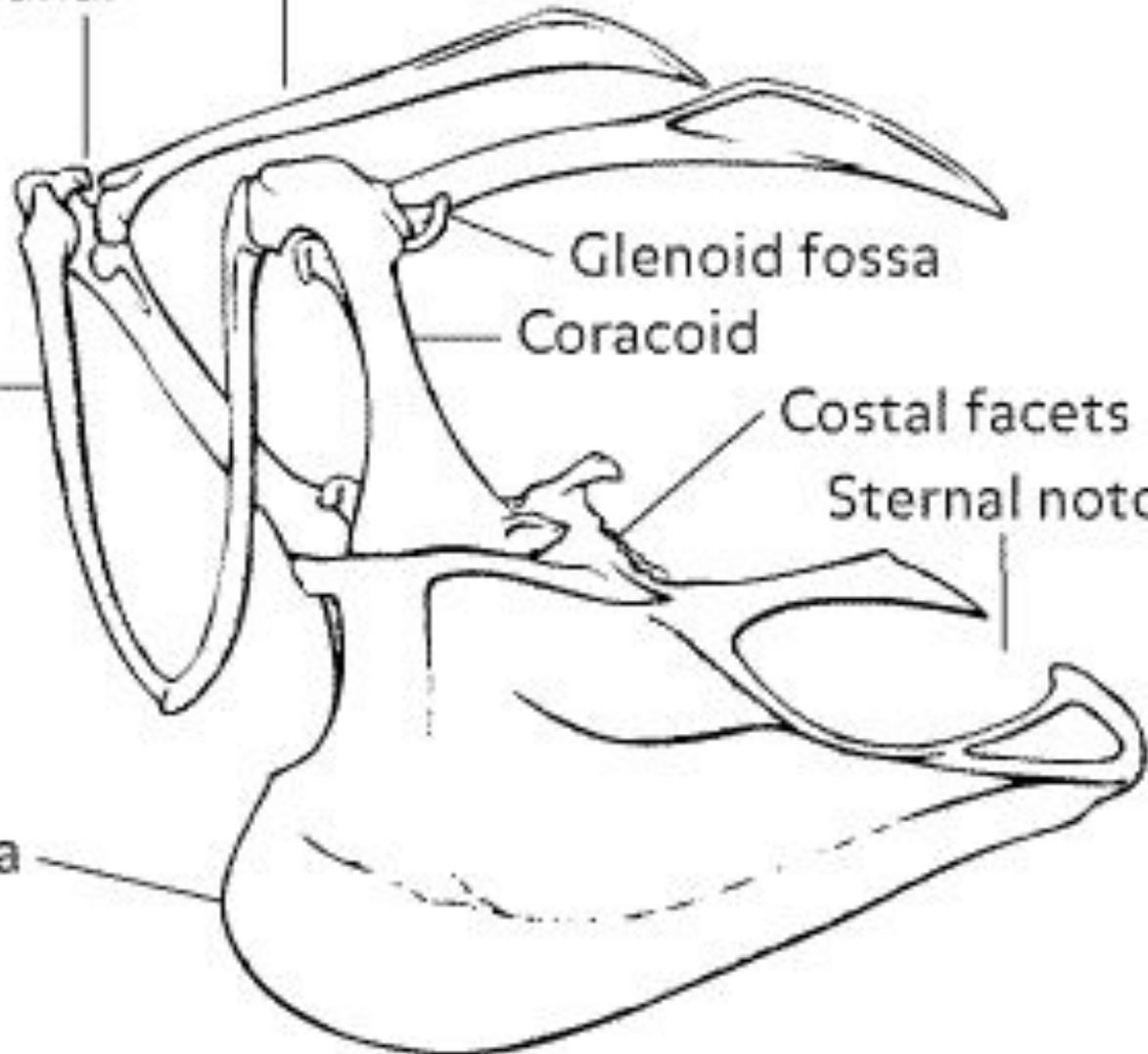
Coracoid

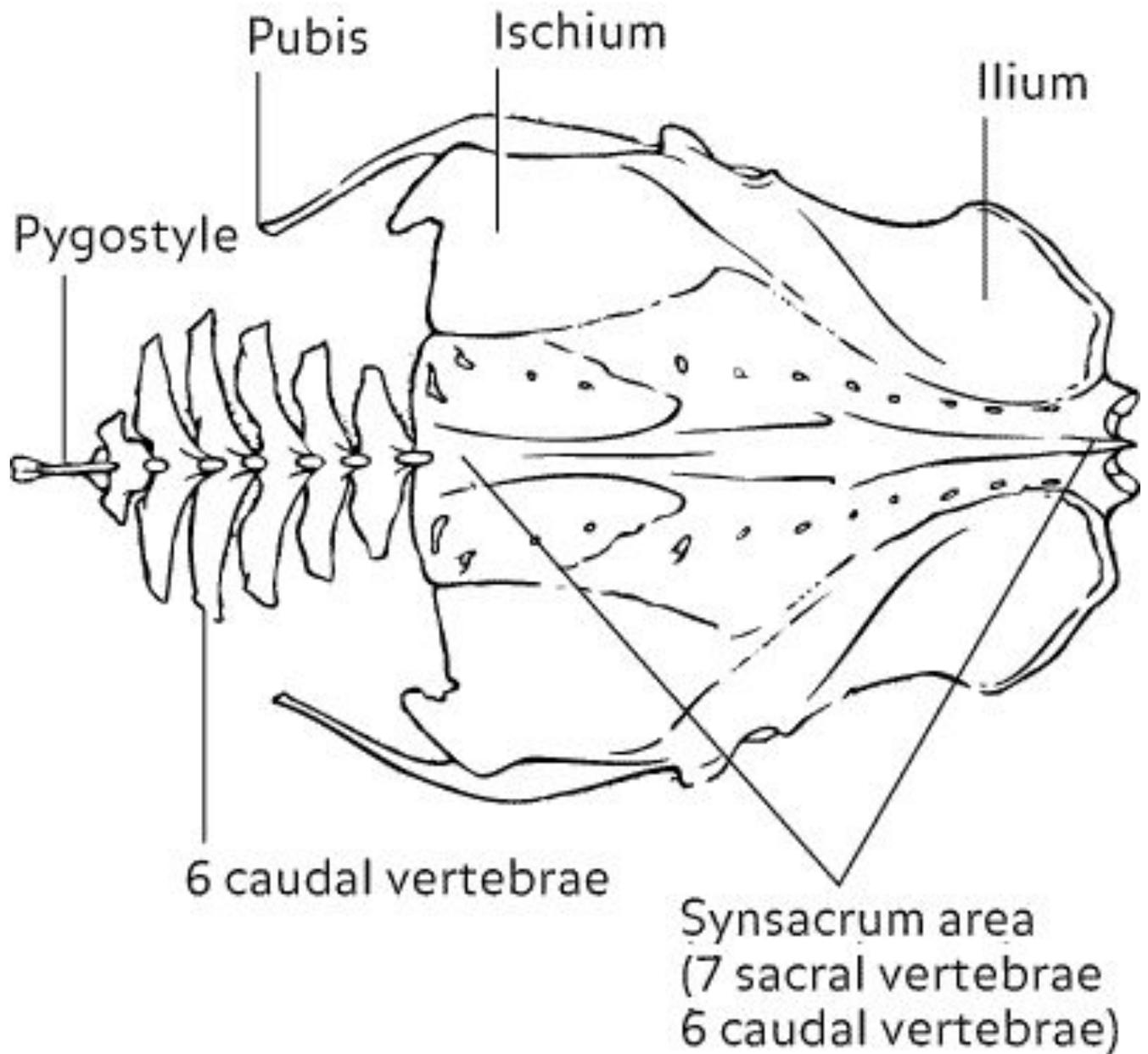
Clavicle
(paired, called
the furcula)

