SUPPLEMENTARY MATERIAL

*Habitats*

*Wetlands and rivers*. Within the Rio Branco basin, aquatic birds use open water along creeks, inland lakes, and rivers (Fig. S1). Most of the birds that occur on these habitats feed directly on the water or water edges, and are normally seen flying over the water, perched on beaches and sandbars, or along the forest edge.

*Beaches and sandbars*. Possibly the habitat that is most affected by the seasonal natural flood pulse of the Rio Branco and its tributaries (Fig. S1 A and C). Beaches and sandbars disappear almost completely during a few months, but represent a fundamental habitat for many aquatic birds that breed on the sandy beaches. Also of great importance for migratory waders and shorebirds, which use beaches and sandbars to feed.

*Sandbar scrub*. The tallest parts of sandbars on river islands are covered by herbaceous and shrubby vegetation (Fig. S1C) that remains flooded for part of the high-water season, but not as long as lower beaches. This vegetation type is the house of many specialist bird species, and represents an important ecosystem for birds.

*River edge Forest*. This type of forests is a transitional stage between sandbar scrub and várzea forest (Fig. S1D), and is restricted to river islands along the Rio Branco, and is not present in any of the Branco tributaries. This vegetation type remains flooded for several months every year, it has a dense grassy understory and is dominated by *Cecropia* spp. and few other tree species.

*Várzea Forest*. Possibly the most widespread habitat along the river south of the Bem Querer rapids. Although it remains flooded for a few months every year, it has a

considerably more diverse tree community that previous vegetation types and the understory can be less dense than previous habitat types. This vegetation type occurs both on river islands and along river margins, and can reach between 10 and 30 m in height (Fig. S2A). The forest interior can vary greatly, including very open understory areas (Fig. S2C) or more closed understory with many vines and very difficult to trespass (Fig. S2C).

*Transitional Forest*. This forest type occurs on higher grounds along the river, and floods only briefly (if at all) during the highest peak of the flooding season. The structure of the forests resembles that of a *terra-firme* forest and its canopy can reach up to 30-40 m in height (Fig. S2D). The understory is very similar to that of a typical terra firme forest, with many palm trees and a high species diversity of trees (Fig. S2E). This habitat can sometimes be considered as patches of terra firme forests in areas that do not flood along the Rio Branco.

*Black-water Igapó*. Restricted to areas that are seasonally flooded by black-water rivers, such as the rivers Xeruiní, Anauá, and Água Boa do Univiní, all of which are tributaries of the Rio Branco. It generally develops on top of sandy soils and structurally resembles a white sand forest or a *campina* / *campinarana* type of vegetation.

*Gallery Forest*. Riparian woodlands associated with rivers within the savannas domains (Fig. S3A and B). Gallery forests are deciduous or semi-deciduous forests (Fig. S3C), occuring in areas where precipitation seasonality causes many trees to lose their leaves (Pires and Prance 1985). These vegetation type usually covers a narrow band (ca. 50 m wide) along the margins of watercourses (Fig. S3B), tending to be low in stature (canopy reaching 10-15 m) and filled with vines (Naka et al. 2006). This is the main vegetation

type on the upper Rio Branco and other rivers in northeastern Roraima, such as the Uraricoera and Tacutú rivers. The understory is very open in some areas (Fig. S3C), but can be virtually impenetrable in others. Flooding along these rivers is seasonal but less predictable; the level of these rivers can change dramatically in a matter of days.

