

Taxonomy of Australian Birds

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Why are birds listed in what appears to be a random order? Why does the order change over time? Why is it not alphabetical in some way? Why are buttonquails separate from quails? Why are Willie Wagtails with the fantails, and not the other wagtails? If it is a fantail, why isn't the name changed? Other birds have had their names changed. Why is it called a Black-necked Stork instead of Jabiru? Why is the Gilbert's Honeyeater now different to the White-naped Honeyeater? Why is the Kimberley Flycatcher included with the Lemon-bellied Flyrobin even though it looks very different and more like a robin? Why are the 28 Parrot and the Port Lincoln Ringneck now both called Australian Ringneck? Why do some birds have hyphens in their name, and others don't? Why are some species being split, and some being lumped? What does split and lump mean?

Alphabetical order does not work. White-faced Heron is next to White-faced Robin which is next to White-faced Storm Petrel. If the order is by the type of bird, you still get duck, garganey, hardhead, shoveler and teal widely separated. Quails have 3 toes (no hind toe) and have evolved separately from buttonquails which have 4 toes and are more closely related to shorebirds. The Willie Wagtail is a fantail despite its name. The other wagtails are closely related to the pipits. Jabiru is a South American stork that is very different to our Black-necked Stork. A scientific paper in 2011 showed that the Gilbert's Honeyeater is more closely related to the Black-headed Honeyeater of Tasmania than it is to the White-naped Honeyeater. The Kimberley Flycatcher interbreeds with the nominate Lemon-bellied Flyrobin near Wyndham.

Taxonomy

The answer to all this lies with taxonomy. So what is taxonomy? Taxonomy is defined on Wikipedia as :

Taxonomy (from Ancient Greek *taxis* "arrangement" and *nomia* "method") is the science of identifying and naming species, and arranging them into a classification. The field of taxonomy, sometimes referred to as "biological taxonomy", revolves around the description and use of taxonomic units, known as **taxa** (singular **taxon**). A resulting taxonomy is a particular classification ("the taxonomy of ..."), arranged in a hierarchical structure or classification scheme.

Other definitions on Wikipedia are :

The exact definition of taxonomy varies slightly from source to source, but the core of the discipline remains: the identification, naming, and classifying of organisms. As points of reference, three recent textbook definitions are presented below:

1. The theory and practice of grouping individuals into species, arranging species into larger groups, and giving those groups names, thus producing a classification;
2. A field of science (and major component of systematics) that encompasses description, identification, nomenclature, and classification;
3. The science of classification, in biology the arrangement of organisms into a classification.

You can have a taxonomy for different types of taxa. e.g. birds, plants, mammals, etc. You can have alternate taxonomies for the same types of taxa.

Taxonomic Orders

There have been several taxonomies adopted over the years by the RAOU, which became Birds Australia and is now BirdLife Australia. They have been :

Year	Reference
1926	<i>The Official Checklist of the Birds of Australia</i> , Second Edition, Royal Australasian Ornithologists Union, Melbourne 1926
1941-1967	Supplements 1-9
1975	Condon HT (1975), <i>Checklist of the Birds of Australia: Part 1: Non-Passerines</i> , RAOU Schodde R (1975), <i>Interim List of Australian Songbirds</i> , RAOU
1994	Christidis L & Boles W (1994), <i>The Taxonomy and Species of Birds of Australia and its Territories</i> , RAOU Monograph 2, Melbourne
2008	Christidis L & Boles W (2008), <i>Systematics and Taxonomy of Australian Birds</i> , CSIRO Publishing
2016	BirdLife Australia (2016), <i>The BirdLife Australia Working List of Australian Birds; Version 2</i> . Downloaded from http://birdlife.org.au/documents/BWL-BirdLife_Australia_Working_List_v2.xls

There have been other taxonomies adopted or proposed for Australian birds by others :

Year	Reference
1998	Stanger M <i>et al.</i> (1998), <i>CSIRO List of Australian Vertebrates – A Reference with Conservation Status</i> , CSIRO Publishing
1999	Schodde R (1999), <i>The Directory of Australian Birds: Passerines. A taxonomic and zoogeographic atlas of the biodiversity of birds of Australia and its territories</i> , CSIRO Publishing
2006	Clayton M <i>et al.</i> (2006), <i>CSIRO List of Australian Vertebrates – A Reference with Conservation Status</i> , CSIRO Publishing

The taxonomy of birds is an ongoing process. The problem with all the above taxonomies is that they are fixed until the next list is adopted. This has the advantage that the taxonomy is stable for a substantial period. The CSIRO list is the basis of federal government environmental legislation. But it means that when the new list is adopted there are substantial changes.

