

constructing a new nest at quite some distance from the old towhee's nest and the towhee was still brooding the chat eggs. It was our intention to return to Snelling a fortnight later to ascertain whether or not the towhee was successful in her maternal duties; unfortunately we were not privileged to make the trip.

At about 6 o'clock on the morning of August 15, 1934, while making the rounds of traps located on the grounds of my home at Manor, Marin County, California, I heard the characteristic click of one side of a catapult trap and, glancing over at it (a distance of some twenty feet), I thought we had obtained, for banding, our first thrush of the season. From the distance I judged it to be a Russet-backed Thrush, so completed the task I was then engaged in, that of releasing and banding two Lutescent Orange-crowned Warblers (*Vermivora celata lutescens*) from a near-by water trap. I then walked over to the catapult and was greatly and agreeably surprised to discover that the "thrush" was in reality a Long-tailed Chat, an immature of the year.

This, so far as we can learn, is the first fall record for Marin County, of this species. It has been listed as only occurring in the county as a "rare spring visitant" and this would appear to be quite correct inasmuch as an intensive three-year search, made up of many field trips during the spring months, has failed to locate it, nor have we ever heard one note of its characteristic song in that time.

The probable explanation of our capture of this particular specimen lies first in the fact that it is an immature and evidently had strayed from the species' usual channels of migration. And second, that it was undoubtedly attracted to the trap by the living specimens brought back from Snelling which are held in an aviary situated approximately twenty-five feet from the catapult. The latter was baited with weed seeds, an unusual bait to attract an insectivorous species, except through curiosity. No other chats have been either sighted or heard in the vicinity although a careful watch has been kept for them during the last few days.

Unlike the individuals trapped at Snelling during the breeding season, this particular one evidenced very little fear when handled and is as tractable and steady in confinement, as are now the Snelling examples which have all "cage molted" into fearless, and beautifully plumaged birds.

Manor, California, August 20, 1934.

PERPLEXITIES IN THE MAKING OF A STATE LIST OF BIRDS

By JOSEPH GRINNELL

For quite some time I have made it a pleasurable duty to keep chronicle of the published literature bearing in any way upon the bird-life of California. This activity of mine has resulted in a manuscript bibliography and synonymy which have kept growing ever more rapidly since their beginnings in 1899. They are right now brought down to date, that is, about as nearly down to date as a thing of this sort can be brought—in the nature of the case.

These materials, constituting a kind of bookkeeping system, make it possible at any one time to count up the number of species credited to the state and to examine the status of each in the light of accumulated knowledge. I propose presently to give some of the current figures. But first, there are difficulties that I want to tell about. Just how shall a state or regional list be made up? In undertaking to compile a new, down-to-date distributional list of the birds of California, I am confronted first of all with the problem of just where to fix limits for the inclusion of kinds.

A classification of the groups to be considered in this connection will make the nature of this problem clear. We have, to deal with:

(1) Kinds (that is, species and subspecies) which are known to occur now, naturally and regularly, somewhere within the limits of the State as at the present time politically bounded. [For example, the Western Meadowlark.]

(2) Kinds now extinct within the State but which are definitely known to have occurred naturally and regularly within historical times, exclusively fossil species being thus eliminated. [As an example here, is the Columbian Sharp-tailed Grouse.]

(3) Kinds which are known *only* from their *fossil* remains—that is, no individuals of which have lived down into Recent or even into humanly historical times. [For example, the stork of Rancho La Brea.]

(4) Kinds which have occurred naturally and recently but once or twice or three times, so recorded on perfectly valid basis, but which are not regular or not established—those that are often designated as accidentals, casuals or strays. [The Louisiana Water-thrush is an example.]

(5) Kinds that are now established at large, therefore of “regular” occurrence in some portion of the State, but which are not native or of “natural” occurrence, because the original stock was brought in and planted through the agency of man. [For example, the Ring-necked Pheasant.]

(6) Kinds that are non-native and yet not domesticated, those which owe their presence to the agency of man, but which have not become established, only individuals now and then being recorded as at large. Some of these are “escapes,” others the result of purposeful liberation; but all have proven their ability, individually, to survive for a time outside of captivity. [For instance, the European Blackbird.]

(7) Kinds which occur only under domestication—ones which, though not necessarily kept under enclosure, are dependent upon man’s culture of them; individuals, however, may stray away from man’s own immediate precincts and may even breed to a limited extent outside of man’s close supervision. [For example, Guinea-hen.]

(8) Kinds that are known to occur in captivity, usually under the closest sort of human care, but not strictly speaking in a state of domestication; those of which individuals have not, at least as yet, been known to survive at large. [For example, the Whydah-bird.]

Just how, then, shall our State list be made up? Most conservatively, of group (1) alone? Or of groups (1) and (2) only? If so, why not include (3)? If (2) be included with (1), then why not add (5)? Shall (4) be included? If so, then why not (6)? And (7), and then (8)?

