

## THE FOSSIL BIRDS OF THE A. O. U. CHECK-LIST

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Though written or pictured information regarding the living birds of America begins with the designs made by the Maya and other ancient peoples, and continues with Columbus' account of the nightingale of Haiti which sang by day and by night (unquestionably the mockingbird) and with other casual mention of birds in the accounts of the earlier voyagers, our knowledge of the bird life of the New World extends back into a far more remote antiquity, since we have in the geological strata records in the form of fossilized bones of birds that lived in the remote period of the Cretaceous, 60,000,000 or more years ago, when giant reptilian forms were the dominant types of life upon the earth, and when mammals were in their infancy. The official check-list of the American Ornithologists' Union in its three editions thus far published has listed these fossil species as an appendix, and it is planned to continue this practise in the fourth edition now going to press. The revised fossil list has been brought down to date, and to make it complete in addition to extinct species will include those living forms whose remains have been found in a fossil state.

At the Ottawa meeting of the Union in 1926, I made a preliminary statement regarding this fossil list, and my present remarks, now that the manuscript is complete, are in continuation of what was then said. To review briefly, the first edition of the A. O. U. Check-list in 1886 included 46 fossil species of birds, the second edition in 1895 listed 64 fossil forms, and the third in 1910 gave 72 in this category. The list at the moment of writing this covers 146 extinct forms with the addition of 102 species still living, a total of 248 forms now known from the fossil beds of North America within the Check-list limits. In addition, 10 species of fossils have been described whose status is uncertain, so that the total reaches to 258. There are obviously numerous additions still to be made; in fact it is anticipated that the list will be increased beyond the numbers here given before the volume in which it will appear is finally published.

The 258 forms now included in the fossil list are distributed among 20 orders (see table 1), three of these, the Hesperornithiformes, Ichthyornithiformes and Diatrymiformes being extinct groups, and the remaining seventeen having modern representatives. Of the orders of birds at present found in North America there are only four, the Caprimulgiformes or goatsuckers, the Micropodiiformes or swifts and hummingbirds, the Trogoniformes or trogons, and the Coraciiformes or kingfisherlike birds, of which at present no fossils are known within our limits. This indicates in part a remarkable stability in type in our ornithology, when the vast period of time concerned is considered, though it must be borne always in mind that the fossil record is incomplete and that unexpected species of peculiar form may come to hand at any time.

Hawklike birds are the most abundant among the fossils of our list in point of species, numbering 45 in all, of which 29 are extinct and 16 still living. Ducklike forms, with 39 known species, stand next, but here the proportion of extinct and living birds is reversed, there being only 11 of the former but 28 of the latter. Shorebirds, gulls and auks number 30, with 19 extinct and 11 living, and gallinaceous birds 25, of which 16 are extinct and 9 still living. The cranes and rails include 19 species, the pelicans, boobies and cormorants 15 species, and the owls 13 forms. Other orders are represented in less abundance. The list of perching birds, with only four fossils and seven living forms, is very small and will be considerably

extended since bones of passeriform birds to the present have been laid aside in the main without determination because of difficulties attendant on their identification.

TABLE I. THE NUMBER OF NORTH AMERICAN FOSSIL BIRDS KNOWN, BY ORDERS

	Total number known	Extinct	Living
Hesperornithiformes .....	6	6	0
Ichthyornithiformes .....	8	8	0
Gaviiformes .....	1	1	0
Colymbiformes .....	9	4	5
Procellariiformes .....	4	2	2
Pelecaniformes .....	15	13	2
Ciconiiformes .....	11	7	4
Anseriformes .....	39	11	28
Falconiformes .....	45	29	16
Galliformes .....	25	16	9
Gruiformes .....	19	15	4
Diatrymiformes .....	5	5	0
Charadriiformes .....	30	19	11
Columbiformes .....	3	1	2
Psittaciformes .....	1	1	0
Cuculiformes .....	1	0	1
Strigiformes .....	13	4	9
Piciformes .....	2	0	2
Passeriformes .....	11	4	7
Total .....		146	102
<i>Incertae sedis</i> .....	10	10	
Total .....	258	156	

The list is richest in forms of large size, as these have heavier, stronger bones which are more liable to preservation than those of smaller species which have more fragile skeletons; and also because of their size the larger forms are more readily found in the course of excavations. Water-loving species, and birds like hawks and owls that roost and nest on cliffs, are most abundant, since in such habitats there is greater opportunity for skeletons to be buried, preserved, and made fossil.

At the end of the list comes that sad category "*Incertae sedis*" containing those species that have been described by hasty or enthusiastic individuals without distinct idea as to their group relationships. These can only be arranged alphabetically and are in their present condition meaningless. Some of them may not be birds. They include such names as *Eopteryx mississippiensis* based on a broken bit of a vertebra from Eocene deposits near Jackson, Mississippi; *Laopteryx priscus* from the Jurassic beds of Como Bluff in southern Wyoming, at one time bravely put in the same family as the famous *Archaeopteryx* of the Solenhofen slates of Bavaria, but now considered to be very doubtfully a bird; *Laornis edwardsianus*, possibly a goose; and *Uintornis lucaris* at one time believed to be a woodpecker but now of doubtful status. There is also with them *Fontinalis pristina* described many years ago from the Florissant beds of Colorado as a fossil moss, the type specimen on later examination proving to be a bit of fossilized feather. All repose in a scrap basket where most of them will remain without hope of definite identification.

Such in hasty review is the present check-list of our fossil avifauna, the total representing merely a hint of the abundant life of the past in North America where, at the close of the Tertiary, climatic conditions were such that the great diversity at present found only within the tropics in all probability extended far to the north within our limits. Our knowledge of these matters increases annually, and succeeding

decades should enable us to sketch in more and more fully the outline of the wonderful and interesting bird-life of the past, a mosaic picture made from fragmentary bits of bones from birds long dead that with proper understanding becomes as vivid and living a reality as any of our ornithological experiences of today.

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