

## Understanding bird orders and families

The following is a complete re-write of a document that I first penned back in November 2015 whilst trying to understand why there were so many disparities between the primary taxonomy listings, particularly in relation to higher ranking taxons; notably bird orders and family placement within those orders. I was re-categorising my Lightroom keywords at the time as my growing bird list needed tidying up and, as part of the exercise, wanted to group similar species together in a structured system based on their taxonomic sequence. This seemed a logical and sensible approach, until I discovered that no two authority's information aligned. The more I looked into the subject, the more anomalies I found and the more confused I became.

For instance, when I started looking at waterbirds I found that a number of authorities had families Ardeidae (Herons & Egrets) and Threskiornithidae (Ibises & Spoonbills) in the order PELECANIFORMES, whereas the BOU (British Trust for Ornithology) was still using the old order CICONIIFORMES. Whilst I could ignore the BOU listing as the classification was dated, I'd read that PELECANIFORMES was going to be split. Family Ardeidae was going to be moved to a new order ARDEIFORMES, and Threskiornithidae to another order named PLATALEIFORMES. Under that proposed structure, PELECANIFORMES would include just three families; Pelecanidae (Pelicans), and the monotypic Scopidae (Hamerkop) and Balaenicipitidae (Shoebill). Phoenicopteridae (Flamingoes) had already been moved to their own monotypic order PHOENICOPTERIFORMES, albeit the BOU were also listing that family under CICONIIFORMES, which all other authorities were now using just for the original Ciconiidae (Storks) family.

The above example is just for the larger long-legged waterbirds. I found similar disparities with other categories, notably seabirds and raptors. No wonder I was confused and didn't know which authority's taxonomy list to use.

But, along the way, I had picked up on the phrase 'taxonomy in flux', which I initially took as a general term to describe the current situation with bird classification being somewhat fluid as a result of recent DNA analysis. However, following a later Google search, I found that "Taxonomy in Flux" (TiF) was actually part of a very respected and well-recognised website. I'll talk about the site and its associated checklist in a bit but, notwithstanding any potential issues with bird orders, I liked the layout and the fact that it listed every family and every species. So, whilst appreciating that it wasn't one of the formally recognised systems, I decided to adopt it as my primary source of reference for cataloguing and captioning my photos at species, genus and family level. I would then simply take a balanced view regarding the bird orders that I would use in my Lightroom hierarchal group keywording system which, quite frankly, I could and would adapt to suit my own requirements.

One of the good things I noticed during my 'research' was that in most cases family names were relatively consistent. There were different approaches below that ranking, with some lists splitting families down further into subfamilies and *tribes* but, in the main, family groups contained the same species from one list to another. All the big differences were centered around the higher rankings, particularly orders. This is what I just couldn't understand as a non-birder. I could look at the latest issue of the "World of Birds" (the Natural History Museum's definitive guide) and see all the world's bird species neatly listed under just 32 orders. I'd then look at the regularly updated information on *Wikipedia* and find an extended list of 39 orders. And, to confuse matters further, if I looked at the BTO/BOU list I'd see everything under just 28 conventional orders.

Perhaps if I'd known more about the subject at the time, I would have paid less attention to those particular resources for taxonomic information. I now have a better understanding and appreciate why

some of the recent findings and associated proposals regarding the relationship between bird orders and families take time to be adopted. This is obviously more evident in respect of published works such as "World of Birds", or even with the Howard and Moore checklists - Passerines (2014) and non-Passerines (2013), which are already out of date.

We then have the three primary on-line lists, which is where I should have started looking. Firstly, eBird/Clements and HBW/BirdLife, both of which are updated annually and, which out of interest, recognised 39 and 36 orders respectively when I compared them at the end of 2015. The other is the 'world bird list' maintained by the IOC, which is the most up-to-date of the four major published lists by far. This list is reviewed quarterly, and is the taxonomy that will now be adopted by the BOU, BirdGuides and Birdwatch. As such, it will now be the only formal list that I'll follow in conjunction with the previously referenced "Taxonomy in Flux" checklist. Interestingly, the IOC list currently includes more orders than any of the other lists I've mentioned and, therefore, is the closest to the TiF list.