Frankly, at the moment of this writing, I am quite undecided just where most properly to draw the line. This uncertainty does not, be it observed, bring in any question of systematics (namely, the subspecies question) or of geography (such as limit on the ocean). The points at issue have to do with the time factor (birds actually existing versus extinct and fossil ones); with the status factor (birds established, regular or breeding, versus casual or accidental ones); and with the human factor (birds introduced, domesticated, captive, escaped). Shall we have a “boiled down” State list, for California, of 400-odd kinds, or a more inclusive list of 600-odd, or an all-inclusive list of upwards of 1000 species and subspecies?

From the strictly biological standpoint it seems perfectly immaterial just how an initial stock of a given bird species gets into a country—whether by its own efforts, whether carried on the air currents of a cyclonic storm, as so well demonstrated by Forbush for the Atlantic coast of North America, or whether brought

across an ocean, caged, by some Chinese sailor. What of the English Sparrow, which is thought to have reached California by "hitch-hiking" along the Union Pacific Railroad from an eastern state into which it had originally been introduced from Europe by some well-intentioned person? Man, *himself*, with all his predilections, is just as "natural" a phenomenon on the Earth as any of the other animals. Why should *his* agency, either incidental or purposeful, in carrying animals about over the Earth's surface be considered exceptional, unnatural, artificial? Therefore, why side-step the results?

No matter how the English Sparrow, or the Ring-necked Pheasant, got to California, it is here; it has established itself, and this inevitably affects the fortunes of a long chain of other living things, including plants both native and cultivated, insects, mammals, and other birds. From this highly important, ecological point of view the presence of every bird, as also the history of its arrival, needs to be recorded along with those of the so-called endemic species. It can be argued here that listing, *separately*, of "introductions" may thwart the ready understanding of what is happening or likely to happen as a result of such transplanting. The listing of introductorial and vagrant occurrences *along with* the endemics, in their proper systematic positions, would make more clear the directions of inter-specific competition that may be set up with native species—the replacement processes that, under way for a period, may lead to the supplanting of some native kind by an alien kind. The latter, from this biological standpoint, cannot safely be ignored; and its presence from the outset, it would seem, should be made known, and kept before the ornithological and ecological public. It is, in this view, quite as important a component of the state list as any other bird.

As to the student of faunistics, can he afford to ignore the existence of *any* species, by whatever means established, within the area he outlines for his study? The complex picture before him must be analyzed in every detail, leaving out no one species or group of species. Very often the general faunist, also the economic zoologist, must depend entirely upon the work of the compilers of authentic lists for his knowledge of what is, and what is not, present in a given territory. It might prove seriously misleading to such a faunist, or economist, if any set of species were omitted, even if this be listed *only* apart, in an appendix.

Then there is the fossil group of kinds, that some bird students would like to be relieved of even *seeing* anywhere in a regional list! The species in this group are, they say, dead and gone, their ancient existence in the region is outside of any considerations with respect to the living fauna. Of course, it can instantly be rejoined that *historically* present, but now extinct, species should on just as good grounds be forgotten. Why include the Sharp-tailed Grouse, once plentiful in the Modoc region but now gone, in the California list (which most compilers would unhesitatingly do), any more than *Teratornis* of the Pleistocene?

The emphatic reply is to be heard, from that group of students who instinctively want to know how things as they are right now came to be, that every known kind of extinct bird that has existed in a given region should be included in an easily accessible chronicle of its avifauna. The argument is respectable, that only through knowledge of all the extinct species, the ancient kinds preserved to us only in fossil form, as well as those from cave deposits and kitchen-middens, and thence down to the kinds but very recently exterminated, can we come anywhere near satisfactorily explaining the associations of species living in the region today.

On the other hand, again, the great numbers of fossil species already come to knowledge from California, imposes a practical difficulty, in that the length of a

state list which includes them thereby reaches great bulk—increase of cost; and not only that, but it may mean to the lay student, who is in greatest number, the obscuring of the things appealing most to him, and thus inconvenience. This question is, therefore, one that is especially difficult of practical answer.

The average aviculturist, I have observed, concerns himself rather concentratedly with his captive birds. His is often a very personal concern for the individual bird, rather than interest in the fortunes of its species; yet now and then one meets a man in this group of people who has, additionally, the introductionist point of view. Indeed, I have known of certain cases wherein a man of this trend turned out onto his estate numbers of foreign kinds, with the expressed idea that they would breed at large and stay around permanently. One or a few of these species, of course, might prove able to do just that. In any event, the inclusion of caged birds in a state list might quite well be justified on the ground that so doing would provide a feature of interest to the aviculturist (of whom there are astonishingly many in California) and thus extend the "circulation" of the list; and not only that but, more to the point in my discussion, there would be provided to the faunal student a record of all the species likely at any time to make their appearance in the wild. We have, undoubtedly from this source, already in California, records of wild-taken Chaffinches, European Blackbirds, Mynahs, etc.

