

## **BIRDS IN THE TROPICAL SAVANNAS**

**Alexandre Gabriel Franchin**

*Laboratory of Ornithology, Biology Institute, Federal University of Uberlândia, Brazil*

**Rafael de Freitas Juliano**

*Laboratory of Ornithology, Biology Institute, Federal University of Uberlândia, Brazil*

**Mieke Ferreira Kanegae**

*Bioscience Institute, General Ecology Department, São Paulo University, Brazil*

**Oswaldo Marçal Júnior**

*Laboratory of Ornithology, Biology Institute, Federal University of Uberlândia, Brazil*

**Keywords:** Avifauna, Biodiversity, Conservation, Ecoregions.

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### **Summary**

The Savanna biome is characterized by landscapes dominated by grasses with scattered trees and shrublands, covering about 20% of the world's surface. Tropical Savannas are located mainly in South America, Africa, Australia and South Asia. In the present chapter, we are combining information from different sources to offer a more complete description of the bird diversity in the tropical savannas. We employed data from BirdLife International, articles, field guides, local journals, newsletters, bird distribution maps, checklists and reports by ornithologists around the globe. For our analysis, we considered all main terrestrial and flooded tropical savannas (those savannas occurring

in the tropical region). The results show that 2,951 bird species (25 orders, 152 families and 1,404 genera) are found in the Tropical Savannas. The Cerrado (with 850 species) and African Savannas (794 species) have the greatest bird richness. Tyrannidae family has the most diversity, with 162 species which are exclusively found on the Neotropical savannas. Accipitridae is another prominent bird family with around 142 species. Three bird species are common to all tropical savannas: the Cattle Egret *Bubulcus ibis*, Barn Swallow *Hirundo rustica*, and the Osprey *Pandion haliaetus*. The tropical savannas also share 15 orders, 20 families and 19 genera. Twenty families were exclusive to only one savanna. Northern Australian savannas had the greater number of exclusive families (eight families). The similarity analysis shows the following groupings: African Savannas; Terai-Duar; Northern Australian and Trans-Fly; and Beni, Pantanal, Cerrado and Llanos. The Neotropical savannas (Llanos, Pantanal, and Cerrado) are those that can be considered in fact similar, because they presented a minimum 0.70 Sorenson's index. There are 2,057 bird species that face some degree of threat (21% of the recognized bird species), not considering the extinct species or those with insufficient data available. In the tropical savannas, there are 319 species that face some degree of threat. The Cerrado is a unique tropical savanna considered a hotspots, with the most threatened bird fauna (58 species), and seven of them are critically endangered.

## 1. Introduction

There are approximately 9,990 bird species in the Earth, distributed in 29 orders, 195 families, and 2,113 genera. The Order Passeriformes include 58% of all extant bird species and among the non-passerines, the Apodiformes is the most diverse order, totaling roughly 443 species, which is about 4% of the total of world bird species. The most representative passerine family in species numbers is Tyrannidae, with around 410 species known as the tyrant flycatchers. Amongst the non-passerine families, Psittacidae, represented by the macaws, parrots, lorises, and lorikeets, has the greater species number, with around 374 species. The genus *Nectarinia* (some sunbirds) shows the greater bird species richness in the world with 78 species.

Due to their varied anatomical and ecological adaptations, birds have a worldwide distribution. The most distinctive zoological region for the avifauna is the Neotropical region, with around one third of Earth's species, including a great number of endemics species (e.g. toucans, manakins, hummingbirds, rheas, among others). Birds are also diversified and abundant in other tropical areas of Ethiopian, Australian and Oriental Zoological regions. They occupy different biomes, mainly tropical forests and savannas.

The plants and animals that inhabit grasslands, savannas and shrublands are adapted to survive the seasonal extremes and are also more dependent on the impact of fire regimes than on the climate itself, and birds are not an exception. Our current knowledge about tropical savanna birds is very broad, although the majority of the data is diffuse, resulting from isolated works. In the present chapter, we are joining different sources of information to offer a more complete description of the bird diversity in the tropical savannas. We employed data from BirdLife International, articles, field guides, local journals, newsletters, bird distribution maps, checklists and reports by ornithologists around the globe.