My original write-up rambled on with lots of detailed information regarding how the different lists compared before reaching any form of conclusion. So, in this much-shortened document, I thought I'd finish with a few personal observations, and then include some additional information below regarding each of the authorities and/or checklists that I've specifically referred to.

## Personal observations :

The first point is, that it's simply not possible at the present time to accurately allocate bird families to orders that will be recognised by all authorities. Anyone that wants to follow a formal system for whatever reason will have to adopt one of the main lists and stick with it.

My next comment has to be in respect of the British version of a world bird list which, even from a layman's point of view, looks very dated when compared with the other lists. It was, therefore, of little surprise when I read that the BOU wanted to adopt a new taxonomy and were in the process of evaluating the various possibilities available to them. A subsequent announcement in January 2017 confirmed that the IOC list would be used from 2018.

We then have the very useful *Wikipedia* resource which, I suppose, has a very difficult task in this respect as they have to swing one way or the other. Personally, I shall continue referencing *Wikipedia* for articles on individual species particularly, as the articles are usually far more comprehensive than the summarised notes you find in most bird guide books. I will just be careful with any associated information regarding taxonomy.

Of the main on-line bird lists it seems to me that if you're from North America, or looking at data for that region, it's very likely you'll be using the Cornell's eBird/Clements list, as any updates for the area will reflect changes approved by the AOU (recently reformed as the American Ornithologists Society). The HBW/BirdLife checklist is aimed at being a more globally recognised document. It's also the approved European list and, consequently, will have a larger following than the Cornell list. The other important thing to note is that both of these, via eBird and HBW/Alive respectively, include additional on-line resources for recording species and managing personal bird lists. If you're subscribing to one of those services you'll obviously be using the associated checklist.

The IOC 'world bird list' plays a different role in that it aims to complement the other lists with a view to improving alignment of taxonomic data. There is an increasing collaboration between the IOC and eBird/Clements to this effect. It's also regarded as being the most current and forward-thinking of the primary authorities which, coupled with its policy of providing quarterly updates, puts it in top spot.

It should be remembered that the main differences between all these lists purely results from the current phase of taxonomic revision. There should be little doubt regarding correct scientific and common names of species, or indeed the family in which those species are placed but, the higher-level listing issues in terms of genus arrangement, taxonomic ranking, family and/or subfamily placement within those orders etc., needs to be resolved before we have a single unified global taxonomy. In the meantime, we have to accept that different authorities will operate different lists, and that any printed versions of those lists are likely to become outdated rather quickly. It's difficult enough to maintain a fully detailed and comprehensive list of 10,000 plus species on-line as, for example, BirdLife are trying to do, but if that data is also in a printed and published format then clearly it's neither viable or practicable to continually provide updated versions. In the digital age, on-line systems are important, but when you access information from the internet it needs to be current.

I suppose that final observation brings me back almost full cycle to the fluid and constantly updated "Taxonomy in Flux" (TiF) checklist and the reasons why I decided to adopt it for most of my naming and keywording requirements at species, genus and family level. And, in conjunction with the latest IOC 'world bird list', also for grouping related species at order level.

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## **Associated information :**

As an addendum to the above, here are a few notes that were relevant to my findings at the end of 2015. They provide some additional information that was current at the time.

### **"Taxonomy in Flux" (TiF)**

As the name suggests, "Taxonomy in Flux" is a regularly maintained on-line bird taxonomy checklist based on current genetic studies and latest research. Its American author, Professor John Boyd, is not governed by formal approval processes and, therefore, is in a position of being able to keep his taxonomy at least one step ahead of any of the primary bird lists. His personally maintained checklist separates a number of unique species and certain families where recent scientific data shows that they should be split from existing conventional orders. It also re-evaluates and splits groups of 'similar' species, such as the long-legged waterbirds and diurnal 'birds of prey'. The result is an extended system of 46 orders containing 110 non-passerine and 138 passerine families.