Costal facets

Sternal notch

Carina





Pubis

Ischium

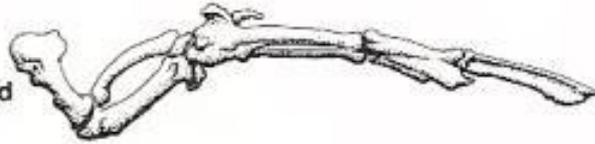
Ilium

Pygostyle

6 caudal vertebrae

Synsacrum area
(7 sacral vertebrae
6 caudal vertebrae)

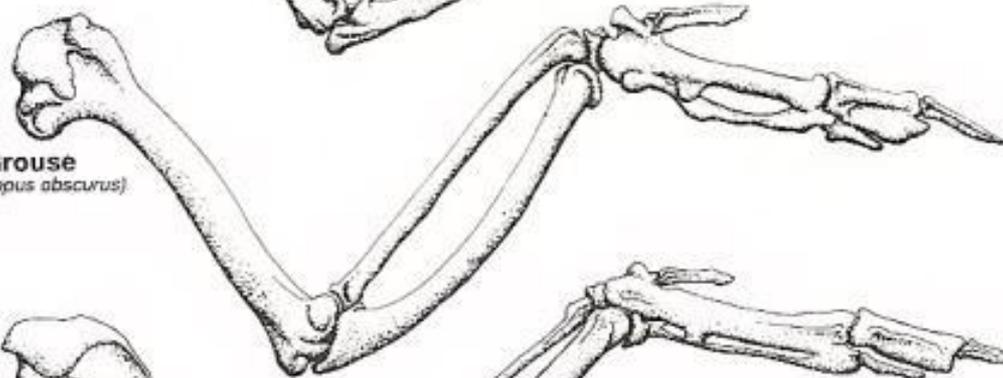
Calliope Hummingbird
(*Stelluta calliope*)



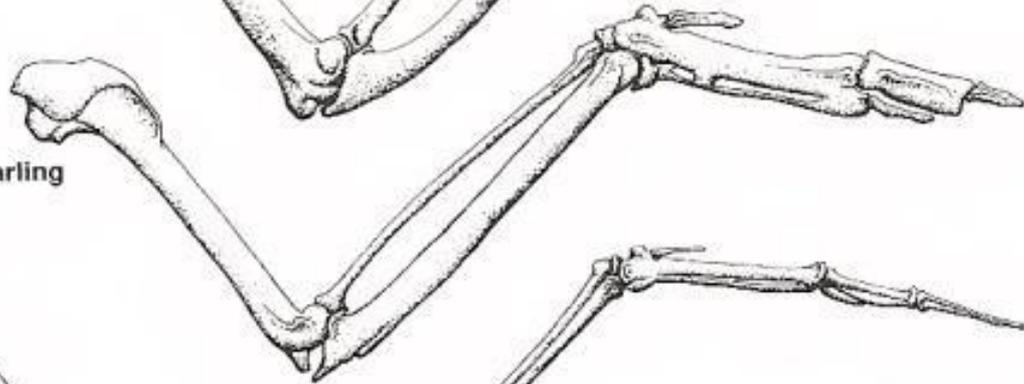
Rock Dove
(*Columba livia*)



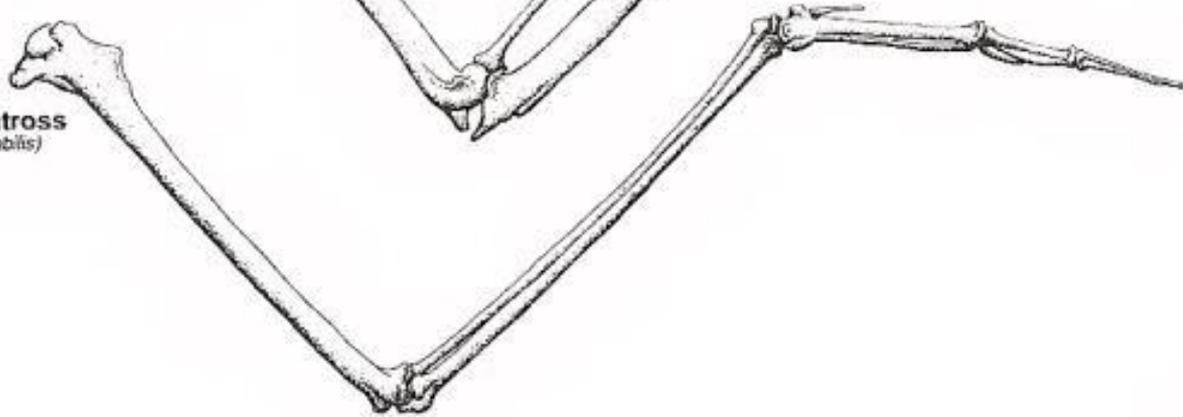
Blue Grouse
(*Dendragapus obscurus*)

