

# When investigating riparian invasion patterns, one must consider aquatic and terrestrial drivers

## Natural and anthropogenic drivers facilitate invasion of riparian areas by *Hedychium coronarium*

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### INTRODUCTION

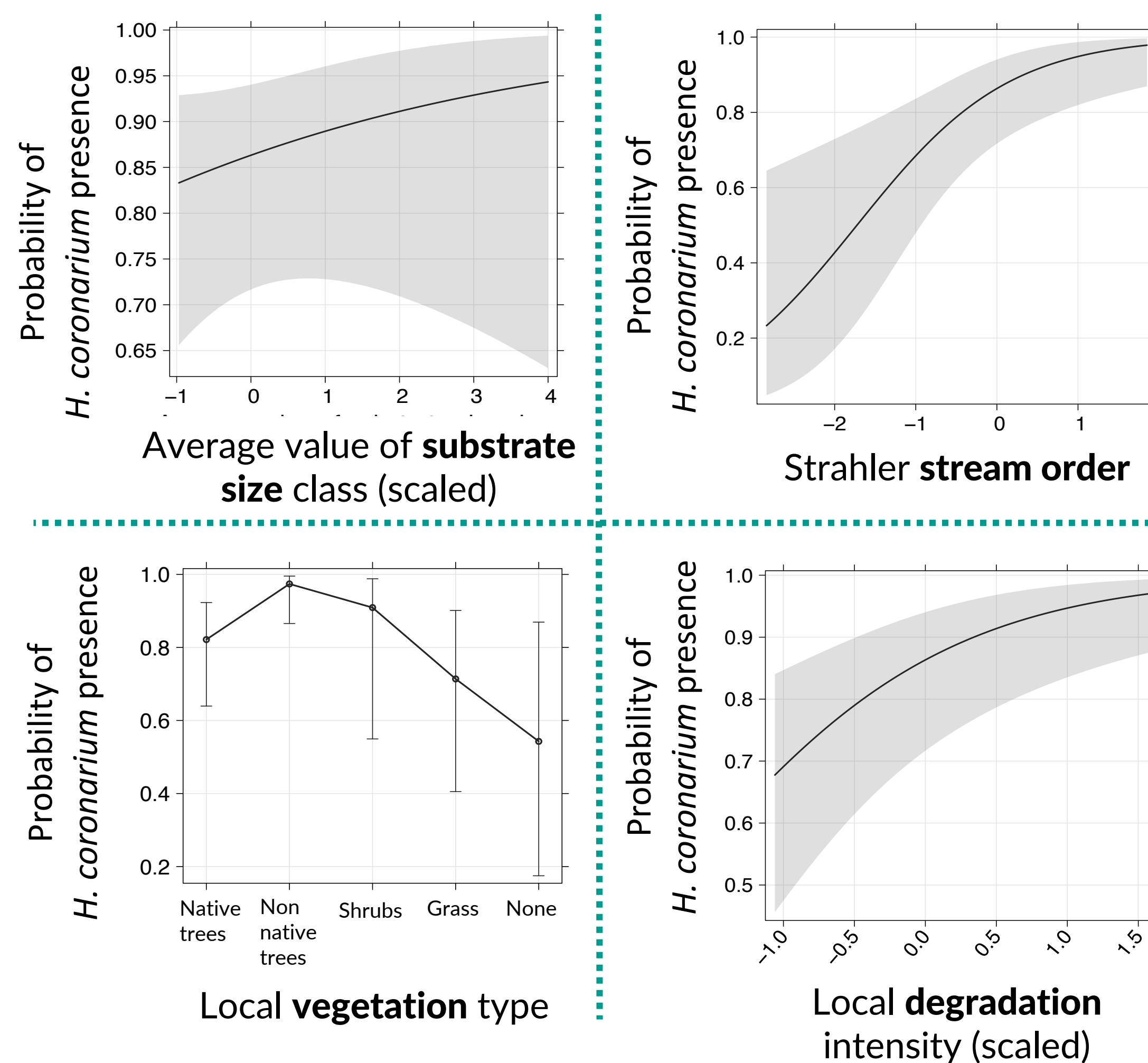
- Hedychium coronarium* or white ginger lily (Zingiberaceae) is a **major riparian invader** in Brazil
- Anthropogenic disturbance** and hydrochory are known invasion drivers in riverscapes<sup>①</sup>, but what about **natural fluvial disturbance**?
- Aim:** assess how propagule dispersal and anthropogenic/natural disturbance affect the presence of *H. coronarium* in riparian zones

### METHODS

- 296 parcels (5x10m) in 148 randomly chosen riparian sites in a **subtropical Brazilian watershed**
- Record of *H. coronarium* presence/absence and other local variables related to ecological integrity, human presence and hydro-morphology
- Logistic regression (GLMM)**, Rstudio (*lme4*)

