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Source: The Auk, 118(4) : 832-837

Published By: American Ornithological Society

URL: https://doi.org/10.1642/0004-8038(2001)118[0832:DWKWWT]2.0.CO;2

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The Auk 118(4):832–837, 2001

OVERVIEW

DO WE KNOW WHAT WE THINK WE KNOW ABOUT WINTER RANGES OF MIGRANTS TO SOUTH AMERICA? THE CASE OF THE VEERY (*CATHARUS FUSCESCENS*)

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Modern ornithologists have become accustomed to flipping open field guides to find accurate depictions of bird distributions. For birds in temperate North America, we have excellent resources that describe not only distribution, but relative abundance (e.g. Root 1988, Sauer et al. 2000). Works from the Caribbean and Central America provide distribution information for many other species (e.g. Howell and Webb 1995, Garrido and Kirkconnell 2000). South America remains less well known, but even there many species have had their distributions mapped with reasonable precision (e.g. Hilty and Brown 1986, Ridgely and Tudor 1989, 1994). An irony of the current state of knowledge of the avifauna of South America is that many sedentary species, about which almost nothing is known except their distributions, have fairly unambiguous ranges. At the same time, familiar species that breed in North America sometimes seem to vanish from the face of the Earth if they winter in South America. A glance at the American Ornithologists' Union (AOU) checklist (American Ornithologists' Union 1998) or field guides for South America (e.g. Ridgely and Tudor 1989, 1994) reveals a general pattern of increasing vagueness in describing winter ranges of migratory landbirds with increasingly southern winter distributions.

When confronted with those distributions, many of us probably reason that some species indeed are dispersed over a wide area on the wintering grounds. In South America, that often includes the Amazon Basin, a staggeringly large area with sparse coverage by ornithologists, so it may seem unlikely that distributions of migrants in Amazonia will become better resolved. One migrant recorded from Amazonia is the Veery (*Catharus fuscescens*), which is described by most references as wintering in an area that encompasses about a third of the continent, including all of central and western Amazonia (e.g. Ridgely and Tudor 1989). How was that range derived? Is the information available to evaluate its accuracy? The work of Remsen (2001) demonstrates that the accepted view of the winter range of the Veery is flawed, and that its true winter range is much smaller than previously described. To determine the true winter range, Remsen went back to the original specimen records, which he augmented with banding data and sight records.

Based on Remsen's analysis, the true winter range may be in a small area of southcentral and southeastern Brazil. That area constitutes as little as 10% of the previously described range, and barely overlaps the range generally described. Veery records from August through April dot the map from Colombia, Venezuela, and Guyana, to Bolivia, Paraguay, and southeastern Brazil. The northern and western records vanish, however, when only 1 December through 20 February is considered. Remsen points out that this correction changes the northern limit to the winter range to a latitudinal extent comparable to the distance from New York City to Caracas! How could the Veery's distribution be so misrepresented?

Remsen's analysis demonstrates that the problem in the current literature arose as much as a century ago from the failure to distinguish wintering birds from those in passage (e.g. American Ornithologists' Union 1895). Errors were perpetuated in subsequent writings based on incorrect analyses. Even so, as early as 1949, several authors had arrived at the same conclusions as Remsen, although their work has not been widely cited (Tyler 1949), or they themselves backpedaled when describing the Veery's range (Meyer de Schauensee 1964, Phillips 1991). Two other papers recognized the

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possibility that the Veery wintered farther south than generally depicted, based on the absence of wintering birds from Colombia and central Amazonia (Hilty and Brown 1986, Stotz et al. 1992).

Remsen's contribution raises several important points that ornithologists need to note, even if their own interests seem removed from tinkering with distributions in remote places. First, Remsen's methods give a framework for deriving the true winter range of any species. Careful scrutiny of specimen data and banding records by date is the key; those tools could probably be used to great advantage even on birds for which range data are fairly reliable. Second, a sobering extension of Remsen's study is that many other species that migrate to South America probably also have inaccurately described ranges in many publications. Correcting inaccuracy is part of the process of science, but for most questions it is apparent from the literature where to direct attention. For bird distributions, however, we have many modern resources with beautiful maps but with little information on how those maps were derived. How is a reader to know which maps are well supported and which are highly speculative? Third, and most urgently, exact knowledge of distribution is fundamental to conservation planning. For migrants, that includes not only broad patterns like Remsen describes for the Veery, but more subtle details like differential migration, elevational migration, and habitat segregation by age and sex classes (e.g. Powell and Bjork 1995, Marra et al. 1998, Cristol et al. 1999).

Determining Winter Ranges

Remsen (2001) resolved the true range of the Veery mostly by disregarding published summaries in favor of mapping locations of birds recorded on known dates. Those data were provided by museum specimens, banding data, and earlier references. As in much ornithological research, collected specimens were essential. Banding records were used to a lesser extent, but sight records were not particularly important. Given the possible errors with sight records, unassailable conclusions require better documentation. That is especially true for species that are regularly misidentified, such as *Catharus* thrushes (see Lane and Jaramillo [2000] and Remsen's [2001] discussion of *Catharus* spp. recorded on Christmas Bird Counts). From the examples below, it will be clear that identification difficulties are part of the reason for imprecisely described ranges for other species as well as *Catharus* spp. In the future, methods like stable-isotope ratios may also become important for identifying where birds winter (Marra et al. 1998, Hobson et al. 2001), but those techniques will also require that birds be captured.

