Predicting biomass of hyperdiverse and structurally complex central Amazonian forests – A virtual approach using extensive field data

Objective:

Reliable biomass estimates require the inclusion of predictors that express inherent variations in species architecture.

Approach:

Old-growth forests are highly heterogeneous in structure and species composition. Therefore, generic global or pantropical biomass estimation models can lead to strong biases (Fig. 1).

Results/Impacts:

Generic aboveground biomass (AGB) models applicable across species were applied across six scenarios (Fig. 2) of data from 727 trees (DBH > 5 cm) from 101 genera, and 135 species harvested near Manaus, Brazil.

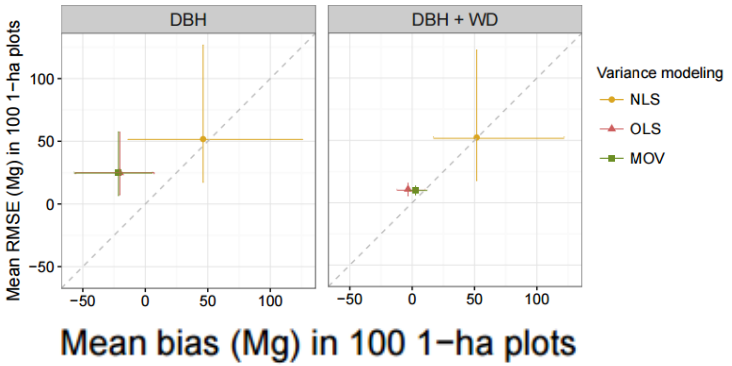

Fig 1. Performance of 12 aboveground tree estimation models along six forest scenarios composed of 100 1 ha plots. Models' predictors: diameter at breast height (DBH) (cm), wood density (WD) (g cm^{-3}). NLS: nonlinear least square. OLS: ordinary least square with log-linear regression. MOV: nonlinear with modeled variance (MOV).

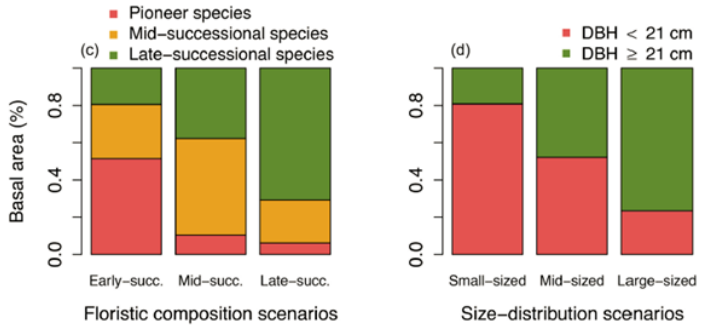

Fig 2. Sampling schemes applied to six forest scenarios designed to reflect changes in floristic composition and size distribution of trees, typical of central Amazonian terra firme forests.

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