

SUPPLEMENTARY ELECTRONIC MATERIAL (APPENDIX 1)

ARDEOLA 68(2)

**LOW-INTENSITY LANDSCAPING OF RESEARCH FACILITIES
INCREASED TAXONOMIC, FUNCTIONAL AND PHYLOGENETIC
BIRD DIVERSITY IN A LOWLAND RAINFOREST**

**AUMENTO DE LA DIVERSIDAD TAXONÓMICA, FUNCIONAL Y FILOGENÉTICA
DE LAS COMUNIDADES DE AVES ASOCIADAS A INSTALACIONES DE
INVESTIGACIÓN EN UNA SELVA TROPICAL**

Pablo AYCART^{1*} and Mario DÍAZ¹

¹ Department of Biogeography and Global Change (BGC-MNCN-CSIC), National Museum of Natural Sciences, CSIC, C/Serrano 155bis, E-28006 Madrid, Spain.

Corresponding author: pablo.ayclaz@gmail.com

TABLE A1

Full list of species captured during the three years of sampling, the habitats where they were recorded, their reproductive status in the study area and their Evolutionary Distinctiveness (ED) scores: a measure of evolutionary uniqueness used to compute the phylogenetic diversity of communities (see text for details). English names obtained from *Handbook of the Birds of the World* and BirdLife International (2019); Spanish names obtained from Billerman *et al.* (2020).

[Lista completa de las especies capturadas durante los tres años de muestreo, los hábitats donde se registraron, su estatus reproductivo en el área de estudio y su valor de originalidad evolutiva (Evolutionary Distinctiveness, ED, una medida de la singularidad evolutiva utilizada para estimar la diversidad filogenética de las comunidades; véase el texto para más detalles). Nombres en inglés obtenidos de *Handbook of the Birds of the World and BirdLife International* (2019); nombres en español obtenidos de Billerman *et al.* (2020).]

Scientific name	English name	Spanish name	Habitat	Breeds ?	ED score
<i>Amazilia tzacatl</i>	Rufous-tailed Hummingbird	Amazilia rabirrufa	Forest & garden	Yes	3.6077
<i>Anthracothorax prevostii</i>	Green-breasted Mango	Mango pechiverde	Garden	Yes	3.6932
<i>Anthracothorax veraguensis</i>	Veraguas Mango	Mango de Veragua	Garden	No	3.6932
<i>Antrostomus carolinensis</i>	Chuck-will's-widow	Chotacabras de la Carolina	Forest	No	9.0429
<i>Aramides cajaneus</i>	Grey-necked Wood-rail	Rascón cuelligrís	Garden	Yes	7.7401
<i>Cantorchilus thoracicus</i>	Stripe-breasted Wren	Soterrey pechirrayado	Forest	Yes	6.2552
<i>Cardellina canadensis</i>	Canada Warbler	Reinita pechirrayada	Garden	No	2.4237
<i>Catharus ustulatus</i>	Russet-backed Thrush	Zorzal de Swainson	Forest & garden	No	6.8413

<i>Ceratopipra mentalis</i>	Red-capped Manakin	Saltarín cabecirrojo	Forest	Yes	5.4464
<i>Chloroceryle aenea</i>	American Pygmy-kingfisher	Martín pescador enano	Forest	Yes	9.5236
<i>Chloroceryle americana</i>	Green Kingfisher	Martín pescador verde	Forest	Yes	8.9119
<i>Contopus cinereus</i>	Southern Tropical Pewee	Pibí tropical	Forest	Yes	3.7949
<i>Dendrocincla fuliginosa</i>	Plain-brown Woodcreeper	Trepador pardo	Forest	Yes	4.5415
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher	Mosquerito ventriamarillo	Garden	No	5.1663
<i>Empidonax traillii</i>	Willow Flycatcher	Mosquerito de traill	Forest & garden	No	4.2568
<i>Empidonax virescens</i>	Acadian Flycatcher	Mosquerito verdoso	Forest	No	6.6095
<i>Florisuga mellivora</i>	White-necked Jacobin	Jacobino nuquiblanco	Garden	Yes	10.4
<i>Geothlypis bairdi</i>	Baird's Yellowthroat	Antifacito coroniolivo	Garden	Yes	2.2823
<i>Geothlypis philadelphia</i>	Mourning Warbler	Reinita enlutada	Forest & garden	No	2.1939
<i>Glaucis aeneus</i>	Bronzy Hermit	Ermitaño bronceado	Forest & garden	Yes	5.575
<i>Habia fuscicauda</i>	Red-throated Ant-tanager	Tangara hormiguera gorgirroja	Forest & garden	Yes	5.0216
<i>Henicorhina leucosticta</i>	White-breasted Wood-wren	Soterrey de selva pechiblanco	Forest & garden	Yes	7.1571
<i>Hylocharis eliciae</i>	Blue-throated Goldentail	Colibrí colidorado	Garden	Yes	4.4415
<i>Icterus prosthemelas</i>	Black-cowled Oriole	Bolsero capuchinegro	Garden	Yes	3.4815
<i>Leiothlypis peregrina</i>	Tennessee Warbler	Reinita verdilla	Garden	No	4.153
<i>Leptotila cassinii</i>	Grey-chested Dove	Paloma pechigrís	Garden	Yes	6.1835