### RESULTS

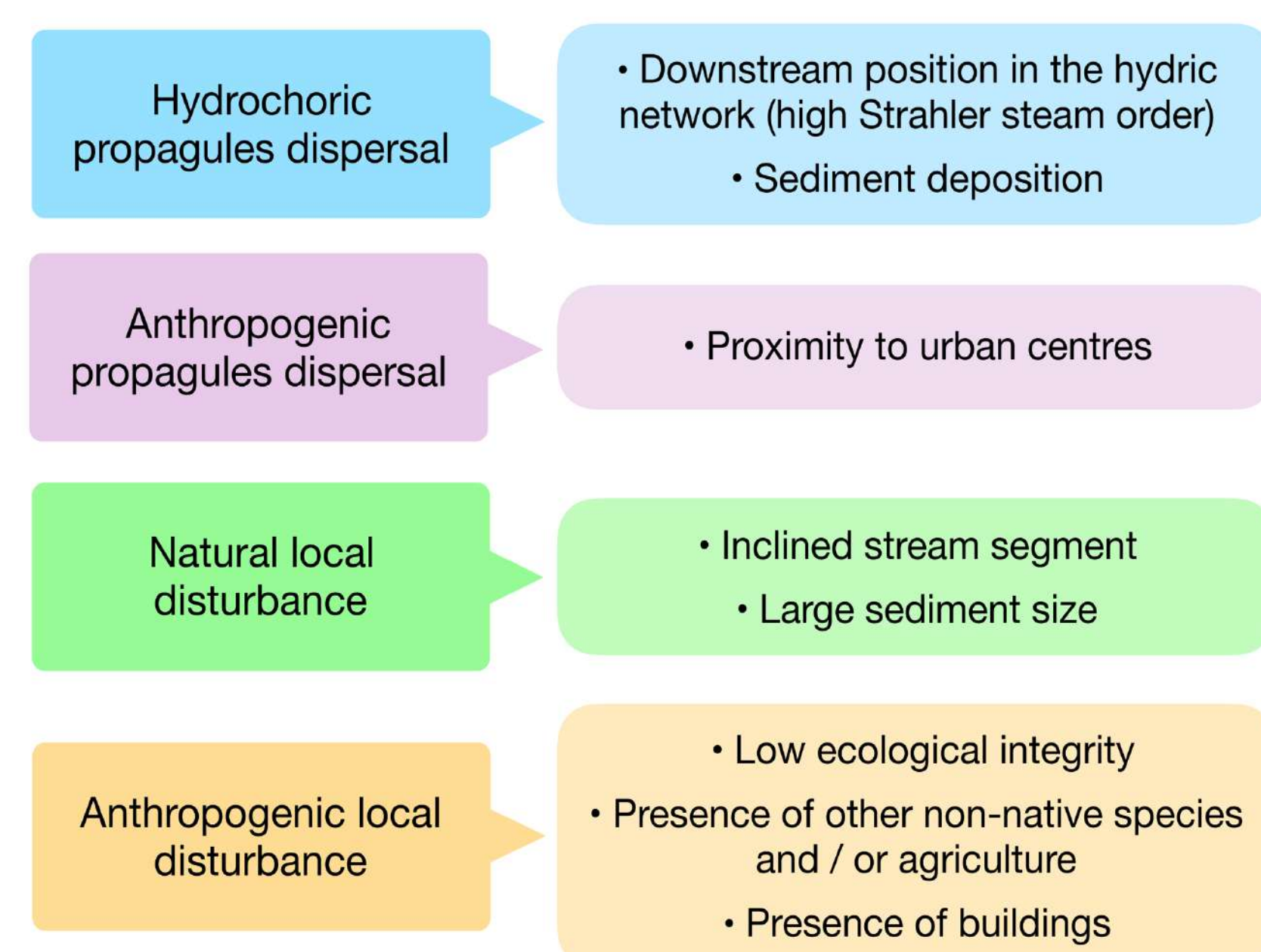
- Effect of significant variables on *H. coronarium* presence probability



### DISCUSSION

- Aquatic disturbance seems to facilitate invasion (possibly via **disruptive action** by **large fluvial sediment** during high energy floods), and propagule arrival by hydrochory
- Local riparian degradation** by human action also favours *H. coronarium*, just like the presence of trees and **other non-native vegetation**

