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AUSTRAL MIGRATION IN COLOMBIA: THE STATE OF KNOWLEDGE, AND SUGGESTIONS FOR ACTION

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Resumen. – Migración austral en Colombia: el estado de conocimiento y sugerencias sobre cómo proceder. – Comparada con la migración boreal, la migración austral ha sido poco estudiada en Colombia. Esta situación refleja diferencias entre los tamaños y diversidades de las áreas "fuentes" de las aves migratorias, distribuciones de aves migratorias vs las de observadores potenciales, oportunidades para financiamiento y afinidades taxonómicas con relación a los residentes tropicales. Presento una reseña breve del estado de conocimiento de la migración austral en Colombia, ilustrado con dos ejemplos que muestran las muchas preguntas todavía sin contestar sobre la migración austral en general. Para contestar estas preguntas será necesaria la cooperación internacional, para la cual los países "fuente" del sur de Sudamérica están mejor situados para tomar la delantera.

Abstract. – Compared to boreal migration, austral migration has been little studied in Colombia. This reflects differences between the migration systems in the size and diversity of source areas of migrant avifaunas, distributions of migrants vs potential observers, funding opportunities and taxonomic affinities relative to tropical residents. I present a brief review of the state of knowledge of austral migration in Colombia, illustrated with two examples, to highlight the many unanswered questions regarding austral migration in general. International cooperation will be the key to answering these questions, for which the source countries of southern South America are best situated to take the lead. *Accepted 6 February 2004*.

Key words: Austral migration, Colombia, monitoring, Neotropical birds, South America.

INTRODUCCIÓN

Colombia, in the northwestern corner of South America, is at the crossroads of the two great migration systems of the New World, receiving postbreeding migrants from the higher latitudes of both northern and southern hemispheres. Southwards and eastwards from Colombia in South America, austral migrants predominate, but few of these cross the northern Andes or reach Middle or North America (Stiles & Skutch 1989, A.O.U. 1998). From the eastern Andes westwards and northwards boreal migrants are prominent, but relatively few species extend in appreciable numbers into or beyond the Amazon basin. Effectively, Colombia is the gateway to South America for boreal migrants arriving via Central America and many of those crossing the Caribbean, but it is the end of the line (or the back door) for austral migrants.

REVIEW OF AUSTRAL MIGRATION IN COLOMBIA

The boreal migrants are by far the better known and more studied in Colombia. This is partly due to differences between the source areas and the avifaunas themselves. North America is far larger and more diverse than southern South America, extending much further polewards. The avifauna is corre-

spondingly more diverse, with over 300 species migrating to the Neotropics during their nonbreeding period, as compared to only c. 230 austral migrant species (Chesser 1994, A.O.U. 1998). This disparity is heightened by the fact that half or more of the austral migrants reach tropical latitudes scarcely or not at all (Joseph 1997). In Colombia, over four times as many species of boreal as austral migrants (approx. 175 vs 43) have been recorded (Hilty & Brown 1986).

The disparity in knowledge of boreal vs austral migrants in Colombia is heightened by their distributions. Most austral migrants occur east of the eastern Andes, especially in Amazonia: these are the most thinly populated parts of the country with no large cities, universities or museums, and observers are likewise few and usually are present for relatively short periods. Much of what we know about austral migrants in Colombia is due to a handful of North Americans who resided for varying periods in eastern Colombia, often as members of the Peace Corps, in the 1970's and early 1980's (e.g., Gertler, MacKay and Lemke). By contrast, boreal migrants mostly occur in the Andes, the Magdalena and Cauca valleys and the northern coastal plain and foothills where most of the population of Colombia resides, including virtually all large cities, universities and museums, and where the vast majority of observations have been made and specimens collected. A further difference between source areas also contributes to the knowledge gap: the disparity in the sizes and wealth of their respective scientific establishments. There has been a long tradition of North American (and European) ornithologists working in tropical South America (I note here the pioneering work of McNeil and his colleagues in Venezuela for austral migrants), but no corresponding influx of workers from, say, Argentina or Chile. Moreover, a recent upsurge in concern for the fates of boreal migrants during the northern winter has resulted in a similar increase in Nearctic funding for (mostly) North American ornithologists to study these migrants in the Neotropics (note the studies of Greenberg, Ramos, Rappole, Sherry, Wunderle, Lynch, Joseph, Chipley and many others). No comparable phenomenon has permitted funding of studies of austral migrants, except possibly within the boundaries of Brazil.

