

SUPPLEMENTARY MATERIAL

A summary of the methods used for sampling different groups of animals and plants in the standardized LTER plots at Alter do Chão. Details can be consulted in the articles cited in the reference list.

ANIMALS

Ants

Forest - Ants were sampled in diurnal surveys twice a year, at the end of the dry and the end of the wet season. Three survey methods were used: sardine baits, manual collection and the Winkler method. Sardine baits and manual collection were used both on the ground and in the lower vegetation (1–2 m high). Small portions of oiled sardine were placed every 25 m along the transects, alternating between baits on the ground and baits in the vegetation. All ant species attracted to baits were collected 1 h later. Two observers conducted the manual collection, which consisted of a visual search and capture of ants on the ground or in the understory vegetation in each plot, for a total of 1 h per observer in each stratum. For the Winkler method, leaf-litter samples were taken along the transects every 10–20 m. A composite sample of 8 liters of litter was obtained and ants were extracted in a Winkler bag for 48 h. Details can be found in Vasconcelos et al. (2006).

Savanna - The methods used for surveying ants in the savanna plots were similar to those used for forests, except because of the absence of the Winkler method in the savanna habitat. Ant surveys were conducted in the dry season. Details can be found in Vasconcelos et al. (2008).

Bats

Forest and savanna - Bats were captured with mist nets (2.5 x 12 m) positioned along one 150 m transect in the understory, to capture passing individuals between 18:00 and 24:00. Echolocation methods were also used to complement the species list with canopy insectivorous species. Plots were visited 5 times including both the dry and wet seasons, with a 30-day interval between visits. Details can be found in Bernard & Fenton (2002, 2007).

Birds

Savanna - Birds were counted by one observer in 10-m radius points positioned along the four transect lines. Points were 50 m apart, totaling 20 points per plot. The observer stopped 2 min in each point, counting all birds seen or heard during this period and then moving to the next point. Surveys were conducted in the same plot twice, from 06:00 to 09:00 and from 16:00 to 18:00 pm. Cintra & Sanaiotti (2006) also used ground mist nets for bird surveys. However, we focused on point-counts because they provide rapid, yet reliable data from several species of birds, being a more appropriate method for long-term studies covering large spatial scales. Surveys were conducted twice a year, at the end of the dry season and the beginning of the wet season.

Forest - Birds were counted by one observer in points located 50 m apart along the transects. The observer stopped 2 min at each point to record all birds seen in a strip 30 m long and 5 m wide, extending from the observation point toward the plot border. Unidentified birds that vocalized were recorded for posterior identification. Surveys were conducted in the same plot twice, from 06:00 to 09:00 and from

15:00 to 18:00 on the same day, during the dry seasons of two consecutive years. Details can be found in Cintra et al. (2013).

Dung beetles

Forest - Dung beetles were captured with pitfall traps baited with human dung suspended in 5 ml soda caps. Ten one-liter plastic pots were buried in the ground along two of the four 250 m transects, 50 m apart from each other. Pitfall traps were maintained in the field for three consecutive days at the end of the wet season. Flight-intercept traps were also used for sampling the commonest species of dung beetle. Details can be found in Vulinec et al. (2008).

Savanna - Dung beetles were captured with pitfall traps, baited either with cow dung, human feces, or carrion. Plastic pots (diameter 15 cm, height 10 cm) were buried in the ground along the four 250 m transects, 50 m apart from each other, totaling 24 points per plot. Each point consisted of three pots separated by 0.5 m, containing one of the dung baits, totaling 72 pots per plot. Pitfall traps were maintained in the field for two consecutive days during the transition between the wet and dry season. Details can be found in Louzada et al. (2010).

Lizards

Forest - Sixteen species of lizards have been recorded from Alter do Chão forests. However, data are available for only two, *Coleodactylus amazonicus* and *Gonatodes humeralis* (both Sphaerodactylidae), which are forest specialists and relatively abundant species, that can be easily counted. Two observers walked along the center of each transect searching for individuals in a 6 meters wide strip and up to 3 m height. Leaf litter was overturned in a 1-m wide strip

along the transect line in search for *G. humeralis*. Details can be found in Carvalho Jr. et al. (2008).

