

CLIMATE CHANGE EFFECTS ON BIRD DIVERSITY IN PARÁ, BRAZIL BASED ON ECOLOGICAL NICHE MODELING

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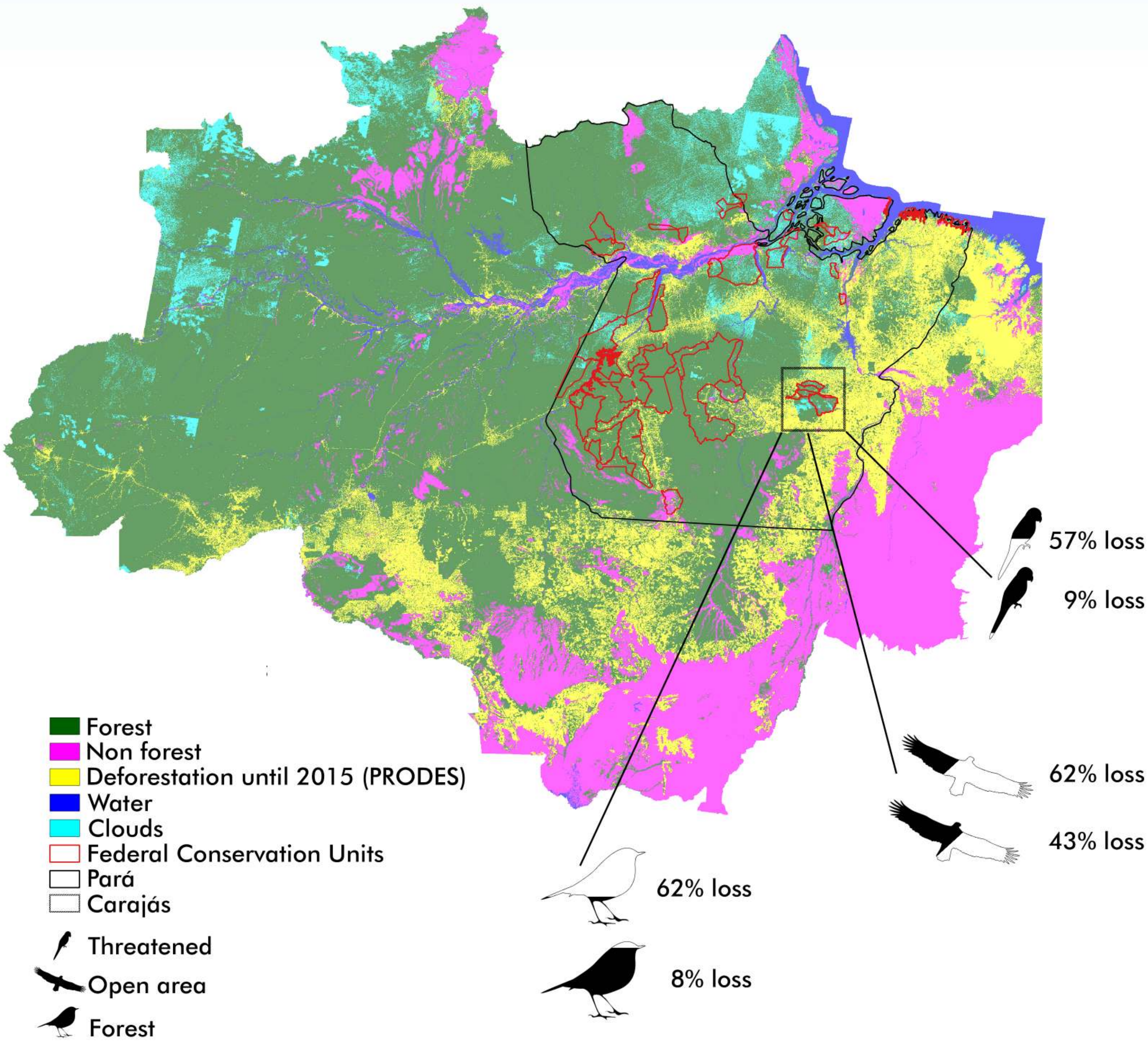
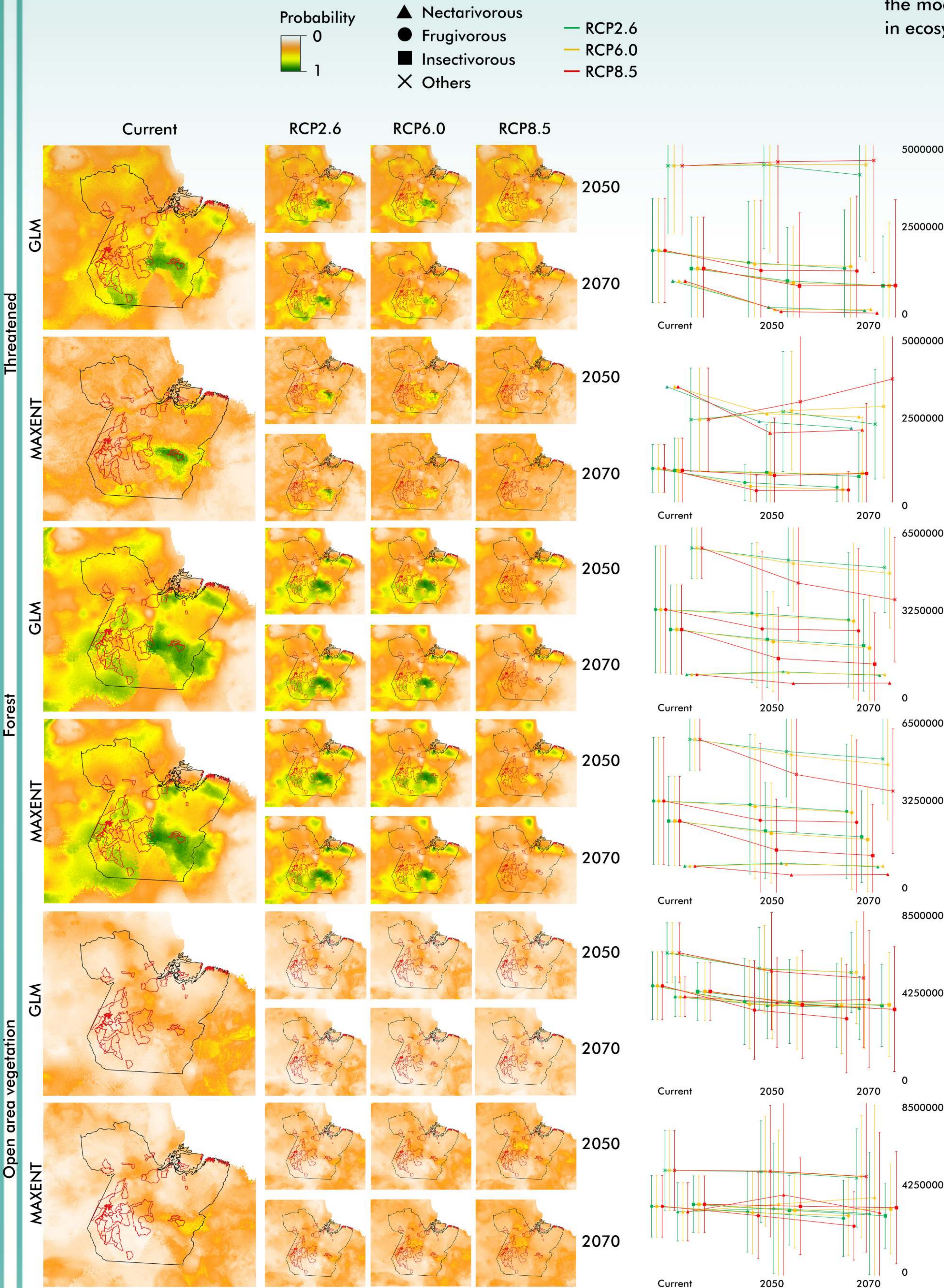
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The most important and severe threats to biodiversity is climate change and habitat loss. They can cause compositional changes in communities due to modifications in species distributions and/or to species extinctions. Assessing the nature and magnitude of potential effects of climate change on populations is important to anticipating effects on species diversity for conservation planning. We are studying the distribution for 625 bird taxa, all occurring in the Floresta Nacional de Carajás, Pará, Brazil.