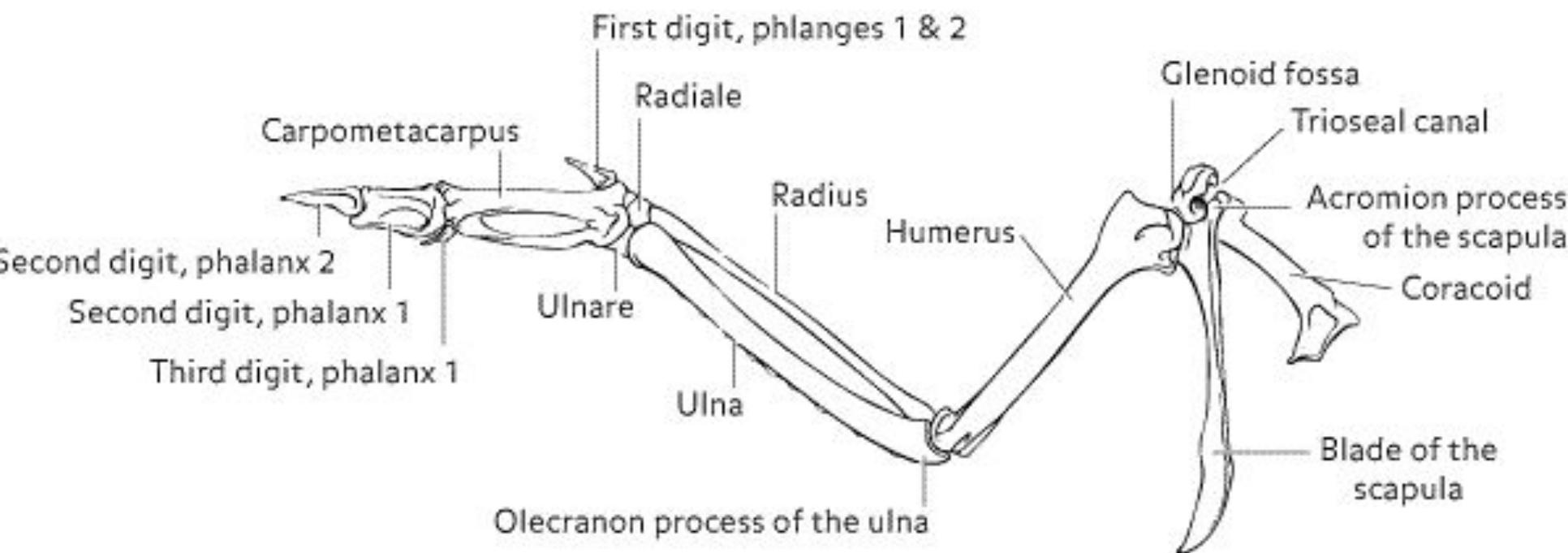


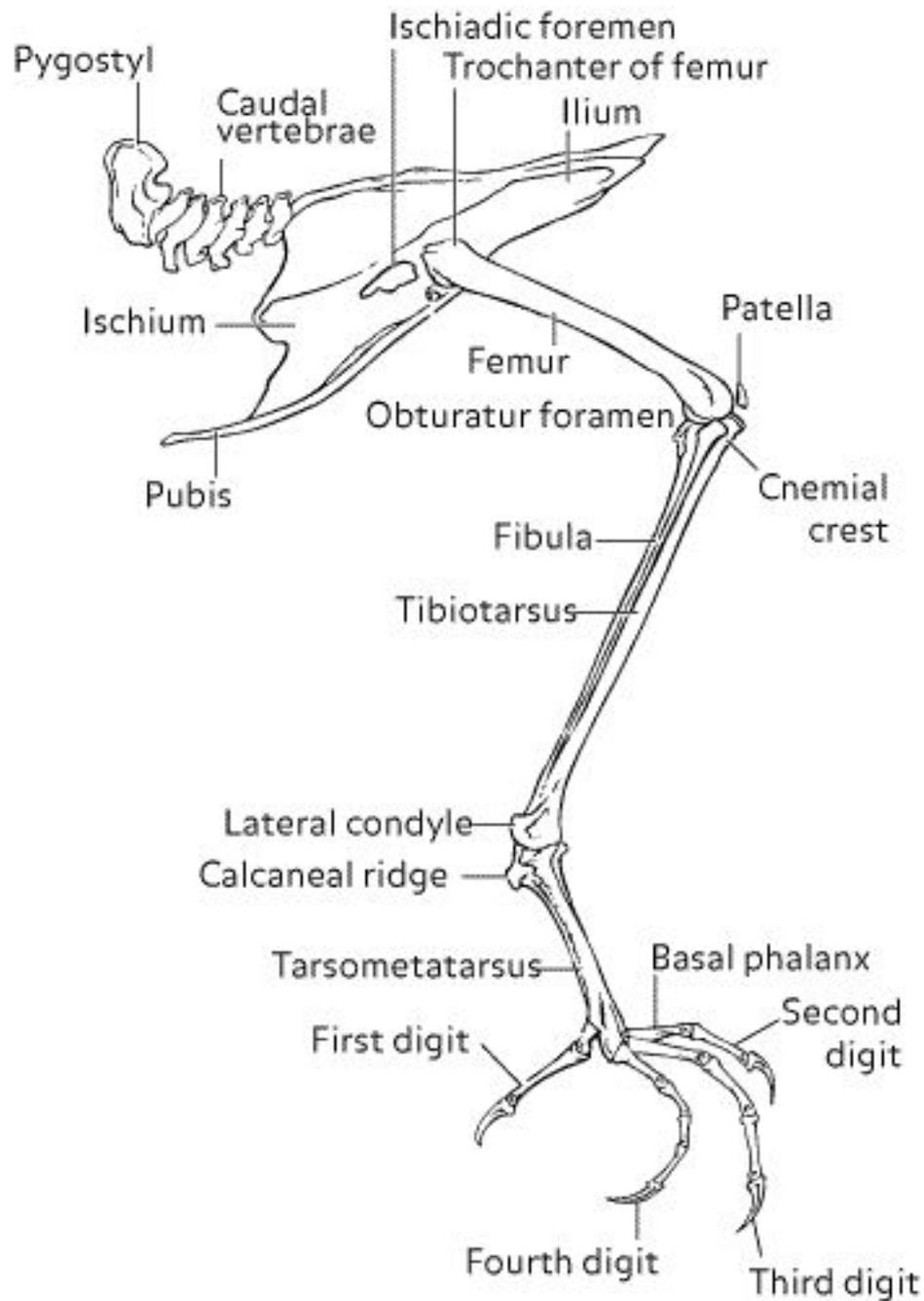
European Starling
(*Sturnus vulgaris*)



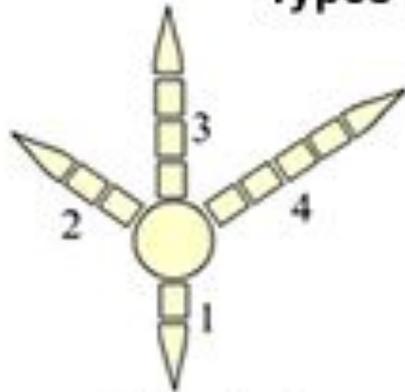
Laysan Albatross
(*Diomedea immutabilis*)