Savanna - Two observers searched for lizards along the four transect lines from 07:00 to 18:00. Several transects were surveyed per day at the end of the dry season. Data were collected for three species: *Cnemidophorus lemniscatus* and *Kentropyx striata* (both Teiidae), and *Anolis auratus* (Dactyloidae). Clumps of grasses and shrubs were beaten to flush lizards that were counted from a sight. Sampling increased from one (Faria et al. 2004) to two surveys (Souza et al. 2021) per transect to reduce the risk of false-absences. At the beginning and end of each transect, temperatures of the air, soil in the shade, and soil exposed to sun were measured (Faria et al. 2004).

Medium/Large mammals

Forest - Medium to large mammals (> 0.5 kg) were surveyed along transect lines of 1-1.4 km long in each of four forest fragments. Diurnal (05:45–10:00) and nocturnal (19:00–22:00) surveys were conducted during the dry season. Every transect was surveyed nine times during the day and five times at night without a predefined order. Sights, tracks, vocalizations, hair or carcasses of any mammal species were recorded. One-meter square sand track-plates and structured interviews complemented the data. Details can be found in Sampaio et al. (2010).

Small mammals

Forest - Small mammals were captured with 30 Sherman traps (8 × 9 × 20 cm), 30 Tomahawk live traps (15 × 15 × 35 cm), and 8 pitfall traps per plot. Sherman and Tomahawk live traps were alternated along the transects, 15 m apart. Two were installed on the ground followed by two 2 m above ground. Traps were baited with a small piece of banana, a cotton wad soaked

with cod-liver oil and a mixture of soybean oil, peanut butter and corn meal. Pitfall traps were made of 60 liter plastic buckets that were buried in the ground, 10-m apart, and connected by a 60 cm-tall black plastic sheet, pinned to the ground with wooden stakes. The 80 m pitfall-trap line was parallel to and equidistant from the two central grid lines of the plot. Plots were sampled during five consecutive days in each of the field expeditions during the wet and dry season. Details can be found in Borges-Matos et al. (2016).

Savanna - Small mammals were captured with Sherman traps (23 × 8.0 × 9.0 cm), baited with half a Brazil nut, and a mixture of peanut butter and oatmeal. Captures were usually conducted in both seasons (dry from July to October, and rainy from March to June). Traps were spaced 20 m apart along the four transect lines, totaling 50 traps per plot. Trap checking was made from 07:00 to 10:00 on two consecutive days. *Necromys lasiurus* (Cricetidae) was the only species consistently trapped in the savanna plots, and, studies focused on this species from the very beginning (Francisco et al. 1995, Magnusson et al. 1995). Individuals were marked to avoid duplicate counts and inflate abundance estimates (Ghizoni et al. 2005, Layme et al. 2004).

PLANTS

Mistletoe

Savanna - The number of the potential hosts and of established mistletoes were counted in 10 m wide strips on each side of the transect lines, forming four strips of 20 x 250 m, totaling

2 ha per plot. Surveys were conducted during the wet season. Details can be found in Fadini & Lima (2012).

Vegetation structure

Forest - Forest structure was assessed by a profiling ground Light Detection and Ranging sensor (LIDAR) in the same transects where tree surveys were made (see the main text). At each transect, two people carried the portable ground LIDAR, with the sensor pointed vertically, at a ~80 cm above the ground. Data was used to calculate the following forest structural variables for each transect: a) Leaf Area Index, LAI, (m^2/m^2); b) Leaf area density, LAD (m^2/m^3); c) Maximum Height (m) of the canopy surface; and d) Mean Height (m) of the canopy surface. Details can be found on Stark et al. (2020).

Savanna - The relative vegetation cover of plant species in savanna plots was estimated with point quadrats placed every 2 m along each one of the four transects. The points (500 per plot) were located with a measuring tape stretched and suspended along each transect. All species touched by a vertical 2 mm diameter metal rod were recorded up to 2 m above ground. Plants taller than 2 m were recorded if the point was under the tree or shrub canopy. Each species was recorded only once at each point, regardless of the number of times it was touched by the rod. Details can be found in Magnusson et al. (2008).