<i>Leptotrygon veraguensis</i>	Olive-backed Quail-dove	Paloma-perdiz bigotiblanca	Forest & garden	Yes	8.7023
<i>Manacus candei</i>	White-collared Manakin	Saltarín cuelliblanco	Forest & garden	Yes	2.8631
<i>Megarynchus pitangua</i>	Boat-billed Flycatcher	Mosquerón picudo	Garden	Yes	2.8631
<i>Mionectes oleagineus</i>	Ochre-bellied Flycatcher	Mosquerito aceitunado	Forest	Yes	5.3652
<i>Myiozetetes granadensis</i>	Grey-capped Flycatcher	Mosquero cabecigrís	Garden	Yes	5.2848
<i>Myiozetetes similis</i>	Social Flycatcher	Mosquero cejiblanco	Forest & garden	Yes	5.4133
<i>Onychorhynchus coronatus</i>	Amazonian Royal Flycatcher	Mosquero real	Forest	Yes	8.0192
<i>Parkesia noveboracensis</i>	Northern Waterthrush	Reinita acuática norteña	Forest & garden	No	4.7075
<i>Phaethornis longirostris</i>	Long-billed Hermit	Ermitaño colilargo	Forest & garden	Yes	6.2857
<i>Phaethornis striigularis</i>	Stripe-throated Hermit	Ermitaño enano	Forest & garden	Yes	4.3763
<i>Pitangus sulphuratus</i>	Great Kiskadee	Bienteveo grande	Garden	Yes	7.9878
<i>Poliocrania exsul</i>	Chestnut-backed Antbird	Hormiguero dorsicastaño	Forest & garden	Yes	6.0355
<i>Sporophila corvina</i>	Black Seedeater	Espiguero variable	Forest & garden	Yes	1.5327
<i>Thalurania colombica</i>	Crowned Woodnymph	Colibrí ninfa verde-violeta	Forest	Yes	3.0355
<i>Thamnophilus atrinucha</i>	Black-crowned Antshrike	Batará plumizo	Forest & garden	Yes	4.634
<i>Thraupis episcopus</i>	Blue-grey Tanager	Tangara azuleja	Garden	Yes	3.1343
<i>Thraupis palmarum</i>	Palm Tanager	Tangara palmera	Garden	Yes	3.1343
<i>Threnetes ruckeri</i>	Band-tailed Barbthroat	Ermitaño barbudo	Forest & garden	Yes	6.752

<i>Thryothorus nigricapillus</i>	Bay Wren	Soterrey castaño	Forest	Yes	6.2552
<i>Todirostrum cinereum</i>	Common Tody-flycatcher	Espatulilla común	Garden	Yes	4.6137
<i>Todirostrum nigriceps</i>	Black-headed Tody-flycatcher	Espatulilla cabecinegra	Garden	Yes	4.3489
<i>Troglodytes aedon</i>	House Wren	Soterrey cucarachero	Forest & garden	Yes	4.2942
<i>Turdus grayi</i>	Clay-colored Thrush	Mirlo pardo	Forest & garden	Yes	3.1226
<i>Tyrannus melancholicus</i>	Tropical Kingbird	Tirano tropical	Garden	Yes	2.9979
<i>Xiphorhynchus susurrans</i>	Cocoa Woodcreeper	Trepador gorgianteado	Forest	Yes	2.8154

TABLE A2

List of variables used for the characterisation of vegetation structure over a 25m-radius circle centred on each net and their factor loadings for PC1 and PC2 of a Principal Component Analyses. Boldface indicates $p < 0.05$.

[Lista de las variables utilizadas para la caracterización de la estructura de la vegetación en un círculo de 25 m de radio centrado en cada red y sus factores de carga para el PC1 y el PC2 de un Análisis de Componentes Principales. Negrita: $p < 0,05$.]

