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## A Classification of Living Birds

**This list incorporates changes made in the 56th Supplement to The Check-list, as published in *The Auk* 132: 748-764, 2015.**

### **Order Tinamiformes**

#### ***Tinamous***

Heavy bodied ground dwelling birds of central and South America; sometimes domesticated. They are one of the most ancient living groups. Their closest relative is thought to be the extant flightless birds (ratites), such as Emus, Kiwis, Cassowaries.

Family Tinamidae

- Keeled sternum
- Distinctive palate; more reptilian and primitive than all other birds.

### **Order Anseriformes**

#### ***Waterfowl; Ducks, Geese and Swans***

This order is believed to be closely related to Galliformes. These two orders are believed to be the most ancient groups of modern birds. It contains birds highly adapted for an aquatic existence at the water surface. The combination of the internal shape of the bill and a modified tongue acts as a suction to pump or draw water in at the tip of the bill and expel it from the sides and rear; an array of fine filter plates called *lamellae* trap small particles, which are then licked off and swallowed. Anseriformes have alternative feeding strategies: geese graze on plants; the saw-billed ducks catch fish.

Family – Anatidae

- Webbed feet with hind toe somewhat elevated
- Flattened blunt-tipped bill, bearing a nail at the tip of the maxilla, fine lamellae along the margin of the maxilla and mandible.
- Specialized lamellae

### **Order Galliformes**

#### ***Grouse and fowl like birds***

Heavy bodied ground feeding birds often domesticated or hunted as game birds. They are considered to be closely related to Anseriformes.

- Short rounded wings ill-adapted for sustained flight, skilled runners
- Short, conical bill with arched culmen
- Well developed keel
- Legs and feet sturdy, 3 front-facing toes and 1 shorter hind toe

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- Large muscular gizzard
- Well developed aftershaft
- Chicks are precocial and able to feed themselves soon after hatching
- Large intestinal ceca
- Elaborate courtships, males usually more colorful

Family Cracidae – Curassows, Guans and Chacalacas

- Hind toe same level as front toe
- Males of some species have an elongated trachea which loops between the pectoral muscles and the skin. This may serve to amplify call

Family Phasianidae – Grouse, Pheasants, Ptarmigan, Old World Quail, Turkey

- Tarsal spurs present in many species
- Tarsi and sometimes toes are feathered (in grouse only)

Family Odontophoridae – New World quail

- Often drab plumage

## **Order Gaviiformes**

### ***Loons***

Waterbirds that breed beside lakes and ponds in arctic and subarctic latitudes of North America. There is considerable debate on their taxonomic affinities. Male and female loons have identical plumage.

Family Gaviidae - Loons

- Large heavy diving birds
- Spear-shaped bills
- Laterally compressed tarsi
- Legs set far back on body with webbed feet

## **Order Podicipediformes**

### ***Grebes***

Medium-sized, stocky waterbirds of lakes and marshes, well adapted to aquatic life.

Family Podicipedidae

- Leg located far back on the body
- Tarsi are elliptical or laterally compressed
- Tail reduced
- Feet lobed not webbed with flattened claws

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## **Order Phoenicopteriformes**

### ***Flamingos***

Ancient distinct group of birds (5 species) found in saline lakes of high pH throughout tropical and warm temperate zones. Some authorities include the order as a family within the Ciconiiformes (Herons and Storks) whereas others consider them more closely related to the Anseriformes.

#### Family Phoenicopteridae

- Distinguished by long necks, long legs, webbed feet, and generally pink coloration. Unique coloration due to their diet which is rich in carotenoids.
- Filter feeders with a unique bill structure. Bill is bent downward in the middle and the margins of the bill bear long lamellae for filtering small organisms out of the mud and water. During feeding the bill is placed in the water with the maxilla downward.
- Thick fleshy tongue used to circulate water between the lamellae.

## **Order Sphenisciformes**

### ***Penguins***

Flightless seabirds native to cool southern hemisphere waters.

