AVES

- CIRI-CIRI UMUM
- PENYEBARAN
- KLASIFIKASI
- MORFOLOGI DAN ANATOMI

Kompetensi

Memahami perbedaan dan persamaan pencirian serta pengelompokan pada Aves

Ilmu tentang burung atau aves : ORNITHOLOGI

AVES

CIRI-CIRI UMUM

- Tubuh ditutupi bulu, kecuali kaki dan paruh

- Tetrapoda, ekstremitas anterior termodifikasi menjadi sayap, posterior untuk hinggap atau berenang

AVES

CIRI-CIRI UMUM

- Homoitermis, dengan suhu tubuh 40-43^{0}C
- Suara, pendengaran dan penglihatan berkembang dengan baik
- Metabolisme tinggi
- Kulit tidak berkelenjar, kecuali uropigeal
- Anatomi dan morfologi tubuh termodifikasi untuk terbang

AVES

CIRI-CIRI UMUM

- Tulang ringan dan berongga
- Beberapa sendi menyatu, misalnya tulang belakang dan tengkorak
- Memiliki bulu yang aerodinamis dan isolator panas
- Tidak ada kantong urin (jadi lebih ringan)
- Burung dewasa hanya punya ovarium kiri
- Sistem pernapasan yang efektif

AVES

PENYEBARAN

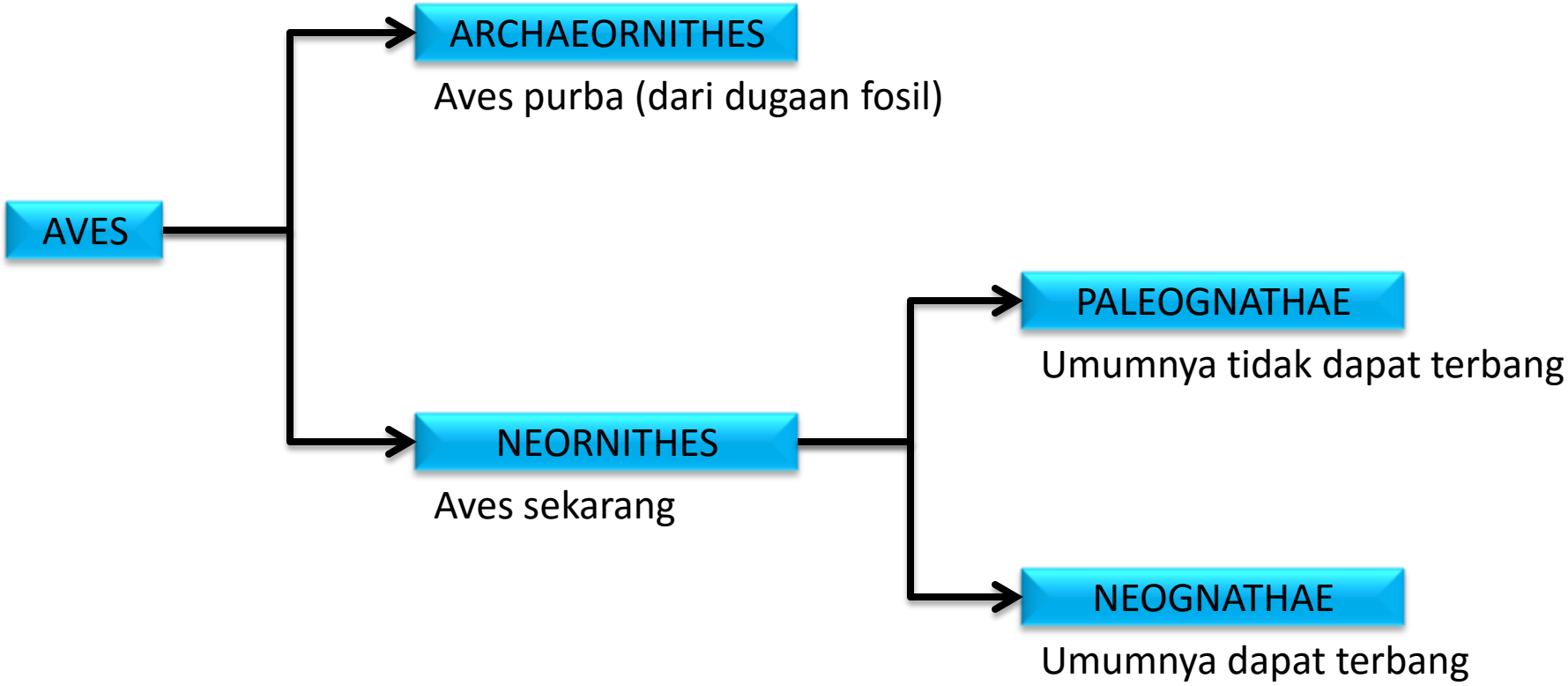
Dapat ditemukan di semua belahan bumi, kecuali di padang es gersang dan di gurun yang kering

AVES

KLASIFIKASI

Diduga ada lebih dari 9.000 jenis aves yang ada dan pernah hidup di bumi

CLASS | SUB CLASS | SUPER ORDO



AVES

KLASIFIKASI

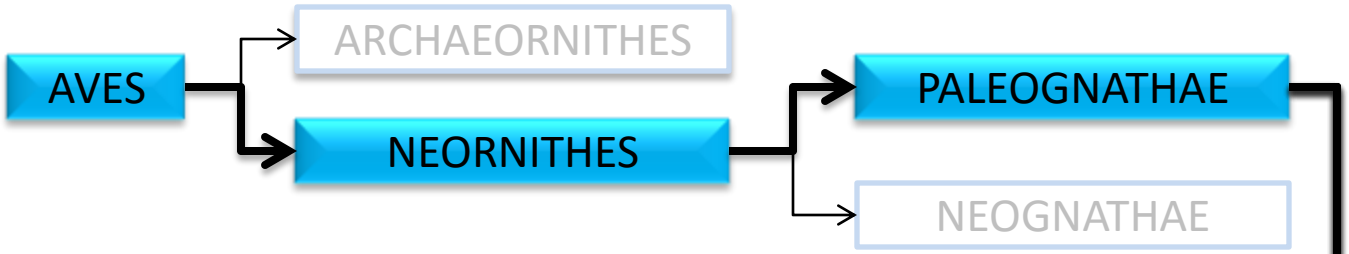
- Aves purba (dari dugaan fosil)
- Diduga pernah hidup 150 juta tahun yang lalu
- Punya gigi
- Jari 3 digit dengan cakar
- Tulang ekor panjang (13 vertebrae)
- *Archeopteryx*

Dugaan fosil
Archeopteryx

Dugaan bentuk
Archeopteryx

AVES

KLASIFIKASI



-Aves yang hidup sekarang, tetapi umumnya tidak dapat terbang
-Hanya jenis Tinamous yang dapat terbang
-Terdiri atas 5 ordo

- TINAMIFORMES
- APTERYGIFORMES
- CASUARIIFORMES
- RHEIFORMES
- STRUTHIONIFORMES

TINAMIFORMES

- *Eudromia elegans* (Tinamous)
- Telur dieram dan anak dipelihara oleh Tinamous jantan
- Hidup di Amerika Selatan

AVES

KLASIFIKASI

PALEOGNATHAE

APTERYGIFORMES

- *Apteryx australis* (burung Kiwi)
- Tergolong hewan nokturnal
- Hidup di daerah New Zealand

AVES

KLASIFIKASI

PALEOGNATHAE

CASUARIIFORMES

- *Dromaius novaehollandiae* (Emu atau Kasuari)
- Tinggi dapat mencapai 2 meter
- Berlari dengan kecepatan 64 km/jam
- Hidup di Australia

AVES

KLASIFIKASI

PALEOGNATHAE

RHEIFORMES

- *Rhea americana* (Rhea)
- Hidup di wilayah Amerika Selatan
- Tinggi dapat mencapai 1,5 meter

AVES

KLASIFIKASI

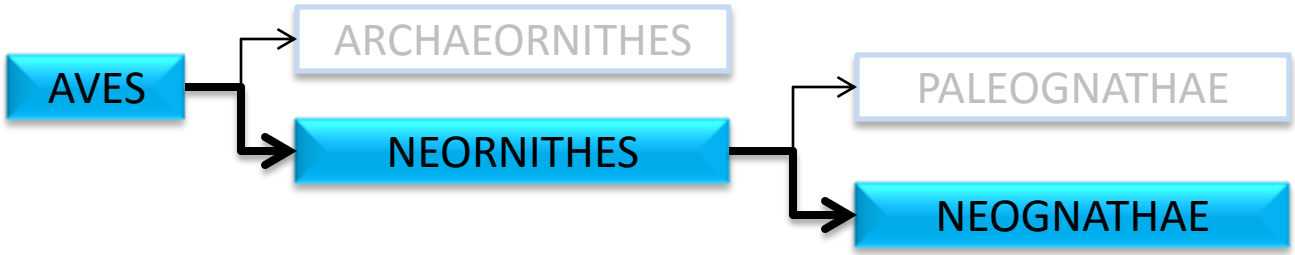
PALEOGNATHAE

STRUTHIONIFORMES

- *Struthio camelus* (burung Unta)
- Tinggi dapat mencapai 2,4 meter
- Mampu berlari dengan kecepatan 65 km/jam
- Hidup di gurun dan padang rumput Afrika
- Bersifat Omnivora

AVES

KLASIFIKASI



- Jenis yang ditemukan paling melimpah saat ini
- Diduga ada 29 Ordo, namun sistem klasifikasi masih diperdebatkan

Sphenisciformes	Ciconiiformes	Falconiformes	Caprimulgiformes
Procellariiformes	Anseriformes	Galliformes	Apodiformes
Pelicaniformes	Gruiformes	Columbiformes	Coraciiformes
Podicipediformes	Charadriiformes	Psittaciformes	Piciformes
Gaviiformes	Strigiformes	Cuculiformes	Passeriformes

AVES

KLASIFIKASI

NEOGNATHAE

Sphenisciformes

- Termasuk kelompok Penguin
- Ada 20-an spesies
- Mampu berenang dengan baik
- Contoh spesies: *Aptenodytes forsteri*

AVES

KLASIFIKASI

NEOGNATHAE

Procellariiformes

-Hidup dengan terbang di laut lepas

-Contoh : *Diomedea exulans* (burung Albatros)

AVES

KLASIFIKASI

NEOGNATHAE

Pelicaniformes

-Hidup di perairan laut maupun tawar

-Contoh : *Pelicanus sp* (pelican)*, Palacrocorax sp* (cormoran)

AVES

KLASIFIKASI

NEOGNATHAE

Podicipediformes

-Hidup di air tawar
-Mampu menari (berenang) di permukaan air
-Contoh : *Aechmophorus occidentalis*

AVES

KLASIFIKASI

NEOGNATHAE

Gaviiformes

-Hidup di air tawar

-Contoh: *Gavia immer*

AVES

KLASIFIKASI

NEOGNATHAE

Ciconiiformes

-Hidup di air dan daratan
-Contoh: *Eudocimus ruber* (Ibis)