SUPPLEMENTARY FIGURES

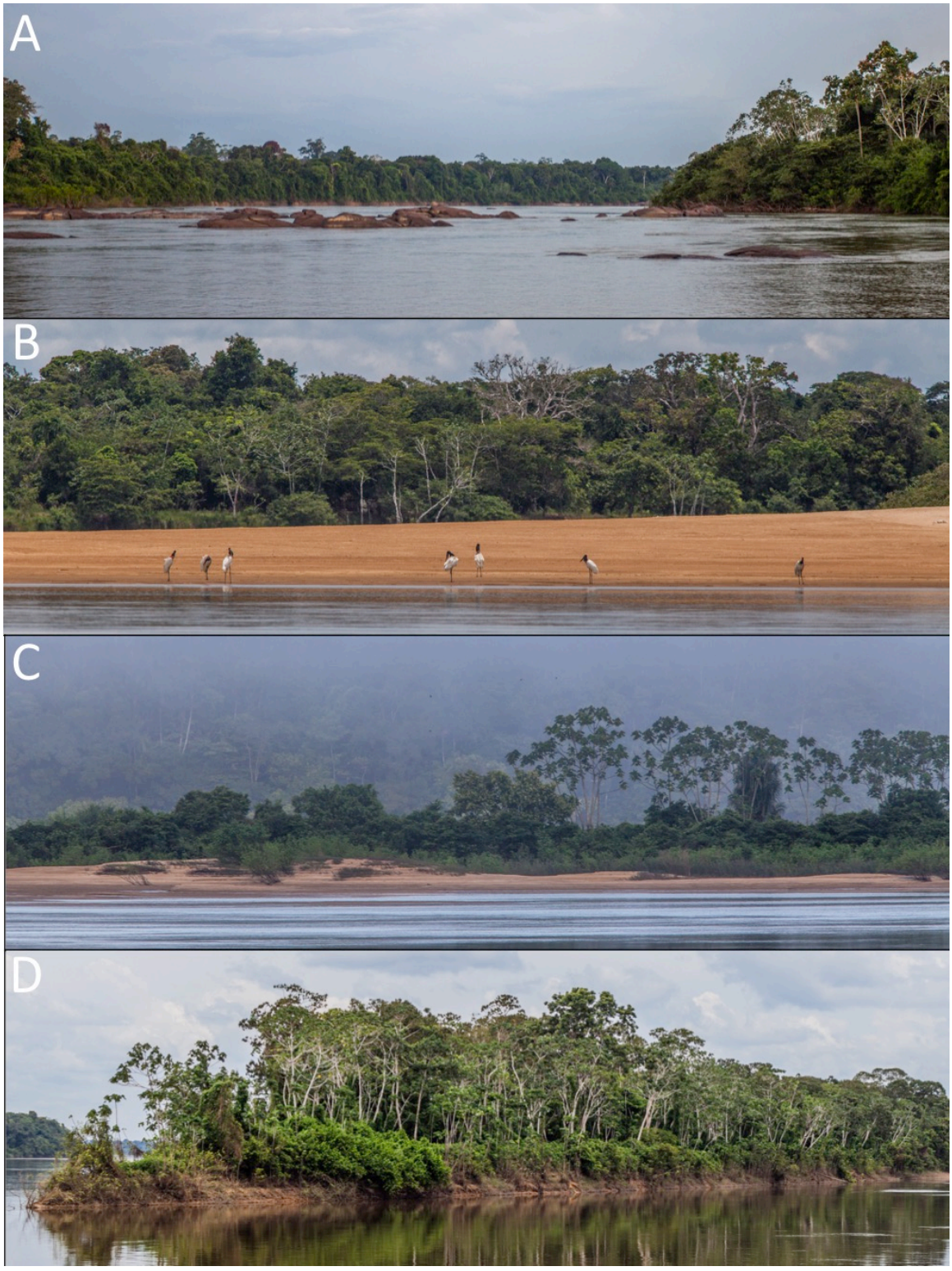


Figure S1. Natural habitats along the Rio Branco. A, Bem Querer Rapids near the city of Caracaraí (the piece of land to the left is a river island, not the river margin). B, Water and beaches along the lower Rio Branco, with group of Jabiru (*Jabiru mycteria*) and varzea forest in the background. C, Early successional states on a river island located on the lower Rio Branco, including sandbar scrub and few Cecropias. D, River-edge or Cecropia-dominated Forest, a habitat that is exclusively from river islands on the Rio Branco. Photographs by T. Orsi Laranjeiras.