Austral migration is also not as conspicuous as boreal migration in most of Colombia. Because the source area is so much smaller, the volume of austral migrants is far lower, and the areas where they mostly occur include some of the most complex and species-rich avifaunas and tallest, most diverse evergreen forests in the world. Problems of taxonomy and identification also complicate the study of austral migrants. Fully half of the austral migrant species in Colombia also have resident populations (though in about half of these, different subspecies are involved). No fewer than six species occur as both boreal and austral migrants and residents. For instance, all three forms of the Red-eyed Vireo (*Vireo olivaceus*) have been taken in October and November in the Leticia area of the Colombian Amazonia: the boreal migrant *olivaceus,* the austral migrant *chivi* and the resident *solimoensis.* Compounding these difficulties, many austral migrants belong to genera in which identification of species in the field (or even in the hand) is notoriously difficult, such as *Elaenia* and *Myiarchus* flycatchers or *Chaetura* swifts.

Knowledge of austral migration in Colombia is thus largely limited to data from specimens collected opportunistically, mostly over the last 50 years by a few resident ornithologists, especially at the Instituto de Ciencias Naturales (Olivares, Borrero, Romero and colleagues), the Museo de La Salle (Hno. Nicéforo María) and the Universidad del Valle (Borrero, Catano), and the observations of a few long-term visitors like J. V.Remsen (Leti-

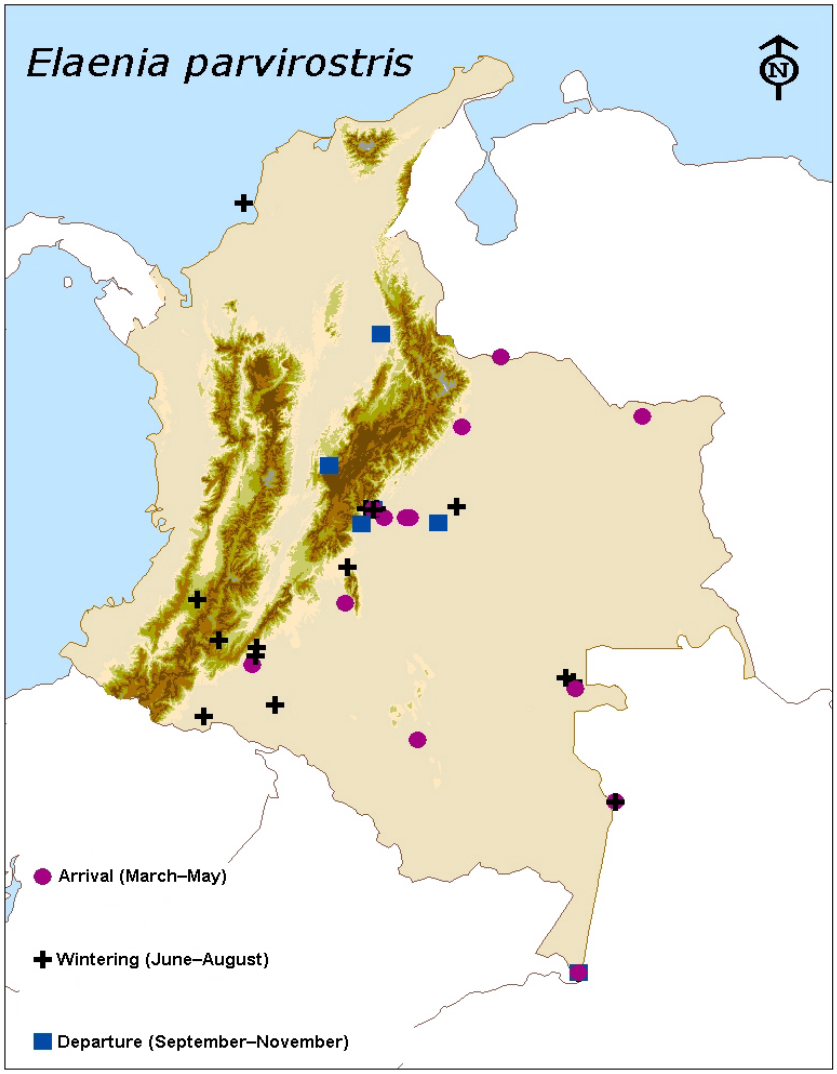

FIG. 1. Distribution of specimen records of Short-billed Elaenias (*Elaenia parvirostris*) in Colombia according to period of year. Data from Instituto de Ciencias Naturales and Project BIOMAP.

cia area), S. L. Hilty (various areas) and S. Fisher (the llanos), as well as the Peace Corps observers mentioned above. These data suffice to permit a brief overview of Colombia's austral migrants (excluding seabirds), as follows: 1) four species of diurnal raptors (one falcon, three accipitrids, two of which are rare and of rather uncertain status; 2) four waterbirds (two rails, a gull and a skimmer); 3)four *Coccyzus* cuckoos; 4) two *Chaetura* swifts; 5) 19 tyrannid flycatchers including six species of *Elaenia*, three *Tyrannus*; 6) five swallows, including three species of *Progne*; and 7) two *Sporophila* seedeaters.

