

## Migration of the Fork-tailed Flycatcher through southeastern Brazil.

*New light on austral spring migration with an intriguing speculation on North American vagrancy*

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THE APPEARANCE of vagrant Fork-tailed Flycatchers, *Tyrannus savana savana* Vieillot (formerly *Muscivora t. tyrannus*), in the eastern United States is regularly reported in *American Birds*. Monroe and Barron (1980) have summarized North American records for the species. September and October sightings account for more than one-half of the total. This coincides with the early stages of "spring" migration in southeastern Brazil.

Large numbers of this highly migratory species spend the austral winter in northern South America. Hundreds of thousands have been reported to roost in mangroves of Trinidad's Caroni Swamp from May to October (French, 1966). A major southeastward migration was observed in Venezuela in late September (McNeil and de Itriago, 1968). This is the same subspecies which reaches the southern half of Brazil in September, *en route* to breeding grounds as far south as Rio Negro, Argentina, (Meyer de Schauensee, 1970) casually reaching the Falkland Islands (Cawkill and Hamilton, 1961).

The northern limit of their breeding range is not precisely known but is thought to be wholly south of the Tropic of Capricorn (Zimmer, 1937). Pinto (1935) does not list the species in his account of birds collected in the eastern half of the state of Bahia in an expedition lasting from November to April. It is also absent from Berla's list of specimens collected in the coastal region of Pernambuco, covering every month of the year (1946). Both locations are in extreme eastern Brazil. Mitchell (1957) had only twelve sightings for southeastern Brazil over a four-year period. All occurred from September to December

in the highlands between the cities of Rio de Janeiro and São Paulo. Several of her observations included aerial displays. They might have been nesting in the area, which is within the tropics, but there is no firm supporting evidence.

While spending several years in the Brazilian state of Minas Gerais, in the village of Viçosa, located in the Rio Doce valley north of Rio de Janeiro, I had occasion to observe the annual movement of this very conspicuous bird (Erickson and Mumford, 1976). I also made frequent trips to neighboring states, often during migration. Observations suggest the presence of a well-defined migration corridor and also the possibility of isolated breeding populations within the tropics.

Most of this region is about 2000 feet in elevation and none is below 1000 feet. A few mountain ranges reach 4000 to 9000 feet. Viçosa is in the humid tropical forest zone, although the forest cover itself has been largely removed. Open, scrub-covered cerrado of the central Brazilian uplands dominate central and western Minas Gerais.

The Fork-tailed Flycatchers arrive in the southern part of the state in September, increasing in number during October and November, when they become generally distributed in suitable habitat, although they are much less common or absent in the extreme east. In December and January local populations are present at the higher elevations, but rarer elsewhere. The northward return migration evidently misses this area. Pertinent records are listed in Table 1, by months. In addition to these, many other observations were made.

OCCURRENCE IN VIÇOSA is sporadic, and almost certainly represents transients near the eastern flank of their migratory route. December and January records for Caxambu' and Catas Altas are at elevations over 3000 feet, and in each instance birds were numerous and appeared to be engaged in courtship displays. They could have been on nesting territory, as this is mid-summer. Catas Altas is at the latitude of 20°S, near Belo Horizonte. Caxambu' is near latitude 22°S in the Mantiqueira Range (Fig. 1).

In late September and early October 1966 an overland trip was made through northeastern Minas Gerais, eastern Bahia, through the states of Sergipe, Alagoas and eastern and central Pernambuco west to Petrolândia on the São Francisco River. This is the time when *T. savana* appears in numbers in central and western Minas Gerais. Only a single individual was seen during the 2500 mile journey, and it was in eastern Minas Gerais. Much of the route was well inland from the coastal plain, in generally open, savanna-type terrain favored by the species. It would appear that migration is entirely west of the traversed area.

In the latter part of October 1966 several days were spent in central Brazil along the upper Xingu' River in northern Mato Grosso. Heavy forests predominate but substantial open country exists which superficially at least resembles western Minas Gerais. No *T. savana* were observed.

A month later they were similarly absent from central Goiás state, around the city of Goiás, which is also west of Minas Gerais. At the time they were common from Brasília eastward.

