Examining spatially explicit networks of individual plant interactions with a frugivorous lemur mutualist (Eulemur rubriventer)

Jadelys Tonos[1], Onja Razafindratsima and Amy Dunham

INTRO

- Plant-animal interactions structure terrestrial communities and play an important role in shaping the biodiversity of tropical ecosystems
- Examination these interactions at the individual level has revealed ecologically relevant variation which may be missed in species level studies
- By studying networks of frugivore-plant interactions I hope to contribute to an understanding of the mechanisms shaping individual plant-animal interaction patterns

METHODS

1. Direct observation of 2 lemur groups

2. Built network of visited plants linked by lemur movements and calculated network metrics:

Strength
Sum of all node links

Within-module connectivity
Proportion of a node's links which occur within its module

Betweenness
Sum of the proportion of least distance paths between all nodes pass through any node

Between-module connectivity
Proportion of a node's links which occur outside its module

3. Measured individual, neighborhood and spatial plant traits.

Individual

Height
Estimated height of each plant visited

Fruit crop
- Categorical estimate of fruit crop size
- Measured within 7 days of visit
- Averaged across all visits

Spatial

Delta_pc
1. Estimated distance between plants
2. Created a spatial network with connections determined by distance based probability (citation)
3. Calculated global connectivity
4. Used node removal to estimate the change in global connectivity

Neighborhood

Abundance & Richness
- Fruiting abundance and richness of plants within 10m diameter
- Measured within seven days of visit
- Averaged across all visits

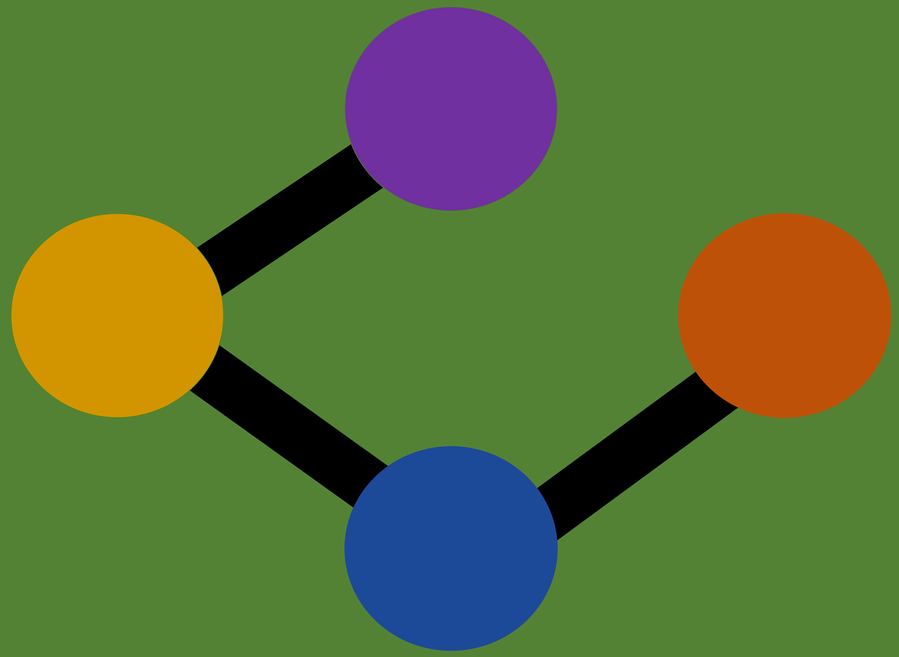
4. Used generalized linear models with AIC based model selection and averaging to examine how plant traits relate to network metrics

Patterns of interactions between frugivorous lemurs and fruiting plants are influenced by:

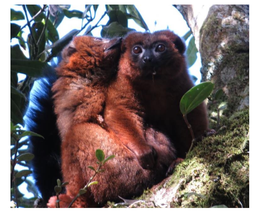
Individual plant traits

&

Plant spatial patterns



Take a picture to **download** the **full poster**



Left. Juvenile female from the GOT group.
Right. Adult and Subadult males of the SKF group

RESULTS

- Across all response variables only fruit cop, height and delta_pc had any significant influence.
- For both betweenness and within module degree there was no significant effect from any response variable.
- Results varied between groups so group specific and combined analysis results were used.