We should recognize that we need greater precision in defining ''winter'' from a migratory bird's perspective. As Remsen notes, ''winter'' is the period in which the bird is relatively sedentary and not in the physiological condition to migrate. Thus defined, ''winter'' varies among species depending on migration schedule. We have no problem with the comparable definition for ''summer,'' such as are used for ''safe dates'' in breeding bird atlases, but breeding is a conspicuous enterprise, and there are lots of people looking for breeding birds in North America. Just as we recognize that a Veery in Louisiana in April provides no concrete evidence that it will breed there, a Veery in Colombia in October might not be settled for the winter. Unfortunately, the literature is full of statements about winter range based on data from October, November, March, and April. For Veeries, Remsen's approach was to identify winter as the period when no known passage birds were collected from anywhere. Defining that time period was critical for the analysis; only by separating the relatively few records from this interval was the startling range constriction revealed. Even with a precise definition of winter, however, a problem may arise for species with irregular winter movements. For those species, possibly including the Eastern Kingbird (*Tyrannus tyrannus*) and some swallows, the winter distribution may indeed be large, even without many records from some areas (Ridgely and Tudor 1989, Stotz et al. 1992, Payntor 1995, American Ornithologists' Union 1998).

A growing body of research shows segregation of the sexes by latitude to be common in wintering migrants (Cristol et al. 1999). Segregation by habitat also occurs in some species (e.g. Marra et al. 1998). Although too few data exist to consider those possibilities for the Veery, Remsen points out that it may be possible

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with additional data. Perhaps it should also be noted that differential migration compounds the problem of defining ''winter.'' Within a species, age and sex classes sometimes migrate different distances and at different times. If males depart wintering grounds before females (which is by no means resolved; see Cristol et al. 1999), the early part of the spring migration period may be a time of great spread in the distribution. At that point, premigratory birds could remain in the southern part of the distribution, whereas birds in passage could be considerably farther north.

Improving Accuracy for Other Species

One might hope that standard references, such as South American field guides and the AOU checklist, could be helpful in discovering and disentangling problems in distributions. If not in those works, tomes like the *Handbook of Birds of the World,* the *Birds of North America* (BNA) series, and the books devoted to individual families must surely have enough information to evaluate statements about winter ranges. Unfortunately, even detailed resources sometimes do not clarify how they arrived at the winter distributions they depict. Often it is difficult even to recognize the species with scant data. Remsen (2001) points out that most of the problems in modern works stem from copying earlier distribution descriptions. To be fair, it is beyond the scope of field guides to check distribution data for every species, especially those that spend a considerable period of time outside the area covered by the guide. Also, many resources do state that distributions may be poorly resolved. The 7th edition of the AOU checklist, for example, acknowledges many ambiguous distributions that were previously presented with the impression that they were well supported (American Ornithologists' Union 1957, 1983, 1998). The most valuable works are those that include copious detail on records for problematic species. Hilty and Brown (1986), for example, anticipated the true range of the Veery when they noted that there were no Colombian records between 23 October and 2 March. Some BNA accounts also include dates and locations to help define winter ranges (e.g. Pitochelli et al. 1997, Ladd and Gass 1999). This information allows the reader to interpret the range data, and is much more valuable than accounts that state something like ''winters from Colombia to southern Brazil,'' without support.

Should Remsen's result prompt us to take a hard look at the data behind the accepted distributions of many species that migrate to south America, or is the Veery's case an anomaly? Unfortunately, as discussed above, it is difficult to know. For some species it is clear where they winter in greatest abundance. For those species, it remains unresolved just how often they occur elsewhere. For example, both Olive-sided Flycatcher (*Contopus cooperi* [=*borealis*]) and Summer Tanager (*Piranga rubra*) are fairly common in the Andes and Venezuela in winter (see discussion in Stotz et al. 1992). They have been recorded from Manaus, Brazil in winter (Stotz et al. 1992). Olive-sided Flycatchers also winter in southeastern Brazil (Willis et al. 1993). Does that mean they are thinly scattered throughout Amazonia and central Brazil? It may be worth noting that those species—and most of the other songbirds wintering in lowland South America—are more common in second growth and along edges than in primary forest (Stotz et al. 1996). Perhaps the small patches of light woodland within the largely deforested urban area of Manaus function as migrant traps, increasing probability of detecting what would be called ''extralimital'' birds in North America.

