

**TAXONOMY FOR THE LAYMAN:**  
**A Guide to Lumping and Splitting with Suggestions for Listers**

By H. Douglas Pratt

No real earthquake could ever rock the birding fraternity as did the thirty-second supplement to the American Ornithologists' Union's Check-list of North American birds (1973). The indignant and often abusive outcry from birders continues even now and has not abated even in the face of ABA President Stuart Keith's well-reasoned paper (1972) dealing with the relationship between birding and ornithology. Recent writers of letters to the editor of *BIRDING* have either not read that paper or have missed its point entirely. They continue to argue that they know birds as well as those who have conducted years of carefully controlled research with live birds in the field. Like Keith, I am both a birder and an ornithologist, but only recently have I realized that the two are different. To some extent, all field ornithologists are birders. Though not all are listers, bird listing almost certainly is one of the most popular hobbies among the professionals. The rift that has recently developed between these scientists and some birders is a very sad and needless development resulting from poor communication. Technical literature can be rather tedious reading even for those with zoological backgrounds. The average birder cannot be expected to wade through it. On the other hand, many apologists for the scientists, in an attempt to explain why bird taxonomists do what they do, oversimplify and mislead so much that the amateur's outrage is only increased. Such is particularly true with regard to generalizations about hybridization and its significance (Keith, 1972; Arbib, 1973). The purpose of this article is to clarify some of these misunderstandings. I will try to explain, in nontechnical language, the reasons why populations are "lumped" or "split" and I will attempt to show how these criteria were applied in the recent changes. In addition, I will review some unsettled taxonomic problems to give some idea of the changes that may occur in the future. I have cited the technical works that apply in each case so that anyone who wants to can go directly to the source.

**Birding and the Biological Species**

For many years, birders considered infraspecific categories fair game. Witness the attention given to field marks of identifiable subspecies by Roger Tory Peterson in the earlier editions of his field guides (Peterson, 1934, 1941). But recently, birders have begun looking for and counting only full species. Such a course has much to recommend it. The biological species is the only real natural unit in the scheme of classification. Orders, families, genera, superspecies, and subspecies are all artificial groupings set up for the convenience of students of evolution. But species are not such arbitrary units. The gradual consensus that species are actual entities in nature has led ornithologists over the years to lump many so-called species and to split others. Modern birders seem to think that lumping is only a modern fad, and that in a few years splitting will be back in vogue. Only in a very limited sense is

that idea true. The fact is, lumping has been going on for hundreds of years without creating any uproar. Audubon called many things species that later proved to be birds in fall or immature plumages of known species. If today's birders had been around a hundred years ago, would they have bemoaned the loss of Washington's Sea Eagle from their life lists when the bird was shown to be a young Bald Eagle? Fully 305 North American subspecies were originally classified as separate species (Mayr and Short, 1970). But as more was learned about each one, its true status became clear. This process is still going on today as we continue to learn more and more about birds. Sometimes new information leads to splitting, sometimes to lumping. That more have been lumped than split cannot be denied, but the reason is not that ornithologists have any pro-lumping bias as some would claim, but simply that many species were incorrectly split in the past before the reality of biological species was fully understood. In any case, it is not the ornithologist who decides what constitutes a species but rather it is the birds themselves. Ideally, the scientist only observes and reports what actually happens, and lets the taxonomic chips fall where they may.

But what then is a "biological species?" Ernst Mayr (1964) gives the following almost universally accepted definition: "Species are groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other such groups." The second part of the definition is of paramount importance. The existence of hybrids between two forms does not necessarily mean the two are one species. The two must merge into a single reproductive community in which any male, given the opportunity to do so, could mate with any female and produce successful young. Let us examine how this definition is applied to actual cases.

Eastern White-crowned Sparrows have the white eyebrow beginning at the eye, but in western forms it begins at the bill. Thomas Nuttall considered the two forms different species in 1840 when he described "Gambel's" Sparrow as new to science. But further exploration of the West revealed that where the two kinds meet, mixed pairs and various intermediate types occur. Apparently, the difference in color pattern is not important to the birds when they are seeking mates. As a result, White-crowned Sparrows of both types form a single reproductive community that is separate from other similar communities such as those of White-throated and Golden-crowned Sparrows.

But what if two forms are similar appearing and have no opportunity to demonstrate the importance of their differences? Black-throated Green Warblers nest in evergreen forests across Canada and into the southern Appalachians. Also, a breeding population of these birds occurs in the cypress swamps of the southeast Atlantic coast. The two groups never mingle during the breeding season, and they do have slight differences. But in the field, the two birds seem identical. Nothing in their plumages, vocalizations, or nesting behavior could possibly prevent them from interbreeding if they occurred in the same area. Consequently, they form a potentially single reproductive community. On the other hand, the very similar Golden-cheeked Warbler of the Edwards Plateau of Texas has both plumage and vocal differences that could well keep it from mating with the eastern bird, so it is regarded as a separate species.