Variables	PC1	PC2
Cover of buildings (%)	0.233	-0.297
Tree canopy cover (%)	-0.362	0.158
Shrub cover (%)	-0.352	-0.082
Herb cover (%)	0.330	-0.044
Leaf litter cover (%)	-0.349	0.094
No. trunks < 10 cm diameter	-0.239	0.306
No. trunks 10- 30cm diameter	-0.179	0.420
No. trunks > 30cm diameter	-0.317	-0.129
Mean shrub height (m)	-0.251	-0.417
Mean tree height (m)	-0.291	-0.277
No. shrub species	-0.181	-0.564
No. tree species	-0.300	0.116
Variance explained (%)	47.78	14.15

TABLE A3

Results of the fit of zero-inflated mixed models with Poisson distribution and log-link to the number of individuals (Abundance) and number of species (Richness) caught in each net (nested within sites as a random factor). Boldface: $p < 0.05$; italics: $0.05 < p < 0.10$.

[Resultados del ajuste de los modelos mixtos (distribución de Poisson que asume exceso de ceros y función de enlace logarítmica) para el número de individuos (Abundancia) y el número de especies (Riqueza) capturados en cada red (red anidada dentro de sitios de estudio como factor aleatorio). Negrita: $p < 0,05$; cursiva: $0.05 < p < 0.10$.]

Source	df	Abundance		Richness	
		F	p	F	p
Sampling effort	1, 60	0.33	0.568	0.02	0.892
YEAR	2, 60	1.40	0.255	0.29	0.758
HABITAT	1, 60	0.11	0.738	1.12	0.294
PC1	1, 60	8.12	0.006	4.22	0.044
PC2	1, 60	2.93	<i>0.092</i>	0.90	0.346
YEAR * HABITAT	2, 60	0.90	0.411	1.22	0.303
YEAR * PC1	2, 60	1.19	0.312	2.14	0.126
YEAR * PC2	2, 60	2.26	0.113	1.47	0.237
HABITAT * PC1	1, 60	15.21	0.000	4.72	0.034
HABITAT * PC2	1, 60	4.55	0.037	3.50	<i>0.066</i>

YEAR * PC1	0.904	2, 50	0.412	0.846	2, 50	0.435	2.345	2, 30	0.113
YEAR * PC2	1.262	2, 50	0.292	0.721	2, 50	0.491	6.116	2, 24	0.007
HABITAT * PC1	0.837	1, 50	0.365	0.031	1, 50	0.86	2.863	1, 34	0.100
HABITAT * PC2	5.849	1, 50	0.019	1.441	1, 50	0.236	2.470	1, 41	0.124

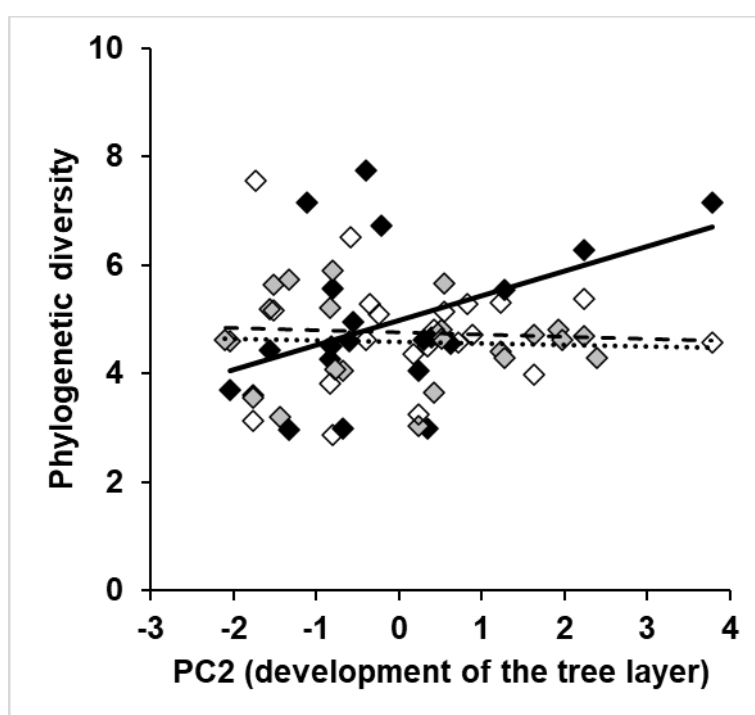


Figure A1. Variation of the phylogenetic diversity of the species captured by each net, in relation to the values of the nets in the PC2, representing the degree of development of the tree layer, for the three study years. Black points, solid line: 2017; Grey points, dashed line: 2018; White points, dotted line: 2019.

Figura A1. Variación de la diversidad filogenética de las especies capturadas por cada red, en relación con los valores de las redes en el PC2, que representa el grado de desarrollo del arbolado, para los tres años de estudio. Diamantes negros, línea continua: 2017; Diamantes grises, línea discontinua: 2018; Diamantes blancos, línea punteada: 2019.