## 2. Global Ecoregions and the Savanna Biome

The concept of Global ecoregions was developed by WWF and is defined as: “a large unit of land or water containing a geographically distinct assemblage of species, natural communities, and environmental conditions”. In this sense, ecoregions represent ecological and conservation units in which natural communities share the greater part of their biodiversity, ecological processes and similar environmental conditions, producing critical mechanisms for their long-term persistence. This knowledge provides us with a powerful tool that aids us in the investigation of the biodiversity from all terrestrial and aquatic ecosystems on the Earth. A total of 142 terrestrial, 53 freshwater and 43 marine ecoregions are recognized. This concept is a tool for biodiversity conservation at a global scale, since it makes possible to sustain regional conservation policies and development strategies. Those habitats include extensive areas and different environmental conditions, ranging from the wettest of forest types to the driest and hottest deserts, reflecting a broad diversity of species, communities and ecosystems.

The Savanna biome is characterized by landscapes dominated by grasses with scattered trees and shrublands. It is a transition between forests and grasses domains. The primary savannas result from typical climate (climatic savannas), soil (edaphic savannas) or grazing conditions. A secondary type, called derived savanna, is produced by human activities, including burning and deforesting. The distribution of savannas includes extensive areas of America, Africa, Asia and Australia continents (Figure 1).

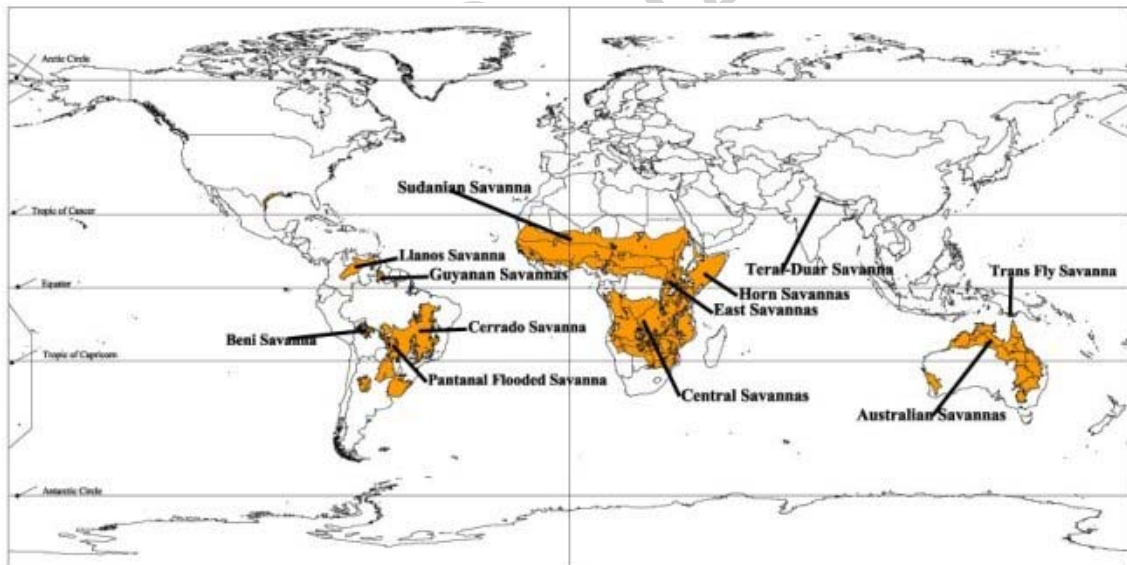


Figure 1. Map of distribution of the savannas in the world, highlighting the location of the tropical savannas.

Grasslands, Savannas and Shrublands are present in a representative number of ecoregions distributed in three Terrestrial Major Habitat Types, as follows: Tropical and Subtropical Grasslands, Savannas and Shrublands; Temperate Grasslands, Savannas and Shrublands; and Flooded Grasslands and Savannas (Table 1).

<i>Terrestrial Major Habitat types</i>	<i>Geographical distribution</i>							<b>Total</b>
	<b>Afrotropical</b>	<b>Australasia</b>	<b>Indo-Malayan</b>	<b>Neotropical</b>	<b>Nearctic</b>	<b>Palaearctic</b>	<b>Oceania</b>	
1. Tropical and Subtropical Moist Broadleaf Forests	11	8	17	12	-	-	2	<b>50</b>
2. Tropical and Subtropical Dry Broadleaf Forests	1	2	2	4	-	-	1	<b>10</b>
3. Tropical and Subtropical Coniferous Forests	-	-	-	2	1	-	-	<b>3</b>
4. Temperate Broadleaf and Mixed Forests	-	3	2	-	1	2	-	<b>8</b>
5. Temperate Coniferous Forests	-	-	-	1	4	4	-	<b>9</b>
6. Boreal Forests / Taiga	-	-	-	-	2	3	-	<b>5</b>
7. Tropical and Subtropical Grasslands, Savannas and Shrublands	4	1	1	2	-	-	-	<b>8</b>
8. Temperate Grasslands, Savannas and Shrublands	-	-	-	1	1	1	-	<b>3</b>
9. Flooded Grasslands and Savannas	2	-	1	2	-	-	-	<b>5</b>
10. Montane Grasslands and Shrublands	4	1	1	2	-	3	-	<b>11</b>
11. Tundra	-	-	-	-	2	3	-	<b>5</b>
12. Mediterranean Forests, Woodlands and Scrub	1	2	-	1	1	1	-	<b>6</b>
13. Deserts and Xeric Shrublands	4	2	-	1	2	2	-	<b>11</b>
14. Mangroves	3	1	2	2	-	-	-	<b>8</b>
<b>Total</b>	<b>30</b>	<b>20</b>	<b>26</b>	<b>30</b>	<b>14</b>	<b>19</b>	<b>3</b>	<b>142</b>