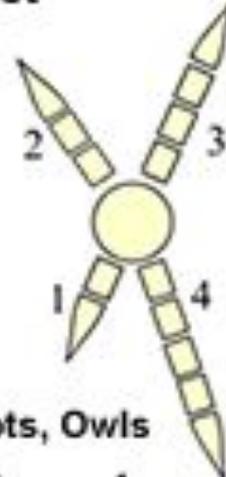


Types of Bird Feet



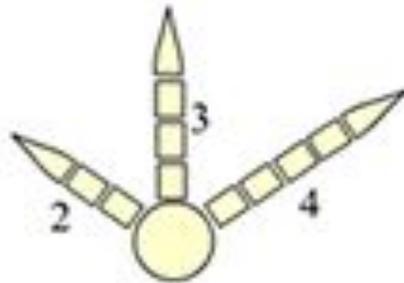
Songbirds

Anisodactylie



i.e., Parrots, Owls

Zygodactylie



Tridactylie

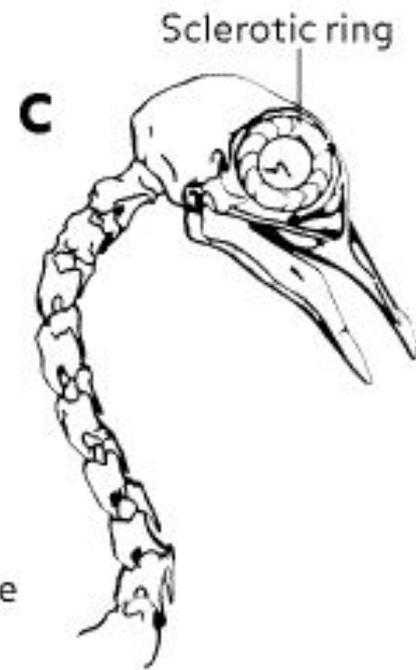
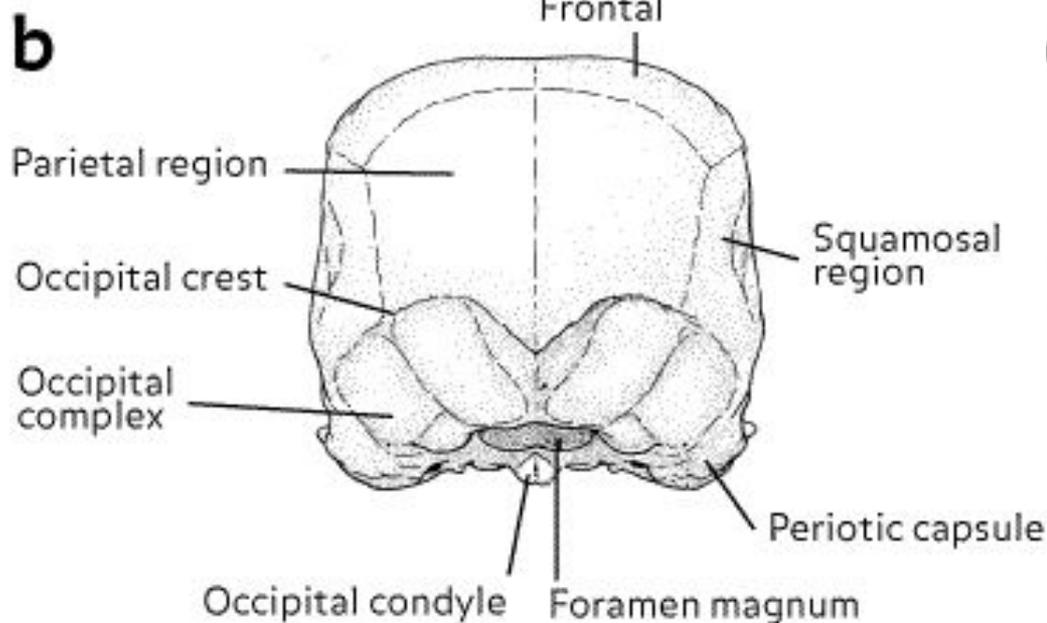
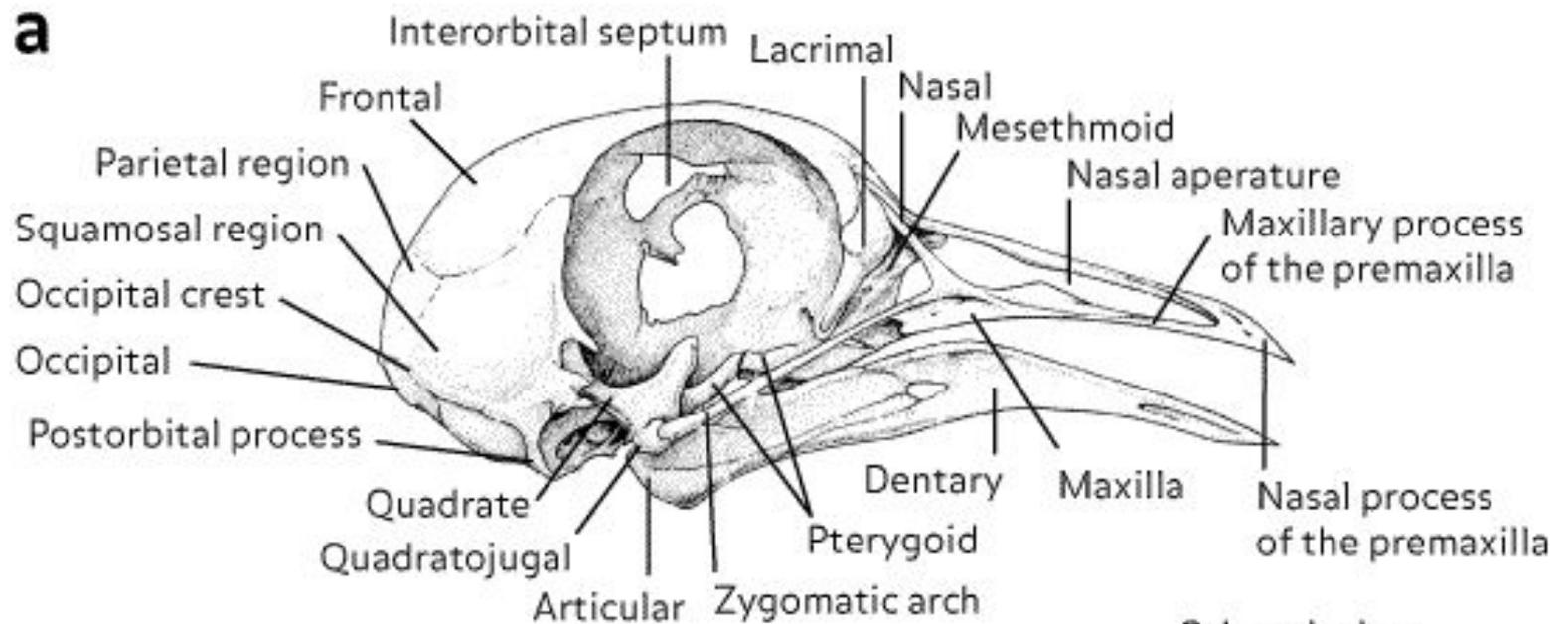
Three-toes: i.e. Emu,
Pelikan, etc.



Didactylie

Two Toes:
i.e. Ostrich

+ ?



