



Don't Count Your Arthropods Before They Hatch



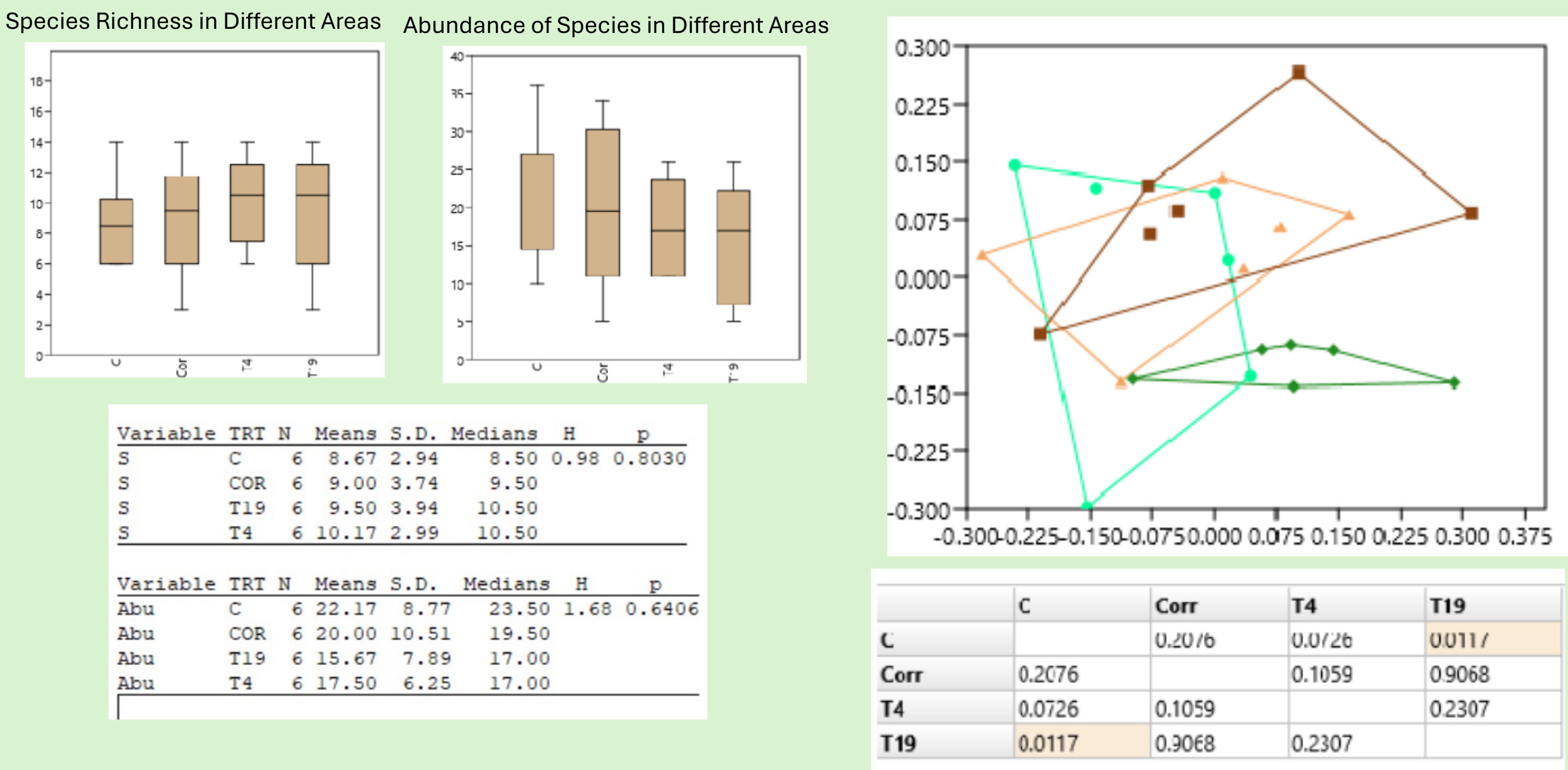
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Background

Arthropods comprise more than 2/3 of all terrestrial species and are important to the ecological well-being of ecosystems. They are a major part of many food webs, so anything that hurts them will throw the rest of it off. (Bradford&Garcia, 2018) In the past 30 yrs, forest temperatures have risen by around 2°C. Climate warming is a major factor driving reductions in arthropod abundance; even small temperature changes can have drastic effects on the fitness and abundance of species. In addition, deforestation events leave less suitable habitat available for species with narrow thermal ranges. (Olison, 1994) But long-term data on the population and extinction of Arthropods is severely limited, especially in the tropics. (Bradford&Garcia, 2018) This lack of data may mean that some of our current biodiversity management practices need to be reconsidered.