AVES

KLASIFIKASI

NEOGNATHAE

Anseriformes

-Termasuk kelompok yang paling memberikan nilai ekonomis

-Termasuk di dalamnya kelompok angsa (*Cygnus sp*), bebek (*Cairina sp*), dan sejenisnya

AVES

KLASIFIKASI

NEOGNATHAE

Gruiformes

-*Grus americana*

-Hidup di daratan dan cenderung berair

AVES

KLASIFIKASI

NEOGNATHAE

Charadriiformes

Umumnya hidup di pesisir pantai

Contoh: *Larus livens*

AVES

KLASIFIKASI

NEOGNATHAE

Strigiformes

-Umumnya tergolong aves nokturnal
-Bersifat Carnivora
-*Bubo virginianus*

AVES

KLASIFIKASI

NEOGNATHAE

Falconiformes

-Umumnya diurnal
-Umumnya carnivora
-Reproduksi sangat lambat
-Contoh: *Falco sp* (burung elang)

AVES

KLASIFIKASI

NEOGNATHAE

Galliformes

-Umumnya bernilai ekonomi

Contoh: *Gallus sp* (ayam), *Pavo sp* dan *Afropavo sp* (merak), *Coturnix sp, Anurophasis sp, Perdicula sp, Ophrysia sp* (puyuh)

AVES

KLASIFIKASI

NEOGNATHAE

Columbiformes

-*Columba livia*

-Dikenal sebagai salah satu kelompok aves yang memiliki suara dan bulu yang indah

AVES

KLASIFIKASI

NEOGNATHAE

Psittaciformes

-Termasuk jenis betet/bayan (*Eclectus roratus*), kakatua (*Cacatua alba*)
-Dikenal karena keindahan bulu dan keunikan bentuk paruh
-Di Riau, khas dengan Serindit (*Loriculus sp*)

AVES

KLASIFIKASI

NEOGNATHAE

Cuculiformes

-*Cuculus canorus*

-Pemakan serangga, ulat

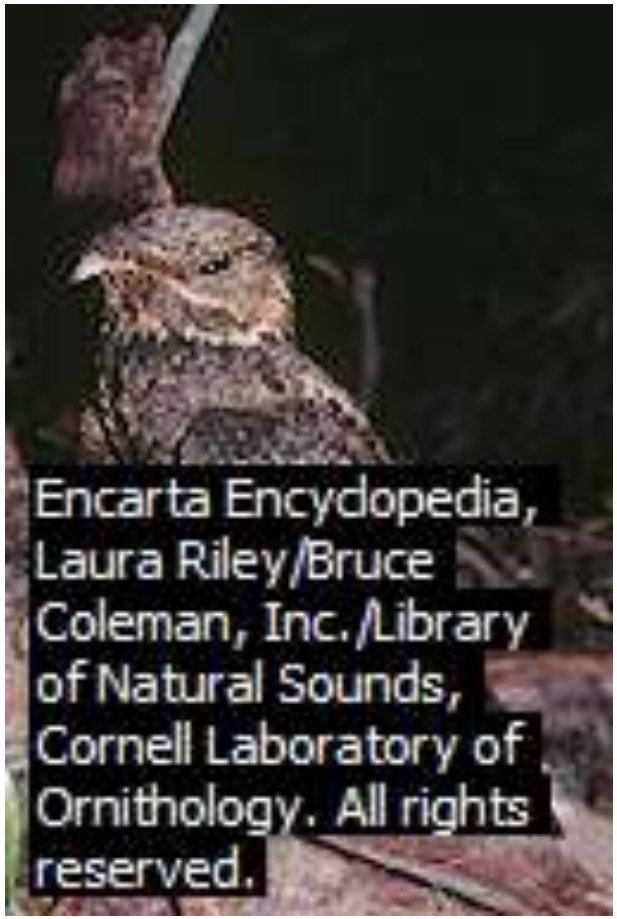
AVES

KLASIFIKASI

NEOGNATHAE

Caprimulgiformes

Caprimulgus carolinensis



AVES

KLASIFIKASI

NEOGNATHAE

Apodiformes

-Termasuk kelompok burung-burung kecil pemakan madu
-Mampu mengepakkan sayap hingga 80 kali per detik
-*Colibri thalassinus*

AVES

KLASIFIKASI

NEOGNATHAE

Piciformes

- Termasuk jenis pelatuk (*Picus sp*)

AVES

KLASIFIKASI

NEOGNATHAE

Passeriformes

-Ordo ini memiliki spesies terbanyak dari kelompok aves
-Umumnya berukuran kecil
-Hampir semua kelompok ini termasuk dalam aves yang “ahli bernyanyi”

Chlamydera cerviniventris

AVES

MORFOLOGI DAN ANATOMI

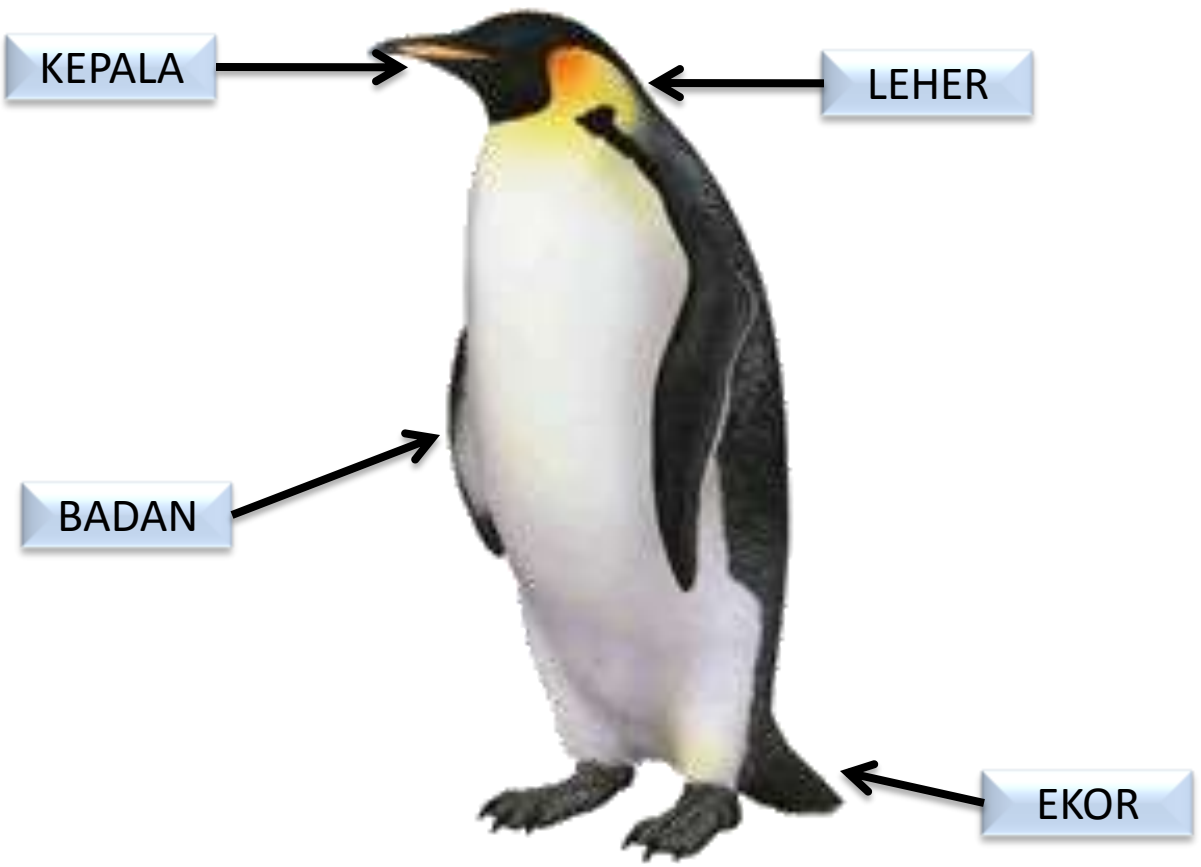
MORFOLOGI

ANATOMI

AVES

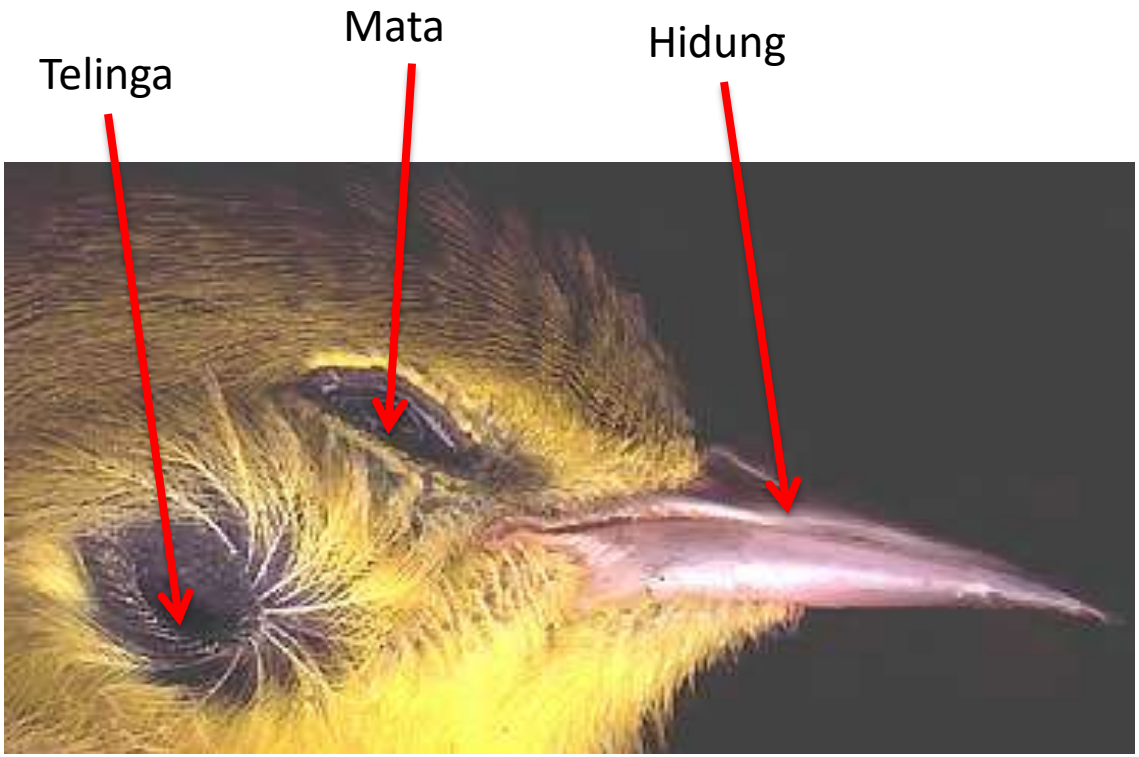
MORFOLOGI DAN ANATOMI

MORFOLOGI



KEPALA

-Tekstur kepala aerodinamis
-Memiliki paruh, bentuknya dapat menunjukkan jenis makanan
-Memiliki kelengkapan mata, pendengaran, hidung