For several species, the winter range remains highly speculative. The Connecticut Warbler (*Oporornis agilis*) could be among the biggest mysteries. Its winter range, based on ''a few documented records'' (American Ornithologists' Union 1998), encompasses some 9,000,000 km^2 (Ridgely and Tudor 1989). Sick (1993), however, mentions records from the central Amazon in April and November, but from farther south in Mato Grosso in December and January. The best summary of available data is in the BNA account (Pitochelli et al. 1997). They list records by location and date, based in large part on Paynter (1995). From those records, it appears that birds do winter in both Venezuela and southern Brazil, but that none have been recorded in the intervening 2000 km of Amazonia. Should that hold up, it would be a very unusual distribution.

As another example, the Common Nighthawk's (*Chordeiles minor*) range is also unresolved. It is known from the northern Amazon

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Basin in passage, but most winter records are from Paraguay and southeastern Brazil (see discussion in Stotz et al. 1992). Its winter range has been depicted as all of South America south to central Chile and Argentina (Sick 1993, after Rappole et al. 1983), or as most of South America east of the Andes (Cleere 1999). As was the case for the Connecticut Warbler, the BNA account for the Common Nighthawk provides a useful summary of records (Poulin et al. 1996).

Several other North American breeders are difficult to study because of major identification challenges in South America. For example, the Chimney Swift (*Chaetura pelagica*) is so similar to South American *Chaetura* (particularly C. *meridionalis* [*=andrei,* see Marín 1997]) that its distribution will not be resolved without much additional collection. The *Progne* martins are even more complicated. Nearctic breeders that winter in South America include Purple (*P. subis*), Cuban (*P. cryptoleuca*), Caribbean (*P. dominicensis*), Sinaloa (*P. sinaloae*), and Gray-breasted (*P. chalybea*) martins (Stotz et al. 1996). Those can be confused with Southern Martins (*P. elegans*), an austral migrant, and possibly with resident and austral migrant Gray-breasted Martins, or with Brown-chested Martins (*Phaeoprogne tapera*). So although it is clear that martins are present in winter throughout much of South America, and that multiple species roost together (Oren 1980), the species represented await resolution. Species limits are also unclear in that group; perhaps additional information from wintering birds will help identify lineages, much as the distinct winter distribution of Bicknell's Thrush (*Catharus bicknelli*) supported its separation from Gray-cheeked Thrush (*C. minimus;* Ouellet 1993).

In North America, the frontier of the study of distribution is now mostly manifest in the sport of finding birds where they are not supposed to be. Often those records can be important for understanding the process of migration (e.g. Cardiff and Remsen 1979). Similarly, identifying the correct winter range of birds in South America will allow better study of passage birds. For Veeries, an interesting pattern that emerges is that birds migrate south along western Amazonia, then return to North America after passing through east-central Amazonia, possibly avoiding Central America entirely in spring (J. V. Remsen pers. comm., Stotz et al. 1992). Uncovering other intricacies of migration for winter visitors to South America, or for austral migrants within South America, will await further study, beginning with satisfactorily describing winter ranges.

Christmas Bird Count data provide an excellent picture of distribution for many species that do not leave North America, but important insights could probably be gained from specimen and banding data. For example, where do the Bachman's Sparrows (*Aimophila aestivalis*) that leave the northern part of the range spend the winter (Dunning 1993)? Do they spread out within the range of the sedentary southern birds, or are they concentrated in certain areas? The same question could probably be asked for most species that are present year round in the southern part of their range, such as the White-eyed Vireo (*Vireo griseus*) in Louisiana (e.g. Remsen et al. 1996, 1998).

Conservation Planning with Range Data

When declining species are identified, planning for management begins with examining threats within the species' range (e.g. Stotz et al. 1996). The Veery is declining (Sauer et al. 2000), and now it appears that the true winter range includes areas undergoing rapid habitat conversion (Remsen 2001). Thus winter factors may play a larger role in the Veery's decline than would have been suspected on the basis of the traditionally depicted winter distribution. Finer scale resolution of winter distributions may also be important for conservation of several North American species in peril, including Cerulean (*Dendroica cerulea*), Golden-cheeked (*D. chrysoparia*), and Kirtland's (*D. kirtlandii;* Robbins et al. 1992, Haney et al. 1998, Rappole et al. 1999) warblers. Within North America, the same could be said for species like Henslow's (*Ammodramus henslowii*) and Bachman's (Dunning 1993) sparrows. Close attention to movements, such as elevational migration, will also be important for conservation of some intratropical migrants (e.g. Powell and Bjork 1995).

Time will tell if Remsen's research strikes a nerve in the ornithological community. I hope we see action on two fronts. First, other species warrant the scrutiny Remsen gave to the Veery. I imagine that Remsen's methods differed little

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from what the pioneers of American ornithology did a century ago; here is the chance to be back on the cutting edge with Coues, Brewster, and Ridgway (or Hellmayer, Pinto, and Zimmer). Of course, basic survey work in the field will provide important new information. Second, perhaps authors and editors will pay closer attention to sources of ambiguous range statements. Regardless of the new science that is stimulated by the case of the Veery, readers should realize that published distributions they see for migrants to South America might not be as tidy as they appear.

ACKNOWLEDGMENTS

I thank colleagues too numerous to mention for discussions of migratory birds. Mario Cohn-Haft and Doug Stotz made useful comments on this overview.

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