### **IOC (International Ornithological Congress)**

The original IOC commissioned 'Birds of the World' book (Gill and Wright 2006) is out-dated in terms of classification and, as such, is now supplemented by the IOC website listing. The first version of the list mostly followed the classification and sequence of families in the Howard and Moore checklist that was current at the time and, therefore, the IOC still make reference to the latest version of these works. They also confirm that their web-based list, which is updated quarterly, complements the other two primary world bird lists, being eBird/Clements and HBW/Birdlife. Their mission is to improve alignment between the various lists with a view to having a single globally recognised taxonomy. They fully acknowledge changes currently being made to classification, corrections of nomenclature and other related updates of species taxonomy in light of recent DNA analysis. And, in this respect, make specific reference to John Boyd's "Taxonomy in Flux" website as an excellent resource of information. Their current policy is *"to change higher level classification and sequences of taxa conservatively"*, confirming that *"stability is important and, being creatures of habit, we all find taxon or species more easily in a familiar sequence, even if dated"*. Notwithstanding that final comment, it was interesting to

note that their 2015 v5.4 'world bird list' included 40 orders and 239 families, which was closer to the TiF list than any of the other checklists.

### **The Cornell Lab of Ornithology - eBird/Clements**

Shortly after writing the original version of this document, I found that a number of photos on my Flickr photostream had had additional scientific name tags added by an automated system linked to a particular specialist bird group that I belong to. Notwithstanding why or how this was done, it was one hell of a coincidence, as it happened on the very day that I was finalising the new structure of my Lightroom keywords. Whilst most of the new tags tallied with changes that I had already identified, a few didn't. I contacted the group and found that the system they were using was the Cornell Lab of Ornithology's v2015 update of the Clements 'Checklist of Birds of the World', 6th edition. It was the tenth instalment of updates and corrections of the 2007 publication. Given that this update was as current as anything else I'd looked at, it made sense to do a quick comparison with the other lists. Without going into too much detail, I found it to be very similar to the information I'd sourced from *Wikipedia's* 'list of birds'. It was showing 39 orders, most as *Wikipedia*, albeit not in the same taxonomical sequence. Interestingly, where *Wikipedia* differed, their listing was more in line with the TiF system. At that time, I noted they were listing 126 families within the order PASSERIFORMES, compared to 138 on the TiF list.

### **HBW/BirdLife**

BirdLife International has been operating its own taxonomic checklist for a number of years. Duly acknowledging the urgent need to resolve the taxonomic rank of many taxa, BirdLife treat their list as an ongoing 'work in progress', which they usually update on an annual basis. BirdLife's priorities are more to do with conservation issues, such as identifying globally threatened species, important bird and biodiversity areas (IBA's) and endemic bird areas (EBA's). When I looked at v8 of the list in October 2015, just after it was made public, I noticed a number of anomalies compared with the previous three taxonomy listings. There are too many differences to explain in detail, but the two that jumped out at me were 1) they place Ostriches, Rheas, Tinamous, Cassowaries, Emus and Kiwis all together in an extended STRUTHIONIFORMES order, thereby completely ignoring RHEIFORMES (Rheas), TINAMIFORMES (Tinamous), CASUARIIFORMES (Cassowaries and Emu) and APTERYGIFORMES (Kiwis), which all the other authorities recognise, and 2) surprisingly, particularly following that previous observation, they've adopted the new order CATHARTIFORMES for New World Vultures as the TiF list, whereas the other authorities do not. In total they listed 36 orders including 104 non-passerine families. I did not look at the passerine families, but understand they were listing 137 at the time, very similar to the TiF system.