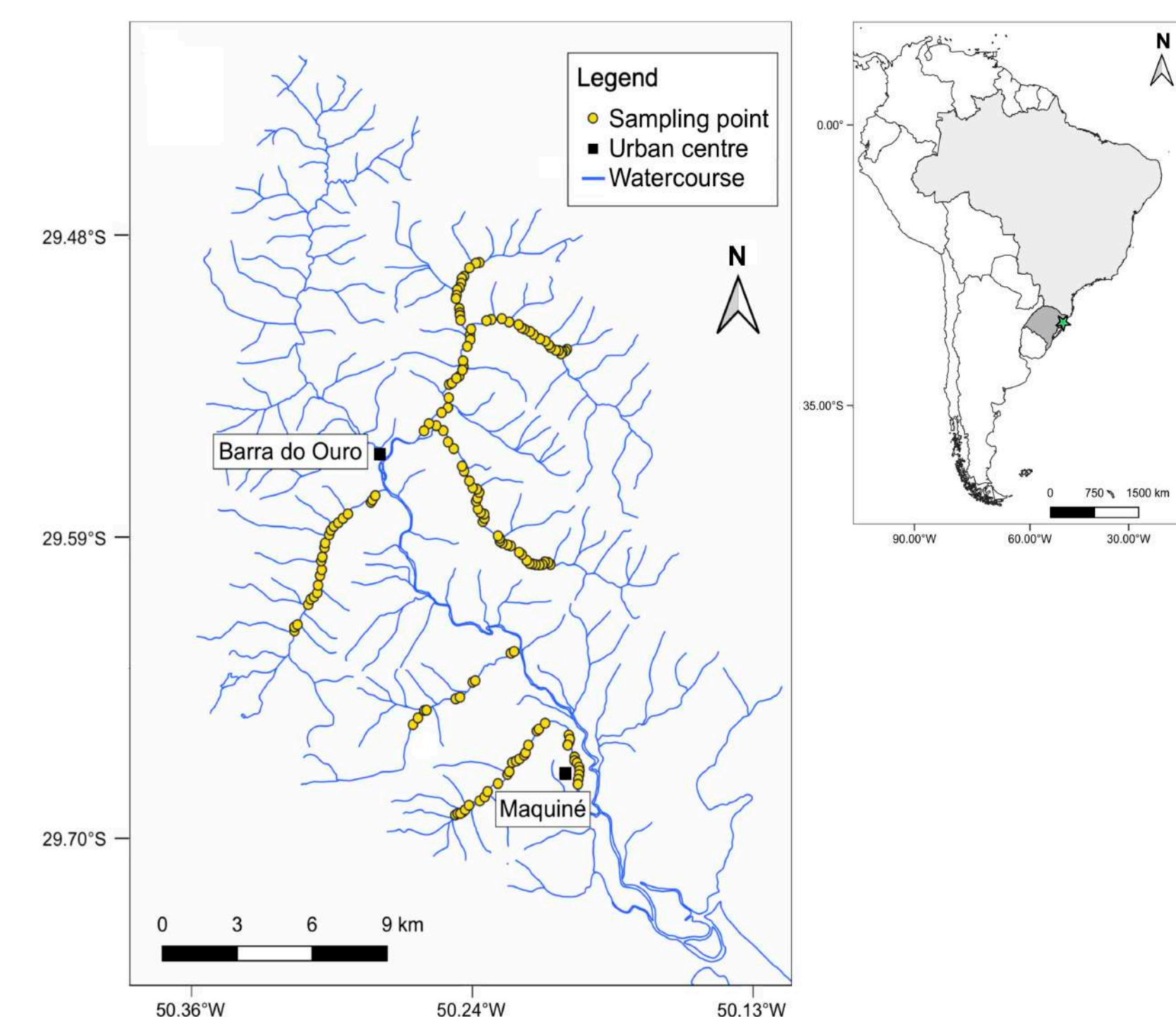
### HYPOTHESES



favour the presence of *H. coronarium*?



### STUDY AREA



### MODEL OUTPUT

	Estimate	Std. Error	z value	Pr(> z )	Significance
(Intercept)	1.5267	0.4866	3.138	0.001704	**
Strahler stream order	1.0683	0.3636	2.938	0.003302	**
Average substrate size	0.2424	0.2485	0.975	0.329522	
Vegetation – Exotic trees	2.0892	0.7527	2.776	0.005509	**
Vegetation – Shrubs	0.7763	1.0556	0.735	0.462102	
Vegetation – Grass	-0.6128	0.7221	-0.849	0.396081	
Vegetation – None	-1.3550	0.9519	-1.424	0.154591	
Local area degradation	1.0382	0.3082	3.368	0.000757	***

### REFERENCES

① Planty-Tabacchi A-M, Tabacchi E, Naiman RJ, et al (1996) Invasibility of Species-Rich Communities in Riparian Zones. *Conserv Biol* 10:598–607



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