KEPALA

Bentuk-bentuk paruh

AVES

MORFOLOGI DAN ANATOMI

KEPALA

Bentuk-bentuk paruh

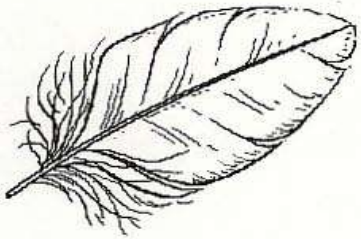
LEHER

BADAN

-Berbentuk aerodinamis, ditumbuhi bulu
-Tempat melekatnya sepasang ekstremitas (sayap dan kaki)
-Ekstremitas anterior berupa sayap yang berbulu
-Ekstremitas posterior berupa kaki tanpa bulu
-Bentuk jari kaki termodifikasi sesuai dengan kebutuhan

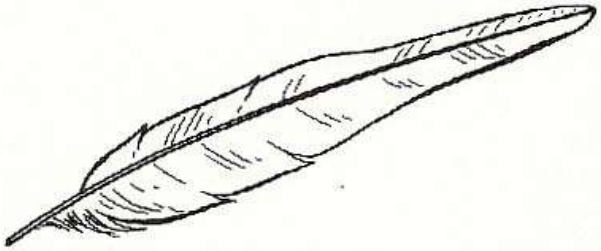
Tipe bulu pada aves

Contour feathers



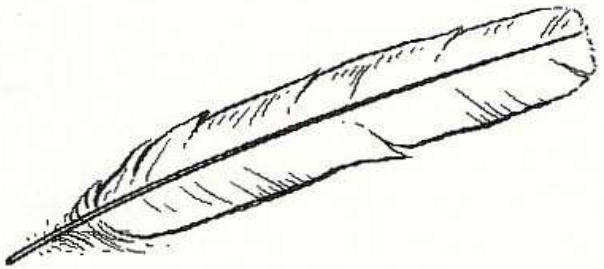
Contour feathers are the basic vaned feathers of the body and wings, including the large flight feathers of the wing and tail (see below). The smaller contour feathers that cover the body have symmetrical vanes divided between a firm, pennaceous distal vane area and a soft, plumulaceous inner vane area. In some birds the contour feathers of the body tend to have more prominent afterfeathers than do the flight feathers.

Remiges



Remiges are the flight feathers of the wing, including the primaries, secondaries, and tertiaries. Remiges (singular, remex) are pennaceous contour feathers with prominent, often asymmetrical vanes. In ducks, gallinaceous birds, and owls the ventral vane surface is partially modified into a shiny, firm structure formed by specialized **tegmen** feather barbs, which are believed to strengthen the vane and resist the flow of air upward through the vane surface.

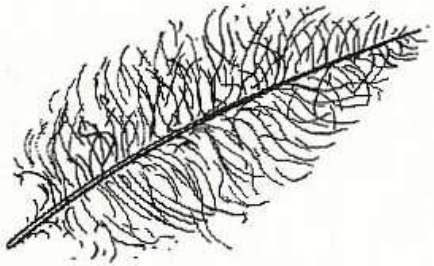
Rectrices



The rectrices (singular, rectrix) are the large, vaned flight feathers of the tail. The rectrices are similar in structure to the remiges of the wing, and also have asymmetrical vanes. In some groups, like woodpeckers, the rectrices have been adapted and strengthened to act as props, helping birds remain vertical as they forage on tree trunks. Swifts use similar stiff rectrices as an aid in perching on vertical surfaces.

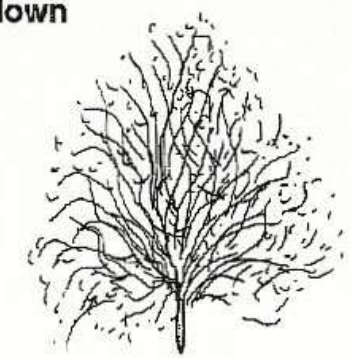
Tipe bulu pada aves

Semiplumes



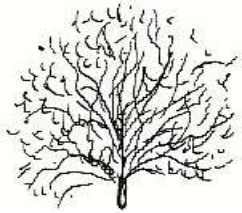
Semiplumes are intermediate in form between the more pennaceous contour feathers and the strictly plumulaceous down feathers, which lack a central rachis. Semiplumes always have a distinct rachis that is longer than any of the barbs. They are seldom exposed but lie under the surface contour feathers, insulating the body and forming smooth, aerodynamic body contours.

Adult down, or definitive down



Down feathers of adult birds are extremely plumulaceous feathers that provide a layer of insulation underneath the contour feathers. Down feathers either lack a central rachis or sometimes have a very short rachis that is shorter than the longest barbs. The barbs sometimes attach directly to the basal calamus of the feather. Down is not evenly distributed, and some groups (sea ducks, for example) have much heavier down coats than other groups (such as songbirds).

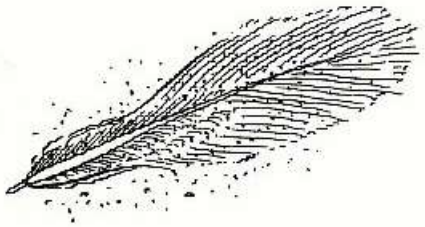
Natal down, or neossoptiles



Natal down, which covers hatchling birds, is generally simpler in structure than adult down. The feathers rarely have a central rachis (except in ducks), and the barbs are simpler, with fewer barbules. Often natal down is immediately pushed out of the feather follicle by the emerging juvenal plumage and appears as tufts at the tips of new feathers.

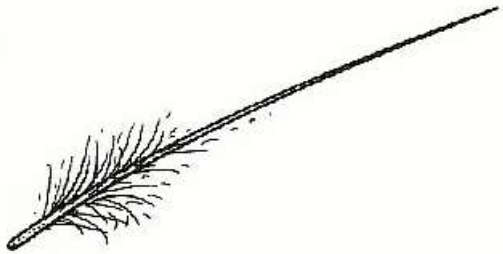
Tipe bulu pada aves

Powder feathers, or **powder down**



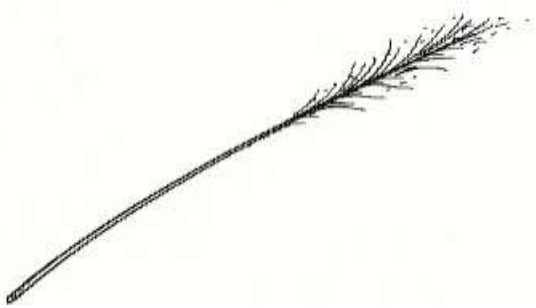
Powder feathers are special feathers with barbs that disintegrate into a fine powder and are thought to aid the bird in grooming and waterproofing its feathers. They are the only feathers that grow continuously and are never molted. Many species have widely scattered powder feathers within patches of normal down feathers, but herons and bitterns have dense, prominent patches of powder feathers on the breast and belly.

Bristles



Bristles are contour feathers without vanes, consisting only of a whiskery central rachis almost bare of barbs or barbules. Not all birds have bristles (the Rock Dove has none, for example). Bristles are found mostly around the eye (for protection), the lores, the nostrils, and the rictus of the mouth (rictal bristles). Insectivorous birds are thought to use their prominent rictal bristles as sensory organs, much the way mammals use whiskers.

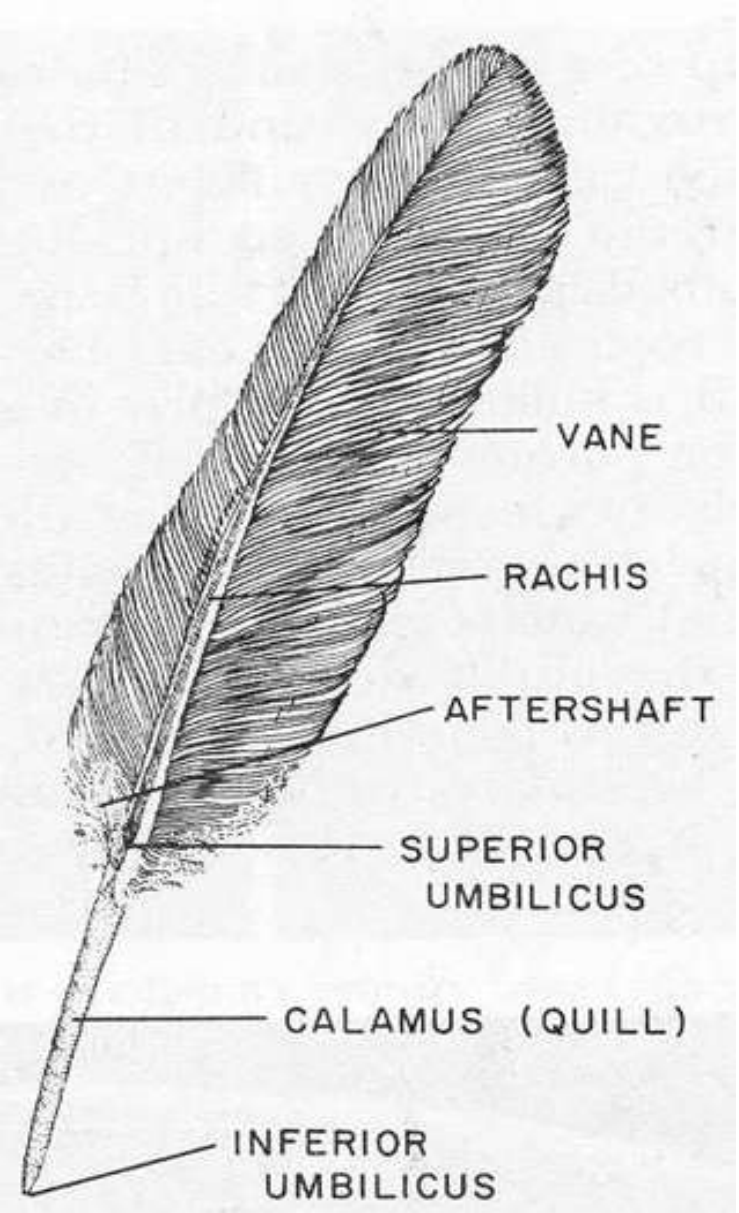
Filoplumes



Filoplumes are long, hairlike feathers that monitor the position of the pennaceous feathers, such as those of the wings and tail. Sensory corpuscles at the base of each filoplume detect fine movements of the filoplume shaft. Filoplumes are often numerous at the bases of wing remiges to monitor the position and movement of the remiges during flight. In many passerines, they also protrude through the outer contour feathers of the crown and nape, perhaps warning the bird when wind disrupts the smooth outer surface of the plumage.

