Striking a balance: identifying features of urban green spaces to optimize bird diversity

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Aim: To identify the role of macro and micro-scale habitat variables for improving bird conservation potential of the urban green spaces of Dehradun.
Objectives:
- To identify urban green spaces of varied size and surrounding matrix in Dehradun district of Uttarakhand.
- To quantify the macro and micro-scale habitat variables within each urban green space.
- To analyze the role of macro and micro-scale variables in explaining variation in bird species richness.

Methods:

- Total of 28 sites were identified as potential urban green spaces for the study using google earth. Reconnaissance survey for quality of urban green spaces and feasibility of conducting study reduced the number of sites to 18.
- Area of macro -scale variables (built up area, agriculture land, green cover, open etc.) were quantified within a 200 m buffer around the site.
- Micro-scale variables (vegetation structure and composition) were quantified through circular vegetation plots.
- Vegetation data was collected for both tree and shrub layer within 20 m and 5m radius, respectively.
- Bird community was quantified by variable radius point transect method on the sampling points established for vegetation sampling.
- A total of 52 points on 18 UGS sites were visited four times during the breeding season (March-May 2019) sampled.
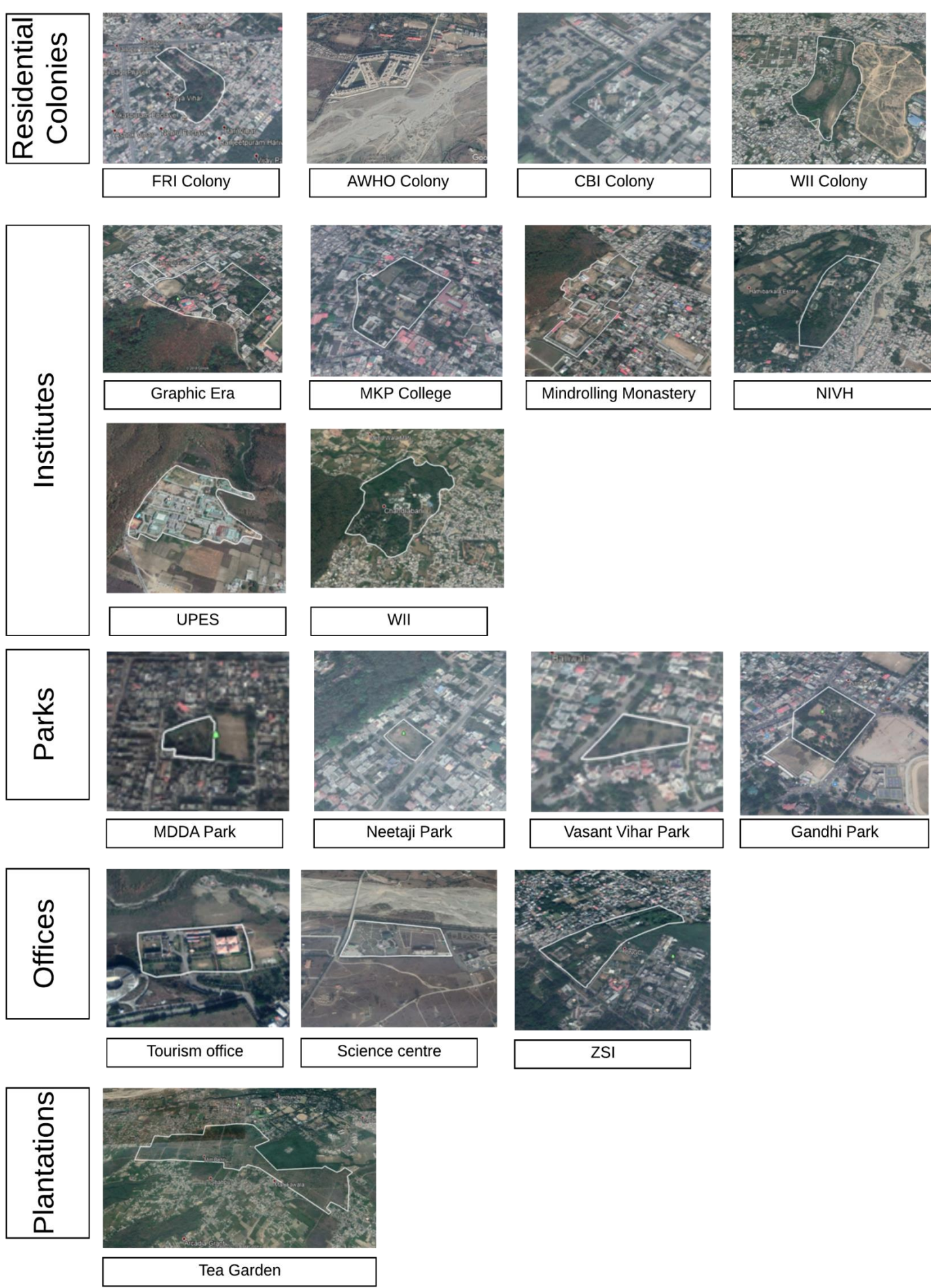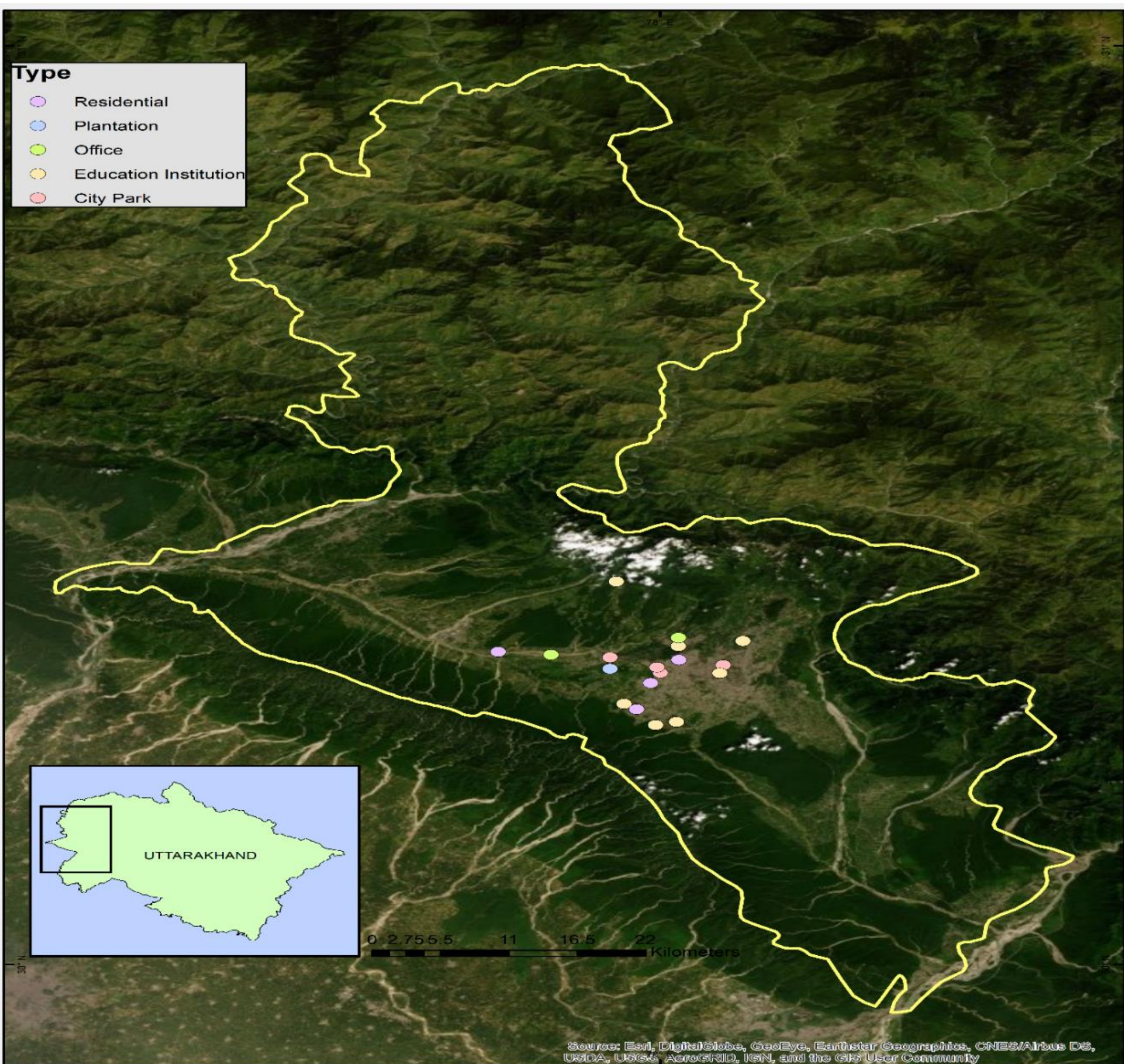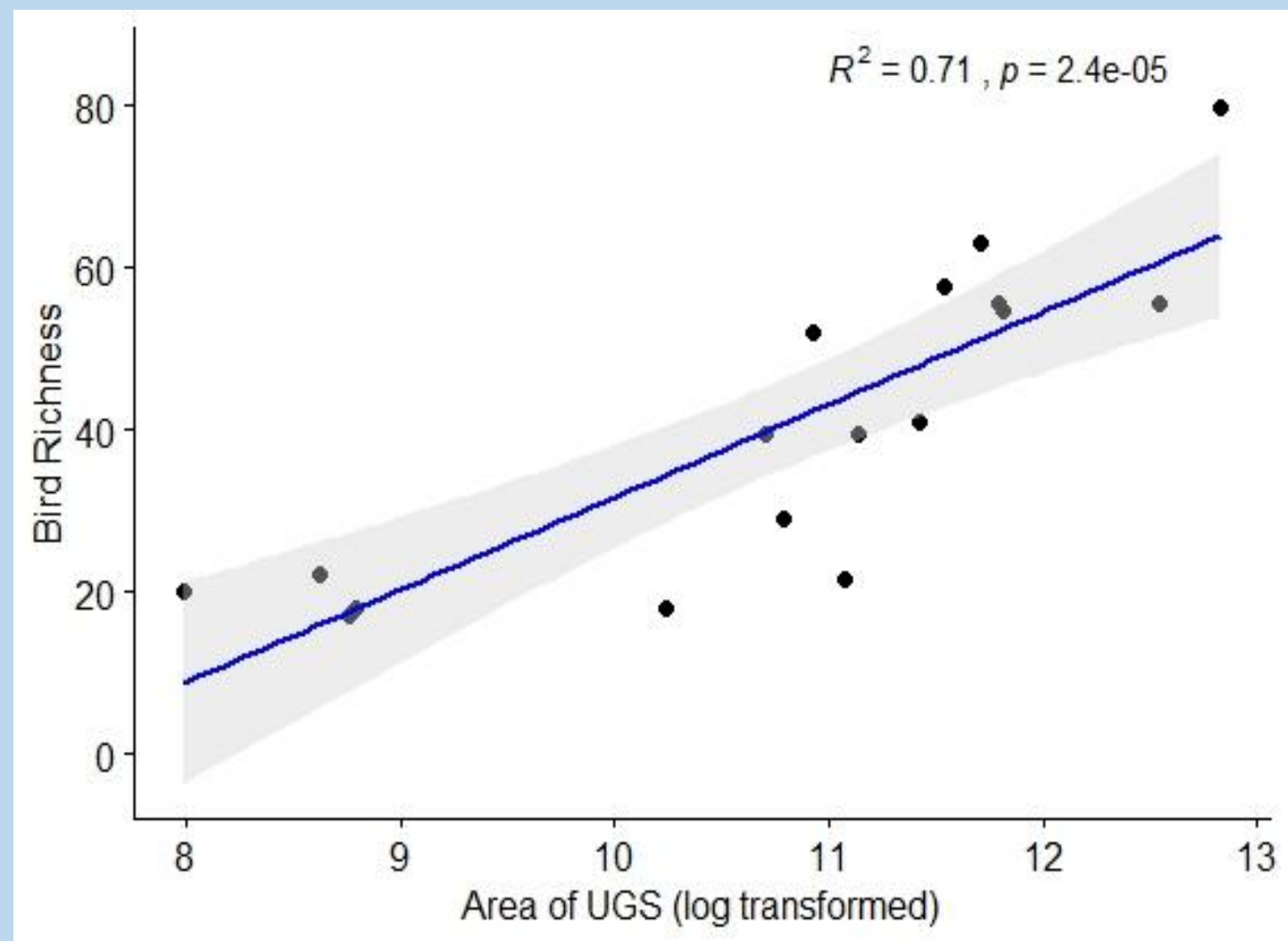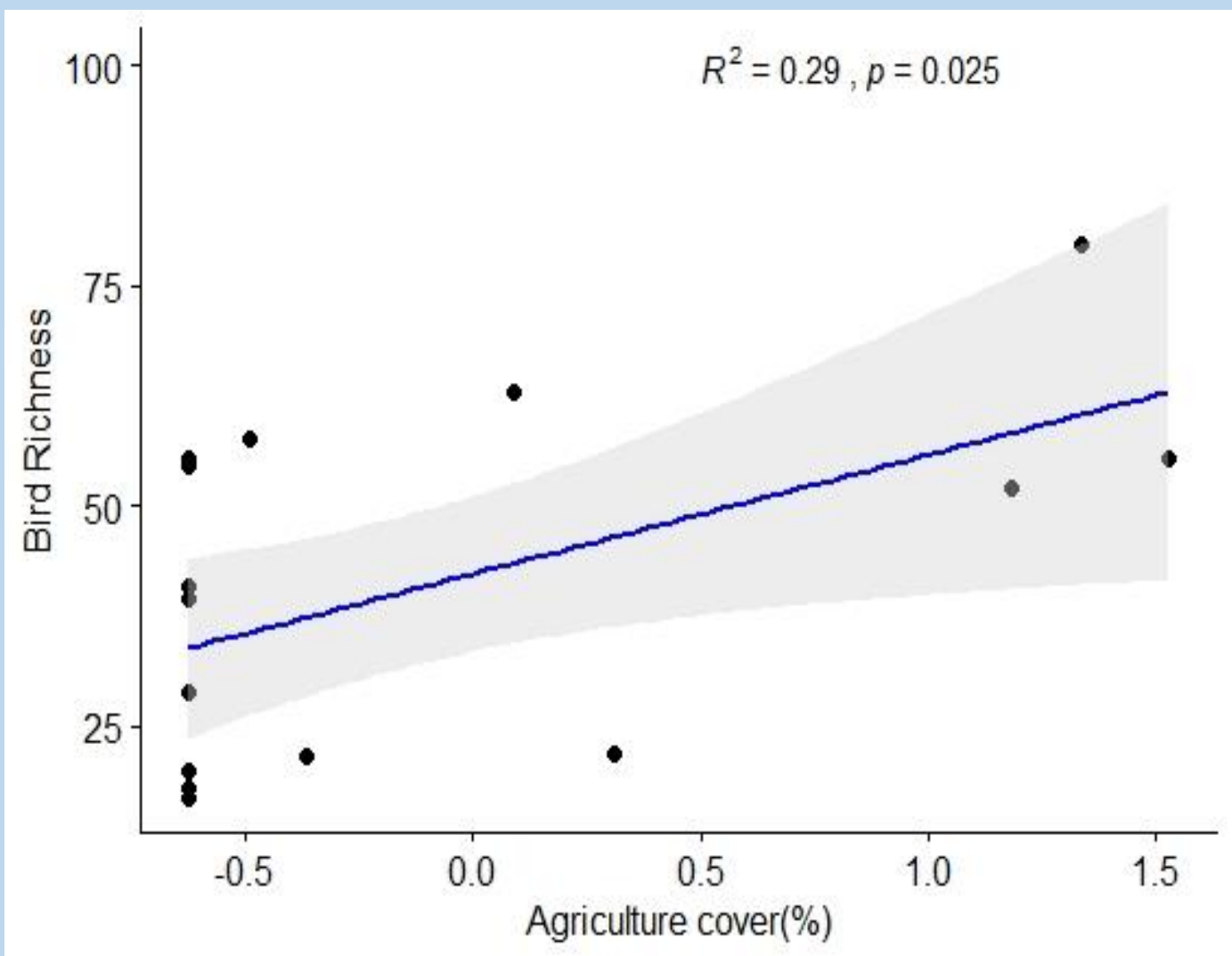

