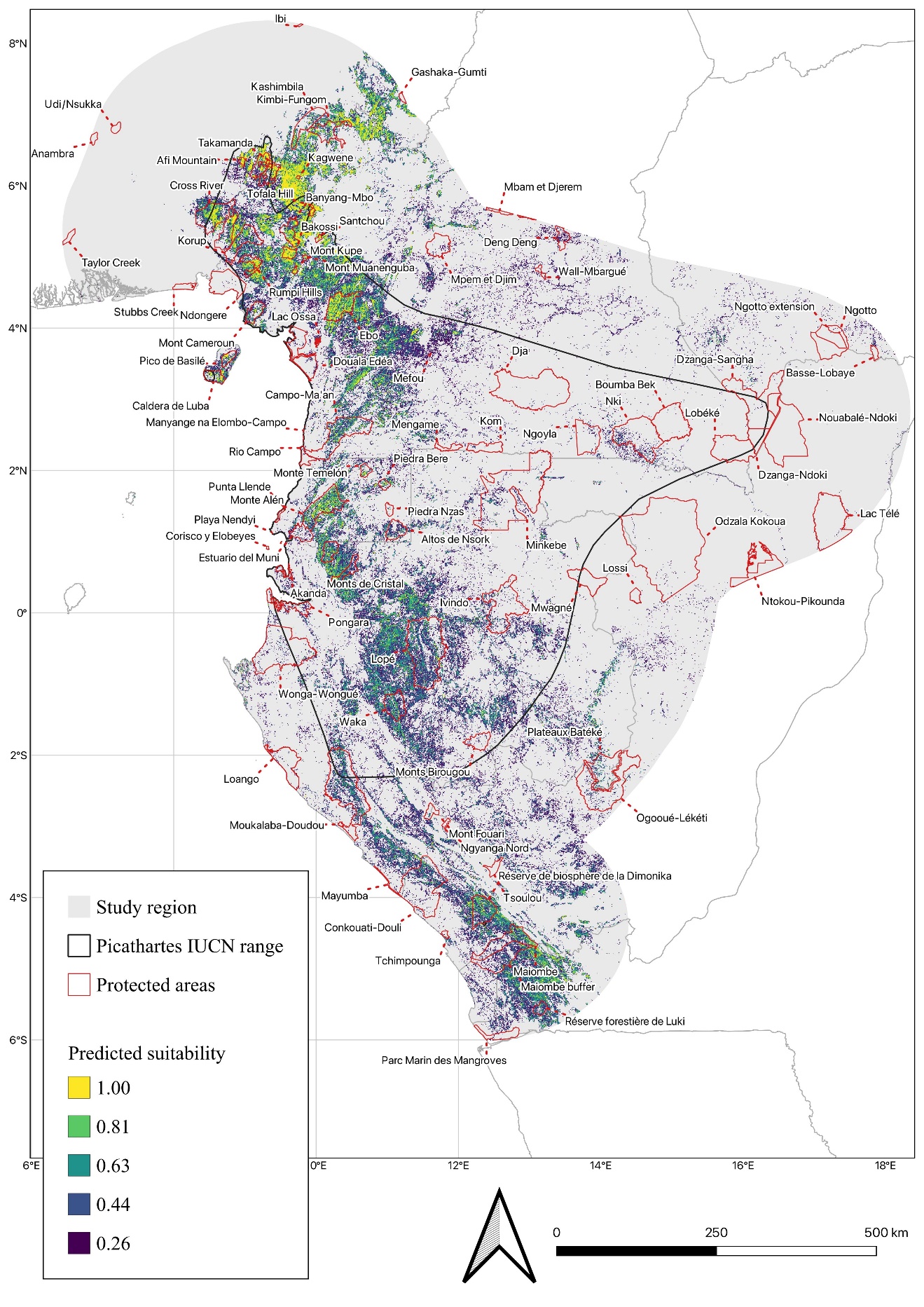
**Supplementary information**

**Table S1:** All 21 variables initially considered in the model, those with Variance Inflation Factors (VIF) > 10 were excluded from the modelling (Naimi *et al.* 2014)