- Legs located far back on the body
- Densely covered with three layers of short feathers (unusual among birds in virtually lacking bare areas between feather tracts)
- Bones of wing are flattened and fused, wing cannot be folded
- Keel of sternum well developed
- Vascular rete at base of wing for counter-current heat exchange

## **Order Procellariiformes**

### ***Tube-nosed seabirds : Petrels, Shearwaters, Albatross***

They are wide-ranging seabirds of the open ocean. This order of birds contains the greatest range in sizes (from the Least Storm Petrel – 14 cm / 25 g to the Royal Albatross – 125 cm / 12 kg).

- Paired tubular nostrils surmounting a distinctly hooked bill
- Characteristic musty, oily smell due to stomach oil which along with oil from the uropygial gland is spread over the plumage (thought that the tubular nostrils act as a conduit for controlled application of the oil)
- Large paired nasal glands in the orbit of the eye. Glands produce secretion with large quantities of NaCl that is shed through the nostrils. This allows the bird to secrete up to 90% of NaCl in diet.

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- Most species have long wings used for soaring

### **Order Ciconiiformes**

#### ***Jabiru, Wood Stork***

Long-legged and often long necked birds adapted for wading and capturing animal foods.

- Straight, sharp bill and often with a slight curve at the tip
- Bulky in appearance
- Fly with neck extended
- Lack syrinx and thus clatter bills
- Will defecate on legs for evaporative cooling

Family Ciconiidae – Storks

### **Order Suliformes**

#### ***Frigatebirds, Cormorants, Boobies***

Pelagic piscivores of tropical oceans. They obtain food on the wing and can stay airborne for long periods. Their only distant relative is believed to be Pelecaniformes and they seem to have evolved from a common ancestor. Frigatebirds have the longest parental care of any bird.

- Long wings, tails and bills
- Gular pouch

Family Phalacrocoracidae - Cormorants

Family Anhingidae – Anhingas

### **Order Pelecaniformes**

#### ***Pelicans, Herons, Egrets, Ibis, Spoonbill***

A possibly invalid order. Medium to large sized aquatic birds that eat fish or squid. Most members have distensible bare throat patch between the branches of the lower mandible (gular pouch) and dysfunctional slits for nostrils, which force them to breathe through their mouths. Traditionally defined and grouped as “all birds that have feet with all four toes webbed (Totipalmate).

Family Pelecanidae – Brown and American White Pelicans

- Most have very small nostrils that sometime lack an external opening. Gannets for example lack opening because they need to prevent the entry of water when diving head first into the sea from 30m.

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Family Ardeidae – Herons, Bitterns and Egrets

- Long spear-shaped bill
- Powderdown feathers which grow continuously and frays into a powdery substance that is used to protect the plumage from fish slime
- Comblike margin on the claw of the middle toe
- Enlarged sixth neck vertebrae which causes the neck to adopt a characteristic S-shaped appearance.

Family Threskiornithidae – Ibises and Spoonbills

- Long-curved bills or long bill with a broad flattened spoon-shaped tip.
- Pair of grooves which extend from the nostrils to the tip of the bill
- Lack of face feathers
- Fly with the neck extended

**Order Accipitriformes**

***Vultures, Hawks, Eagles, Kites, Condor***

Diurnal raptorial birds, birds of prey.

- Sexes more or less similar in plumage but the male is often considerably smaller than the female
- Bill is hooked with a fleshy cere at the base containing the imperforate nostrils
- Sharp curved talons

Family Pandionidae – Osprey

- Reversible outer toe, giving the two forward and two back arrangement
- Sharp spicules on the underside of the foot

Family Accipitridae – Hawks, Harriers, Eagles, Kites, Old World Vultures

- Diverse array of birds, wings generally broad and rounded but can be long and narrow (harriers) or pointed (kites)
- Faeces can be squirted several feet from perch

Family Cathartidae – New world vultures (may be relatives of the storks versus birds of prey)

- More or less unfeathered head and ruff of feathers at the base of the neck
- Generally black or brown plumage
- Lack a syrinx and thus are voiceless
- Perforated nasal septum
- Several species possess an unusually well developed sense of smell
- Will defecate on legs for evaporative cooling

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## **Order Gruiformes**

### ***Cranes, Rails, and Allies***

A diverse group of ground-feeding and nesting birds with few unifying characters. This order has the highest percentage of recently extinct or currently endangered species.

