Supplementary Material

Temporal changes of taxonomic and functional diversity of dung beetles inhabiting forest fragments and pastures in Los Tuxtlas Biosphere Reserve, Mexico

Cambios temporales de la diversidad taxonómica y funcional de los escarabajos estercoleros que habitan fragmentos de bosque y pastizales en la Reserva de la Biosfera Los Tuxtlas, México

Pedro Giovâni da Silva, Renato Portela Salomão, Daniel González-Tokman , Frederico de Siqueira Neves, Mario E. Favila

Table S1. Distribution of dung beetle species per habitat (pasture and forest fragments) and period (1999–2000 and 2016–2017), and species traits used to calculate functional diversity metrics. PAS = Pasture; FOR = Forest.

Species	1999–2000		2016–2017		Behaviour	Diet	Length (mm)	Habitat use
	PAS	FOR	PAS	FOR				
Ateuchus illaesum (Harold, 1868)	4	30	0	171	Tunneller	Coprophagous	6.77	Forest Specialist
Bdelyropsis newtoni Howden, 1971	0	32	0	1	Tunneller	Coprophagous	4.58	Forest Specialist
Canthidium ardens Bates, 1887	0	96	0	9	Tunneller	Coprophagous	4.59	Forest Specialist
Canthidium centrale (Boucomont, 1928)	0	350	0	253	Tunneller	Coprophagous	8.34	Forest Specialist
Canthidium pseudoperceptibile Kohlmann & Solís, 2006	0	0	0	120	Tunneller	Coprophagous	3.89	Forest Specialist
Canthidium pseudopuncticolle Solís & Kohlmann, 2004	7	0	0	0	Tunneller	Generalist	3.71	Too rare
Canthidium sp.	0	283	0	0	Tunneller	Coprophagous	5.13	Forest Specialist
Canthon cyanellus Leconte, 1859	35	22	31	54	Roller	Generalist	8.24	Generalist
Canthon eurycelis Bates, 1887	0	3	0	28	Roller	Coprophagous	5.50	Too rare
Canthon femoralis Chevrolat, 1834	0	19	0	1	Roller	Coprophagous	7.17	Too rare

Species	1999–2000		2016–2017		Behaviour	Diet	Length (mm)	Habitat use
	PAS	FOR	PAS	FOR				
Canthon indigaceus chiapas Robinson, 1948	13	0	8	0	Roller	Coprophagous	10.04	Pasture Specialist
Canthon morsei Howden, 1966	0	61	0	4	Roller	Necrophagous	5.97	Forest Specialist
Canthon subhyalinus Harold, 1867	0	10	0	60	Roller	Coprophagous	5.28	Forest Specialist
Canthon vazquezae Martinez, Halffter & Halffter, 1964	0	16	0	33	Roller	Coprophagous	6.57	Too rare
Copris laeviceps Harold, 1869	0	28	7	65	Tunneller	Coprophagous	10.17	Forest Specialist
Copris lugubris Boheman, 1858	3	3	1	0	Tunneller	Coprophagous	16.14	Too rare
Copris sallei Harold, 1869	1	6	1	68	Tunneller	Coprophagous	15.16	Generalist
Coprophanaeus corythus (Harold, 1863)	0	35	0	7	Tunneller	Necrophagous	26.13	Too rare
Coprophanaeus gilli Arnaud, 1997	8	37	0	0	Tunneller	Necrophagous	18.27	Generalist
Deltochilum carrilloi González-Alvarado & Vaz-de-Mello, 2014	0	0	0	5	Roller	Coprophagous	22.71	Too rare
Deltochilum pseudoparile Paulian, 1938	0	364	0	195	Roller	Generalist	10.37	Forest Specialist
Deltochilum scabriusculum Bates, 1887	0	6	1	2	Roller	Generalist	20.35	Too rare
Dichotomius amplicollis (Harold, 1869)	0	0	2	4	Tunneller	Coprophagous	19.80	Too rare
Dichotomius colonicus (Say, 1835)	5	1	2	0	Tunneller	Coprophagous	23.11	Too rare
Dichotomius satanas (Harold, 1867)	0	24	0	126	Tunneller	Coprophagous	19.77	Forest Specialist
Eurysternus angustulus Harold, 1869	0	0	1	185	Dweller	Coprophagous	8.80	Forest Specialist
Eurysternus maya Génier, 2009	0	1	0	91	Dweller	Coprophagous	13.71	Forest Specialist
Eurysternus mexicanus Harold, 1869	0	0	30	27	Dweller	Coprophagous	10.60	Generalist
Onthophagus asperodorsatus Howden & Gill, 1993	0	0	0	2	Tunneller	Saprophagous	4.67	Too rare
Onthophagus batesi Howden & Cartwright, 1963	18	3	13	20	Tunneller	Coprophagous	7.04	Generalist
Onthophagus incensus Say, 1835	0	2	1	81	Tunneller	Coprophagous	7.37	Forest Specialist
Onthophagus landolti Harold, 1880	18	6	0	2	Tunneller	Coprophagous	4.33	Generalist
Onthophagus rhinolophus Harold, 1869	0	154	4	451	Tunneller	Generalist	6.86	Forest Specialist
Onthophagus sp.	0	0	2	2	Tunneller	NA	6.38	Too rare
Onthophagus violetae Zunino & Halffter, 1997	0	0	0	2	Tunneller	Generalist	8.00	Too rare
Phanaeus endymion Harold, 1863	0	0	17	105	Tunneller	Generalist	15.22	Generalist
Phanaeus mexicanus Harold, 1863	3	0	0	0	Tunneller	Coprophagous	19.10	Too rare
Phanaeus sallei Harold, 1863	1	2	0	0	Tunneller	Coprophagous	16.31	Too rare
Phanaeus tridens Castelnau 1840	4	0	1	0	Tunneller	Coprophagous	16.60	Too rare