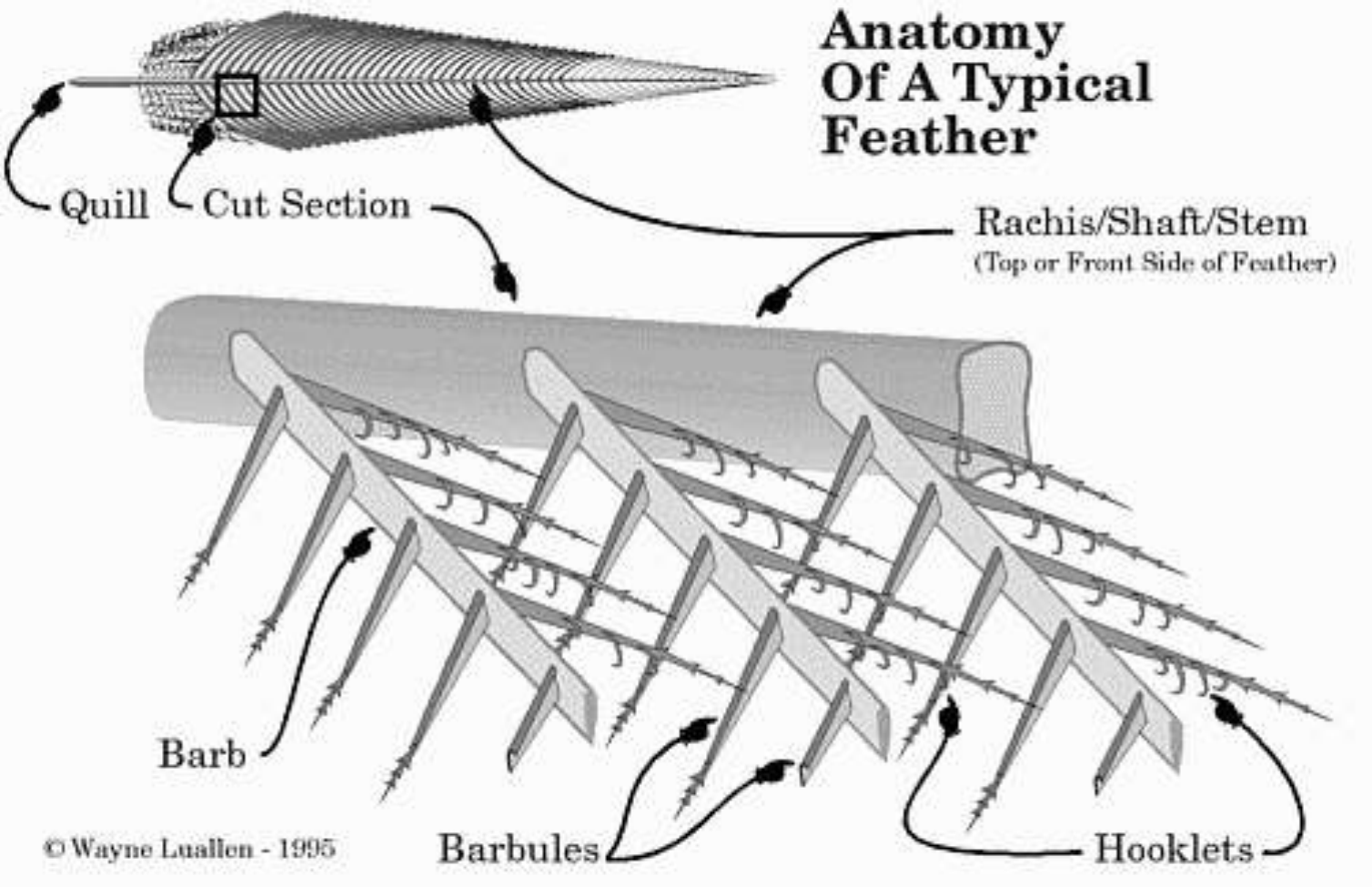
BADAN

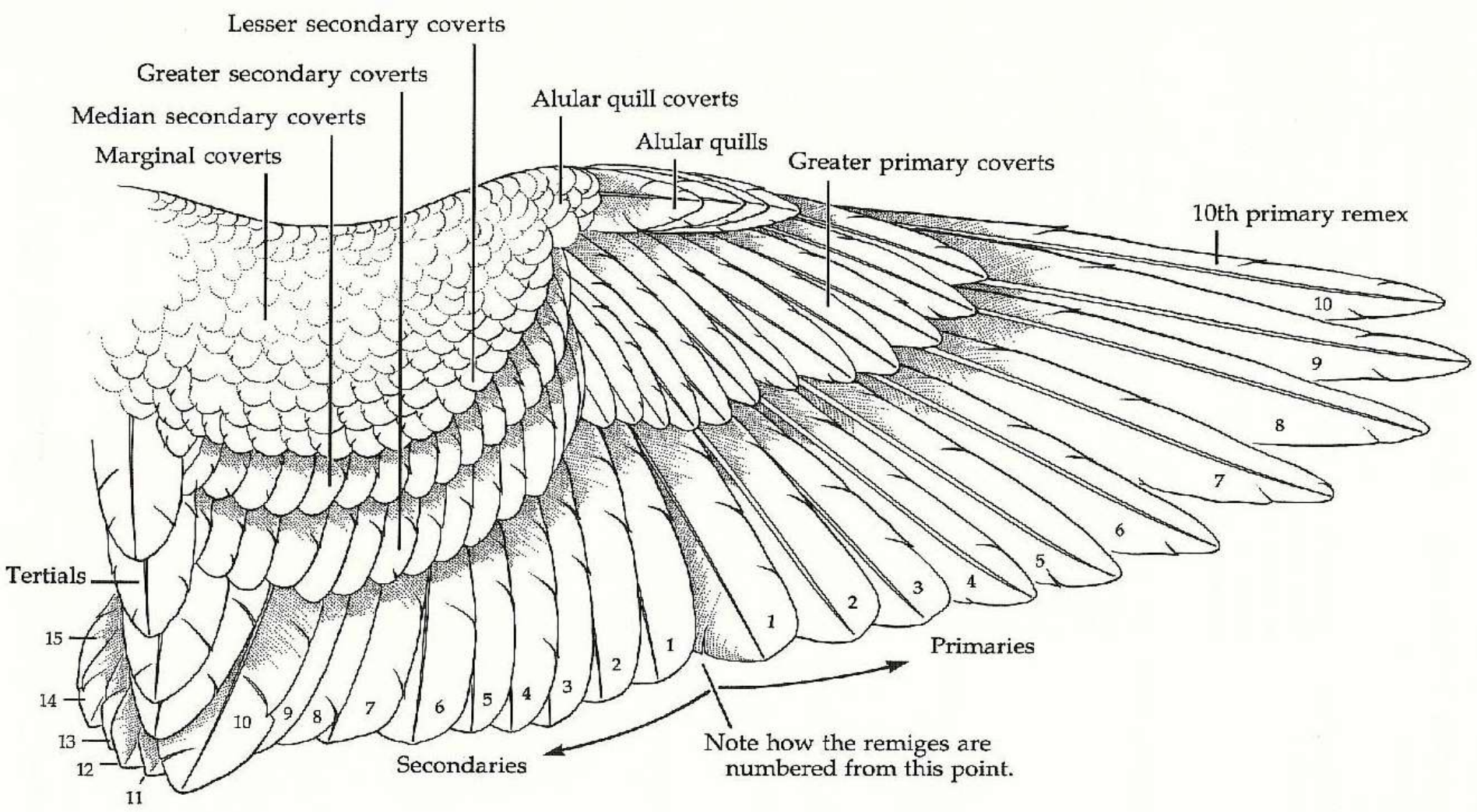
Struktur bulu pada aves



BADAN

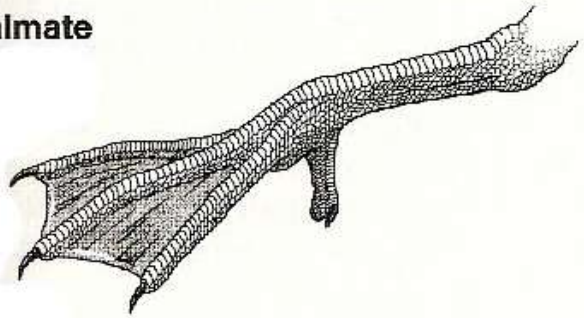
Struktur bulu pada aves



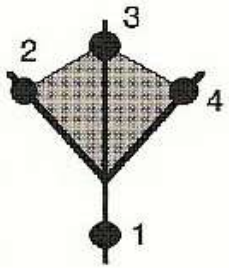

Lesser secondary coverts
Greater secondary coverts
Median secondary coverts
Marginal coverts
Alular quill coverts
Alular quills
Greater primary coverts
10th primary remex
10
9
8
7
6
5
4
3
2
1
Primaries
Tertials
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Secondaries
Note how the remiges are numbered from this point.

Tipe jari kaki

Palmate

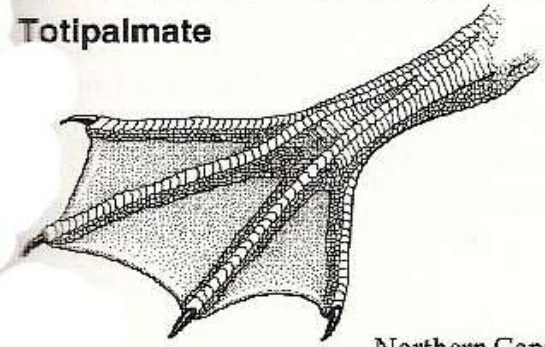


Mallard (*Anas platyrhynchos*)

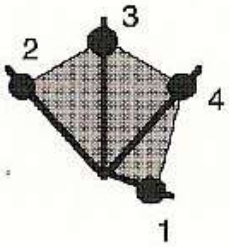


In the palmate foot only the anterior digits (2, 3, and 4) are included within the webbing. This is the most common type of webbed foot and is found in ducks, geese, swans, gulls, terns, and other aquatic birds.

Totipalmate

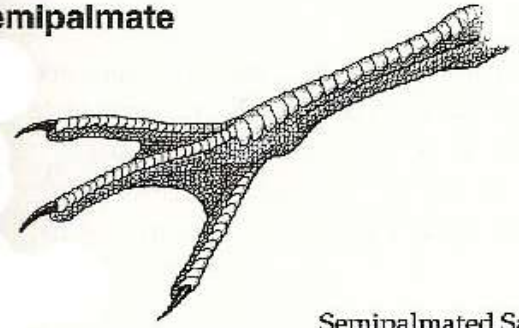


Northern Gannet (*Morus bassanus*)

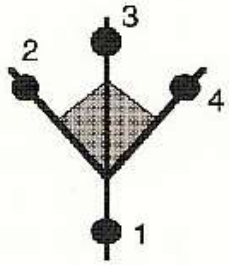


In the totipalmate foot all four digits are included within the webbing. Totipalmate feet are found in the gannets and boobies, cormorants, and pelicans, all highly aquatic groups.

Semipalmate



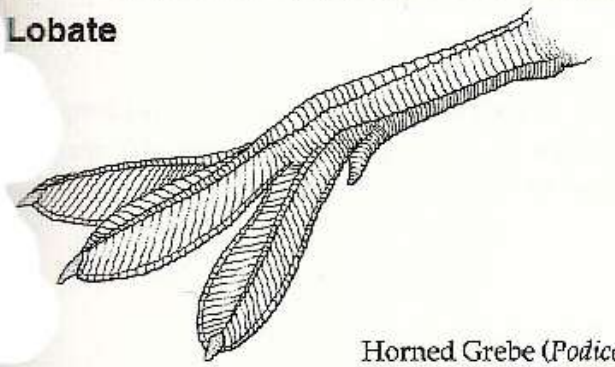
Semipalmated Sandpiper (*Calidris pusilla*)



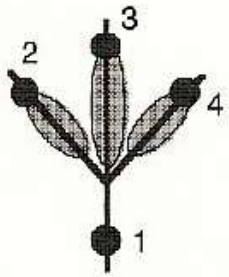
Semipalmated means that a small web is present between the anterior digits (2, 3, and 4). Semipalmated feet are found in some sandpipers and plovers, all grouse, and some domestic breeds of chicken.

