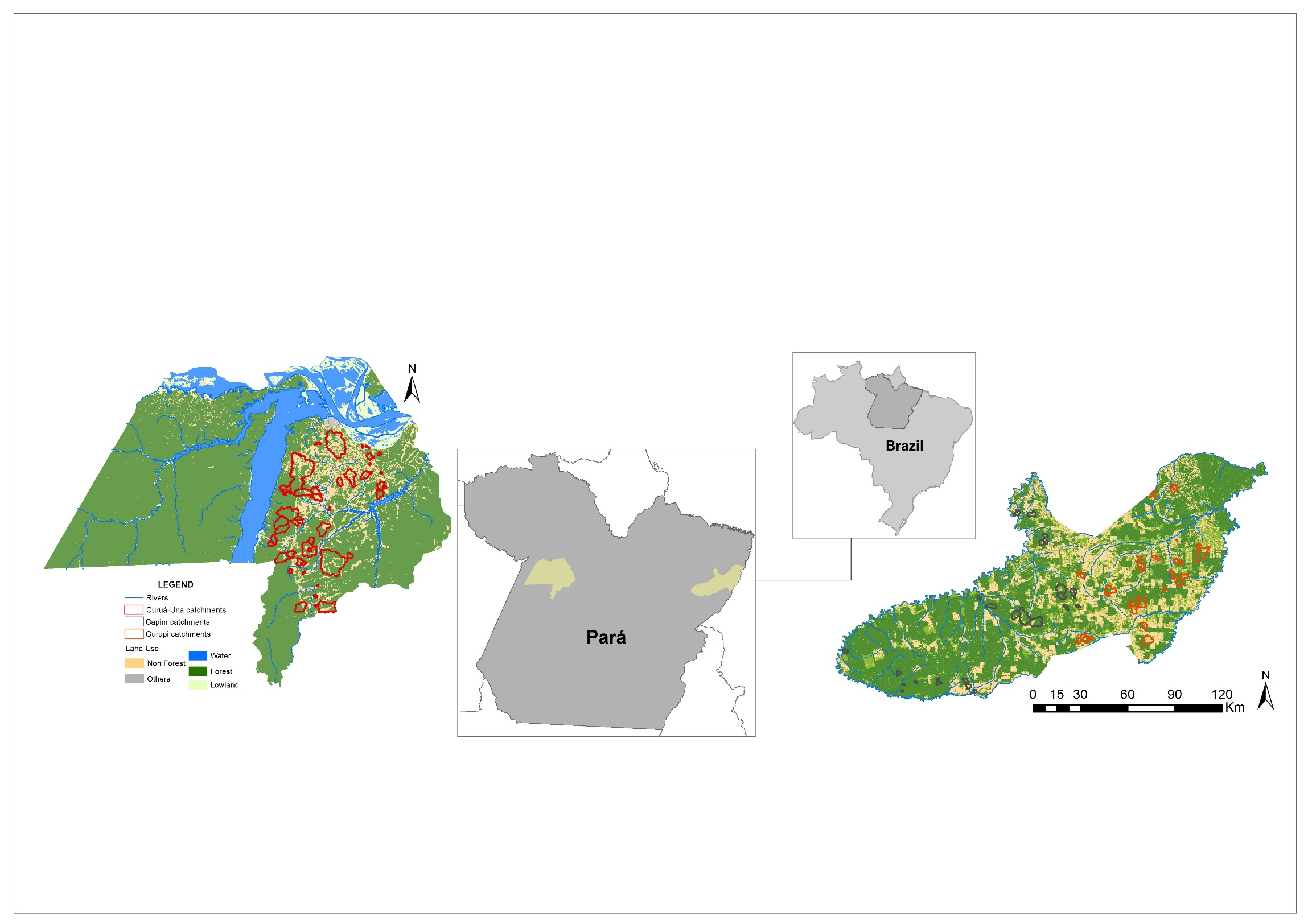
1. **Research project**: this dataset results from the PhD thesis “Multiscale anthropogenic impacts on stream condition and fish assemblages in Amazonian landscapes” developed by Cecília Gontijo Leal between 2011 and 2015. The thesis was part of the Sustainable Amazon Network (www.redeamazoniasustentavel.org), a multidisciplinary research initiative focused on assessing social and ecological dimensions of land use sustainability in the eastern Brazilian Amazon (Gardner *et al.* 2013).
2. **File name**: Leal\_et\_al\_Conservation\_Amazon\_streamFish.xlsx
3. **Data dictionary:** The spreadsheet ‘DataLegends’ presents all the data components provided in the different spreadsheets in the **main file**.
4. **Overall organization of the main file:** 
   1. **DataLegends:** definitions of column headings, data codes, and measurement units.
   2. **SpeciesComposition\_site:** number of individuals of each fish species in each stream site; fish species (columns), stream sites (rows).
   3. **GuildsComposition\_site:** number of individuals of fish functional guilds in each stream site; functional guilds (columns), stream sites (rows).
   4. **Predictor\_variables\_site:** environmental variables used as predictors of the fish fauna, including aspects of the instream habitat and the landscape; predictor variables (columns), stream sites (rows).
5. **Spatial location:** Sampling was carried out in two municipalities in the eastern Brazilian Amazon, Santarém (STM) and Paragominas (PGM), Pará state. Wadeable stream sites (1st to 3rd Strahler order on a digital 1:100,000 scale map) were chosen to encompass a gradient in the extent of riparian and catchment forest cover, resulting in 33, 26, and 24 sites in the Curuá-Una (STM), Capim (PGM), and Gurupi (PGM) River Basins, respectively (Figure 1).

