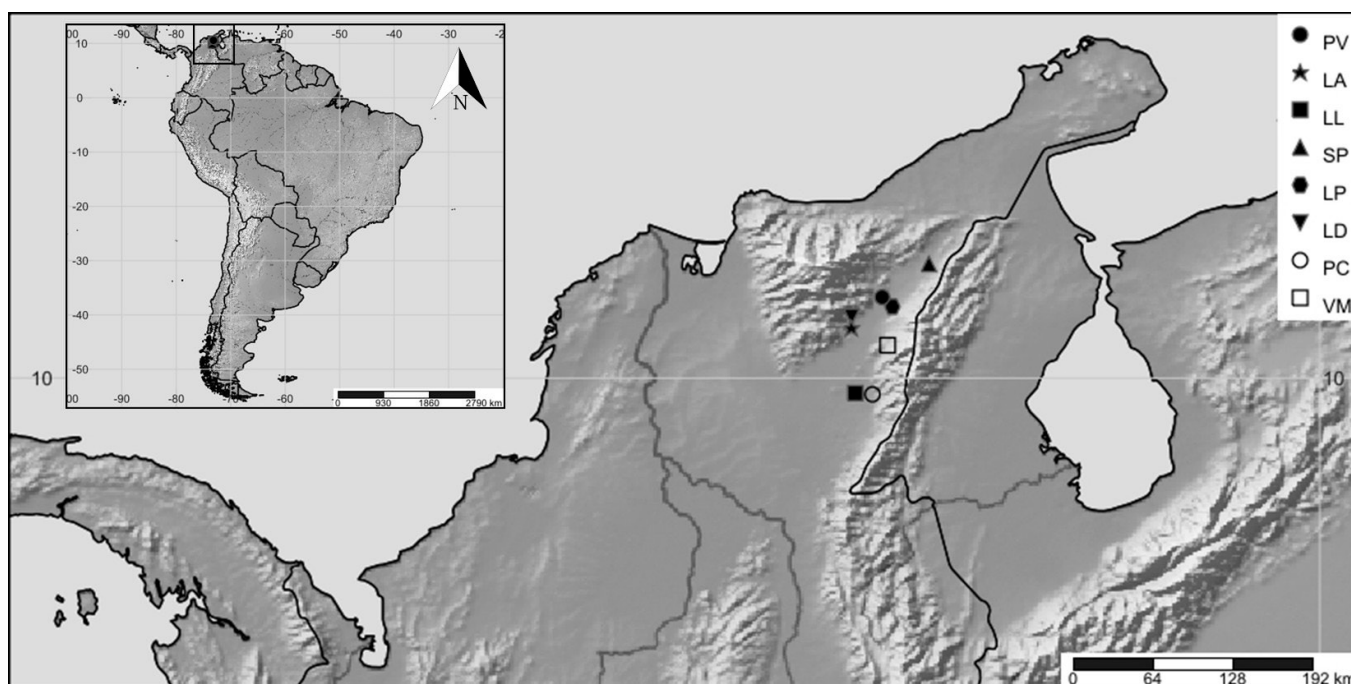


SUPPLEMENTARY MATERIAL

Supplementary material article: Is *Digitonthophagus gazella* undergoing a naturalization process? A study case in a tropical dry forest of northern Colombia

Material suplementario artículo: ¿Está *Digitonthophagus gazella* en proceso de naturalización? Estudio de caso en un bosque seco tropical del norte de Colombia

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Supplement figure 1. Location of study area and cattle ranches in the Cesar River valley (Colombia): PV: Palmeras de Venecia; LA: La Arcadia; LL: La Luisa; SP: Salsipuedes; LP: La Pradera; LD: Las Delicias; PC: Parcela 52 and VM: Villa Mariela. (Simplemappr available at Shorthouse, 2010).

Supplement table 1. Land use systems studied in eight cattle ranches of the Cesar River valley, Colombia. F: Forest; ISPS: Intensive Silvopastoral Systems; ST: Scattered Trees in pastures; TP: Treeless Pastures. *Ranch selected to evaluate biodiversity and temporary succession.

Ranch	Location	Land use	Elevation (m.a.s.l.)
La Pradera (LP)	La Jagua del Pilar, Guajira 10°30'58.2"N 73°05'18.4"W	F	181
		ISPS	181
		TP	189
La Arcadia (LA)	Valledupar, Cesar 10°21'42.4"N 73°23'04.9"W	F	160
		ISPS	168
		TP	164
Salsipuedes (SP)*	Fonseca, Guajira 10°49'29.3"N 72°49'28.6"W	F	206
		ISPS	211
		TP	216
Palmeras de Venecia (PV)	Valledupar, Cesar 10°35'05.7"N 73°09'42.1"W	F	164
		ISPS	162
		TP	158
La Luisa (LL)	Agustín Codazzi, Cesar 9°53'30.6"N 73°21'25.0"W	F	75
		ISPS	71
		TP	73
Las Delicias (LD)	Valledupar, Cesar 10°26'36.1"N 73°23'00.0"W	F	294
		ST	294
		TP	294
Parcela 52 (PC)	Agustín Codazzi, Cesar 9°52'57.8"N 73°13'56.5"W	F	165
		ST	165
		TP	165
Villa Mariela (VM)	San Diego, Cesar 10°14'15.6"N 73°07'50.0"W	F	524
		ISPS	510
		TP	592