Results:

i) Bird species richness increase with increase urban green space area and percentage of agriculture land in the buffer area in the surrounding. Higher tree richness and shrub richness within urban green space resulted in increase bird species richness.
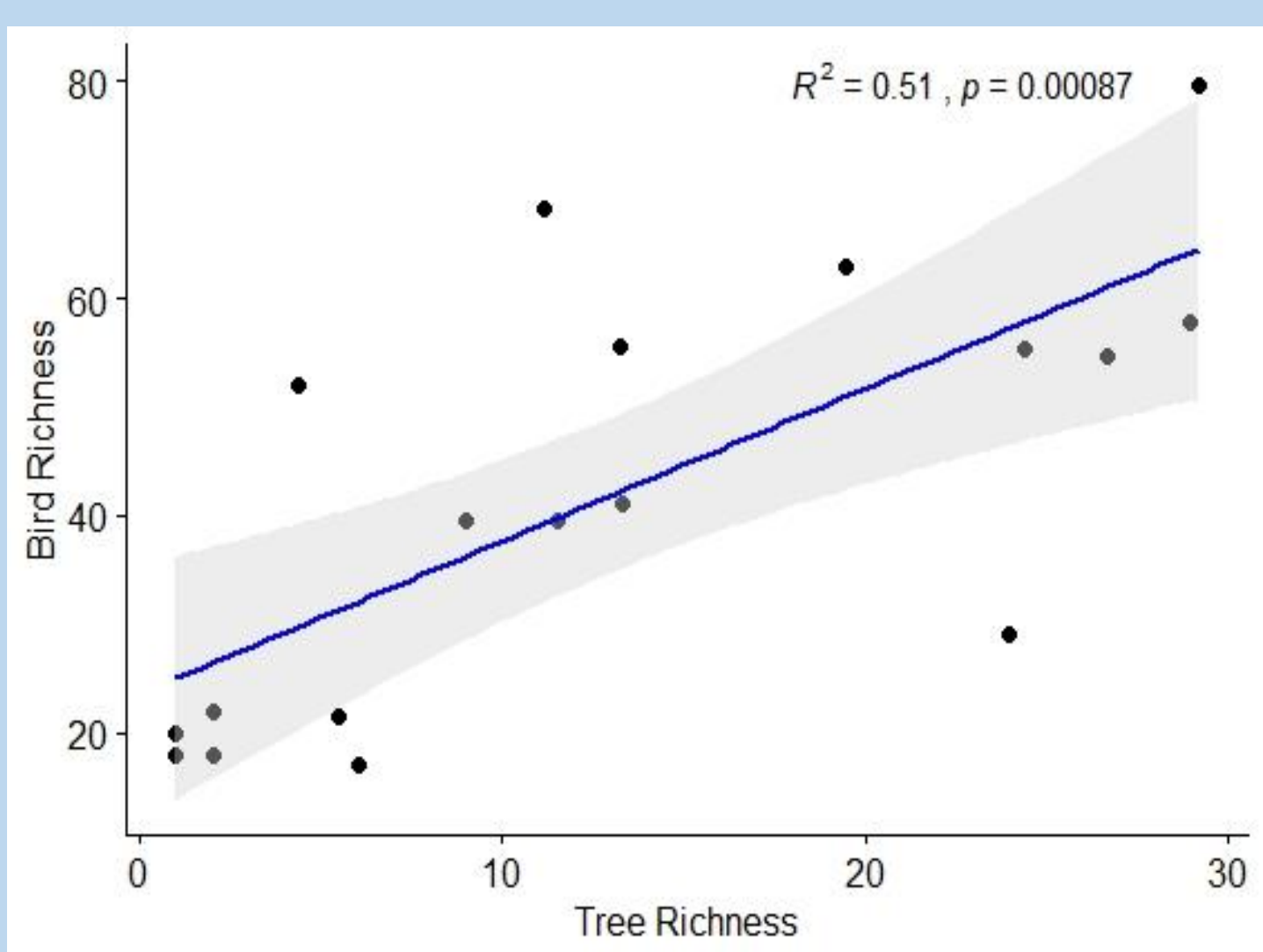
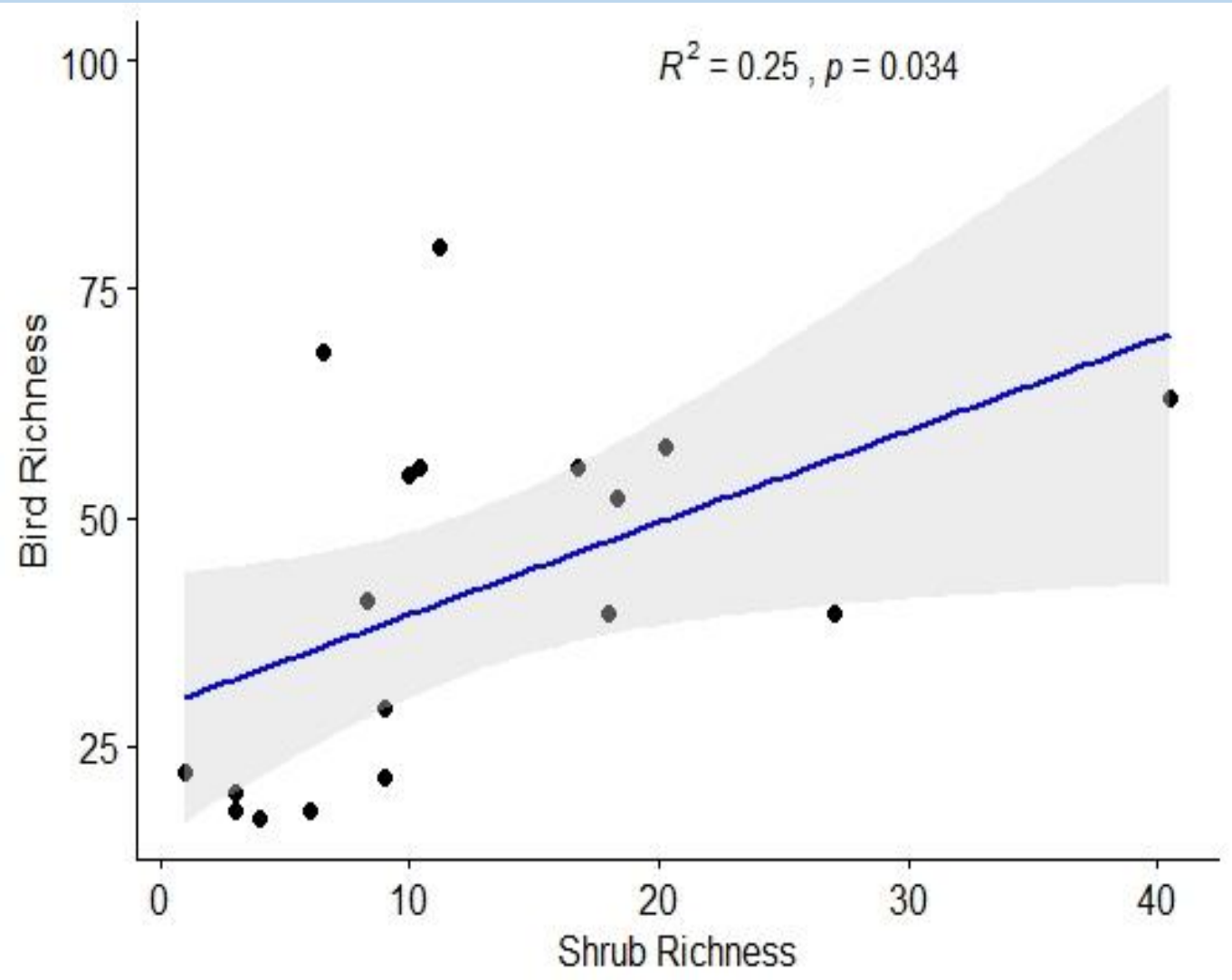### Macro-scale variables