Unfortunately, all situations are not so easily analyzed. What if two populations are strikingly different but still produce hybrids when they meet? Do we lump them in spite of their differences? Not necessarily.

### The Problem of Hybridization

Each case of hybridization must be carefully studied to determine just what is happening between the two parent forms. The criteria currently used in these cases were outlined by Short (1969). Essentially, for two hybridizing forms to merge completely they must exhibit the following characteristics: (1) the hybrids must be able to compete on equal terms with the parental types. If hybrids are even slightly at a disadvantage, the two populations will eventually cease to hybridize; (2) interbreeding must be essentially random, with one form being equally likely to mate with the other form as with its own. In particular the parent types must have no characteristics that tend to keep them from mating with the other type. Scientists call such characteristics "isolating mechanisms." If no isolating mechanisms exist, hybridizing forms will merge in what is called a "hybrid zone," a zone where practically all individuals are of mixed ancestry. The existence of such a hybrid zone demonstrates that the two forms are part of a single reproductive community and are the same species. Sometimes, isolating mechanisms are present but inefficient. In such cases, the two forms will exhibit a "zone of overlap and hybridization" characterized by the presence of the two parental types as well as hybrids. Usually in these cases the isolating mechanisms will become gradually more efficient, so the hybridizing forms should be regarded as good species.

Keeping these criteria in mind, let us review the changes recently made in the *A.O.U. Check-list* at the species level.

### Behind the Thirty-second Supplement

#### "Great White" Heron

Research by Mayr (1956) and Meyerriicks (1957) indicates that this form is a color phase of the Great Blue Heron that shows up only in Caribbean populations. In these populations, the blue morph ("Wurdemann's" Heron) was once thought to be a hybrid between two species. Meyerriicks (1957) mentions nests containing both white and blue young, the parents of which were alike. The two color types mate randomly with each other where both occur. Many herons exhibit light and dark phases, so this discovery was not surprising.

#### "Blue" and Snow Geese

Here is another case in which only one race of a species has two color phases. The genetics of the situation has been worked out by Cooke and Couch (1968) who studied the birds on their nesting grounds, keeping careful records of mate selection and offspring produced by variously mated pairs. The two color types mingle as freely on the breeding grounds as they do in wintering flocks.

### Green-winged Teal

The New World and Old World forms of this species differ only in slight plumage characters with which birders are familiar. Students of waterfowl behavior such as Delacour and Mayr (1945) do not believe these differences could serve as isolating mechanisms, and indeed the two have hybridized in the Pribilofs (Mayr and Short, 1970). The two would probably interbreed more often if they could get together, so they are now considered components of a single species.

### Harlan's Hawk

Taxonomists have had trouble with this one for years, partly because its nesting grounds in the western Canadian wilderness are so inaccessible (Bent, 1961). It is identifiable sometimes, but in many plumages even specimens in the hand cannot be told from Red-tails. No good evidence really exists that the two are separate species. Julian (1971) also discusses this problem.

### Thayer's Gull

This gull was found by N. G. Smith (1966) to breed in the same areas as Herring and other gulls without producing hybrids. It is therefore a good species. Smith's paper is a good reference on identification of this bird.

### "Shafted" Flickers

The yellow- and red-shafted forms hybridize so extensively that in a vast area of North America only intermediates occur. Likewise, red-shafted and gilded types freely interbreed wherever they are in contact (Short, 1965). The birds obviously attach no special significance to their respective differences, so why should we?

### "Traill's" Flycatchers

Research by R.C. Stein (1963) showed that the two song-types of this nominal species do not interbreed and are actually two different species, virtually identical in appearance. The birds themselves never seem to make a mistake in identification.



### Bushtits

The black-eared form of this bird has long been a subject of controversy, but Raitt (1967) settled the issue once and for all with an extensive field study that showed the black-eared birds represent a color morph found in the more southern populations of bushtits. He even found parents of one type with nestlings of the other!

### Yellow-rumped Warblers

Hubbard (1969), in an extensive field study in western Canada, found that the "Audubon's" and "Myrtle" types interbred freely in the mountain valleys connecting their breeding ranges. Although Hubbard himself did not advocate lumping them, others (Mayr and Short, 1970) believe his data show the two to be conspecific.