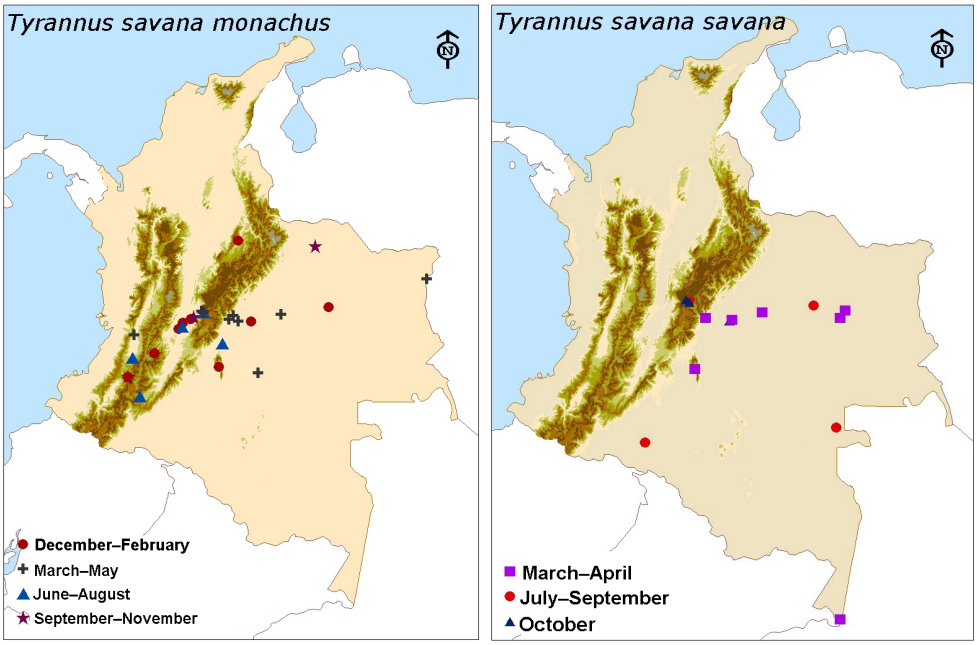

FIG. 2. Distributions of specimen records of migratory races of Fork-tailed Flycatchers (*Tyrannus savanna*) in Colombia: *T. s. monachus* is a boreal migrant, *T. s. savanna* is an austral migrant.

The austral migrant contingent in Colombia thus seems reasonably representative of the austral migrant system as a whole in terms of taxonomic composition, notably in the predominance of Tyrannidae (cf. Chesser 1994). For only a handful of these are enough specimens or other data available to permit a reconstruction of their status in Colombia (though in some cases, more questions are raised than answered). Two such cases are discussed forthwith.

Short-billed Elaenia. The Short-billed Elaenia (*Elaenia parvirostris*) is perhaps the austral migrant best represented in Colombian collections; data from 68 specimens from Instituto de Ciencias Naturales and project BIOMAP are presented here (Fig. 1). I divide these records into three periods: arrival (March–May), wintering (June–August), and departure (September–November). All records for the arrival period are for east of the Andes and, mainly, for the Andean foothills and adjacent lowlands, but cover the entire latitudinal range from the Amazon to Arauca. Evidently the species can cover the distance from southern to northern Colombia within a few weeks. Most birds for which data are available do not show large fat deposits and most are in fresh plumage. During the wintering period, a minority of the birds apparently undergo a complete molt (are the majority first-year birds?) and at least a few cross the Andes, where they may reach sites as far west as the Cauca valley, and as far north as the Caribbean coast, and even some offshore islands. Records from the departure period are from the eastern Magdalena valley or east of the Andes, and again rather few birds seem to have accumulated appreciable fat reserves (but I emphasize that for only a minority were data on body mass, skull ossifi-

cation and fat taken). In Venezuela, many individuals had accumulated enough fat by the time of their southwards departure to permit them to reach their breeding areas by a non-stop flight (McNeil & Carrera 1968). Data from an intensive mist-netting study at a site in eastern Venezuela (McNeil 1982, Tarroux *et al.* 2003) document great year-to-year variation in numbers of austral (as well as boreal) migrants wintering at or passing through a given site, probably reflecting variations in rainfall and food supplies. This points up a further difficulty in interpreting the specimen data, since in any given year one or a few specimens, or none, were taken (more a reflection of the presence of collectors than of the birds).