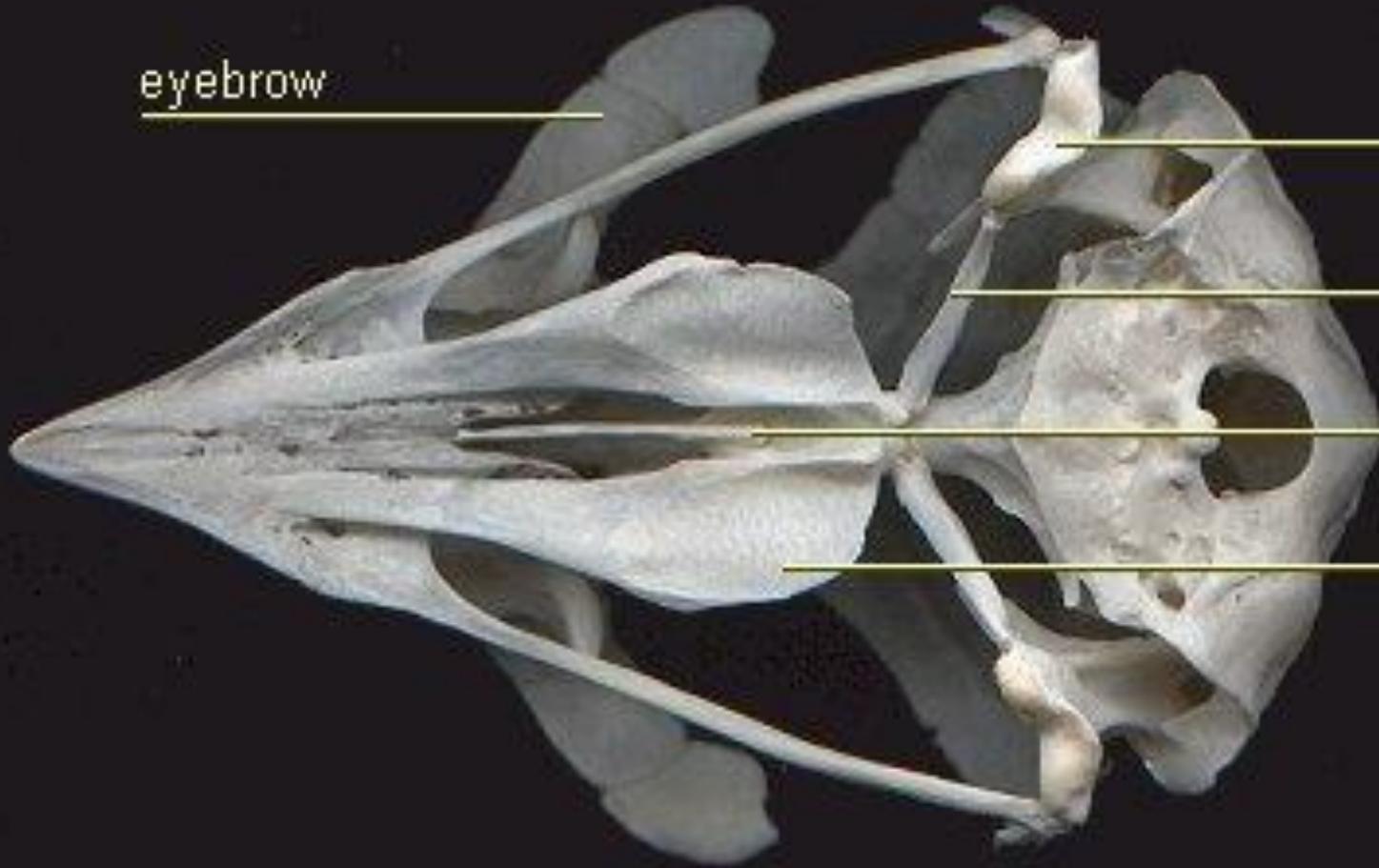
eyebrow

quadrate

pterygoid

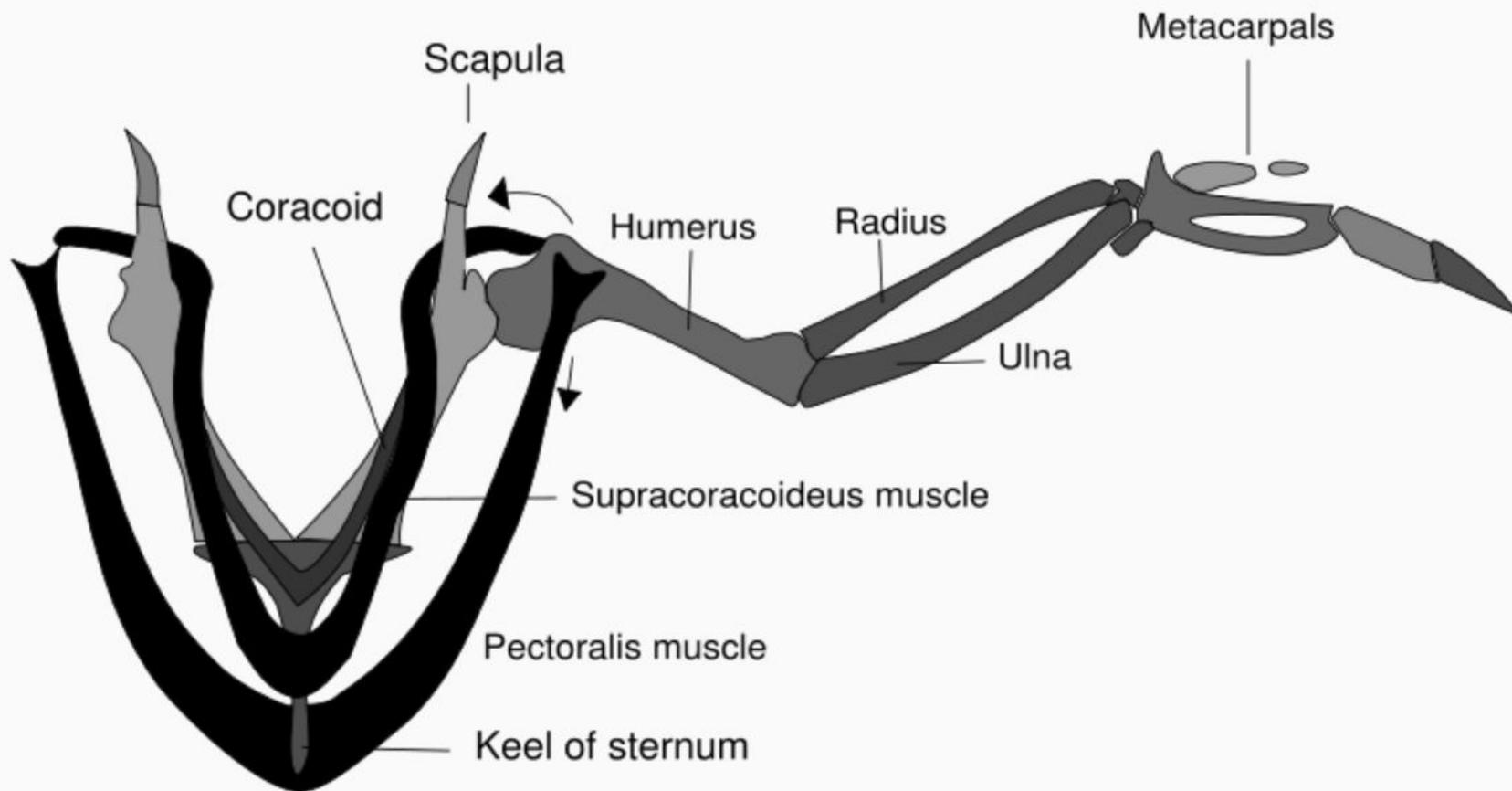
vomer

palate



Особенности расположения мышц на теле птиц

Особенности расположения мышц, опускающих и поднимающих крыло

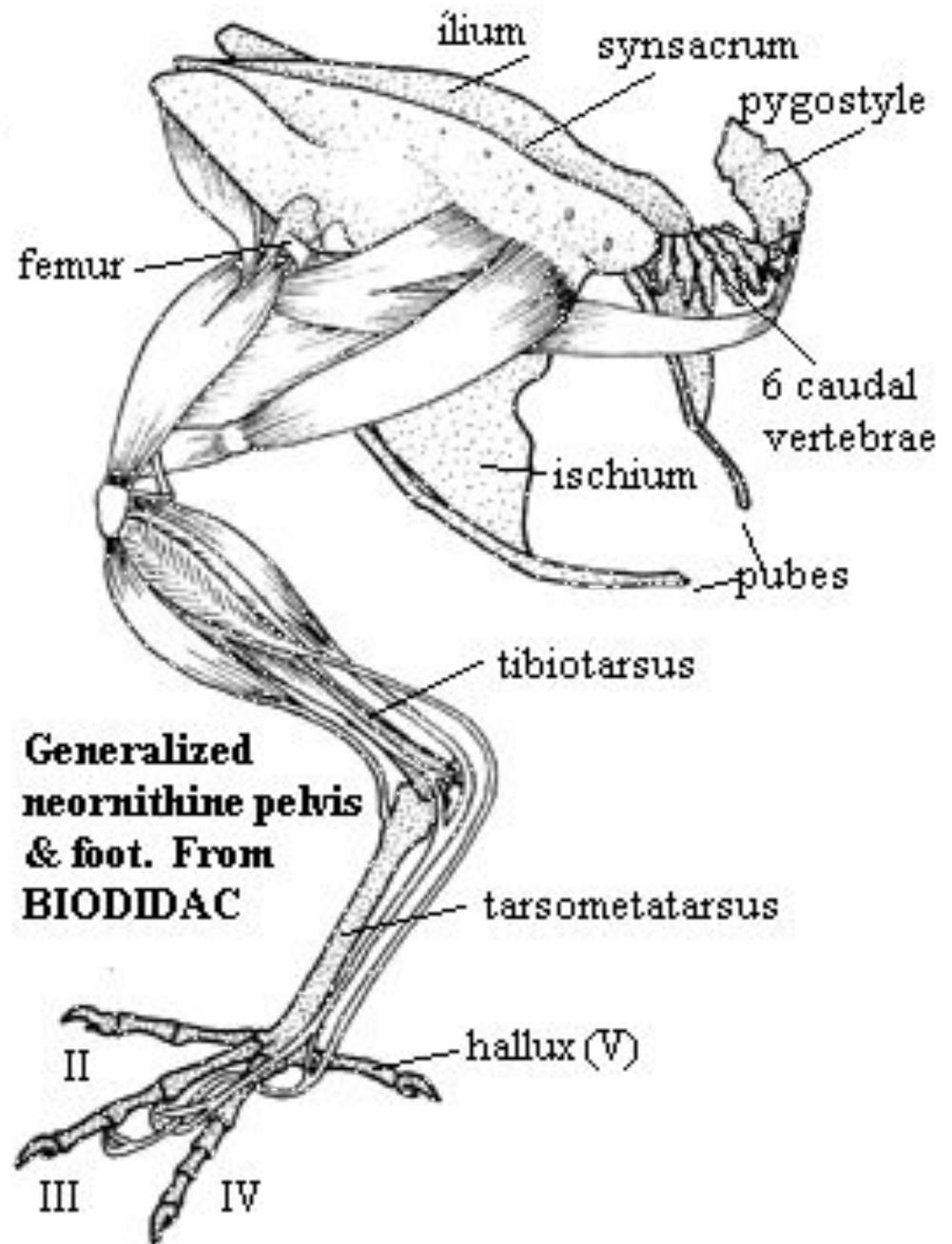


1 – Большая грудная мышца (опускает крыло)

2 – Надкоракоидная мышца? подклюничная (поднимает крыло)

Механизм фиксации пальцев

1. За счет натягивания обводящей мышцы (примитивные птицы)
2. За счет сложного строения сухожилия и сухожильной сумки (продвинутые птицы)