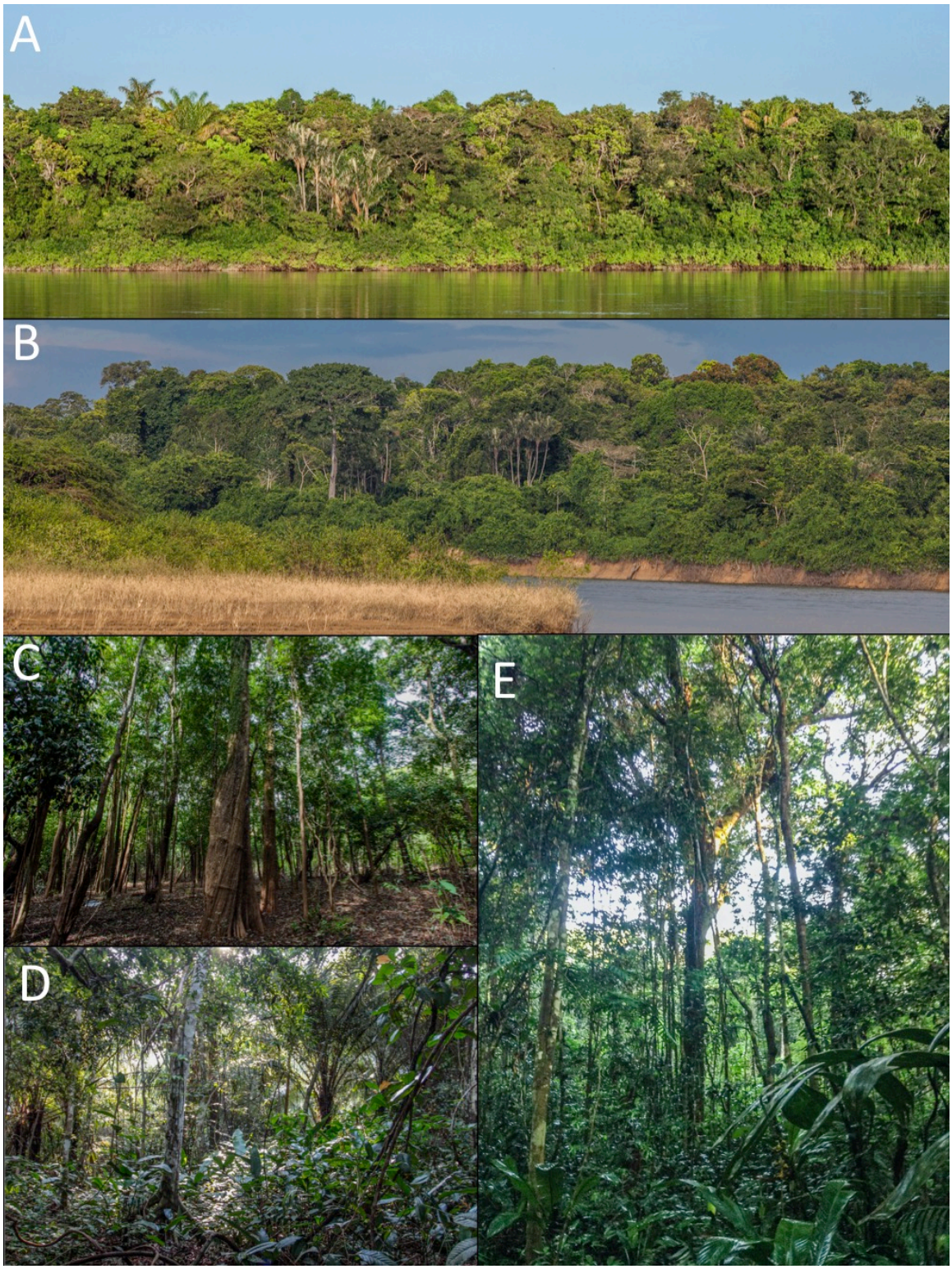


Figure S2. Natural habitats along on the lower Rio Branco. A, profile view of a stretch of Varzea forest along the lower Rio Branco. B, Profile view of a Transitional forest along the lower Rio Branco. C and D, Interior of a Varzea forests along the lower Rio Branco. E, interior of a Transitional forest on the lower Rio Branco. Photographs by T. Orsi Laranjeiras.


Fig. S3. Gallery forest on the upper Rio Branco. A, View of gallery forest and associated semi-deciduous forest near Boa Vista. B, Galley forest on the Uraricoera river. C, Forest interior of gallery forest on the Uraricoera river.. Photographs by T. Orsi Laranjeiras.

