APPENDIX to

Mapping the biodiversity of tropical insects: Species richness and inventory completeness

of African sphingid moths

by

Liliana Ballesteros-Mejia, Ian J Kitching, Walter Jetz, Peter Nagel & Jan Beck

Table A1. Human geographic factors (continuous [cont.], categorical [cat.] or presence-absence [P/A]), data sources, and modelled effects on inventory completeness of 200 x 200 km cells. All online sources were accessed in May 2010. Tourism hotspots were identified as the "top ten places" in each country as listed in the Lonely Planet guide book series. We coded 'colonial history' as presence or absence of Great Britain, France, Belgium and Portugal in the main part of each grid cell in 1919 (diplomatic refinements, e.g. colony vs. protectorate, were ignored); we excluded the few grid cells with other colonial history or no data for other variables, leaving 502 grid cells in analysis.

| Variable	Data source
Road density [area of 2 km buffer, cont.]	http://www.diva-gis.org/gData
Railway density [area of 2 km buffer, cont.]	http://www.diva-gis.org/gData
Airports [P/A]	http://goafrica.about.com/
Tourism hotpots [P/A]	http://www.lonelyplanet.com/africa
Protected areas [P/A]	http://www.wdpa.org/
Pristine nature areas [P/A]	http://www.ciesin.columbia.edu/wild_areas/
Colonial history, in 1919 [cat.]	http://en.wikipedia.org
Human population, 2005 [cont.]	http://gcmd.nasa.gov/records/GCMD_Landscan.html
Armed conflict since 1945 [P/A]	http://www.prio.no/

Table A2 GLS model details for Chao1-estimates of species richness (S_{Chao}). Note that for

S_{Chao} the best model (lowest AIC) was not the full model, but one without AET. Pseudo-R^2 =

0.145 (n = 146 grid cells).

log$_{10}$S$_{Chao}$: AIC = -36.0				
Variable	*Coefficient*	*SE*	*t*	*p*
(Intercept)	0.352494	0.442870	0.796	0.426
Topo. Het.	0.000044	0.000023	1.902	0.059
PET	0.000366	0.000224	1.629	0.106
Tree	0.008514	0.002187	3.894	0.000
Herb	0.007185	0.002379	3.020	0.003

Fig. A1 *Chao1*-estimated species richness. Grey cells denote no data.
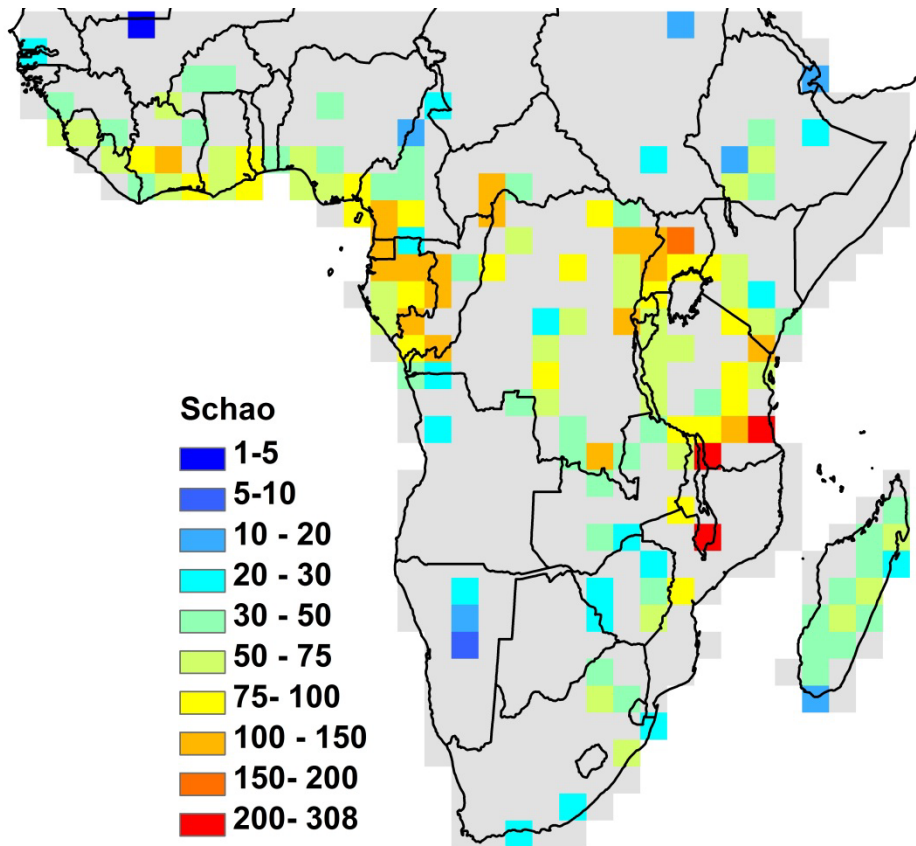
Fig. A2 Species richness estimates based on S_{Chao}. *(Right)* Extrapolation of environmental