### **BTO (British Trust for Ornithology)**

The BTO's 'Bird Families of the World' taxonomic listings are derived from the BOU (British Ornithological Union) list. There are actually two published lists - the first being classed as a traditional list based on morphological characteristics, and a more current list reflecting the official position of the BTO where they have adopted some, but certainly not all, of the changes proposed by recent studies. I referred to the latter when I analysed the different lists in November 2015. Both versions include just 28 orders, which the BTO state are "all the bird orders found in the world". This becomes difficult to understand because, even if we put the extended TiF system to one side for a moment, the other three authorities - IOC, eBird/Clements and HBW/BirdLife, include 40, 39 and 36 orders respectively. I trust it's fair to say that the system is dated - the information remains the same at July 2017 and, I guess, will remain so until the IOC list is adopted in January 2018. The only other point worth noting is that, like the IOC, the BTO also make specific reference to John Boyd's "Taxonomy in Flux" website as a useful source of detailed taxonomic information, which is rather surprising given how far apart the two systems are in terms of classification.

## Update :

From 2015 to late 2017 I used the TiF checklist to name species. It gave me a standard. However, I would also check new species on *Wikipedia*, particularly if the TiF list was at variance to any of my bird guide books. *Wikipedia* confirms alternative common names and usually makes reference to any changes with the taxonomy. I would also use the TiF system for cataloguing and additional keyword purposes at family and, if appropriate, subfamily level. TiF doesn't list subspecies, so again I would rely on *Wikipedia*. Common alternative names together with changes and/or anomalies with the species' scientific name would be shown as Lightroom keyword synonyms. I wasn't, and am still not, keywording or organising species in Lightroom by taxonomic order because of the inconsistencies, but I do list families by order on my 'World Bird List'. In so doing I had to work to a standard and have consistency so, not surprisingly, I used the TiF system.

If there had been a current and credible British taxonomy checklist I would obviously have used it, but there wasn't so I had to make a decision whether to use the TiF system, IOC or HBW/BirdLife. I'd discounted eBird/Clements as it was too American. I used the TiF system for the reasons I've previously explained. When the BOU announced that it was looking to adopt another system I knew that I was going to have to work with it. Fortunately they opted for IOC which, as I previously noted, is closest to the TiF system.

So, at the time of writing this update (July 17), I'm starting to look at the IOC list in more detail ready to make the switch. I know that some of the scientific names I've used from the TiF system will have to be changed, but how do the two lists currently compare in terms of orders and families, as that will be the starting point for re-organising both my Lightroom cataloguing and keywording system, and for updating my 'World Bird List'.

### **TiF 3.08** (May 17) v **IOC 7.2** (April 17)

I've already noted that the current TiF checklist runs to 46 orders and 110 non-passerine families, whereas the IOC list has 40 orders and 109 non-passerine families. The TiF system separates certain species and families where recent studies show that they should be moved out of their traditional orders. Whilst the sequencing of the orders in the two lists are quite different it's interesting to note that, apart from the six new orders in the extended TiF system, the only variance with families is the TiF inclusion of Pluvialidae (Golden Plovers). All of the new TiF orders are monotypic in that they only include a single family. Obviously I can't second guess whether IOC will adopt any of these orders, but for the record they are :-

PLATALEIFORMES for Threskiornithidae (Ibises & Spoonbills), split from PELECANIFORMES.  
ARDEIFORMES for Ardeidae (Hérons & Egrets), split from PELECANIFORMES

CATHARTIFORMES for Cathartidae (New World Vultures), split from ACCIPITRIFORMES

Whilst I will use and/or reference the above, I have no personal interest in the final three, which split down CAPRIMULGIFORMES, moving Steatornithidae (Oilbird), Nyctibiidae (Potoos) and Podargidae (Frogmouths) into their own orders STEATORNIFORMES, NYCTIBIIFORMES and PODARGIFORMES.

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