### Northern Orioles

In river valleys of the Great Plains, "Baltimore" and "Bullock's" Orioles hybridize extensively. In one study of the situation, Sibley and Short (1964) called the areas hybrid zones and advocated lumping the two forms. But at the 1974 AOU meeting at Norman, Oklahoma, Corbin and Sibley read an as yet unpublished paper that claimed that the situation had changed in the twenty years since the earlier study. The Northern Oriole may yet prove to have been born prematurely.

### Great-tailed and Boat-tailed Grackles

Selander and Giller (1961) showed that Great-tailed and Boat-tailed Grackles occurred together in Texas and Louisiana without interbreeding. My own study of the situation (Pratt, 1973) confirmed their findings, but I did turn up evidence of very limited hybridization. The isolating mechanisms break down under certain unusual circumstances, but there is no reason to lump the two again.

### "Ipswich" Sparrow

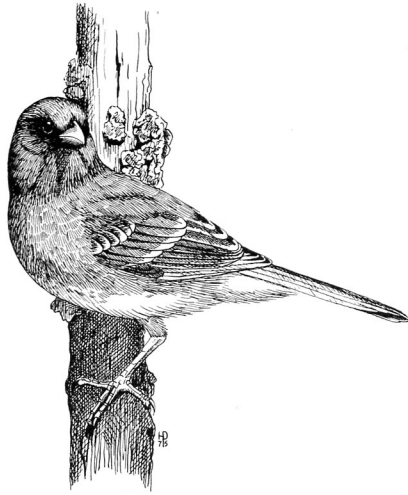
Virtually everyone who has written about this bird over the years has questioned its designation as a separate species (Bent, 1968). It is certainly no more different from other Savannah-type sparrows than are the "Bel-ding's" and "Large-billed" forms of southern California. Recently an Ipswich obligingly mated with a Savannah Sparrow on the mainland.

### Seaside Sparrows

How the two isolated Florida forms could have gone unlumped so long is a mystery. Griscom (1944) showed that the Cape Sable bird was no more distinctive than any other race of the Seaside Sparrow, but he felt that the Merritt Island population had several characters that separated it. All of these characters were shown to be spurious by Trost (in Bent, 1968) and there is no reason to think that both of these isolated populations would not interbreed with other Seaside Sparrows if their habitats were connected.

### Juncos

Almost all of the various dark-eyed forms of the junco hybridize extensively with each other (Mayr and Short, 1970). The "Slate-colored" and



“Oregon” types blend together in a huge hybrid population in the Northwest. The AOU did not include the Gray-headed Junco in the complex pending the results of an ongoing study. Some ornithologists have questioned the wisdom of including the “White-winged” Junco in the species, but it has hybridized occasionally with the other types even though it usually is geographically isolated.

#### The Future

One can see from these examples that the AOU is actually rather conservative in making taxonomic changes, usually waiting for irrefutable evidence for a given change. But what can we expect in the future? The following is a review of some changes that have been suggested in the literature but not yet accepted by the AOU. The predictions are my own, based on my reading and interpretation of the data. I have no special knowledge as to which changes are most likely to occur, and my ideas do not necessarily reflect the thinking of the AOU Check-list Committee or that of any of its members. Here are some possibilities as I see them:

#### Arctic Loon

A form of this bird called the “Pacific” Loon is believed to nest side by side with the other form in eastern Siberia and western Alaska (Vaurie, 1965). Only limited evidence of hybridization has been found, so the two types may be split if the evidence of sympatry is sustained by future research.

#### Canada Goose

The small “Cackling” and “Richardson’s” Geese have not been shown to interbreed with adjacent larger forms of the species (Mayr and Short, 1970) but no one really understands the situation yet because the nesting grounds are so inaccessible.

#### Brants

Waterfowl experts have for years advocated lumping the Black and Common Brants (Delacour and Mayr, 1945). The two do hybridize to some extent and seem to lack isolating mechanisms (Vaurie, 1965)

#### Mallards

Wholesale lumping could occur here. All the Mallard types, except for the Black Duck, may prove to be components of a single species. All are geographically separated but hybridize with domestic Mallards or wild ones when they have the opportunity. The enlarged complex could include the Mexican Duck, Mottled Duck, Hawaiian Duck, and Laysan Duck (Mayr and Short, 1970)

#### Prairie Chickens

There are no good reasons for keeping the Greater and Lesser Prairie Chickens separate. They are not nearly so different from each other as the Greater is from the Sharp-tailed Grouse, and yet these two hybridize fairly often (Mayr and Short, 1970). The most recent work on grouse (Johnsgard, 1973) lumps the two Prairie Chickens.