1. Does Arthropod Community Structure Differ Among Four Management Treatments?
Only in species composition.



2. Will the Corridor Have Similar Levels of Biodiversity to the Conservation Area?
Yes, since the area has been highly disturbed until recently.

T test for independent samples													
Class	Variable	Group 1	Group 2	n(1)	n(2)	Mean(1)	Mean(2)	Mean(1)-Mean(2)	LL(95)	UL(95)	pVarHom	T	p-value
TRT	S	{C}	{COR}	6	6	8.67	9.00	-0.33	-4.66	4.00	0.6115	-0.17	0.8673
TRT	Abu	{C}	{COR}	6	6	22.17	20.00	2.17	-10.28	14.62	0.7019	0.39	0.7063



Taxon	Av. dissim	Contrib. %	Cumulative %	Mean C	Mean T19
Ant	11.99	13.38	13.38	5	0
Tiny Spider	10.03	11.19	24.57	0.5	4.67
black ant	9.603	10.72	35.29	0	8.33
Small Ant	7.821	8.728	44.02	3.33	0.833
Colembula	5.806	6.48	50.5	2.67	1.17

3. Which Environmental Variable Best Explains The Variation in the Observations?
Temperature and DBH.

Species Richness

Coef	Est.	S.E.	LL(95%)	UL(95%)	T	p-value	Mallows'Cp	VIF
const	-24.50	17.64	-61.18	12.18	-1.39	0.1794		
Dbh	2.86	1.26	0.23	5.49	2.26	0.0345	6.12	1.41
Temp	1.06	0.58	-0.14	2.26	1.83	0.0813	4.35	1.41
Mean square error: 9.131683								

ABU

Coef	Est.	S.E.	LL(95%)	UL(95%)	T	p-value	Mallows'Cp	VIF
const	-121.82	38.05	-200.96	-42.69	-3.20	0.0043		
Dbh	9.56	2.73	3.89	15.23	3.51	0.0021	13.29	1.41
Temp	4.47	1.24	1.88	7.06	3.59	0.0017	13.91	1.41
Mean square error: 42.505499								

Take-Home message

In general, there's no significant difference in population between management practices. This may be due to the fact that:

- This is potentially an early succession after recent disturbance. Or:
- The area is already so impacted and fragmented that it lost capacity for resilience.

We don't have enough past data to compare to, so it's difficult to tell what's going on.

- We recommend applied nucleation, which creates islands of small forested areas. Animals can spread the seeds, making it cheaper than completely reforesting and faster than letting the deforested area sit.

References

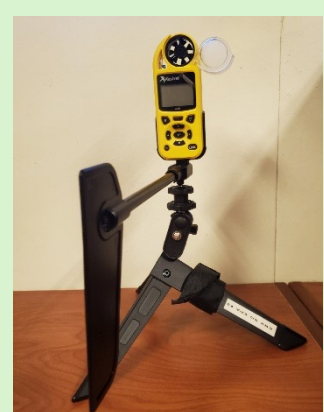
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Acknowledgments

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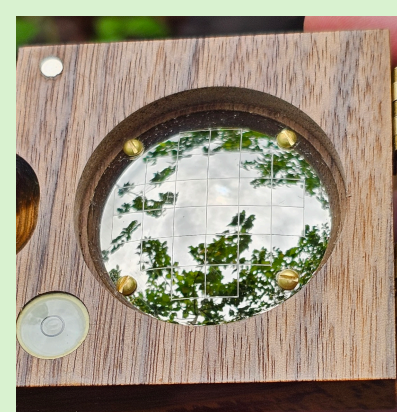


Kestrel



T (°C)
WS(Km/h)
P (hPa)
% humidity
Altitude (m)

Densiometer



DBH
Canopy Gaps
Biomass

Sieving



S
Abu



$$B_{tot} = 21.297022 - 6.952649(DBH) + 0.7403(DBH)^2$$

(Segura & Kanninen 2005)



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Awkward moments in the ant world

QUESTIONS?