Supplement table 2. Richness and abundance of dung beetles under three land uses in cattle ranches in the Cesar River valley, Colombia. F (Native Forest), ISPS (Intensive Silvopastoral System), ST (Scattered Trees in Pastures) and TP (Treeless Pasture). *Code used in Figure 2.

Tribe	Species	F	ISPS	ST	TP	Code*
Ateuchini	<i>Ateuchus</i> sp. 01	4				a
	<i>Uroxys</i> sp.02 H	230	22	4		b
	<i>Uroxys</i> sp.03 H	46	1			c
	<i>Uroxys</i> sp.04 H	8				d
	<i>Agamopus lampros</i>	1				e
	<i>Anomiopus</i> sp.	1				f
	<i>Lobidion fedescobari</i>					g
Dichotomiini	<i>Canthidium</i> sp. 01 H		18		8	h
	<i>Canthidium</i> sp.04 H	1085	286	10	4	i
	<i>Dichotomius</i> sp.03 H	38	16	2	6	j
	<i>Dichotomius</i> sp.04 H	729	229	13	193	k
Deltochilini	<i>Canthon juvenus</i>	37	39	6	7	l
	<i>Canthon lituratus</i>	59	219	21	71	m
	<i>Canthon septemmaculatus</i>	38	149	8	13	n
	<i>Canthon</i> sp. 06 H	12				o
	<i>Canthon</i> sp.08 H	381				p
	<i>Canthon</i> sp.10 H	60	829	19	155	q
	<i>Malagoniella astyanax</i>	35	6	1		r
	<i>Deltochilum</i> (Hybomidium) sp.01 H	69	8			s
	<i>Deltochilum guidingii</i>	10	8			t
	<i>Pseudocanthon</i> sp.01 H	37	112	5	8	u
Eurysternini	<i>Eurysternus impressicollis</i>	68	43		5	v
	<i>Eurysternus mexicanus</i>	3	7		3	w
	<i>Eurysternus plebejus</i>	4				x
Onthophagini	<i>Onthophagus lebasii</i>	118	23	3	3	y
	<i>Onthophagus marginicollis</i>	39	97	20	80	z
	<i>Onthophagus</i> sp. 01 H	111	21	9	5	ab
	<i>Onthophagus landolti</i>	4	2			ac
	<i>Digitonthophagus gazella</i>		91	8	51	ad

(Continue)

Tribe	Species	F	ISPS	ST	TP	Code*
Phanaeini	<i>Phanaeus prasinus</i>	2				ae
	<i>Phanaeus hermes</i>	10				af
	<i>Coprophanaeus gamezi</i>	3	1		1	ag
	<i>Sulcophanaeus cf. steinheili</i>				2	ah
	<i>Diabroctis cadmus</i>	11	28		1	ai
	Species richness	30	23	14	18	
	Number of individuals	3253	2255	129	602	

Supplement table 3. Richness and abundance of dung beetles associated with cattle dung under three land uses. F (native Forest), ISPS (Intensive Silvopastoral System), and TP (Treeless Pasture) in a cattle ranch of the Cesar River valley, Colombia.

Tribe	Species	F	ISPS	TP
Ateuchini	<i>Ateuchus</i> sp.	9		
	<i>Lobidion</i> sp.01	1		
	<i>Uroxys</i> sp.02 H	14		
Dichotomiini	<i>Canthidium</i> sp.04 H	10		
	<i>Dichotomius</i> sp.04 H	6		
Deltachilini	<i>Canthon</i> sp.08 H	1		
	<i>Canthon</i> sp.10 H		1	
	<i>Deltachilum (Hybomidium)</i> sp.01 H	1		
	<i>Pseudocanthon</i> sp.01 H		1	
Eurysternini	<i>Eurysternus impressicollis</i>	4	3	1
Onthophagini	<i>Onthophagus lebasii</i>	5	1	
	<i>Onthophagus marginicollis</i>	3	18	13
	<i>Onthophagus</i> sp. 01 H	8	1	
	<i>Onthophagus landolti</i>	3		
	<i>Digitonthophagus gazella</i>		25	17
Phanaeini	<i>Diabroctis cadmus</i>	1	3	
	Species richness	13	8	3
	Number of individuals	66	50	31