Another problem with all the above taxonomies is that they only apply to Australia and its territories. What about the rest of the world? What about vagrant species recorded in Australia?

There are several alternate taxonomies for the whole world.

Taxonomy	Reference
Clements	http://www.birds.cornell.edu/clementschecklist The Clements Checklist of Birds of the World. This list was produced by James Clements and published by Cornell University Press. James Clements died in 2005. The management of the list was taken over by the Cornell Lab of Ornithology. They published the 6 th Edition in 2007. They have published annual updates with the latest in August 2015 being v2015. This has 39 orders, 10,473 species and 234 extant families.
IOU	This list is maintained by the International Ornithological Union (http://int-ornith-union.org). They evolved from the annual International Ornithological Congresses and the IOU was formed in 2006. The membership of the IOU includes nine Australians including Walter Boles and Richard Schodde. They publish regular updates three to four times a year on the web site http://www.worldbirdnames.org with the latest

	version 6.3 being released in July 2016 with 40 orders, 10,659 species, 2,292 genera and 238 extant families plus 2 families <i>Incertae sedis</i> .
Sibley & Monroe	This taxonomy was developed by Charles Sibley and Burt Monroe using DNA-DNA Hybridisation studies. Charles Sibley and Thomas Ahlquist published the first list in 1990 with a supplement by Sibley and Monroe in 1993. The list has 9,702 species. It has not been maintained since.
Howard & Moore	This list was first published in 1980 by Richard Howard and Alick Moore. This is published in two volumes, with the 4 th Edition Volume 2 published in November 2014. It has 10,135 species, 2,340 genera and 234 extant families.
BirdLife International	BirdLife Australia is the Australian affiliate of BirdLife International. They have their own taxonomy determined by their BirdLife Taxonomic Working Group. Their latest version 8 published in October 2015 recognises 10,424 species. This is the basis for BirdLife Australia's Working List of Australian Birds.

The BirdLife Australia Rarities Committee (BARC) has recommended that BirdLife Australia adopts a living taxonomy. The Clements and IOU taxonomies were the two they mostly considered as they are the most frequently updated. They have recommended that BirdLife Australia adopt the IOU taxonomy as it includes Australian advisors (among other reasons).

This recommendation is unlikely to be adopted, because it is not as simple as that. It has implications for many databases such as Birddata / Atlas which will first need to be worked through. The current IOU list also has some common names for endemic Australian birds that possibly should be amended. e.g. Maned Duck, White-headed Stilt, etc.

Other Terms

There are several other terms involved with taxonomy that you need to be aware of.

Class – This taxonomic level is the highest level for birds. The class of birds is **Aves**.

Order – This is a taxonomic level below **Class** and above **Family**. The **Order** names for birds usually end in "*iformes*" or "*formes*". e.g. *Charadriiformes* which includes the button-quails, shorebirds, gulls, terns, skuas, etc. This is the highest level where alternate taxonomic lists differ. Some lists have **Superorders**, in which case the **Superorder** *Palaeognathae* contains two bird families that include ostriches, rheas, emus, cassowaries, kiwis and tinamous, and *Neognathae* contains the other existing bird families.

Family – This is the taxonomic level below **Order** and above **Genus**. The **Order** names for birds usually end in "*idae*". e.g. *Charadriidae* is the family of plovers (including dotterels and lapwings). Many world birders want to see at least one species from each family. The Clements and Howard & Moore checklists each have 234 extant, while the IOU checklist has 238 plus two extra families called *Incertae sedis* (meaning uncertain placement) for groups of species that are still being determined. None of these occur in Australia. There are several **monotypic families**. e.g. Emu, Magpie Goose, Plains-wanderer, etc.

Genus / Genera – This is a low level taxonomic rank. It is the first part of the **scientific name**. **Genera** is the plural of **Genus**. It is always capitalised. e.g. *Charadrius* is the genus for many of the plovers. The **generic name** follows the grammatical rules of Latin, although it can be derived from a number of languages. The **genus** is equivalent to a noun. It therefore has a gender. Most **genera** that end in **-us** are masculine, **-a** are feminine and **-um** are neuter. This affects the **specific name** (see below).