model (Table A2); *(Left)* Co-kriging extrapolation of S_{Chao} (RMSE = 35).
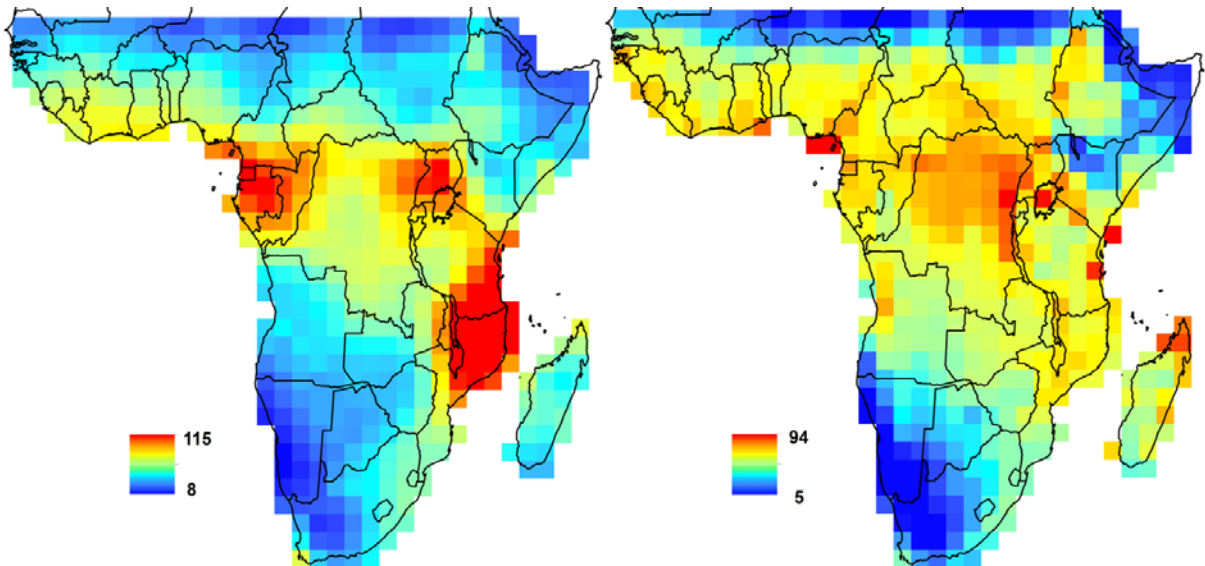
Table A3 Spatially explicit model explaining estimated inventory completeness (Fig 3;

log10(x+1)-transformed) by human geographic factors, using only cells with at least one

species recorded (i.e., no zero-inventory completeness).

n = 367	**GLS**; pseudo-R^2 = 0.18			
	Coefficient	*SE*	*t*	*P*
(Intercept)	0.079839	0.016615	4.805	0.000
Britain	-0.040175	0.011798	-3.405	0.001
Belgium	-0.020264	0.016157	-1.254	0.211
Portugal	-0.074995	0.018758	-3.998	0.000
France	0*			
$\log_{10}$(Popul+1)	0.025628	0.007868	3.257	0.001
Airports	0.037299	0.014017	2.661	0.008
Railways	0.000121	0.000055	2.221	0.027
Tourism	0.032594	0.011408	2.857	0.005
Protected	0.011792	0.009702	1.215	0.225

*) zero by default