SUPPLEMENTARY TABLES

Table S1. Sampling effort of avian surveys on the Rio Branco and some of its tributaries, including date, number of days in the field, survey team and general localities visited.

| Year | Dates | No. days | Survey team | Localities visited |
|---|---|---|---|---|
| 2001 | 16 Mar | 1 | LNN, MFT | Upper Rio Branco (Ilha São José) |
| | 6-11 July | 6 | LNN, MFT | Lower Rio Branco (Caracaraí to Sta. Maria do Boiaçú) |
| | 5-18 Oct | 14 | LNN, JMB | Lower Rio Branco (Caracaraí to Água Boa do Univiní) |
| | 17-19 May | 3 | LNN & MCH | Rio Mau |
| 2006 | 1-15 Oct | 15 | LNN, MCH, CLB, MSJr | Lower Rio Branco (Caracaraí to Anauá) |
| 2008 | 27 Mar- 5 Apr | 9 | See Laranjeiras et al (2014) | Viruá National Park, Lower Rio Branco (Caracaraí to Anauá) |
| 2010 | 28-29 Jul | 2 | TOL | Lower Rio Branco (Caracaraí to Ajaraní) |
| | 6-8 Dec | 3 | TOL | Lower Rio Branco (Caracaraí to Aliança) |
| 2011 | 29 Aug – 2 Sept | 5 | TOL | Lower Rio Branco (Anauá and Aliança) |
| 2012 | 1-4 Mar | 4 | LNN, JQ | Lower Rio Branco and Rio Anauá |
| | 20 Sept – 7 Oct | 18 | LNN, TOL, ACP, MFT, GRL | Lower Rio Branco (Caracaraí to mouth, RB 5 to RB12) |
| | 24-25 Oct | 2 | TOL & ACP | Upper Rio Branco (RB2) |
| | 10-12 Nov | 3 | TOL & ACP | Upper Rio Branco (RB3 and 4) |
| | 29-30 Nov | 2 | TOL & ACP | Upper Rio Branco (RB1) |
| | 3 Dec | 1 | TOL & ACP | Upper Rio Branco (RB1) |
| 2013 | 1-23 Oct | 23 | LNN, TOL, ACP, GRL, HSM, BMC, MCH | Lower Rio Branco (Caracaraí to mouth, RB 5 to RB12) |
| 2014 | 26 Mar - 4Apr | 9 | LNN & TOL | Rio Uraricoera |
| | 10-30 Sept | 20 | LNN, GRL, DM, BMC | Lower Rio Branco (RB5) |
| | 26 Nov | 1 | LNN & TOL | Rio Mucajaí |
| | 4-5 Dec | 2 | LNN & TOL | Rio Tacutu |
| 2015 | 9-11 Aug | 3 | LNN, HL, FMLCG | Rio Uraricoera |

Abbreviation of non-author names: JMB, Juan Mazar Barnett; CLB, Catherine L. Bechtoldt, MSJr, Marcelo Santos Jr; JQ, Julián uitiaquez, HL, Hevana Lima; FMLCG, Flor Maria Las Casas Guedes.

Table S2. List of 15 localities surveyed by means of standardized point counts between 2012 and 2015, included in our Indicator Species Analysis.

| River | Map code | River section | Geographic coordinates (Lat, Long) |
|---|---|---|---|
| Branco | RB1 | Lower | (2.951321, -60.491053) |
| Branco | RB2 | Lower | (2.68273, -60.744589) |
| Branco | RB3 | Lower | (2.284464, -60.88615) |
| Branco | RB4 | Upper | (1.901177, -61.020957) |
| Branco | RB5 | Upper | (1.54309, -61.181017) |
| Branco | RB6 | Upper | (1.120272, -61.301375) |
| Branco | RB7 | Upper | (0.748784, -61.492086) |
| Branco | RB8 | Upper | (0.300741, -61.759403) |
| Branco | RB9 | Upper | (-0.118375, -61.805155) |
| Branco | RB10 | Upper | (-0.556905, -61.807728) |
| Branco | RB11 | Upper | (-0.968726, -61.857296) |
| Branco | RB12 | Upper | (-1.369174, -61.86994) |
| Tacutu | TAC2 | Lower | (3.56348, -59.9323) |
| Uraricoera | URA2 | Lower | (3.438148, -61.037795) |
| Uraricoera | URA1 | Lower | (3.426439, -60.63549) |