Species – This is a low level taxonomic rank. There are many definitions of what constitutes a species. Simplistically, a **species** is a group of organisms capable of producing fertile young, and in theory if two different species interbreed then their hybrid offspring is infertile. But the situation is far more complex than this, and there are several methods used to determine one species from another. This is too hard to explain in this forum. You sometimes see the term **full species**. e.g. Lemon-bellied Flyrobin is a **full**

species, whereas Kimberley Flycatcher is not because it is a sub species of the Lemon-bellied Flyrobin.

Type Specimen – The **type specimen** is the original specimen from which the species was described and named. It is almost always a museum specimen.

Specific name – This is the second part of the **scientific name**. It is never capitalised, even if it is derived from a person or a place name. The specific name is an adjective, or a noun in the nominative case or a noun in the genitive case. It follows the grammatical rules of Latin, although it can be derived from a number of languages. There are many rules for choosing the **specific name**. The **specific name** must be unique within a **genus**, including the **specific names** of the different **sub species**. Preferably it should be unique within a **family** in case the **genus** is changed later on. It is not unique across **families**. There are different forms for each gender. The gender must be the same as the **genus**. Most specific names ending in **-us**, **-i**, **-ii** or **-orum** are masculine. Those ending in **-a**, **-ae** and **-arum** are usually feminine. Those ending in **-um** (other than **-orum** and **-arum**) are usually neuter. Sometimes there are several **specific names** proposed for a **species**. The first one to be published takes precedence. The others are either adopted as the **specific name** of the **sub species**, or they are effectively discarded. The **specific name** for a **taxon** is seldom changed, even when species are lumped or split. There have been mistakes made, and this is one case where the specific name is changed to correct the error. The specific name of the Greater Frigatebird is *minor*. It was described before the Lesser Frigatebird, but the specific name has stuck because it was the first to be published.

Nominate name – This is the **specific name** of the **type specimen**.

Sub Species – Also known as **race**. Different colour morphs are not necessarily different sub species. The **specific name** of the **sub species** is the same as the **specific name** of the **species** for the **nominate sub species**. Some **sub species** have common names that are different to the **full species**. e.g. Port Lincoln Ringneck, 28 Parrot, Mallee Ringneck and Cloncurry Ringneck are common names for the different sub species of Australian Ringneck. The Port Lincoln Ringneck is the **nominate sub species**.

Taxon / Taxa – **Taxa** is the plural of **taxon**. A **taxon** is the basic unit in taxonomy. You sometimes see the term **good taxon**. e.g. A Feral Pigeon or a Domestic Duck is not a good taxon. Hybrids are not good taxa. There is often debate over whether some sub species are good taxa. e.g. White-faced Heron used to have at least two sub species. Recently, the taxonomists have decided that the sub species are not good taxa, and the White-faced Heron is now monotypic (no sub species).

Binomial / Trinomial – The **scientific name** for a **species** is the **Genus** followed by the nominate **specific name**. This is a **binomial**. If a species has several sub species, then this is a **trinomial** from the binomial followed by a specific name for the sub species. The **specific name** used for the second and third parts are the same for the **nominate** sub species. The scientific name (binomial or trinomial) is usually printed in *italics* in literature.

Splitting – This is when a single species is split into one or more species. In this case, the **specific name** of the new species is the same as the **specific name** of the **type specimen** of the **sub species**. e.g. The Gilbert's Honeyeater (*Melithreptus chloropsis*) was recently split from the White-naped Honeyeater (*Melithreptus lunatus*). The **REN** and the **specific names** were chosen as they were found to be the first described, even though the species is far more widespread than the Swan River.

Lumping – This is when two or more species are combined into one species. In this case, the previous species usually become sub species. **specific name** of the new species is the same as the **specific name** of the **type specimen** of the **sub species**. e.g. The Sooty Owl and Lesser Sooty Owl were recently regarded as one species, with Sooty Owl taking precedence.

REN – Recommended English Name. This is the common name for the bird. e.g. Willie Wagtail, Black-necked Stork. Many birds have several common names and the names can

be different in alternate checklists. e.g. Carnaby's Black-Cockatoo in the Christidis & Boles 2008 checklist, but currently Slender-billed Black Cockatoo in the IOU checklist. RENS should be unique in the world. This has meant that some birds have had to be renamed. e.g. Black-necked Stork instead of Jabiru. This will also affect Yellow White-eye (an African species), Yellow Oriole (a species north of Australia), etc. The species to be named first usually has precedence.

Ring Species – This is species where adjacent populations successfully interbreed, but populations that are not adjacent may not be able to interbreed. There is debate about whether the Great Egret is a ring species around the world, or whether it is two or even three species.