Area of UGS

Agriculture cover percentage
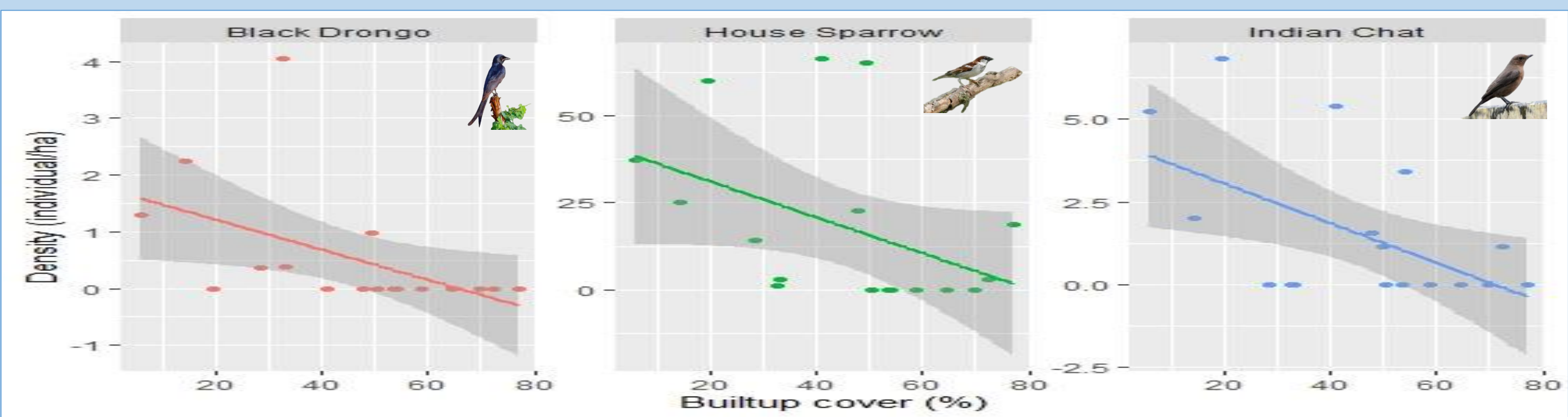

Micro-scale variables:

Tree species richness

shrub species richness
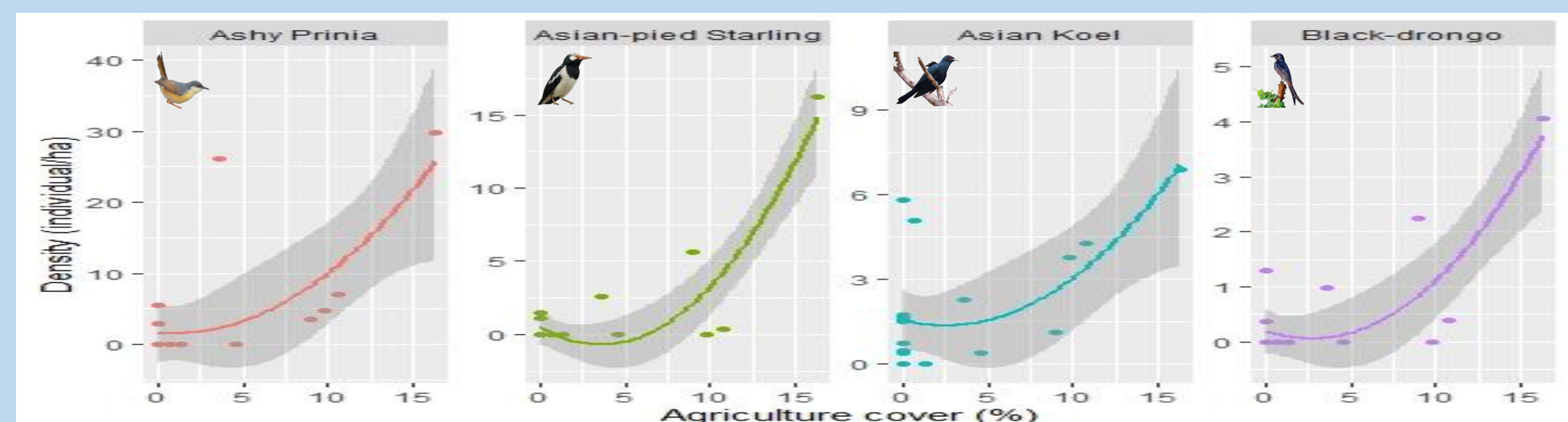

ii) Macro scale variable effect on species specific density
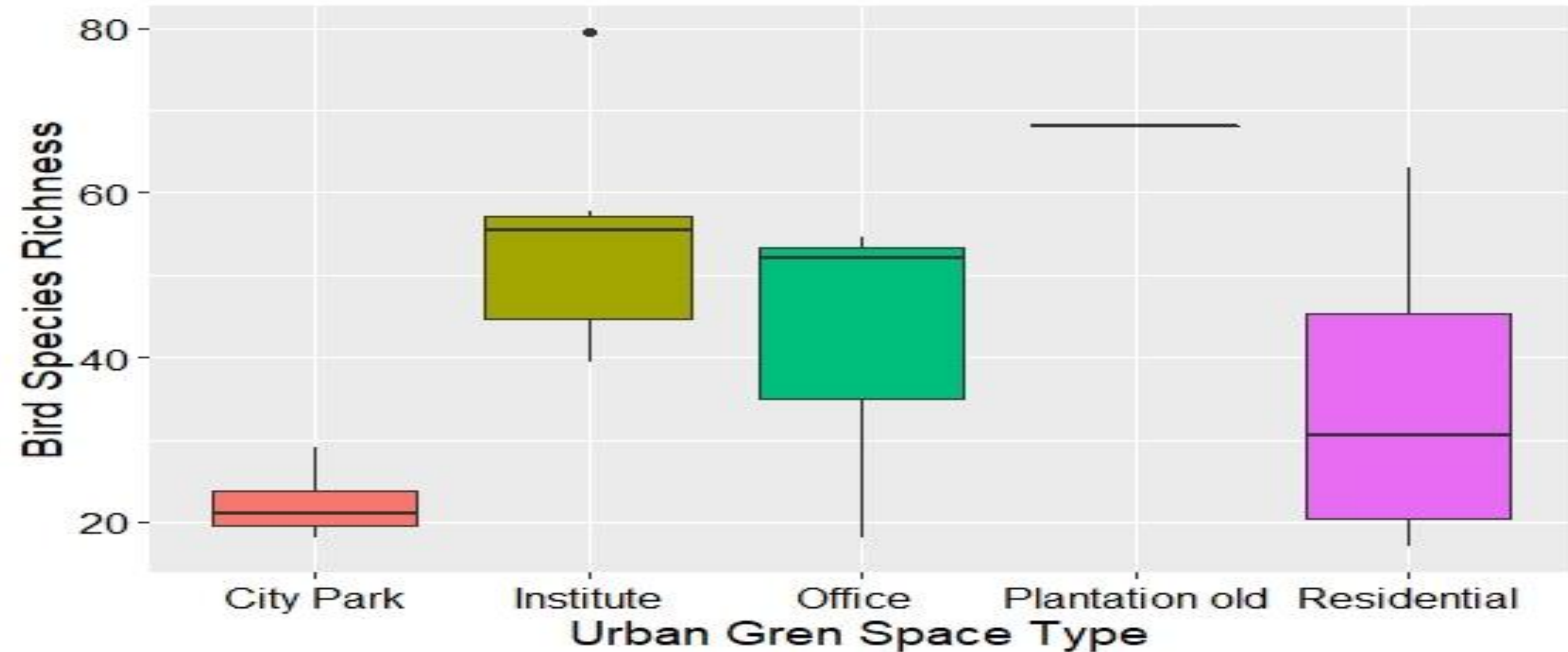
Built up

Agriculture

iii) Bird species richness across different type of urban green spaces

Management implications

- City planners need to design urban green spaces while considering the role of both landscape level and local scale variables.
- Medium sized UGS with sufficient green cover and diversity in habitat would help in sustaining the sizeable amount of bird diversity.
- At local scale, increasing resource heterogeneity by augmenting tree and shrub species richness could make UGS more bird friendly, especially during breeding season.