An argument against including the cage-bird group of species is mostly based on tradition—"it hasn't been done"—not so very sound an argument to be sure. But another argument is the practical one that it would quite surely nearly double the bulk of our state list. And the question of cost again enters.

The conservationist may have a special, and well-grounded, view to express on this question. The inclusion in regular standing in a state list, of all species known from importation and bird-store records might encourage liberation of alien species. That is, it might well lead to a more general tolerance and advocacy of bringing in and planting foreign species, game as well as non-game. Thus, I have heard the remark that our California fauna (probably referring only to some limited portion of the state) is *poor*; we ought to bring in more species, "desirable" ones, it is said,—song birds, birds of beauty, game species which are bigger and finer than any of our native kinds.

To the average conservationist, proposals of this sort do not appeal. Many economic ecologists, too, urge that such increments are exceedingly undesirable; all the ecologic niches (biotopes) in the region are already occupied; there is no room for additions, save by the supplanting of native species—which is not desirable on esthetic grounds and might prove dangerous economically. To the class of persons convinced that the preservation of the native fauna is the policy most consistent with widest long-time human interests, the inclusion of the already established alien species in the state list is interpretable as having an advertising effect. Whatever the other arguments held against it, this one, of probably exalting the seeming importance of the introduced species, would, it is feared, make for extension of the practice of introduction—would speed it up instead of soft-pedaling it, as by omitting all reference to non-native kinds.

The inclusion of accidentals, otherwise known as casuals or strays, those birds that are supposed to have gotten into a given region by natural means (that is, with no help from man), has much to be said on the favorable side, but something also on the opposite side. This I have called the status factor.

The records of so-called accidentals are increasing in number right along—even accelerating in rate of increase, doubtless because there are more, and more

alert, observers and collectors on the look-out for the unusual. As shown by a study I have reported upon elsewhere, if each of these new accidental occurrences be entered upon our California state list, at the present rate (1 and 3/5 per year in a 35-year period), in 300 years there would be more of these accidentals on it than species of regular status. Also, since there is no bird on the entire North American list, of some 1400 species and subspecies, that is not just as likely to appear in California sooner or later as some of those which *have* occurred, then in 490 years at this same rate, if the present intensity of search be continued, all the 1400 birds on the North American Check-list will also be on the California state list. And what good purpose would the inclusion of all this preponderant group of accidentals then serve?

One result of such inclusion currently is to stimulate the intensive search, by collectors and observers, for additions to the list—new records. In a degree this is, perhaps, a good thing, when not made a prime object of ornithological effort. It can be condoned, at least, on the ground that the general trend is for additional occurrences of the same species to be discovered, so that eventually some of the originally "accidental" kinds become recognizable as of regular, say transient, appearance, even though more or less rare.

But an objection is that the search for rarities, with resulting recording of them conspicuously in formal standing in a standard list tends to over-emphasize their importance; tends also to obscure the more fundamentally important regular avifaunal constituency.

Yet another angle that should not be overlooked is the essentially human one, of custom and tradition. Should the compiler of a state list heed the concepts of limitation already developed in publications of the sort, and help stabilize them? Or should he bowl over precedent and attempt to introduce new bases of selecting kinds to be included? Innovations sometimes make for real progress; adherence to tradition invites stagnation.

It might be in order further to ask as to the purpose of a state list: is it to inform *all* classes of people interested in birds—working naturalists, biologists, faunal students, sportsmen, esthetes, aviculturists; or is to be restricted to the needs and interests of just one of these classes? Should the primary aim be to satisfy the wants of the largest group of readers with least confusion, or to provide something not possibly at the outset wanted by some, but which will stimulate such persons to new routes of thinking? Many considerations stack up, on reflection, some pointing one way, some the other.

There are other perplexing matters which confront the prospective compiler of a regional list; for example, how to indicate extent of geographical range, and how to treat peripheral records and change of status in historical time; methods and extent of citation; separate listing of certain groups in appendixes, etc. But these things cannot take time for discussion here.

Now for some figures, as based on my present reckoning, and upon a certain restricted inclusion of the groups I have discussed: The number of species and subspecies which have occurred within historical times, naturally (not through human agency), one or more times, and of which at least one authentic specimen is known to be preserved (therefore subject to re-examination), is 608. In a "hypothetical" list, which I have compiled separately from this "regular" list of 608, there are 107 additional entries, involving sight records, species of occurrence doubtfully within our present geographical limits, doubtful identifications, and non-native, but established, species. There are, described to date, 38 exclusively fossil birds.

Museum of Vertebrate Zoology, Berkeley, California, June 13, 1934.