Clade – This term was specified in 1958 by biologist Julian Huxley. A **clade** is a single branch on the **tree of life**. A **clade** is the only unit in the science of **cladistics**, which is increasingly being used to study the relationship among birds. The taxonomic **tree of life** is not necessarily the same as the **cladistic** tree of life as they are derived usually different methods. The traditional **family, genus**, etc are not necessarily **clades**, though they often will be.

Hyphens

When are hyphens used in bird names? They were commonly used. e.g. Black-Cockatoo, Cuckoo-dove, Fruit-Dove, Bronze-Cuckoo, Owlet-nightjar, Scrub-bird, Bee-eater, Plains-wanderer, Fairy-wren, Emu-wren, Grass-wren, Quail-thrush, Shrike-tit, Shrike-thrush, Cuckoo-shrike, Magpie-lark, White-eye, etc. Why was Scrub-bird hyphenated in the first place but not Wattlebird, Bristlebird, Bellbird, etc? I think because of the double 'b'.

Why is the second part of the name sometimes in capitals, and sometimes not? The general rule was a Black-Cockatoo is a cockatoo but a Cuckoo-shrike is not a shrike. And yes Emu-wrens are related to Fairy-wrens, not to the Wrens of the world. But there are exceptions. A Cuckoo-dove is a dove! So why not Cuckoo-Dove?

There is now a general trend towards removing the hyphen. So for the IOC list they are now Black Cockatoo, Cuckoo-dove, Fruit Dove, Bronze Cuckoo, Owlet-nightjar, Scrubbird, Bee-eater, Plains-wanderer, Fairywren, Emu-wren, Grasswren, Quail-thrush, Shriketit, Shrikethrush, Cuckooshrike, Magpie-lark, White-eye.

But some still have hyphens? One rule is that if it would double up a vowel, the hyphen should be retained. e.g. Bee-eater and White-eye. Why Cuckoo-dove and not Cuckoo Dove to match Fruit Dove or Cuckoodove? Why accept Shrikethrush but not Quailthrush? I am not certain why the other hyphens remain.

Personally, I would have been happy to delete the hyphen. So Cockatoo (the Black should be dropped as recommended in Christidis & Boles 2008 but not adopted), Cuckoodove (or Cuckoo Dove), Fruitdove (or Fruit Dove), Bronzecuckoo (or Bronze Cuckoo), Owletnightjar, Scrubbird, Beeeater (this does look unusual but I think you would get used to it), Plains Wanderer, Fairywren, Emuwren, Grasswren, Quailthrush, Shriketit, Shrikethrush, Cuckooshrike, Magpielark and Whiteeye.

Names of New Species

What are the rules for naming a new species? This usually occurs when a species is newly discovered or it is split from an existing species.

Western Whistler was recently split from Golden Whistler by the IOC. Why not Western Golden Whistler? Because the rule would then be that Golden Whistler should be changed to Common Golden Whistler or Australasian Golden Whistler. But there is Mangrove Golden Whistler? Yes. This is an anomaly. It probably should be Mangrove Whistler but this is a different species that occurs overseas.

So when Naretha Blue Bonnet was split recently by the IOC, an option was to use Naretha Parrot and leave Blue Bonnet unchanged, but the final decision was Naretha Bluebonnet (so it wasn't three parts) and Blue Bonnet was changed to Eastern Bluebonnet.

When Chestnut-breasted Quail-thrush was split by the IOC, the new species became Western Quail-thrush. Western (and Eastern) Chestnut-breasted Quail-thrush would have been too much of a mouthful.

How did Gilbert's Honeyeater get its name? A paper in 2011 showed that the White-naped Honeyeater in Western Australia was more closely related to the Black-headed Honeyeater of Tasmania, rather than the White-naped Honeyeater of eastern Australia. So Western White-naped Honeyeater (which was preferred by many people) was not an option, and they initially chose Swan River Honeyeater, a name used by John Gould in about 1860 after the Swan River Colony. But the bird no longer occurs along the Swan River, and so many people objected to the name and after discussion of many new alternatives it was decided to name it after the collector John Gilbert and hence Gilbert's Honeyeater.

There had been a reluctance to use people's names. Major Mitchell's Cockatoo was renamed Pink Cockatoo for a while before this was overturned. People outside Australia used Short-billed Black-Cockatoo or even Slender-billed Black-Cockatoo for a long time rather than Carnaby's Black-Cockatoo which is the common name in Western Australia where it is endemic. With the adoption of Gilbert's Honeyeater, this reluctance seems to have passed.