Tipe jari kaki

Lobate

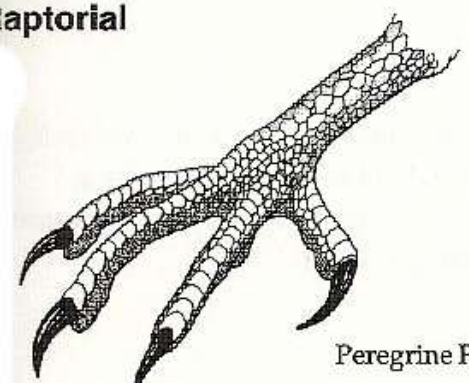


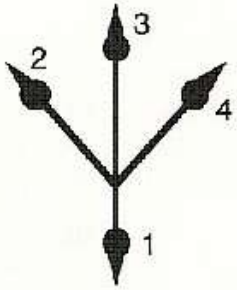
Horned Grebe (*Podiceps auritus*)



In the lobate foot the anterior digits (2, 3, and 4) are edged with lobes of skin that expand or contract as the bird swims. Lobate feet are found in the grebes, though some palmate-footed ducks have lobes of skin on the hallux.

Raptorial





Peregrine Falcon (*Falco peregrinus*)

The raptorial foot is characterized by long, strong digits armed with heavy claws for catching, holding, and killing prey animals. Raptorial feet are found in kites, hawks, eagles, and falcons.

AVES

MORFOLOGI DAN ANATOMI

EKOR

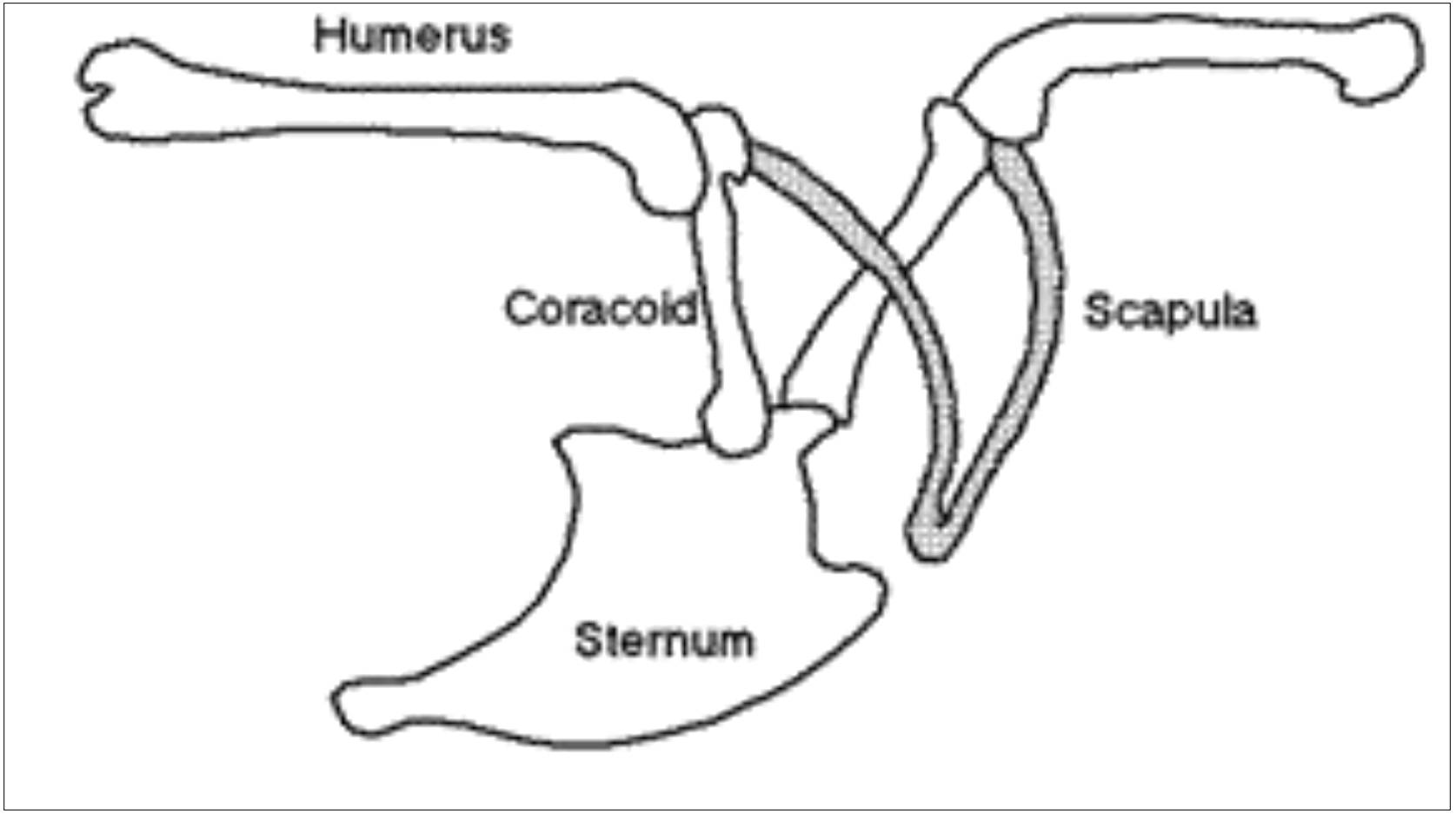
ANATOMI

Skeleton

- Memiliki sedikit perbedaan dengan vertebrata lain, berkaitan dengan modifikasi untuk terbang
- Sendi umumnya menyatu
- Memiliki tulang dada (sternum) yang besar, sebagai tempat perlekatan otot terhubung ke humerus
- Tulang berongga, sehingga ringan

ANATOMI

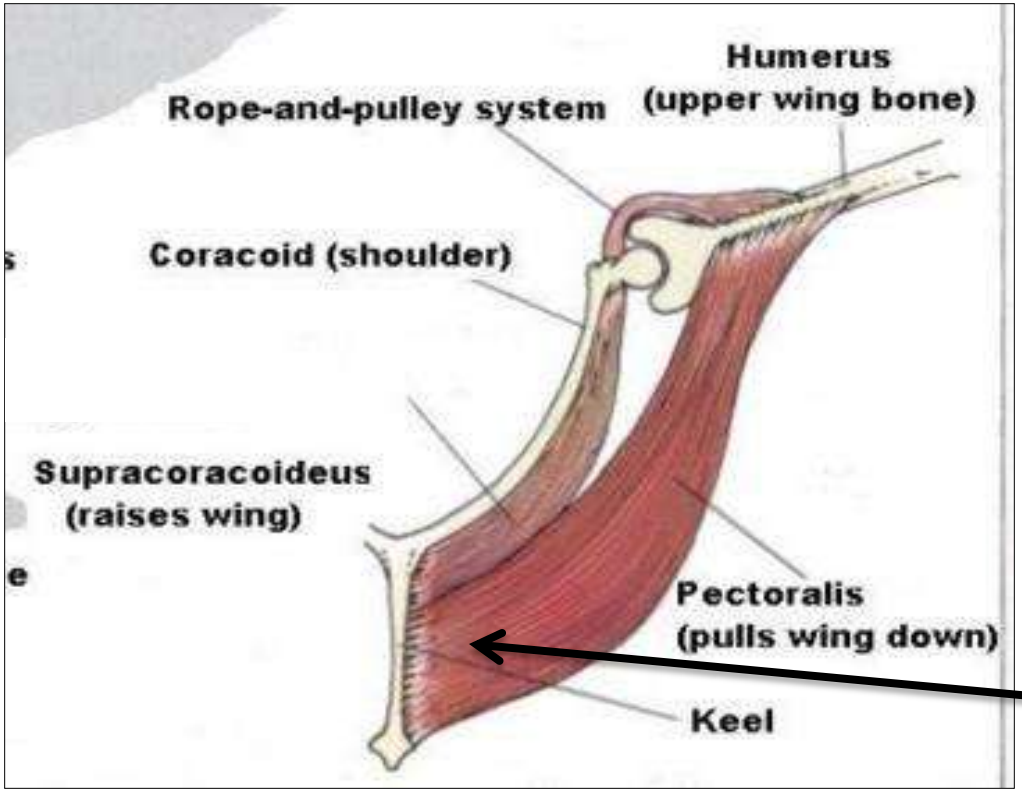
Skeleton

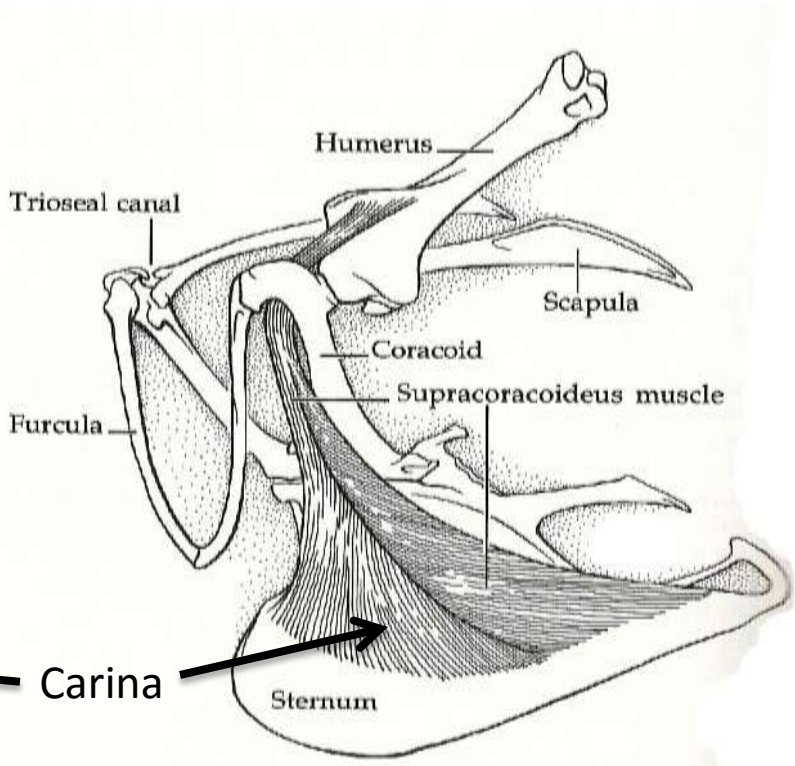


ANATOMI

Otot

-Sedikit berbeda dengan vertebrata lain, juga untuk kenyamanan terbang
-Memiliki otot yang kuat menghubungkan antara sternum dan humerus
-Perbesaran otot dada disebut Carina