Fork-tailed Flycatcher. A somewhat more complicated case is that of the Fork-tailed Flycatcher (*Tyrannus savana*) (Fig. 2). In this species, 1) a resident race (*sanctaemartae*) breeds in the Caribbean coastal plain, 2) a boreal migrant (*monachus*) occurs widely from August or September through May (and apparently year-round in the llanos of northeastern Colombia) with most birds molting between about November and January, and 3) an austral migrant (*savana*) occurs in eastern Colombia between about April through October, during which time most birds molt (cf. McNeil & Carrera 1968 for data from Venezuela). There are also a number of interesting sight records of apparently migrating flocks (many summarized by Hilty & Brown, 1986) which are difficult to interpret since the subspecies was not determined. A detailed analysis is perhaps not warranted here, but several interesting facts were brought to light in the present examination of c. 110 specimens and other records: 1) both northern and southern migrants may occur together in certain months in the llanos; 2) *monachus* apparently breeds in the llanos (and may also do so in the Cauca valley) between about March and May; and 3) records of *savana* for October in the departure period are concentrated in the Bogotá savanna of the eastern Andes! Clearly, much more remains to be learned regarding the movements of this species.

Other species. Fragmentary data for a few other species also suggest patterns, to be evaluated with more data. For instance, the Gray Elaenia (*E. strepera*), is known from a few records in extreme southeastern Colombia and many from southern and eastern Venezuela (cf. McNeil 1982): does it avoid the open country of the llanos? The Yellow-browed Tyrant (*Satrapa icterophrys*) is a well-known migrant and winter resident in southern and eastern Venezuela, including the eastern llanos, yet there is only one record for adjacent Colombia (Arauca). Does it migrate through eastern South America and spread westward only upon reaching the base of the Andes?

QUESTIONS AND SUGGESTIONS

Some of the more interesting questions regarding austral migration that could be studied in the coming years are the following: Do austral migrants have specific, well-defined migration routes or "flyways" as do many boreal migrants? Do they use specific stopover sites? How constant are arrival and departure dates for austral migrants from year to year? Do austral migrants lay down fat deposits comparable to those of boreal migrants? How do their diets change before, during and after migratory periods? To what extent do specific habitats (e.g., riverine successional habitats in Amazonia) and landforms (e. g., the Andes) affect movement patterns and areas of residence? Do breeding and molt cycles show similar relations to migratory movements as in boreal migrants? Are any austral migrants threatened primarily by problems on their winter ranges?

Answering these questions will require

taking a number of steps, some of which will require international cooperation among South American countries. A series of strategically located monitoring sites should be set up in each country (and where two countries meet, possible international sites could be established, as in the Leticia-Tabatinga area of Colombia-Brasil). Long-term monitoring and banding programs will be needed, which in turn will require a common data base and banding scheme for all the countries involved. To insure uniform criteria for taking data in different countries, a series of regional training workshops should be instituted. One output of such workshops might be a series of identification manuals that detail methods for distinguishing austral migrants from similar resident congeners – as mentioned above, this problem is much more severe for austral than for boreal migrants.

From my experience in observing and banding boreal migrants over many years in Costa Rica (Stiles 1994) and Colombia (and much more limited experience with austral migrants in Colombia), I venture to offer several suggestions toward implementing these steps. The monitoring sites should contain varied vegetation of different heights: though migrants must occur in forested areas (or perforce pass through them while migrating through the Amazon basis), they are much more obvious (and bandable!) in nonforest areas like savannas or second-growth scrub. Because most migrants in forest areas may be found in the canopy and thus all but impossible to see, count or capture, vegetation of the study area may require management to maintain an adequate extension of early successional growth. Young riverine succession may well constitute an important habitat for migrants in the Amazon basin, and should be included in sites to be monitored insofar as practical.

With respect to training programs, I think that it will be important to have workshops based at least initially in the source countries for austral migrants, i.e., where these species breed. This will facilitate the initial familiarization with these species by observers and banders from other countries, who can then return better prepared to distinguish them. It will be important to include museum as well as field and laboratory work, to permit learning of the different plumages of austral migrants (another advantage of source countries for such workshops, as their museums are more likely to have good series of these species). Once they are thoroughly familiar with the austral migrants, workers from other countries can prepare identification manuals for distinguishing these species from confusingly similar resident species of their respective regions. A final suggestion is that it might be more feasible to fund projects on austral migrants by combining them with others on boreal migrants (which at present are much more likely to receive funding, since the source countries for austral migrants are much less willing or able to fund such projects in other countries). In the long term, however, it seems inevitable that if we are to make significant progress in understanding austral migration, the austral countries, where these species breed, will have to take the initiative. Just as North American leadership in the study of boreal migrants has stemmed from a concern for the welfare of "their" breeding birds, so might the authorities in the austral countries become convinced of the importance of funding projects on the migration and wintering biology of "their" birds. Ultimately, a major education program to inform public servants on the importance of conservation of austral migrants, may be the best way to assure the study and conservation of these species.

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