



Table to show the possible variables that might determine Dung Beetle Distribution and Community structure in Cusuco National Park:
 Fill in as much as you can and then use this information for discussion on which variables might be important.

Column	Variable measured	Description	Comment	Importance? ***, **, *, X
AV	Elevation	Height in meters above sea level.	No direct effect, but a good proxy for environmental variation	*** - but only as proxy
BP-BS	Monthly precipitation	From WorldClim website - http://www.worldclim.org/bioclimate	Increased precipitation in general supports healthy forest habitat, plant diversity->animal diversity->detritus resource diversity.	**
BP-CA	Max-min temperatures		Low temperatures reduce activity potential for inverts (ectothermic), high temperatures may be damaging to bodily structures	***
CB	Cut stumps	Number recorded in an area. Human activity?	Cut stumps might indicate an unhealthy habitat where dung-producers are not found	**
CC	Saplings	Total number in 20x20m sample square.	Density of undergrowth – possible difficult in movement through area, but also possibly supporting higher densities of smaller mammals. Also affects microclimate – modifies the effects of average precipitation and temperature	*
CD	Total trees	Total number in square.	Forest density – affects microclimate substantially, link with healthy forest processes and ecosystem	X
CE	Broadleaf trees	Total number in square.		X
CF	Ferns			X
CG	Palms			X
CH	Pines			X
CI	Tree ferns			X
CJ	Vines			X
CK	Alive trees	Total number in square.		X
CL	Dead trees	Total number in square.	Dead trees might indicate an unhealthy habitat where dung-producers are not found. However, some proportion of death is natural, and creates a diversity	X





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			of habitats supporting a wider range of resources – eg some dung beetles feed on fungi	
CM	Average CBH	The circumference measured at breast height in cms.	Used for woody density measurements – gives further data towards forest density, forest health etc	*
CN	Average Canopy height	The height of a representative tree in the plot - meters	Affects microclimate and microhabitat variation – again possibly increasing variation of resources	X
CO	Average leaf litter depth	Depth in mm. of the leaf litter layer	Leaf litter depth might affect the dung beetles’ ability to roll or tunnel dung.	**
CQ	Average soil density	Measured using a standard weight dropped from a set height.mm.	Soil density might affect the dung beetles’ ability to roll or tunnel dung.	**
CP	Average canopy openness	How much blue-sky could be seen - the higher the number, the more sky visible.	Canopy openness might affect the local temperature and increase predation	*
CR-CW	Vegetation touches	The number of times each 50cm segment of a 3metre pole is touched by vegetation: gives an indicator of the density of the understory vegetation.	Vegetation/understory density, as above	*

All the data was collected from 20x20m squares. The Dung beetle 10x10m square was located within this sample area.

Importance key - *** = high ** = medium * = low or possibly X = no