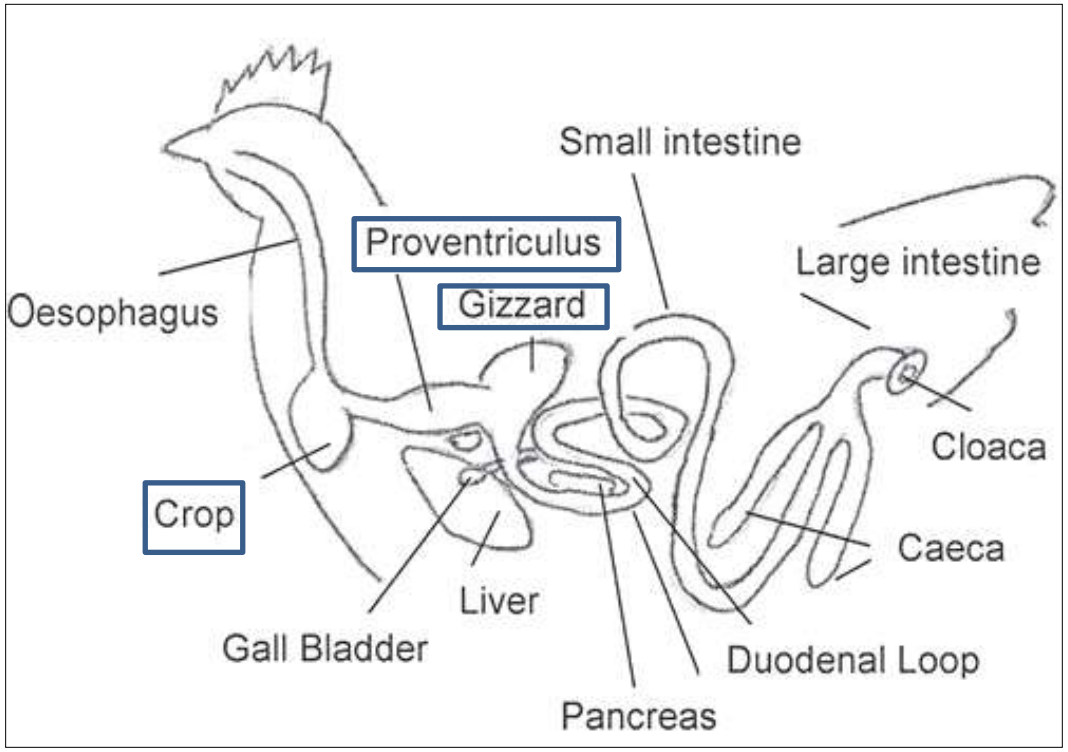


Carina

ANATOMI

Pencernaan

- Umumnya butuh banyak makanan
- Aves ordo Apodiformes dapat makan sebanyak 1x berat tubuhnya
- Tidak punyak gigi untuk mengunyah, tetapi memiliki gizzard (lambung otot) yang berisi kerikil untuk menghancurkan makanan



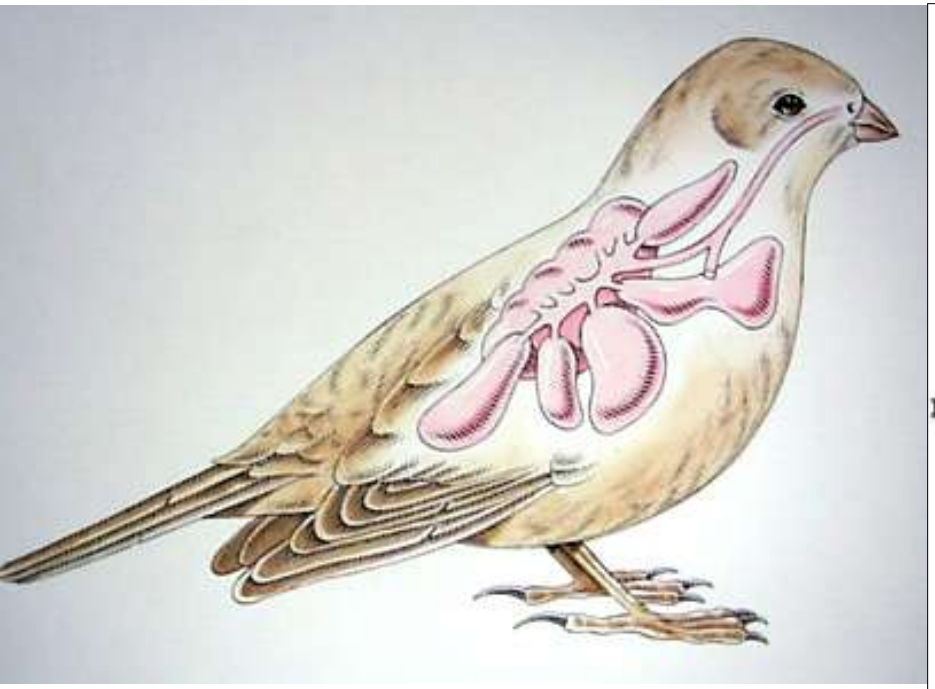
ANATOMI

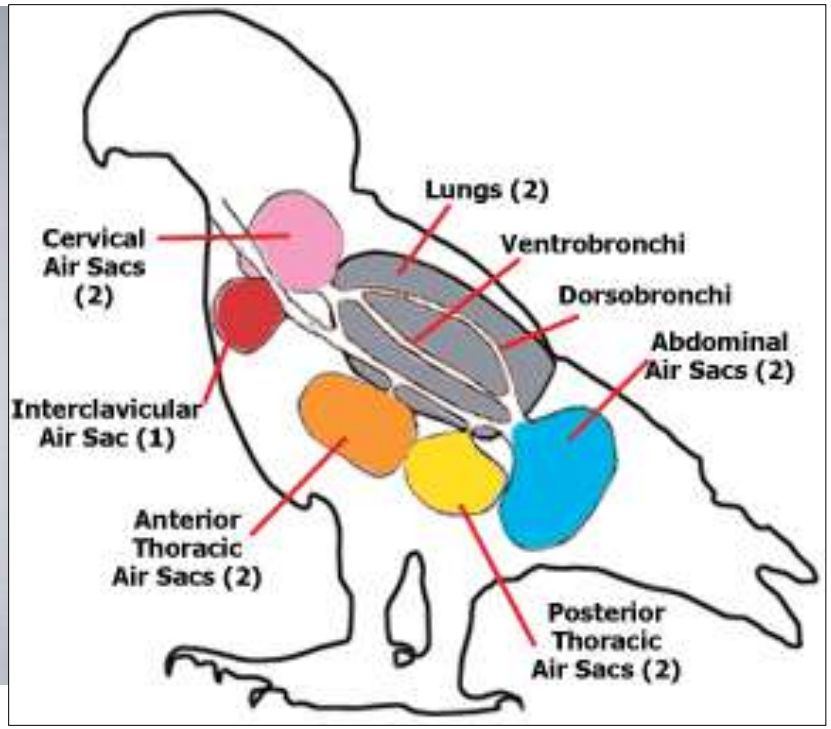
Pencernaan

ANATOMI

Pernafasan

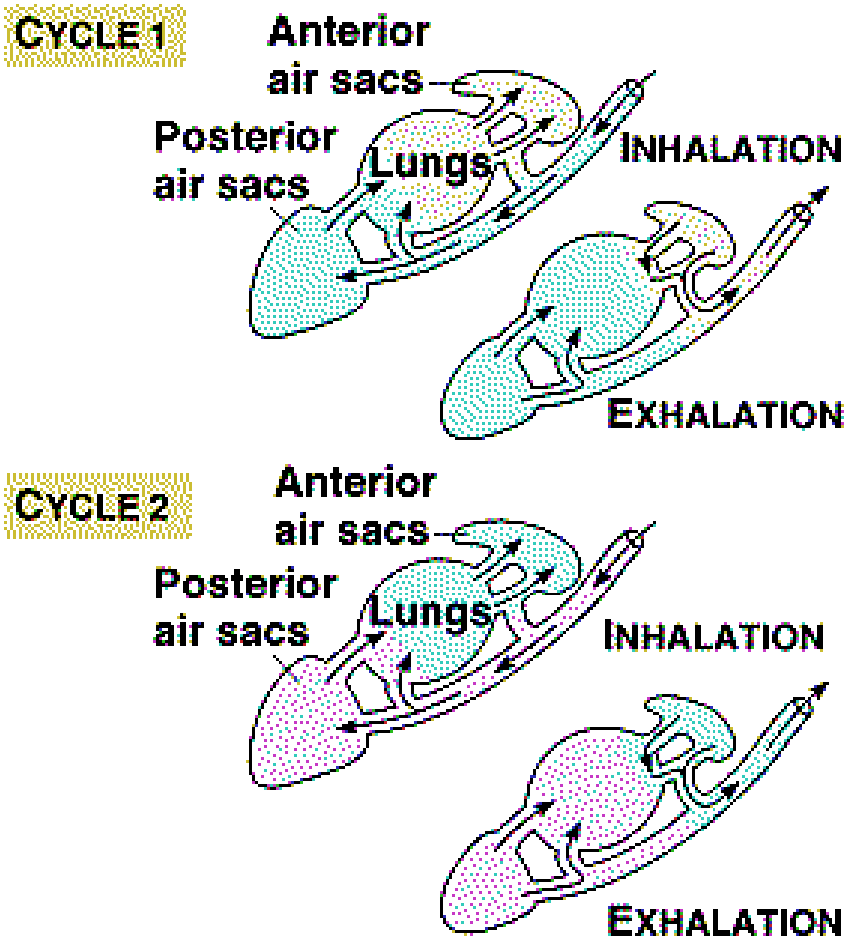
- Memiliki organ bantuan berupa pundi hawa (air bladder)
- Dianggap sebagai hewan dengan sistem pernafasan paling efisien
- Bernafas lebih cepat (burung terbang dapat bernafas 450 kali/menit, manusia yang berlari hanya 30 kali/menit)