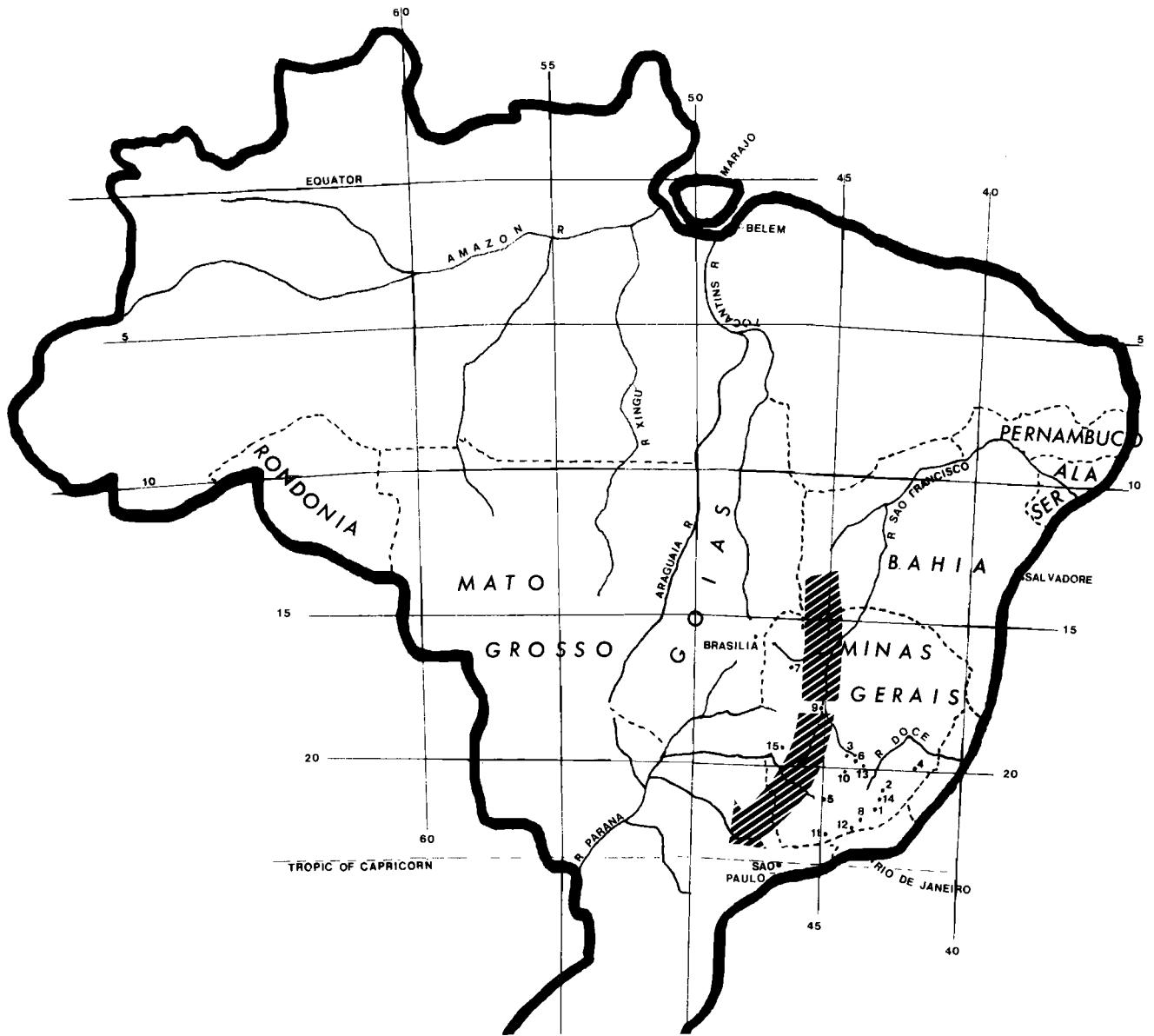


Figure 1. Map of Brazil showing a main migration route (arrow) of Fork-tailed Flycatchers to their southern breeding grounds. Numbers in Minas Gerais state correspond to the Map Key found in Table 1.

Brasília lies in the headwaters of three of the nation's principle river systems, the São Francisco, Parana', and Araguaia-Tocantins which flows northward to the mouth of the Amazon. As no *T. savana* were observed in the Araguaia-Tocantins basin west of Brasília at a time when they were common just to the east, it would appear the main flight was passing through the São Francisco drainage. Likewise, they seem to be uncommon in those smaller river basins draining directly eastward to the Atlantic. The upper reaches of the Rio Doce and Rio Paraíba valleys pick up the flight to the south, and the Parana' basin to the southwest, which includes the city of Lavras and much of southern Minas Gerais.

It is apparent that a major flight passes through western Minas Gerais, with the main body following the valley of the upper São Francisco River and its tributaries. From the 15th to 22nd parallels south latitude, migration appears to channel between the 42nd and 50th meridians, centering on the 45th. Coastal plains are avoided.

The timing of this flight coincides with the maximum sightings in North America, *i.e.* September, October and November. Assuming Trinidad to be a major wintering location and a point of departure for migrants, it is intriguing to note that Belo Horizonte, Brazil is exactly the same distance south as Boston is north. Most North American records center around southern New England.