- Sexes generally alike in plumage and size
- All species lack a crop
- Skeletal similarities

#### Family Ralidae – Rails and Coots

- Most are laterally compressed with short-rounded wings
- Coots have lobed toes
- Rails have elevated hind toe

#### Family Gruidae – Cranes

- Long-legged, long-necked birds
- All species migratory
- Convoluted trachea (like trumpeters coil) which enhances vocalizations

## **Order Charadriiformes**

### ***Waders, Shorebirds, Gulls, Auks and Allies***

Waterbirds or birds clearly derived from waterbirds. They are found along seacoasts and inland waters. The order includes 350 species in all parts of the world. Most eat invertebrates or other small animals, some are pelagic, some occupy deserts and few are associated with thick forest. The order is recently considered to be a single large distinctive lineage of their own, unrelated to other waterbirds. Their filtering beak adaptations suggest a closer relationship to Anseriformes than is currently accepted.

- Small to medium sized birds with slender probing bills
- Long-legged with webbed feet in a few species
- Long winged, short-legged in other species
- Hind toe reduced or lacking
- Stout somewhat hooked bill
- Stocky marine diving birds
- Legs often set far back on the body

#### Family Charadriidae – Plovers and Lapwings

#### Family Recurvirostridae – Stilts and Avocets

#### Family Scolopacidae – Sandpiper, Phalarope, Snipe

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Family Laridae – Gulls, Terns, Skimmer

Family Alcidae – Auks, Murres, and Puffins

## **Order Columbiformes**

### ***Pigeons and Doves***

All Columbiformes are monogamous. Unlike most other birds they are capable of drinking by sucking up water, without needing to tilt the head back. The Dodo, a large flightless pigeon, belonged in this order.

Family Columbidae

- Short legs with small reticulate scales
- Fleshy cere at the base of the bill.
- Small heads
- All possess a large crop, the lining of which secretes substance known as “pigeons milk”.
- Uropygial gland is small or absent
- Feathers have no aftershaft

## **Order Cuculiformes**

### ***Cuckoos, Roadrunner***

Small to medium sized birds, often with a long tail. This order now includes only one family, the Cuculidae.

- Slender, usually long-tailed
- Bill is usually slender and slightly decurved
- Mostly insectivorous
- Zygodactyl feet

## **Order Strigiformes**

### ***Owls***

Solitary, nocturnal birds of prey occupying all regions of earth except Antarctica with many (220-225) extant families. They are believed to be more related to nightjars (Caprimulgiformes) than diurnal raptors. The recent drastic rearrangement of Accipitridae may have obscured any relationship this family has to owls and is not resolved to satisfaction.

- Rounded heads with large eyes
- Large facial disks of feathers

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- Legs and toes often feathered
- Camouflaged plumage
- Short down-curved, hooked beak for killing and tearing
- Hunt mostly small mammals, insects.

Family Tytonidae – Barn Owls

Family Strigidae – All other Owls

### **Order Caprimulgiformes**

#### ***Owlet–Nightjars and Allies***

Members of this order are often nocturnal or crepuscular and are known for feeding “on the wing”. They are believed to have diverged from oilbirds and frogmouths. They are nocturnal hunters with a highly developed sense of sight. They are excellent flyers with small weak legs. This order was once believed to be midway between swifts and owls.

- Small weak bill with a large mouth opening and surrounded by long bristles
- Soft cryptically patterned plumage
- Often small weak feet

Family Caprimulgidae – Nighthawks and Nightjars

### **Order Apodiformes**

#### ***Swifts and Hummingbirds***

Small to very small birds. Members of this order may be closely related to either the Caprimulgiformes or the Passeriformes. Although Swifts and Hummingbirds are usually placed in the same order, their relationship remains uncertain. They share a unique Albumen protein and have a similar specialized wing morphology which is the basis for their grouping. They are believed to be convergent with the closely related owlet-nightjars (Caprimulgiformes). They are the most diverse order after the Passeriformes.

- Tiny feet
- Short humeri
- Long sturdy primaries and short secondaries

Family Apodidae – Swifts

- Small claw present on wing
- Dull colored or patterned in black and white



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- Short bill and broad gape
- Aerial insectivores with body and wing shape designed to feed “on the wing”

Family Trochilidae – Hummingbirds

- Brilliantly iridescent and sexually dimorphic,
- Males typically have bright colored throat patches or crests.
- Small gape and long slender bill
- Long extensile tongue used for reaching nectar

### **Order Coraciiformes**

*Kingfishers, Todies and Motmots*

Near passerine birds. This group have affinities with the Piciformes and the Passeriformes.

