Supplemental Information

Bioclimatic and habitat variables description. We used a set of moderately high-resolution climate and satellite remote sensing variables to characterize the habitat differences among our sampling areas. Variables were re-aggregated from their native resolutions to 5 km resolution (Table S1).

1- Bioclimatic variables

We used 7 bioclimatic variables (representing both temperature and precipitation, while excluding those that showed high degrees of autocorrelation) from the WorldClim database[1] which are 50-year averages (1950-2000) of annual means, seasonal extremes and degrees of seasonality in temperature and precipitation, and represent biologically meaningful variables for characterizing species range[2,3]: (http://biogeo.berkeley.edu/worldclim/bioclim.htm)

BIO1 = Annual Mean Temperature (degree Celsius, °C)

BIO4 = Temperature Seasonality (standard deviation *100)

BIO5 = Max Temperature of Warmest Month (degree Celsius, °C)

BIO6 = Min Temperature of Coldest Month (degree Celsius, °C)

BIO12 = Annual Precipitation

BIO15 = Precipitation Seasonality (Coefficient of Variation)

BIO19 = Precipitation of Coldest Quarter

2- Surface moisture and canopy roughness

From QuikScat (QSCAT;

http://www.scp.byu.edu/data/Quikscat/SIRv2/qush/World_regions.htm), we obtained monthly

raw backscatter measurements that capture attributes related to surface moisture and canopy

roughness[4]: Qscat Mean: Annual mean Radar Backscatter of year 2001 (*for spatial distribution*

of surface moisture and roughness (forest structure))); less negative means higher backscatter.

Unit: Decibel

4- Normalized Difference Vegetation Index

We used the index NDVI (Normalized Difference Vegetation Indices; based on monthly files

from the year 2001 of MODIS Data (1km resolution)): NDVI max: Annual maximum NDVI (*for*

spatial distribution of vegetation density)

5- Percent Tree Cover

We used the vegetation continuous field[5] product from MODIS

(https://lpdaac.usgs.gov/lpdaac/products/modis_overview) as a measure of the percentage of tree

cover in 2001.

References

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