

SOME INFERENCES FROM THE NEW CHECK-LIST¹

BY JOSEPH GRINNELL.

It was Bradford Torrey who declared in the course of a most entertaining essay, "there's a world of good reading in a Check-List." That was upward of twenty years ago and Torrey's gently humorous as well as informative remarks were based upon the Third Edition of the 'American Ornithologists' Union Check-List of North American Birds,' then newly appeared. Now there has just been made available to the bird-conscious public the completely revised Fourth Edition, which is the result of several years' labor on the part of Dr. Witmer Stone aided by the other members of our Union's Committee on Classification and Nomenclature. More than any preceding edition does this present one provide fascinating reading for the bird student. I, for one, have already spent hours simply browsing through it—finally with an objective gradually crystallizing, of enquiring as to what implications it might yield as to the future developments in certain phases of North American ornithology.

Without, then, trying to enlarge upon any of the topics that were suggested by the 'Check-List' to Bradford Torrey and which he dealt with in so charming literary fashion, I venture to offer an analysis in rather serious vein. What can we infer from the present and preceding editions of the Check-List as to future trends?

My enquiry has to do with the numbers of forms (species and subspecies) listed in the first four editions, and then with the numbers likely to be reached in future editions, jumping to the hypothetical tenth edition, which for round figures' sake we will say is to appear in the year 2000, 69 years hence. Without inflicting upon my readers the objective details of a graph, I will admit that I resorted to a sheet of coördinate paper. On this I plotted, one way, the numbers of forms from edition to edition, and the other way, the lapse of years. Some of the figures thus ascertained are as follows.

The total number of forms (species and subspecies) in the first,

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1886, edition was 951, in the second, 1895 edition, was 1068, in the third, 1910 edition, was 1196, and in the present, fourth edition, of 1931, it is 1420. The corresponding figures for full species alone, are 768, 799, 802 and 811—a notably slow rate of increase through the total of 45 years. But look at the subspecies—183, 269, 394, 609! For fossil species, the figures are 46, 64, 72 and 156, the latter excluding ten named forms of “*sedis incertae*” and also many modern forms listed as from Pleistocene.

Now despite the irregular intervals between the publication dates of the four editions (namely, 9 years between first and second, 15 years between second and third, 21 years between third and fourth), we find that the curves joining the four coördinate points in each respect approximate surprisingly closely to straight lines. Reducing these curves on my graph to actual straight lines, and projecting these to the axis of the year 2000, gives us the following figures: total of forms (species and subspecies) 2050; full species 890; subspecies 1160; fossil forms 290. Note that in the modern list of 69 years hence subspecies will preponderate over species!

At this point I must refer to the element of error in the figures here given. Counting of names is subject to error, maybe of several units. The determination of forms as between species and subspecies is a matter of some uncertainty, even taking the names exactly as we find them in each of the four editions. And admittedly I have handled the mathematics in the case grossly. For example, one of the curves, that for full species, shows marked tendency to flatten out; that is, there is prospect of the number of species in course of time becoming constant.

But even with all these errors ironed out, are we we justified in relying upon cold mathematics for prophesying future trends on the basis of tendencies during the 45 years past? What are the factors which have operated to determine the make-up of the fourth edition as we find it constituted, and will these same factors remain in operation indefinitely and, especially, will they operate at the same rate as they appear to have operated heretofore?

First as regards fossil species: Considering the fragility of birds' bones, and the relative rarity of the occurrence of the combination of conditions favorable to their entombment, are we likely to discover any more such productive deposits as the Pleistocene asphalt?

Will there be any great acceleration in geological exploration in North America over the relatively great activity of the past 20 years? Or, on the other hand, will periods of economic depression cause a slump in costly excavation, such as we have witnessed in a certain direction already this present year? Is there likely to be as great return in number of new species from the close study of the small passerine bones as from the large and heavy bones of accipitriids, meleagrids and the like, that have already received attention? And what about the number and relative acumen of future students in avian paleontology: will they be more numerous and more alert than heretofore or will the attractions in this field wane in the face of the ascending allurements for bright minds of bio-physics, bio-chemistry and cosmic mathematics? These questions are more or less baffling of answer. Will the arithmetic prophesy of 290 fossil birds for the tenth Check-List, of the year 2000, be exactly realized upon, or will the number be decidedly fewer, or far more?