- Small Syndactyl feet though in many kingfishers one of the toes is missing.
- Large head with a stout bill
- Most nest in cavities or mud banks
- Similar leg musculature and structure of the palate are unifying characters within this group

Family Alcedinidae – Kingfishers

### **Order Piciformes**

*Woodpeckers, Toucans and allies*

Arboreal insectivorous birds with a peculiar arrangement of the tendons of the toes. The woodpeckers and honey guides are each other's closest relatives. Many neotropical forms may have their origin in the old world.

Family Ramphastidae – Toucans

Family Picidae – Woodpeckers

### **Order Falconiformes**

*Falcons and Caracaras*

Diurnal raptorial birds, birds of prey. A recent DNA study indicated that falcons are more related to parrots and passerines than to Accipitriformes. Sexes are more or less

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similar in plumage but the male is often considerably smaller than the female. They are highly adept fliers and hunters.

#### Family Falconidae

- Bill is hooked with a fleshy cere at the base containing the imperforate nostrils.
- Bony tubercle in nostril
- Legs generally short
- Wings generally pointed
- Defecate below the perch
- Sharp curved claws

### **Order Psittaciformes**

#### *Parrots*

Birds with an upright stance known for their vocal ability and intelligence in common with the Corvids. The upper mandible is prominent, curves downward and is not fused to the skull, which allows it to move independently, and contributes to the tremendous biting pressure. The lower mandible is shorter, with a sharp, upward-facing cutting edge, which moves against the flat portion of the upper mandible in an anvil-like fashion. Touch receptors known as the “bill tip organ” allow for highly dextrous manipulations.

#### Family Psittacidae

- Stout hooked bills with the upper mandible moveable.
- Mandible is attached by a hinge like articulation to the skull
- Fleshy cere at the base of the bill
- Short strong legs with clawed zygodactyl feet
- Scales on legs and toes are small and granular

### **Order Passeriformes**

#### *Perching Birds*

This is the largest order of birds comprising over half of the known bird species (6,000 species). They have strong feet for perching and grabbing branches. There are two groups. One is the suboscine Passerine birds (Tyranni or Terranae: have a syrinx that doesn't have the muscles to make the same sounds as the other birds). The other group is the oscine Passerines, which includes everything else. A diverse and rich assemblage of mostly small land birds.

- Four unwebbed toes with an enlarged flexible hallux
- Unique oil gland structure
- Distinct bony palate

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- Unique forelimb and hind limb musculature

Family Tyrannidae - Tyrant or New World Flycatchers

Family Laniidae - Shrikes

Family Vireonidae - Vireos

Family Corvidae – Jays, Crows, Ravens, Magpies, Nutcracker

Family Alaudidae – Skylark, Horned lark

Family Hirundinidae – Martins, Swallows

Family Paridae- Chickadee, Titmouse

Family Sittidae - Nuthatch

Family Certhiidae – Brown Creeper

Family Troglodytidae - Wrens

Family Polioptilidae – Gnatwrens, Gnatcatchers

Family Cinclidae - American Dipper

Family Regulidae - Kinglets

Family Turdidae – Bluebirds, Thrushes

Family Mimidae - Catbirds, Mockingbirds, Thrashers

Family Sturnidae – Starlings, Myna

Family Motacillidae – Wagtail, Pipit

Family Bombycillidae - Waxwing

Family Calcariidae - Longspurs

Family Parulidae – Wood Warblers, Waterthrush, Ovenbirds

Family Thraupidae - tropical Tanagers, Honeycreeper, Saltator,

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Family Emberizidae – Sparrows (North American spp), Buntings, Juncos, Towhees

Family Cardinalidae - Tanagers, Grosbeaks, Cardinals, Buntings, Dickcissel, Chat

Family Icteridae – Bobolink, Blackbirds, Orioles, Cowbirds, Cacique, Oropendola

Family Fringillidae – Finches, some Grosbeaks, Siskins

Family Passeridae – Old World Sparrows