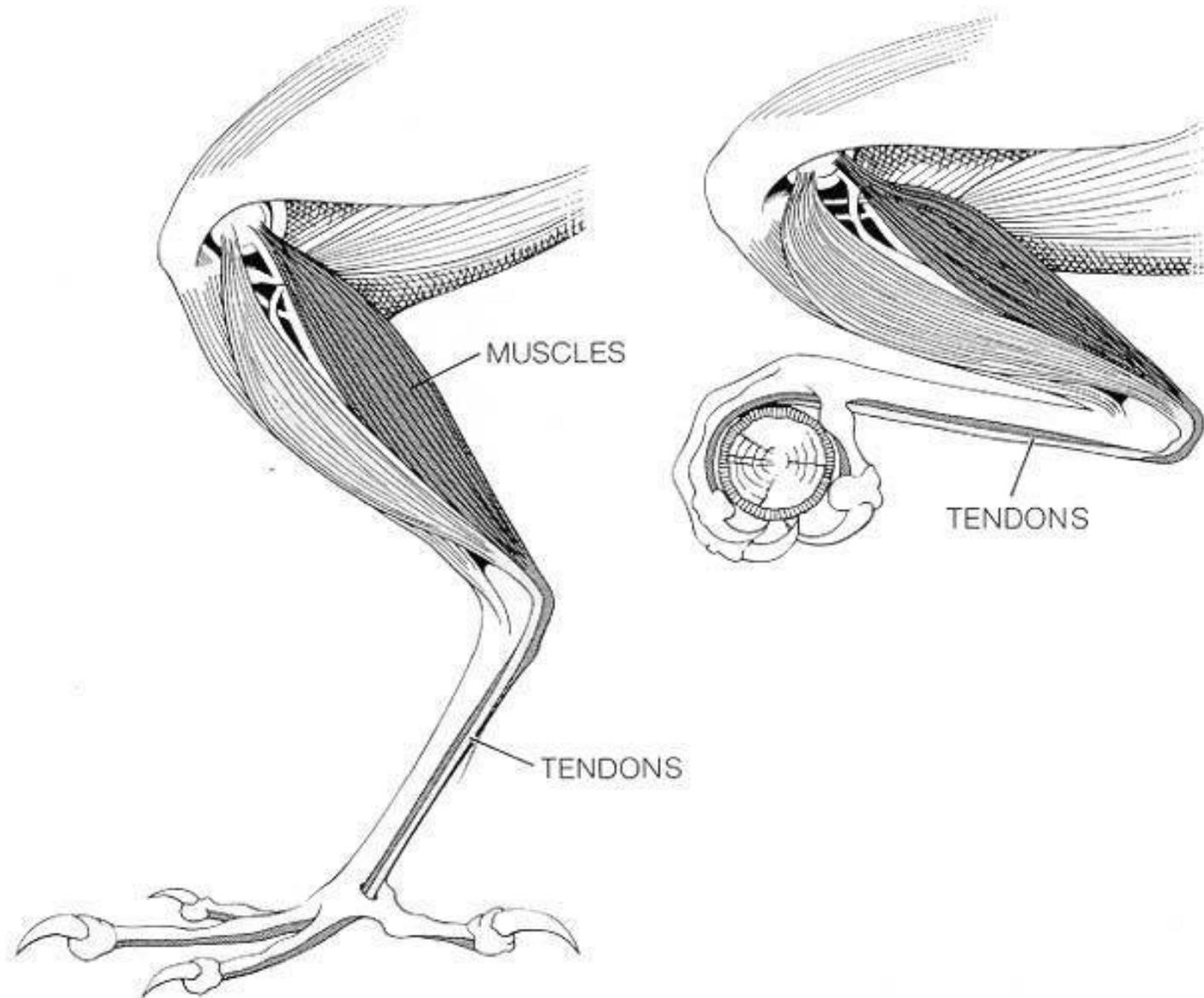
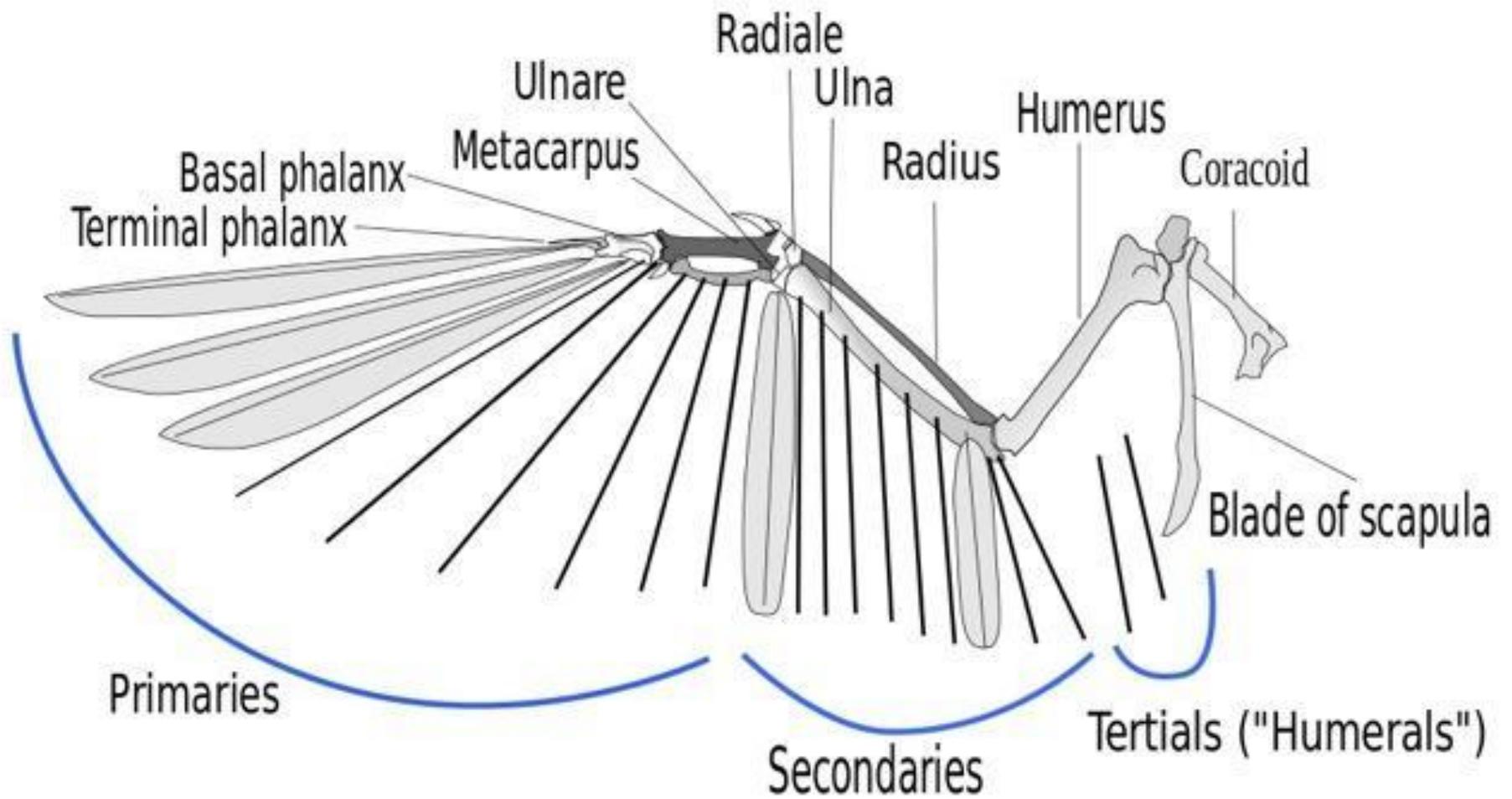
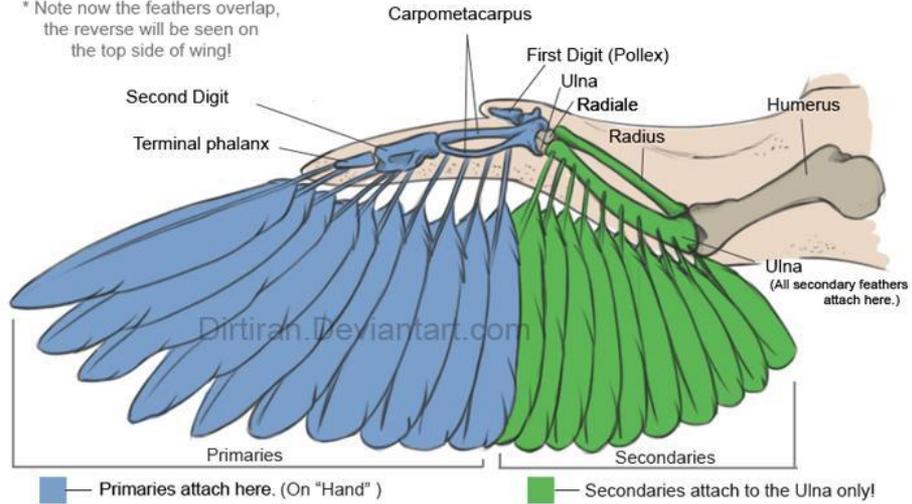


Figure 3. Arrangement of tendons in perching birds. The tendons that join the muscles of the upper leg to the toes extend behind the ankle; when the bird lowers itself on a branch, the tendons are pulled and the toes automatically close.

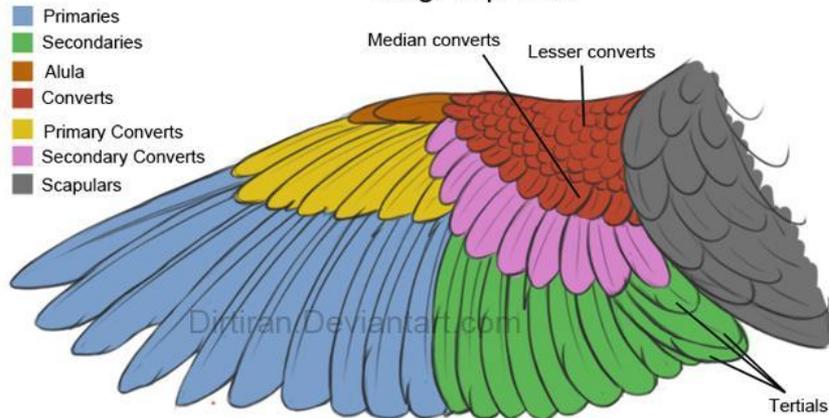


Primary & secondary feathers - Underside.