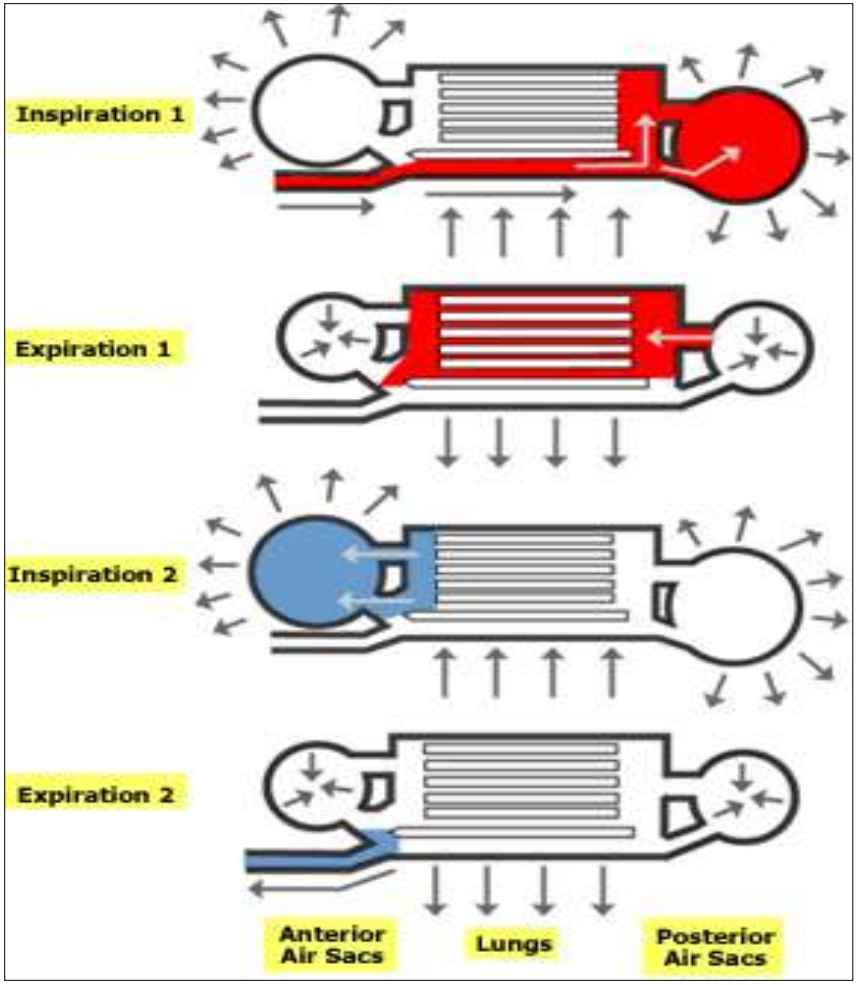




ANATOMI

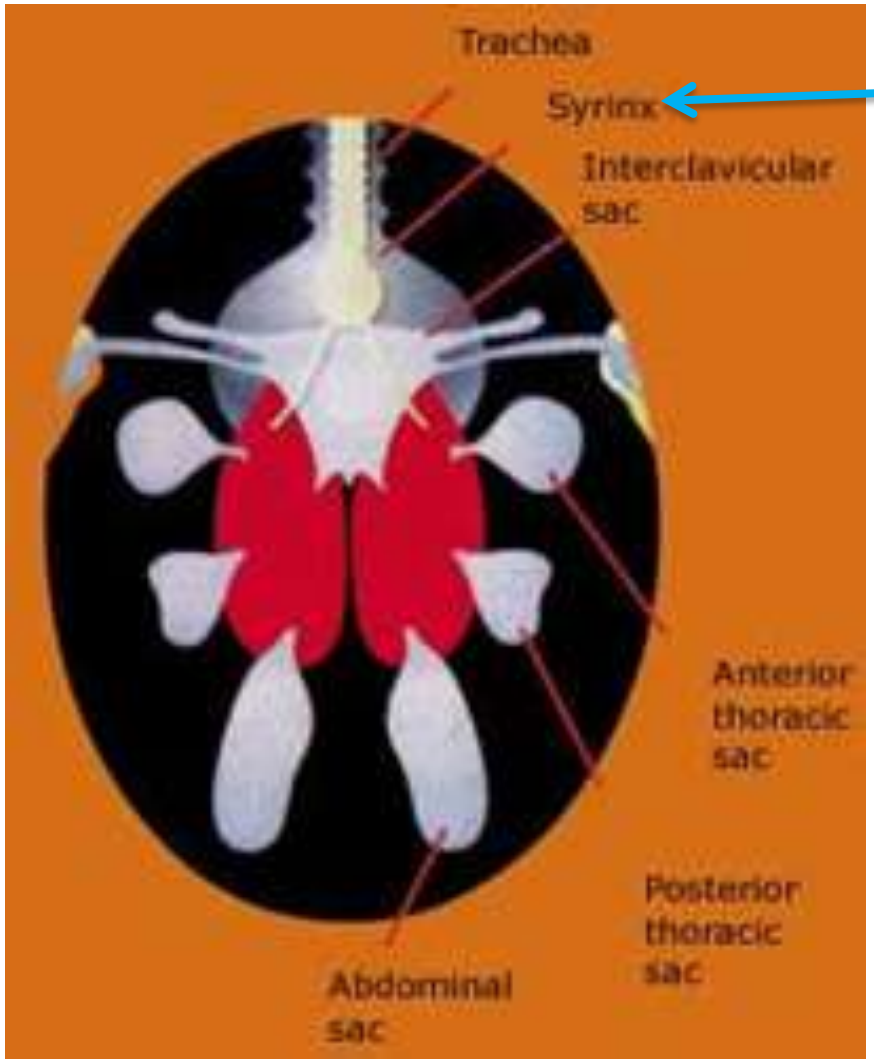
Pernafasan





ANATOMI

Pernafasan

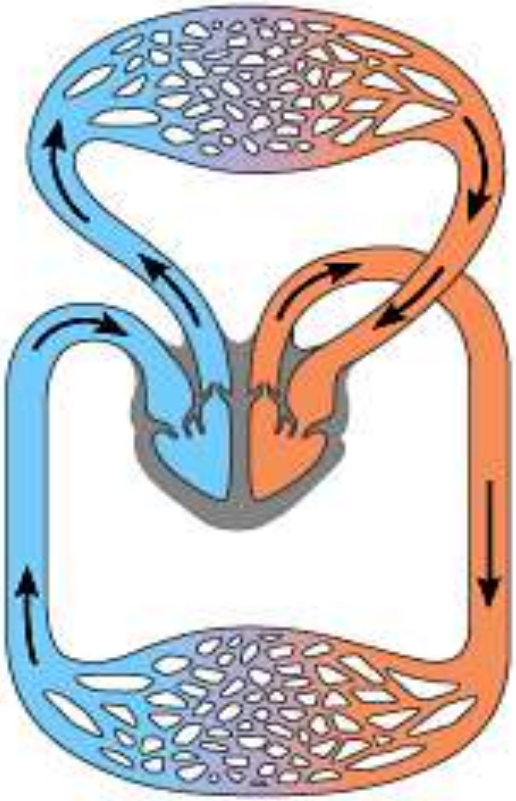


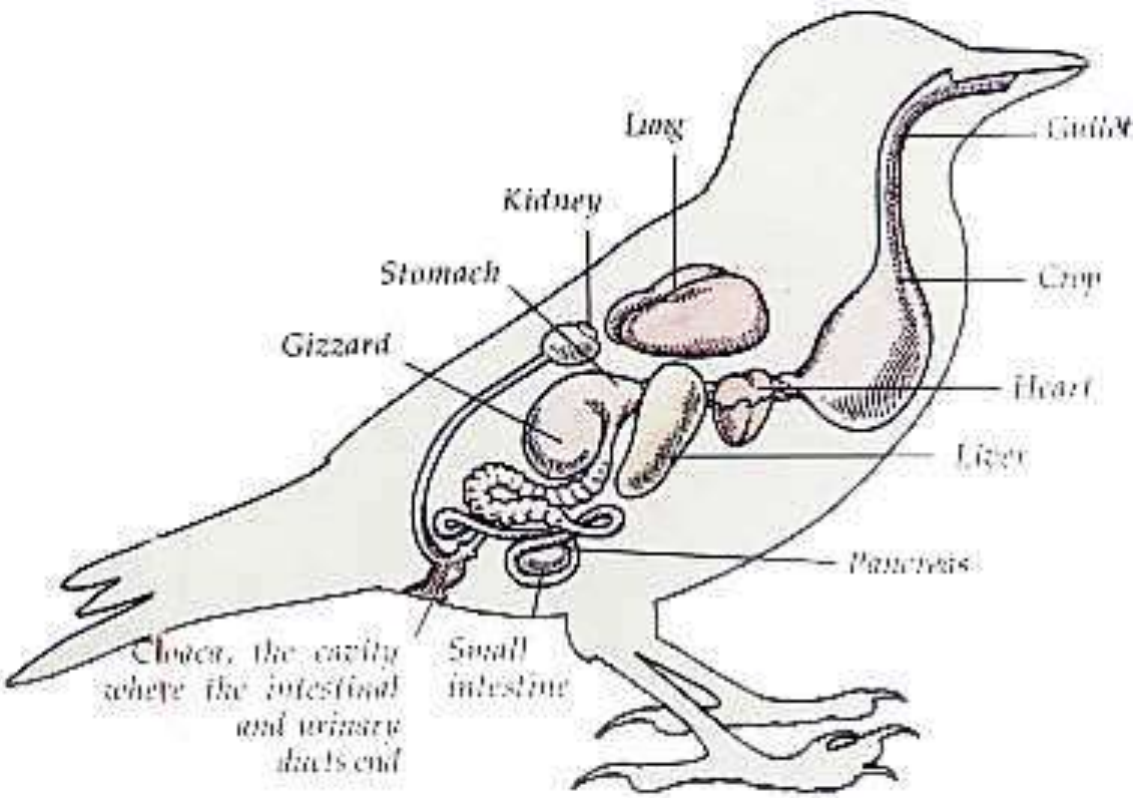
Penghasil suara

ANATOMI

Sirkulasi

-Jantung dengan 4 ruang yang sudah terpisah sempurna
-Bekerja dengan cepat, 100-1200 denyutan per menit





ANATOMI

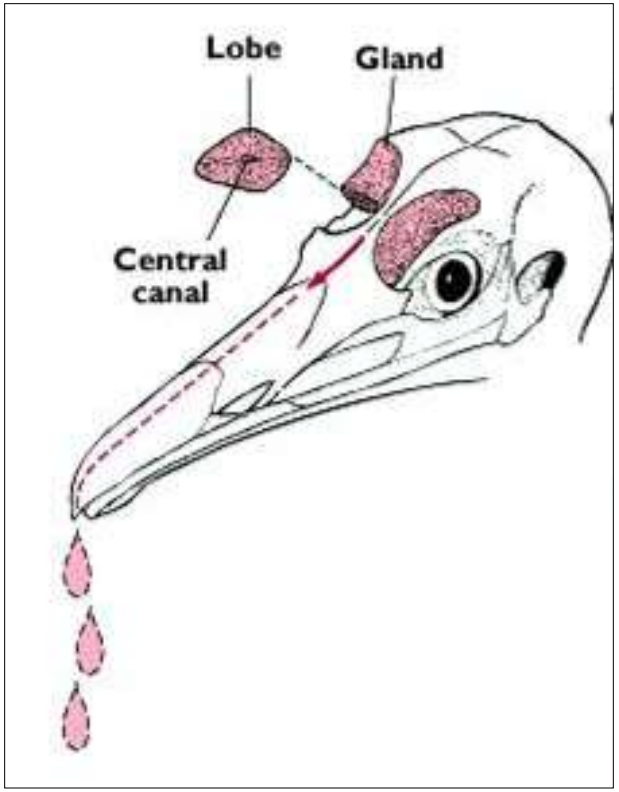
Panca Indera

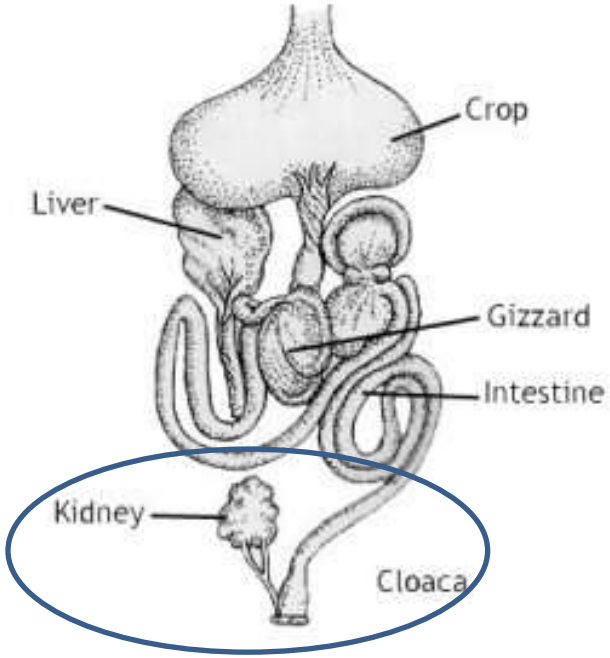
- Mata memiliki tingkat penglihatan yang luar biasa. Elang mampu melihat kelinci dalam jarak 1,5 km
- Pendengaran sangat peka, misalnya pada burung merpati. Beberapa aves dapat mendeteksi mangsa melalui pendengaran
- Penciuman aves relatif buruk