#### King and Clapper Rails

The problems to be worked out here are enormous but intriguing. Are the King and Clapper really forms of a single species adapted to different habitats? Meanley and Wetherbee (1962) found them interbreeding in brack-

ish marshes around Delaware Bay. In Louisiana, the two seem to blend together just as the fresh and salt marshes do, and even the most obvious Louisiana Clapper looks nothing like the bird in the field guides, creating real problems for birders. From the point of view of the researcher, this problem is especially difficult because the two birds are so similar and are so difficult to observe.

#### Coots

The discovery of Caribbean Coots in Florida (Bolte, 1974) was exciting. The birds may not, however, really be a species separate from the American Coot. Bond (1956) reports hybrids from the West Indies, but the nature of the interactions of the two forms is unknown at present. Birders should be on the alert for breeding Caribbean Coots in Florida. They could provide the answer.

#### Screech Owls

As many birders are aware, the calls of eastern and western Screech Owls differ strikingly. Color differences also exist. Marshall (1967) studied the situation and found that the two forms did meet in the southern Great Plains and in the Big Bend region of Texas, and produce some hybrids. Marshall himself made equally strong cases for lumping and for splitting the forms, and ornithologists in general are divided on the issue. Hekstra (in Burton, 1973), a leading authority on Screech Owls of the world, splits them.

#### Whip-poor-wills

Irby Davis (1971) has demonstrated the vocal differences between the eastern and western populations of this species, but apparently no one has carried out any experiments to determine the significance of the differences. We do not know enough yet to say for sure, but a split here is a possibility.

#### Nighthawks

The West Indian race, with its distinctive vocalizations, may be split from the Common Nighthawk. Eisenmann (1962) and Sutherland (1963) provide evidence that the two nest side by side on Key Largo. But Bond (1963) remains to be convinced. Birders should keep an eye on this situation and particularly note any evidence that the two nest in close proximity.

#### Kingbirds

Here is another possible split. W.J. Smith (1966) found that the calls of "Couch's" Kingbird of southern Texas and eastern Mexico differ from those of the Tropical Kingbird of southern Arizona and western Mexico. Later studies, not yet published, show that the two occur together without interbreeding.

#### Crows

Johnston (1961) made an intensive field study of crows in the northwest and found that the Northwestern Crow blends almost imperceptibly into the Common Crow in western Washington. Individual crows in that area give vocalizations of both species. Many specimens cannot be identified to species. This situation is typical of subspecies; so the Northwestern Crow may well be lumped with the Common Crow. Davis (1958) thinks the two populations

of the Mexican Crow should be split on the basis of vocalizations, but Johnston (1961) is not completely convinced and explains his reasons.

#### Black-crested and Tufted Titmice

In a narrow strip of Texas, titmice are totally unbothered by the presence or absence of a black crest on their mates (Dixon, 1955). Interbreeding is completely random, and all variations from Black-crested to Tufted types can be found. These two forms are almost sure to be lumped.

#### Brown-headed and Pygmy Nuthatches

Mayr and Short (1970) consider these two to be the same species, despite the contrary conclusion of Norris (1958). Admittedly the two look much alike, but I have always been impressed by the vocal differences and I see nothing to be gained by lumping them. But such a change is clearly possible.

#### Yellow-green Vireo

Any birder who has seen this bird would agree that it is just a yellowish Red-eyed Vireo. The "Plumbeous" Vireo of the Rockies is much more distinctive and we know it is only a race of the Solitary. But the situation here is quite complex, involving several tropical forms. They may all prove to be conspecific.

#### Parula Warblers

Many recent authors have considered the Tropical and Northern Parulas to be the same species, and birders familiar with the birds will not be shocked by the idea. They are much alike in habits and voice, and may lack isolating mechanisms.

#### Mourning and MacGillivray's Warblers

Like the Parulas, these two warblers are very similar in most respects. They hybridize in Alberta, and many researchers have considered them conspecific (Mayr and Short, 1970).

#### Rosy Finches

The handwriting is on the wall for these three nominal species. Telltale hybrids and intraspecific variability indicate that they may be just races, and they may soon be lumped following Mayr and Short (1970).

#### Rose-breasted and Black-headed Grosbeaks

These two species hybridize fairly extensively in the Great Plains. West (1962) lumped them, based on his field study. Short (1969) disagreed with this interpretation of the data. Mating apparently is not random, and evidence exists that hybrids are at a disadvantage in competition with the parent types. Until further evidence exists, the status quo will probably be maintained.

#### Indigo and Lazuli Buntings

Sibley and Short (1959) studied the hybridization of these two species but found the data inconclusive. Recently, Emlen et al (1975) have demonstrated that mismatched pairs and their offspring are at a selective disadvantage. Thus the specific distinctness of the two buntings is proven.