Please see the manuscript “Is environmental legislation conserving tropical stream faunas? A large-scale assessment of local, riparian and catchment-scale influences on Amazonian stream fish” published at the Journal of Applied Ecology for more details.



**Figure 1:** Stream sites from Santarém (Curuá-Una River basin) and Paragominas (Capim and Gurupi River basins), Pará state, Brazil.

1. **Methods** 
   1. **Instream habitat sampling:** The field work was carried out during the dry season (June to August) in two consecutive years, STM in 2010 and PGM in 2011. Instream habitat is composed of both the physical and chemical characteristics of streams and can be grouped into water properties and physical habitat properties (e.g. substrate type, channel morphology, sinuosity, slope, discharge, wood and cover). To assess the instream habitat we used a protocol proposed by Peck *et al.* (2006) and Hughes & Peck (2008), which provides a standardized and replicable assessment of the physical and chemical characteristics of wadeable streams. The resulting dataset enables the calculation of several instream variables representing key aspects of instream habitat such as stream size, stream gradient, substrate size and stability, instream cover complexity, and stream-floodplain connectivity.

Instream habitat was sampled in a 150 m stream segment subdivided into 10 continuous sections, 15 m long, by 11 cross-sectional transects. Quantitative and qualitative measurements were repeated across transects and along sections according to the methods described in Gardner *et al.* (2013) and Leal *et al.* (2016).

* 1. **Fish sampling:** Following the instream habitat assessment three people sampled the 150 m stream segment for 120 min. Fish were sampled using seines (6 x 1.5 m, 5 mm stretched mesh size) and semi-circular hand nets (0.8 m in diameter, 2 mm stretched mesh size). The use of different equipment and collection techniques was applied to encompass all kinds of meso and microhabitats (e.g., riffles, pools, undercut banks, open waters, wood debris, leaf packs, sand, marginal vegetation), and consequently fish groups. All catches were made during daylight hours. Specimens were killed in an anesthetic solution of Eugenol and then fixed in 10% formalin. In the laboratory, all sampled fishes were transferred to 70% alcohol and identified to species level.
  2. **Landscape data:** Landscape environmental variables were measured at three different spatial scales: 1) the whole catchment upstream from the stream site (‘catchment’), 2) the 100 m buffer along the entire drainage network upstream from the stream site (‘riparian network’), and 3) a 100 m riparian buffer adjacent to the stream site itself (‘local riparian’). Catchment boundaries and slope were obtained through use of digital elevation models (SRTM images with 90 m resolution). The drainage network was constructed using the hydrological model ArcSWAT (Soil and Water Assessment Tool extension for ArcGis) for both regions.

We estimated percentage of forest cover in each of the three spatial scales from a land use map (Landsat TM and ETM+ images, 30 m resolution, year 2010) (Gardner *et al.* 2013). Forest included primary forest (whether undisturbed or showing signs of disturbance from fire or logging), and secondary forest older than 10 years (considered sufficiently developed to provide significant hydrological services based on our expert assessments). We estimated the history of mechanized agriculture from annual MODIS data from 2001 to 2010 (Gardner *et al.* 2013).

We estimated riverscape fragmentation using the number of upstream and downstream road crossings within a 5 km circular buffer from the stream site. The road crossings in the drainage network were identified by aerial image interpretation using georeferenced colour Rapideye images (2010 for STM and 2011 for PGM, 5 m resolution). To map these crossings, we identified linear features in the images that cross the drainage network (Jensen 2000). A subset of half of these identified crossings were validated using Google Earth images. All landscape analyses were conducted in ArcGIS 9.3 (Environmental Systems Research Institute, Redlands, CA, USA).

Please see the manuscript “Is environmental legislation conserving tropical stream faunas? A large-scale assessment of local, riparian and catchment-scale influences on Amazonian stream fish” published at the Journal of Applied Ecology for a full description of methods. Additional information can be found at Gardner *et al.* (2013), Leal *et al.* (2016) and Leitão *et al.* (2017).

1. **Taxonomic information:** Fish species identification was based on the available literature and were confirmed by specialists. Voucher specimens from all species are deposited at the Fish Collection of the Instituto Nacional de Pesquisas da Amazônia (INPA) and the Museu Paraense Emílio Goeldi (MPEG), Brazil.
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