ANATOMI

Ekskresi

- Tidak punya kantong kemih (urine bladder)
- Buangan nitrogen berupa asam urat
- Urin relatif kental
- Aves yang hidup di pantai/laut dan menkonsumsi air laut memiliki kelenjar pembuang garam

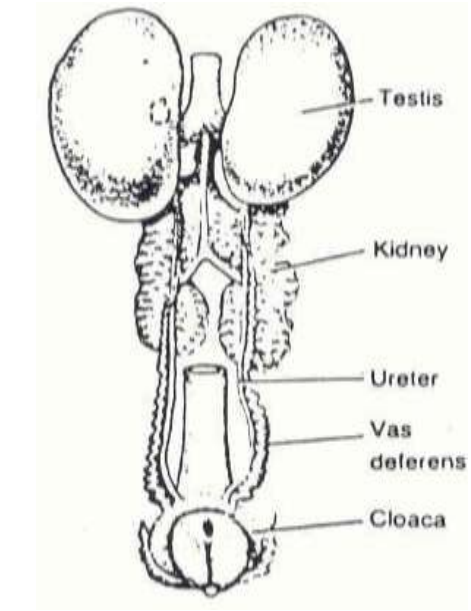


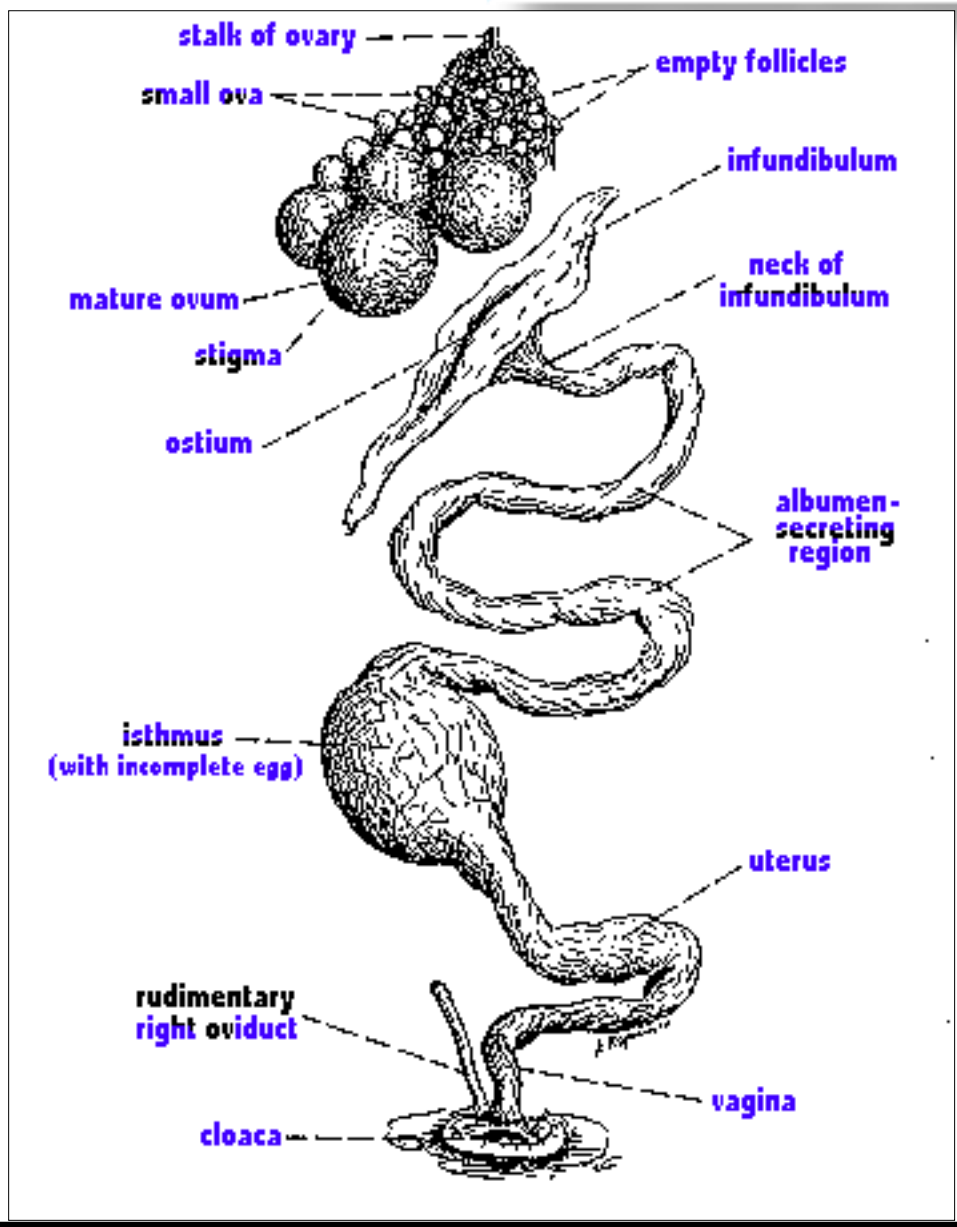


ANATOMI

Reproduksi

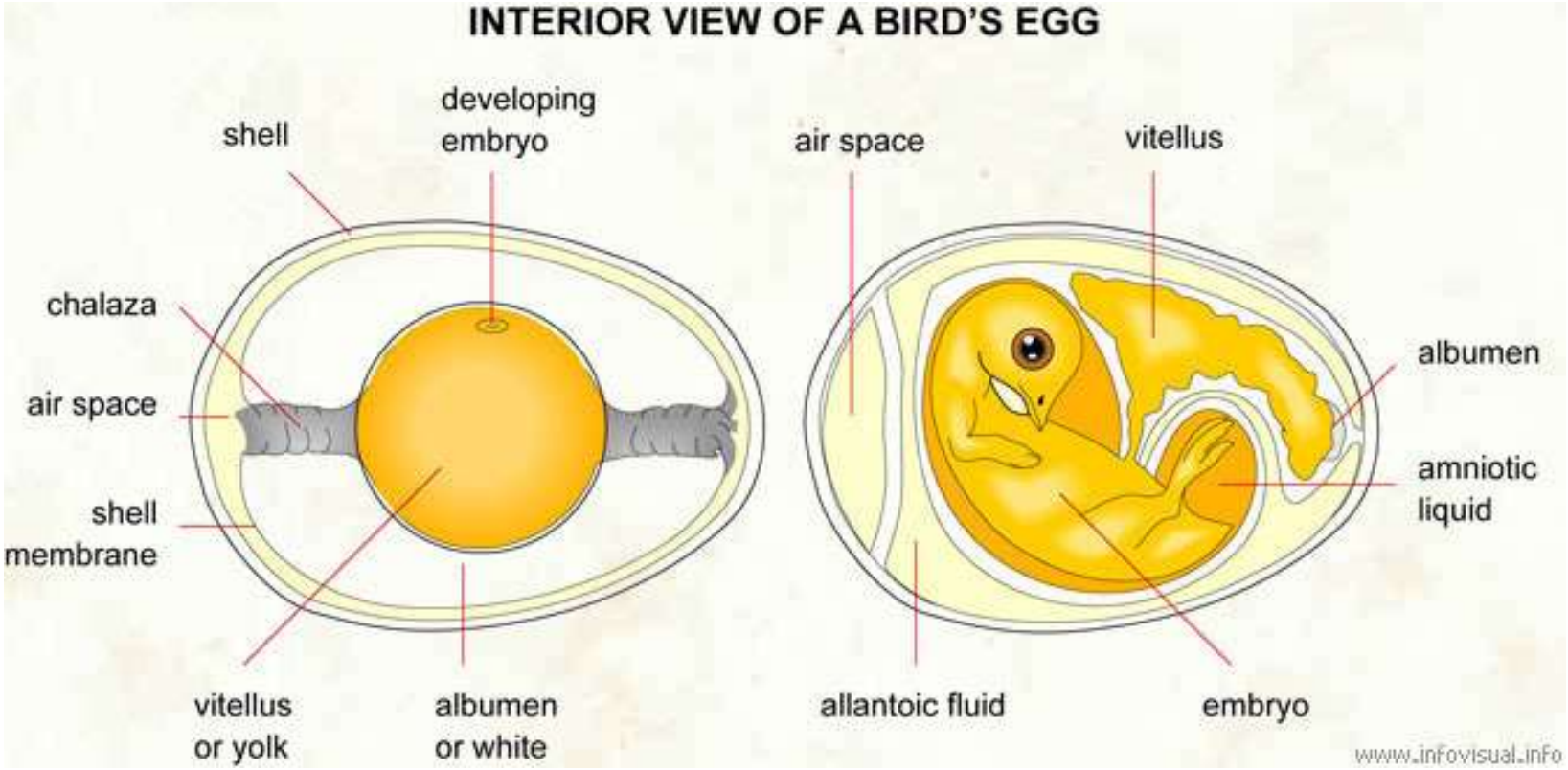
-Betina dewasa tidak punya uterus kanan
-Aves jantan umumnya tidak punya penis
-Beberapa spesies mampu kawin pada saat terbang





ANATOMI

Reproduksi



ANATOMI

Reproduksi

ANATOMI

Reproduksi

Telur atau bayi aves umumnya ditempatkan di dalam sarang, walaupun ada beberapa jenis yang telurnya didedahkan begitu saja di tanah atau bebatuan

Tipe sarang aves

ANATOMI

Pernafasan

Fungsi pundi hawa:

- Memompa udara pernafasan
- Mengurangi berat badan
- Keseimbangan terbang, humerus berisi udara yang berhubungan dengan saccus clavicularis
- Persediaan udara sewaktu terbang, menyelam dan berbungi
- Mengurangi gesekan organ dalam
- Membantu pengeluaran telur atau defekatif
- Perangsang seksuil (melalui bunyi atau suara yang ditimbulkan