Then with regard to full species: It *does* look as though very close to finality had been reached through discovery of living endemic kinds. I think of just one of this category in the last 15 years—the Cape Sable Seaside Sparrow. But as to further additions to the category of naturally occurring strays or casuals from extralimital territory, perusal of the fourth edition shows no prospect of any final ending short of most if not all the species of northeastern Asia via Bering Sea island records, of northwestern Europe via Greenland records, and of Mexico via records from Lower California and the southern tier of our southwestern States. Will exploration and collecting on our frontiers become more or less intensive? Will there not be more, and more sharp-eyed, resident observers? *Quien sabe!*

According to the criterion still held to in the fourth edition, even one occurrence through natural means, of normally non-native species warrants inclusion in the regular list. The question may be raised, will this criterion persist through future editions? Or will it be decided to include only established species, those that are represented by a population regularly present one time of the year or another if not permanently resident? Here is a factor involving human opinion; and of all things, the human point of view is possibly most vacillating!

Another feature of our full-species list, one newly appearing in the fourth edition, is the inclusion of non-native introductions, when thoroughly established as to breeding independently of human care. Thus ten such species newly appear in regular status in the 1931 Check-List—breeders planted by man from the Old World. What will be the limit, if any, reached as a result of the present State Fish and Game furor to bring in and plant foreign game species? What will be the results of the activities of the wealthy and politically influential "More Game Birds in America, Incorporated"? Will our tenth edition contain the Bamboo Partridge, the Chukar Partridge, the Lady Amherst Pheasant, and Tinamous of three species, kinds all ready for liberation from the State Game Farm in California?

On the other hand, may there not develop a healthier ideal, of America for native American game, with concurrent establishment of embargos against all alien species, so that additions to our Check-List from introductions will cease altogether? Who can now say as to the future course of any feature of human behavior?

Another angle as to full species: If it should happen that a future Committee on Nomenclature and Check-List decide not to enter in the main list species of merely casual occurrence (natural stragglers) as well as species liberated but not yet established, then consistency would seem to demand that native species now extinct like the Great Auk and Labrador Duck be expunged from the list—to be put in a separate list, or possibly put into the fossil list! Thus, again, changing opinion may serve to perturb mathematical prediction.

And finally we come to consider subspecies—609 of this category in the fourth edition, and a theoretical prospect of 1160 in the year 2000, when there will be many more subspecies than full species if the present rate of their increase continue and if the present criteria for subspecific recognition hold. Will further exploration and collecting bring to light additional subspecies, as fast as those pursuits have in the past 45 years? I think not, after looking over the map of North America in the light of faunal surveys already reported upon. But another, compensating factor may come in conspicuously (indeed it has already shown its progressive trend). I refer to the practice known vulgarly as splitting, with more defer-

ence, as refinement in standards of subspecific naming. To what now almost inconceivable extent may this tendency go? May there not be in the tenth Check-List, of the year 2000, double 1160—for example, 52 named races of Song Sparrows where there are only 26 in our present, fourth edition! Seriously, I can conceive of just such an eventuality. Vigorous interest in the processes of phylogeny, of species making, is bound to grow; and the species-factory in nature is the only resort in final analysis, to my mind, for learning the true nature of the speciation process. More, and more alert, students in the field of systematics will develop a facility and technique of discrimination scarcely to be dreamed of now. Our arithmetically based prophesy may be far and away too low!

On the contrary, again, we must take account of unstable human judgement. A wave, possibly a permanent wave, of conservatism may strongly set in, away from at least nomenclatural recognition of small-species, of sub-species—so that wholesale “lumping” will result and the total number of forms recognized by name will be much less than the number on the basis of my graph expectable.

Can we, then, say with confidence what the future will show as to the constitution even, say, of the fifth edition of the ‘A. O. U. Check-List,’ only ten years or so hence. Hardly; but won’t the observing bird student find intense interest in watching developments and especially in contributing to their unfolding! And also, right now, “there’s a world of good reading in the Check-List.”

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