Species	1999–2000		2016–2017		Behaviour	Diet	Length (mm)	Habitat use
	PAS	FOR	PAS	FOR				
Scatimus ovatus Harold, 1862	0	0	3	4	Tunneller	Coprophagous	5.35	Too rare
Uroxys bonetti Pereira & Halffter, 1961	0	195	0	29	Tunneller	Coprophagous	2.80	Forest Specialist
Uroxys microcularis Howden & Young, 1981	1	140	0	1	Tunneller	Coprophagous	3.65	Forest Specialist
Uroxys platypiga (Howden & Young, 1981)	0	144	0	36	Tunneller	Coprophagous	3.56	Forest Specialist
Number of species	**14**	**29**	**17**	**34**				

Table S2. Dataset used in this study.

Year	Month	Habitat	Site	A_ILAESUM	B_NEW	CANTHI_SP	C_CENTRALE	C_ARDENS	C_PSEUDOPERC	C_PSEUDOPUNC	C_MORS	C_CYAN	C_EURY	C_IND	C_FEMORALIS	C_SUBH	C_VASQ	C_LAEVICEPS	C_LUGU	C_SALLEI	C_CORY	C_GILLI	D_CARRI	D_PSEUDOP	D_SCABR	D_AMPL	D_COL	D_SATA	E_ANGUSTULUS	E_MEXIC	E_MAYA	O_SP	O_ASPE	O_BATESI	O_LAND	O_INC	O_RHIN	O_VIOL	P_ENDYM	P_MEX	P_SALL	P_TRID	S_OVA	U_BONE	U_MICRO	U_PLATY
1999_2000	jan	Forest	A_CORTEZ	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1999_2000	apr	Forest	A_CORTEZ	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
1999_2000	may	Forest	A_CORTEZ	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	jun	Forest	A_CORTEZ	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
1999_2000	oct	Forest	A_CORTEZ	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0
1999_2000	feb	Forest	B_VISTA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	apr	Forest	B_VISTA	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1
1999_2000	jun	Forest	B_VISTA	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	aug	Forest	B_VISTA	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0
1999_2000	oct	Forest	B_VISTA	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
1999_2000	feb	Forest	C_COYAME	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1999_2000	jun	Forest	C_COYAME	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1999_2000	aug	Forest	C_COYAME	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1
1999_2000	oct	Forest	C_COYAME	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1
1999_2000	jan	Forest	C_TIGRE	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1999_2000	feb	Forest	C_TIGRE	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1999_2000	apr	Forest	C_TIGRE	0	0	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1
1999_2000	jun	Forest	C_TIGRE	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1
1999_2000	aug	Forest	C_TIGRE	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
1999_2000	oct	Forest	C_TIGRE	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
1999_2000	feb	Forest	EST_BIO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1999_2000	apr	Forest	EST_BIO	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1999_2000	jun	Forest	EST_BIO	0	0	0	1	0	0	0	1	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
1999_2000	aug	Forest	EST_BIO	0	0	0	1	0	0	0	1	1	0	0	1	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1999_2000	jan	Forest	EL_GALLO	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1999_2000	apr	Forest	EL_GALLO	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
1999_2000	may	Forest	EL_GALLO	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1999_2000	jun	Forest	EL_GALLO	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1999_2000	oct	Forest	EL_GALLO	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
1999_2000	jan	Forest	EJEGAL	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1