METHODS

Species records required are being downloaded from the Global Biodiversity Information Facility (GBIF). We are using a set of 13 uncorrelated bioclimatic variables that describes the current climate plus altitude. Future climate suitability is being modeled according to three climate change scenarios projected for the years 2050 and 2070. Two different algorithms are being used (i) maximum entropy method (Maxent); and (ii) generalized linear models (GLM). We are using TSS greater than or equal to 0.7 as a threshold to select the models. The taxa will be assigned to a functional group: frugivores, insectivores, nectarivores; to focus in ecosystem functioning. We expect to predict:

- ✓ how climate change will affect the distribution of bird community;
- ✓ which functional group are potentially more sensitive;
- ✓ which areas protect the largest number of species.



RESULTS

Here we are showing the results for 191 bird taxa divided in three datasets: Threatened (N=53), Forest (N=91), Open area vegetation (N=53). On the left, the prediction of potential shifts on species occurrence probability considering three scenarios (rcp 2.6, 6.0, 8.5), projected for two years (2050, 2070) and two models (GLM, MAXENT) for each datasets. On center, the potential area loss for functional groups associated to each dataset (area in km²). Moreover, on the top, the arc of deforestation up to 2015 (Source: PRODES); protected areas in the Pará state, Brazil; and rate of species loss in Carajás for the "worst" and "best" scenario.