* Note now the feathers overlap, the reverse will be seen on the top side of wing!



Wing: Top View



* When folded, secondaries **COVER** the primaries.
 If you map out how the bones pose first, by recalling where the primary and secondary feathers attach, you can't go wrong!

Slotted High-Lift Wing



Eagle

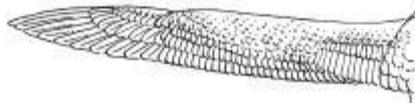


Buteo



Stork

High-Aspect-Ratio Wing



Albatross



Gannet



Gull

Elliptical Wing



Sparrow



Grouse



Blackbird



Thrush



Crow

High-Speed Wing



Swift



Falcon



Duck



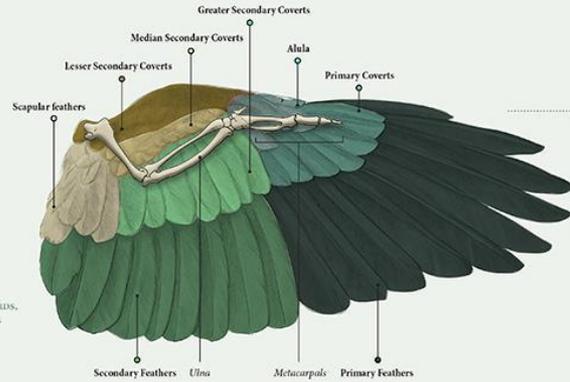
Sandpiper



Tern

Figure 5–34. Major Wing Types: The tremendous diversity of bird wings have been classified by ornithologists into four major types based on both shape and flight performance. Although these categories are imposed by humans onto a characteristic that actually varies through a continuum, they are helpful in making sense of the overwhelming variety of bird wings. See text for detailed descriptions of each wing type and the flight styles that make use of it.

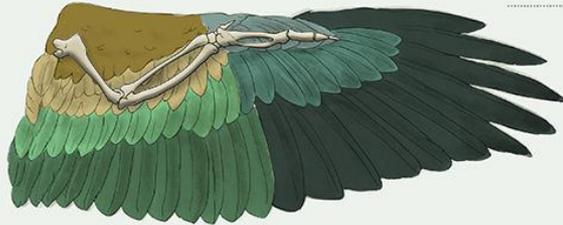
Form Follows Function



CROWS, RAVENS, BLACKBIRDS,
SPARROWS, AND THRUSHES

ELLIPTICAL WING

Designed for high speeds in short intervals, these wings allow birds to take off quickly and perform acrobatic maneuvers mid-air. These wings have a large alula feathers which form a midwing slot, and several outer primary feathers forming tip slots, providing extra lift.



EAGLES, MOST HAWKS,
AND STORNS

PASSIVE SOARING WINGS

Birds with passive soaring wings have slotted primary feathers that spread out to allow the wings to catch thermal vertical columns of hot air which allow it to rise higher and soar on the wind.



SWIFTS, DUCKS, FALCONS,
TERNs, AND SANDPIPERS

HIGH SPEED WING

Long and thin wings that can reach very high speeds and maintain the speed over time.

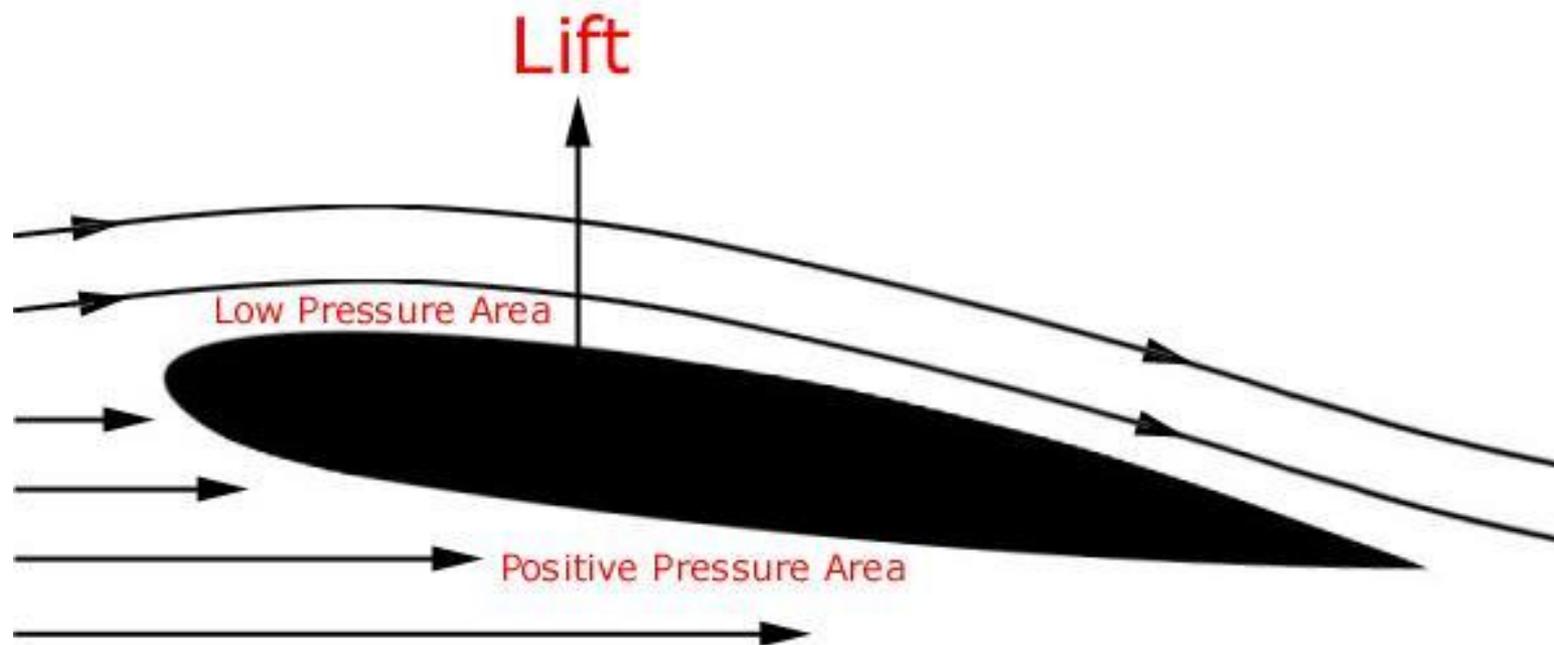


SWIFTS, DUCKS, FALCONS,
TERNs, AND SANDPIPERS

ACTIVE SOARING WINGS

Very long and narrow wings that facilitate soaring flight over a long stretch of time.

Ограничение массы летающих птиц



Increasing
Angle of Attack