|  |  |  |
| --- | --- | --- |
| **Layer** | **Source and description** | **VIF** |
| Bio01 | Fick and Hijmans (2017) Wordclim (v2.1) data for Annual mean temperature. | > 10 |
| Bio02 | Fick and Hijmans (2017) Wordclim (v2.1) data for Mean diurnal temperature range (Mean of monthly (maximum temperature – minimum temperature)). | 3.64 |
| Bio03 | Fick and Hijmans (2017) Wordclim (v2.1) data for Isothermally (Bio02/Bio07) (×100). | 6.62 |
| Bio04 | Fick and Hijmans (2017) Wordclim (v2.1) data for Temperature Seasonality (standard deviation ×100). | > 10 |
| Bio05 | Fick and Hijmans (2017) Wordclim (v2.1) data for Maximum temperature of the warmest month. | > 10 |
| Bio06 | Fick and Hijmans (2017) Wordclim (v2.1) data for Minimum temperature of the coldest month. | > 10 |
| Bio07 | Fick and Hijmans (2017) Wordclim (v2.1) data for Annual temperature range (Bio05-Bio06). | > 10 |
| Bio10 | Fick and Hijmans (2017) Wordclim (v2.1) data for Mean temperature of the warmest quarter. | > 10 |
| Bio11 | Fick and Hijmans (2017) Wordclim (v2.1) data for Mean temperature of the coldest quarter. | 7.26 |
| Bio12 | Fick and Hijmans (2017) Wordclim (v2.1) data for Annual precipitation. | > 10 |
| Bio13 | Fick and Hijmans (2017) Wordclim (v2.1) data for Precipitation of the wettest month. | > 10 |
| Bio14 | Fick and Hijmans (2017) Wordclim (v2.1) data for Precipitation of the driest month. | 3.91 |
| Bio15 | Fick and Hijmans (2017) Wordclim (v2.1) data for Precipitation Seasonality (Coefficient of Variation). | 8.38 |
| Bio16 | Fick and Hijmans (2017) Wordclim (v2.1) data for Precipitation of the wettest quarter. | 2.24 |
| Bio17 | Fick and Hijmans (2017) Wordclim (v2.1) data for Precipitation of the driest quarter. | > 10 |
| Forest cover 2021 | Hansen et al (2013). Forest cover as a percentage coverage of each pixel. | 4.07 |
| Forest Landscape Integrity Index | Grantham et al (2020). Combination of a range of observed and inferred human pressures, and forest connectivity. | 2.78 |
| NDVI | Didan (2015). Normalised Difference Vegetation Index, derived from: (Near Infrared band – Red band) / (Near Infrared band + Red band) | > 10 |
| EVI | Didan (2015). Enhanced Vegetation Index calculated from:  2.5 \* ((Near Infrared band – Red band) / Near Infrared band + (6 \* Red band) – (7.5 \* Blue band) + 1) | 2.25 |
| Altitude | Farr et al (2007) Derived from the STRM Digital Elevation Model. | 7.26 |
| Maximum Slope | Derived from the STRM Digital Elevation Model, calculated using QGIS slope plugin. | 1.71 |

**Table S2.** Sub-model performance metrics, derived from models built using only 4 cross-validation folds, wi0th fifth fold held out for independent testing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Held-out fold | Number of occupied pixels | Boyce Index | True Skill Statistic | Area Under the receiving operator Curve |
| 1 | 94 | 0.935 | 0.4145 | 0.748 |
| 2 | 23 | 0.924 | 0.8337 | 0.9713 |
| 3 | 27 | 0.96 | 0.5198 | 0.7854 |
| 4 | 32 | 0.915 | 0.7631 | 0.9275 |
| 5 | 19 | 0.983 | 0.6272 | 0.8332 |



**Figure S1:** Areas predicted as potentially most suitable for Grey-necked Picathartes nests with Protected Areas highly presented

**Figure S2:** Weighted map derived from the five sub-models of predicted suitability