## Snow Buntings

Many authors have lumped McKay's Bunting and the Snow Bunting. Sealy (1969) found evidence of interbreeding but his data are inconclusive. More information is needed before any change in status is likely here.

## Conclusions and Recommendations

The ABA Checklist Committee's (1975) decision to list only good species as recognized by the A.O.U. (1957, 1973) is commendable. But as the above review shows, that list will continue to change for the foreseeable future as more data are accumulated. Such is the nature of taxonomy. The taxonomists' list ideally reflects evolutionary relationships and must therefore be altered periodically as new insights are gained. But a list to be used only by birders for tallying their observations need not serve any further purpose. No reason exists for the hobbyist to change his list with every new ornithological study.

I do not believe that professional ornithologists would object to birders' counting all identifiable kinds of birds. On the contrary, the reporting of such observations would add greatly to our understanding of migratory patterns and intraspecific distribution. The scientist objects only to the use of the word "species" for things that are not in fact species. Just as professionals in any field, he is understandably irritated by the meddling of uninformed amateurs. No scientist ever told a birder which kinds of birds to count. Birders have always made their own rules, and should continue to do so without presuming to rewrite or reinterpret the results of painstaking research.

A list of recognizable nonspecies is currently being prepared (ABA Checklist Committee, 1975). But I do not believe such a list is a satisfactory solution to the birder's problems. He will now have two lists that are constantly changing. Furthermore, many birders will still resist transferring a bird from the "species" list to the "recognizable form" list. Having two lists implies that one is more important or more significant than the other. But the sighting of a "Spotted" Towhee in the East is just as important and just as exciting as seeing any other western accidental, even though it does not represent a species separate from the eastern form. The ABA could perform a valuable service to birders and ornithologists alike by compiling a single list of identifiable kinds of birds. A single list could contain both good species and intraspecific categories by the adoption of a simple and widely used form of punctuation. In ornithological literature, when a writer wishes to use a common name for a distinctive subspecies or group of subspecies, he puts the first part of the name in quotation marks. The reader then knows that the author does not consider the "Red-shafted" Flicker to be a good species, but that he finds the name convenient when referring to an obviously distinctive group of races. The ABA list could simply use quotation marks with the names of all forms not recognized as full species by the A.O.U. The Latin nomenclature, by use of trinomials, can easily reflect such usage. The greatest advantage of such a list is that it would be relatively permanent. The only change that would ever have to be made in the English names would be the addition or deletion of the punctuation.

For such a list to be consistent it must include all biological species and all infraspecific forms that are unequivocally identifiable in the field. There is no justification for listing the "Ipswich" Sparrow without including "Bel-ding's" Sparrow and "Large-billed" Sparrow, both of which were considered good species until the 1957 Check-list lumped them with the Savannah. But the list should not include variations such as age and sex differences or color phases that occur throughout the population. We can still count "Great White" Herons and "Black-eared" Bushtits because these morphs occur only in certain subspecies of their respective species, but counting a red-gray mated pair of Screech Owls as two forms on a checklist is ludicrous.

The establishment of a list of such identifiable kinds of birds is not without pitfalls. Many widespread species grade gradually from one subspecies into another over a wide continental area. Scientists call these gradual changes "clines," and the boundaries between the subspecies that make up a cline area are often purely arbitrary. Indeed, many ornithologists are opposed to subdividing clines, since the result is sometimes a huge array of subspecies of varying distinctness. The Song Sparrow provides an excellent example. Nevertheless, birds from opposite ends of a cline are often very different in appearance and even in vocalizations. But since no consensus could ever be achieved among birders as to where to draw the lines, clines are probably best kept as single units on our list. Nor will listing of races that differ in characters only occasionally visible in the field be helpful. Such a course will surely lead to many misidentifications and much misinformation. If the ABA committee is conservative in the listing of infraspecific forms, a good, clean, and most importantly, permanent list could be the result.

Perhaps my ideas seem revolutionary, but I am really suggesting a return to an older style of birding. The advantages of the list I propose far outweigh any possible disadvantages. Birders will have more kinds of birds to look for, and in so doing will inadvertently contribute to the progress of ornithology by keeping track of many forms previously ignored. That should make everyone, amateurs and professionals, happy. Also, birders who want to contribute to scientific knowledge can do so without fear that they may "lose" birds from their lists. How many birders today would report a mixed-species nesting pair? Some, I fear, would keep it quiet in the mistaken belief that to report it would mean an automatic lumping. Such a state of affairs is deplorable and I believe that the proposals made here can contribute to healing the divisions among all of us who are fascinated by birds.

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