Table SI. Articles published, dissertations and theses concluded, species list, plot status and online dataset. https://www.dropbox.com/s/s497v7ldup6t5sl/Sheet_supplement_Fadini%20et%20al.%202021_Anais.xls?dl=0

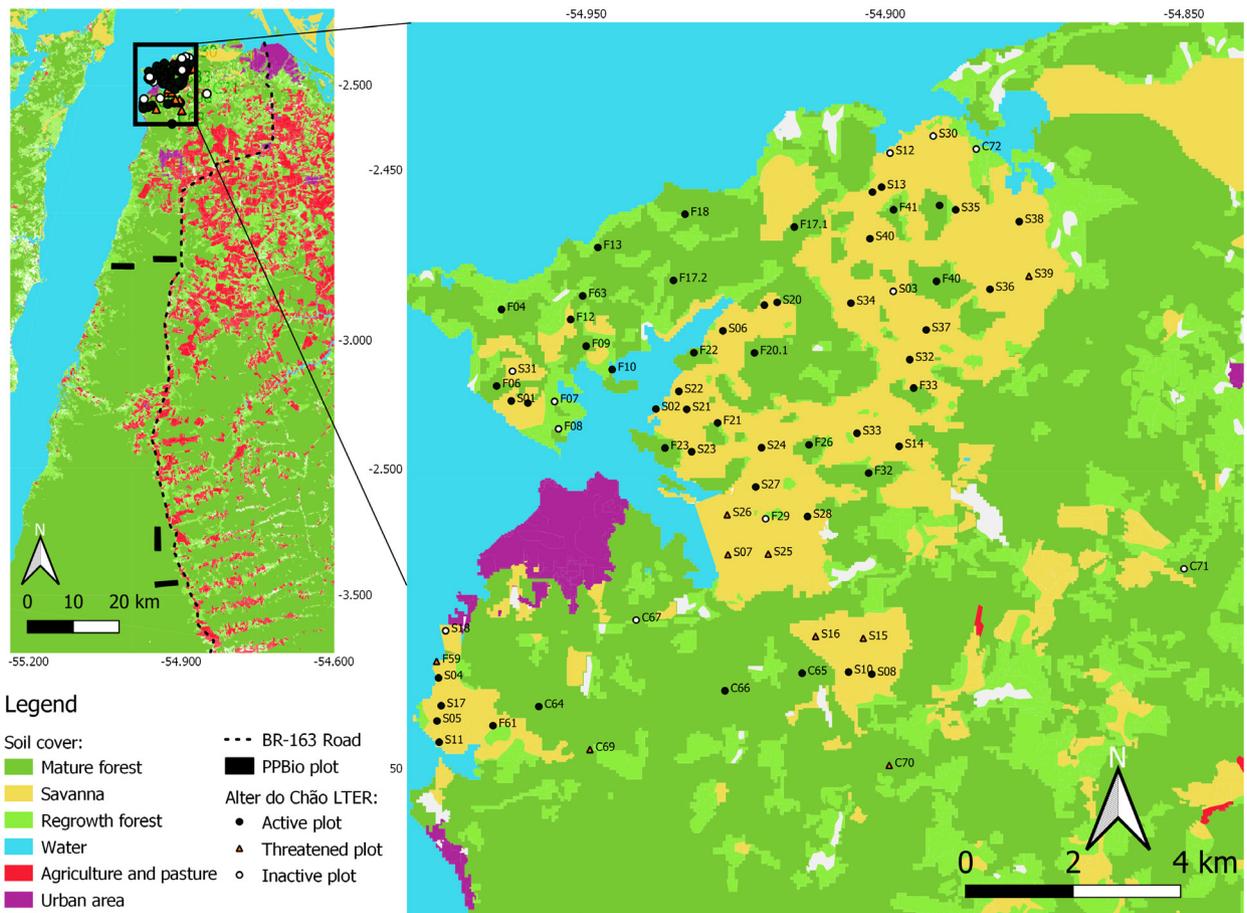


Figure S1. The POPA PELD (Box 1) accommodates plots from the Alter do Chão LTER (black box above) and the RAPELD plots located in the Tapajós National Forest. Plots are distributed along a gradient of soils, vegetation, and human disturbance.