This supports the contention that northerly vagrants are indeed misdirected migrants.

**F**ORK-TAILED FLYCATCHERS are distinctive birds which are highly visible in the open country they frequent. The chances are thus at least fair that a strong sampling of strays to North America is sighted and reported. The small, though persistent, number of North American sightings emphasizes the precision of the migratory instinct. To make a very presumptive guess, perhaps one individual in a million might be misdirected. [It may be, of course, that there is a "mirror" migration among North American migrants wintering in South America, moving *southward* in-

stead of northward in spring, but the chances of detecting such vagrancy would be slim indeed].

My only record for Mato Grosso, where limited time was spent, was of a single bird at Cuiabá on January 9, 1967. This, too, is in the Paraguay-Paraná river basin. Sick (1959) found them on the Goiás-Mato Grosso border "towards the end of 1943". Frisch and Frisch (1964) list September records for the western state of Rondonia and for the upper Xingu, where I failed to find them in October. It is possible that another population migrates through the Amazon Basin in far western Brazil in a more direct route south from the wintering grounds.

This leaves unresolved the migration route of the southeast Brazilian flight from the northern coast of South America south to the 15th parallel. I have Belém records for late May 1980, apparently of wintering birds. Snethlage (1914) lists specimens from the Tapajós River and from Marajó Island and the city of Belém, both near the mouth of the Amazon. Dates were not given. Some could have been migrants. Zimmer (1937) lists specimens from Remanso, Bahia. Significantly, Remanso is on the São Francisco River where it bends sharply southward, some 450 miles from its mouth, at the same meridian, the 42nd, as my easternmost record. Evidently they move southeast from the wintering grounds to the São Francisco valley, possibly reaching it at about latitude 10°S, then follow the valley upstream passing through that part of southeastern Brazil mentioned above. This route would also account for their absence near the coast.

Sick (1958) did not list them for Brasília in late April and early May. My latest record is for February 11, in west-central Minas Gerais. Assuming this is part of the same population that winters in Trinidad there is a two-to-three month interval between departure from their breeding territory and arrival on the wintering grounds. Few records appear in the literature to account for their whereabouts at this time.

#### SUMMARY

**T**HE FORK-TAILED FLYCATCHER, *Tyrannus savana savana*, migrates southward in large numbers through the São Francisco River valley in western Minas Gerais, Brazil from September to December, probably peaking from late

**Table 1** Some observations of *Tyrannus s. savana* in Minas Gerais, Brazil

Map Key	Date	Location	Remarks
2	Aug. 30, 1973	Viçosa	Three birds, very early.
1	Sept. 9, 1960	Uba'	First for the year.
2	Sept. 12, 1962	Viçosa	First for the year.
3	Sept. 18, 1962	Sete Lagoas	20 +, aerial display.
4	Sept. 19, 1966	Abre Campo	First for the year.
2	Oct. 5, 1959	Viçosa	Two, in display.
5	Oct. 19, 1977	Lavras	Common.
6-7	Oct. 29, 1961	Belo Horizonte—Unai'	Very common. Displays.
2	Nov. 3, 1966	Viçosa	Single.
1-8	Nov. 6, 1966	Uba'—Juiz de Fora	Several.
5	Nov. 18, 1959	Lavras	Very common.
9	Nov. 19, 1966	Tres Marias Reservoir	Common.
6-SP	Nov. 21, 1960	Belo Horizonte—São Paulo	Very common.
7	Nov. 26, 1966	Unai'	A few present.
7-6	Nov. 27, 1966	Unai'—Belo Horizonte	Fairly common.
8-1	Dec. 2, 1966	Juiz de Fora—Uba'	Several.
2	Dec. 8, 1961	Viçosa	Several.
10	Dec. 9, 1962	Florestal	Very common.
11	Dec. 15, 1966	Caxambu'	Many present.
12	Dec. 19, 1962	Rio Paraíba Valley	Common.
2	Dec. 26, 1962	Viçosa	One. Latest for location.
6	Jan. 4, 1963	Belo Horizonte	One pair.
13	Jan. 12, 1963	Catas Altas	Numerous. Much display.
14	Feb. 2, 1963	Guidoval	One individual.
15	Feb. 11, 1963	Araxá'	One. Latest record.

October to late November. At this time it appears to be scarce in adjacent parts of the Amazon Basin at the same latitude. It is also absent from the lower reaches of smaller rivers flowing directly east into the Atlantic. No evidence was found for a return migration through this area.

Breeding populations may exist within the tropics of southeast Brazil at higher elevations.



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