

## Changes in the status and distribution of savanna birds of Beni and Santa Cruz, Bolivia

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Reportamos cambios en la distribución o estatus de 32 especies de aves sabaneras en Llanos de Moxos, Sabanas del Beni, Chapada y Pantanal de los departamentos del Beni y Santa Cruz, Bolivia. Incluimos seis especies nuevas para el Beni y dos nuevas para Santa Cruz, a más de una especie confirmada en Bolivia por primera vez mediante fotos. Además, presentamos detalles sobre dos taxones que posiblemente representan nuevas especies para la lista boliviana, pero que requieren de más investigación. Varios de los registros corresponden a la época de cría de aves supuestamente migratorias e indican la posibilidad de nidificación local. Queda claro que el estatus de varias especies en las sabanas bolivianas, sobre todo de las que ocurren durante la época de lluvias, necesita más investigación.

The lowlands of Beni and northern Santa Cruz, Bolivia, form a complex mosaic of seasonal tropical shrubland and grasslands interspersed with gallery forests. In the south, this area is dominated by seasonally flooded grassland ('Llanos de Moxos'), with scattered woody vegetation including *Curatella americana*, and *Vernonia* becoming increasingly common towards the north and east ('Beni savanna'<sup>13</sup>). In the east, savannas are found along the border with the Brazilian states of Rondônia and Mato Grosso, and represent a westward expansion of the Brazilian *chapada*. In south-east Santa Cruz, savannas are associated with the greater Pantanal. Creeks and large rivers such as the Beni, Marmoré and Iténez are surrounded by tall gallery forests, often with a large component of *Rhipidocladum* bamboo<sup>13</sup>. Locally, termite mounds dominate the landscape and form a vital element of structure in an otherwise relief-lacking terrain<sup>13</sup>. Agriculture has been a dominant component of these savannas since pre-colonial times<sup>16</sup>; cattle-, soy- and rice-farming have spread widely in the last decades<sup>17</sup>.

The savanna complex of central Bolivia is largely isolated from other Neotropical savannas such as the Brazilian *cerrado* and *chapada*. Despite this, the avifauna of the Llanos de Moxos consists largely of a subset of widely distributed and dispersive species of southern South American open habitats, genetically not very well-differentiated from other open-biome avifaunas of southern South America<sup>14,15,21,25,34</sup>. Nonetheless, a few endemics exist (e.g., the Critically Endangered Blue-throated Macaw *Ara glaucogularis*, the Near Threatened Unicoloured Thrush *Turdus haplochrous*, nominate Plain Softtail *Thripophaga fusciceps fusciceps* and the subspecies *boliviensis* of Velvet-fronted Grackle *Lamprosar tanagrinus*) and we suspect populations of more widespread species may be in incipient

stages of (sub)speciation due to their isolation from other Neotropical savannas.

Recently, a flurry of studies documenting the avifauna of the region has led to the discovery of new species for the region and Bolivia<sup>1,6–8,12,18–20,27,29,30,35</sup>. Despite this, the ecology of many species remains relatively poorly known and the high seasonality of the area contributes to this. Further, many species are only present during certain times of the year, with many showing particularly puzzling phenologies. For example, Chimango Caracara *Milvago chimango* is known from year-round records in the region, despite no indication of breeding<sup>1</sup>. The temporal occurrence of several species of *Sporophila* seedeaters is unclear and may depend largely on the seeding of grasses<sup>9,26</sup>. Road infrastructure in the central Bolivian lowlands is limited, and flooding, especially during the wet season (October to March), is frequent, preventing access to large swaths of the Llanos de Moxos and Beni savanna. Because ornithological surveys and ornithological tourism have largely been focused on the dry season, there are gaps in our knowledge of the wet-season occurrence of many species.

In this manuscript, we report records of species outside their usual or known distribution within the Llanos de Moxos and Beni savanna in the Bolivian departments of Beni and Santa Cruz. The main sites visited for this study are shown in Fig. 1. We particularly hope to shed light on the temporal occurrence of several species in the region and point to possible new avenues of research concerning the avifauna of the savannas of Bolivia.

We visited Beni during seven expeditions in a six-year period (2018–2023), during which we recorded birds by sight, photographs and sound-recordings; if photographs were taken or sound-recordings made, we specify this in the