(Source: WWF)

Table 1. Global ecoregions, according to Terrestrial Major Habitat Types and geographical distribution.

## 2.1. Flooded Grasslands and Savannas

Flooded Grasslands and Savannas are constituted of large mosaics of flooded grasslands and savannas, gallery forests, and dry forests. In some areas, over 80% of the region can be flooded during the rainy season. These complexes occur in the following Global ecoregions: Everglades and Pantanal (Neotropical), Sudd-Sahelian Flooded Grasslands and Savannas and Zambebian Flooded Savannas (Afrotropical) and Rann of Kutch Flooded Grasslands (Indo-Malayan). Flooded Grasslands and Savannas sustain great biodiversities, including animal and plants intimately adapted to the rainfall regime and soil conditions. The Everglades covers 20,000 sp km of the Southern Florida State (USA) and supports some 11,000 species of seed-bearing plants, 150 fish species and 300 bird species. The Pantanal spreads across 171,000 sq km of Bolivia, Brazil, Paraguay (South America) and it has over 260 species of fish, 700 birds, 90 mammals, 160 reptiles, 45 amphibians, 1,000 butterflies, and 1,600 species of plants. Any change in the precipitation regime, flow and quality of water, integrity of riparian and gallery habitats or natural fires can produce serious disturbances in the composition and

structure of communities. So, agricultural expansion, water projects, pollution, over fishing, uncontrolled ecotourism and road construction constitute severe threats for all Flooded Grasslands and Savannas. These ecoregions are very important for several bird species, including migratory species, that feed and breed there, like the Jabiru stork (*Jabiru mycteria*), Wood stork (*Mycteria americana*), Hyacinth macaw (*Anodorhynchus hyacinthinus*), Roseate spoonbill (*Ajaia ajaia*), and White ibis (*Eudocimus albus*).

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### **Biographical Sketches**

**Alexandre Gabriel Franchin** is undertaking his PhD degree in Ecology and Conservation of Natural Resources from the Federal University of Uberlândia. He obtained his Master Degree in Ecology and Conservation of Natural Resources from Uberlândia Federal University. His studies have focused on Urban Ecology, Bird Ecology, Behavioral Ecology and Ornithology.

**Rafael de Freitas Juliano** is Professor of Zoology at the Department of Biology of the Goiás State University, Morrinhos Campus, Brazil. He obtained his Master Degree in Ecology from Goiás Federal University and is undertaking his PhD degree in Ecology and Conservation of Natural Resources from the Federal University of Uberlândia. His studies have focused on Vertebrate Ecology with emphasis on Animal Communication. His current research interests focus on natural selection on avian communication systems.

**Mieko Ferreira Kanegae** is undertaking her PhD degree in Ecology from São Paulo University. During her post-graduate work, she has studied ectoparasites in bird communities in the Cerrado. Currently, her research focus is on habitat selection, home ranges, and population sizes of endemic species. Working with CEMAVE (National Center for Research and Conservation of Wild Birds), she implemented the bird monitoring program in the National Park of Brasília, and the study of the effects of fire in Cerrado areas on bird communities.

**Oswaldo Marçal Júnior** is Professor of Animal Ecology at the Institute of Biology of the Federal University of Uberlândia. He has a Master Degree and PhD in Ecology. Actually he is coordinating the Postgraduate Program in Ecology and Conservation of Natural Resources and the Laboratory of Ornithology. His studies have focused on several themes in Ecology of Ecosystems and Applied Ecology, with special interest in the following areas: Bird Ecology, Ecology of Parasites and Human Ecology.