Year	Month	Habitat	Site	A_ILAESUM	B_NEW	CANTHI_SP	C_CENTRALE	C_ARDENS	C_PSEUDOPERC	C_PSEUDOPUNC	C_MORS	C_CYAN	C_EURY	C_IND	C_FEMORALIS	C_SUBH	C_VASQ	C_LAEVICEPS	C_LUGU	C_SALLEI	C_CORY	C_GILLI	D_CARRI	D_PSEUDOP	D_SCABR	D_AMPL	D_COL	D_SATA	E_ANGUSTULUS	E_MEXIC	E_MAYA	O_SP	O_ASPE	O_BATESI	O_LAND	O_INC	O_RHIN	O_VIOL	P_ENDYM	P_MEX	P_SALL	P_TRID	S_OVA	U_BONE	U_MICRO	U_PLATY
1999_2000	apr	Forest	EJEGAL	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
1999_2000	may	Forest	EJEGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
1999_2000	jun	Forest	EJEGAL	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1999_2000	oct	Forest	EJEGAL	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
1999_2000	jan	Forest	MEGALLO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1999_2000	apr	Forest	MEGALLO	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1
1999_2000	jun	Forest	MEGALLO	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
1999_2000	oct	Forest	MEGALLO	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1999_2000	jan	Forest	NANCIYAGA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	feb	Forest	NANCIYAGA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	apr	Forest	NANCIYAGA	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
1999_2000	jun	Forest	NANCIYAGA	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
1999_2000	aug	Forest	NANCIYAGA	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1999_2000	oct	Forest	NANCIYAGA	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1999_2000	jun	Pasture	P_B_VISTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	aug	Pasture	P_B_VISTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	jan	Pasture	P_CORTEZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1999_2000	may	Pasture	P_CORTEZ	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1999_2000	jun	Pasture	P_CORTEZ	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1999_2000	oct	Pasture	P_CORTEZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1999_2000	jan	Forest	PIPIAPAN	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	apr	Forest	PIPIAPAN	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1
1999_2000	may	Forest	PIPIAPAN	0	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1
1999_2000	jun	Forest	PIPIAPAN	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
1999_2000	aug	Forest	PIPIAPAN	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1999_2000	oct	Forest	PIPIAPAN	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1
1999_2000	apr	Pasture	P_MEGALLO	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	aug	Pasture	P_MEGALLO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
1999_2000	jan	Pasture	P_PIPIAPAN	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	apr	Pasture	P_PIPIAPAN	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	may	Pasture	P_PIPIAPAN	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	jun	Pasture	P_PIPIAPAN	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

Year	Month	Habitat	Site	A_ILAESUM	B_NEW	CANTHI_SP	C_CENTRALE	C_ARDENS	C_PSEUDOPERC	C_PSEUDOPUNC	C_MORS	C_CYAN	C_EURY	C_IND	C_FEMORALIS	C_SUBH	C_VASQ	C_LAEVICEPS	C_LUGU	C_SALLEI	C_CORY	C_GILLI	D_CARRI	D_PSEUDOP	D_SCABR	D_AMPL	D_COL	D_SATA	E_ANGUSTULUS	E_MEXIC	E_MAYA	O_SP	O_ASPE	O_BATESI	O_LAND	O_INC	O_RHIN	O_VIOL	P_ENDYM	P_MEX	P_SALL	P_TRID	S_OVA	U_BONE	U_MICRO	U_PLATY
1999_2000	apr	Pasture	P_TIGRE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	jun	Pasture	P_TIGRE	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
1999_2000	aug	Pasture	P_TIGRE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	apr	Pasture	P_VELAZCO	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	may	Pasture	P_VELAZCO	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999_2000	aug	Pasture	P_VELAZCO	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0
1999_2000	apr	Forest	SONPASO	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0
1999_2000	may	Forest	SONPASO	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1999_2000	aug	Forest	SONPASO	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
2016_2017	jun	Pasture	P_B_VISTA	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0
2016_2017	aug	Pasture	P_B_VISTA	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0
2016_2017	mar	Pasture	P_CORTEZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	may	Pasture	P_CORTEZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	jun	Pasture	P_CORTEZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2016_2017	oct	Pasture	P_CORTEZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	may	Pasture	P_MEGALLO	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2016_2017	jun	Pasture	P_MEGALLO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2016_2017	mar	Pasture	P_PIPIAPAN	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
2016_2017	may	Pasture	P_PIPIAPAN	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2016_2017	jun	Pasture	P_PIPIAPAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	aug	Pasture	P_PIPIAPAN	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	mar	Pasture	P_TIGRE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
2016_2017	jun	Pasture	P_TIGRE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	aug	Pasture	P_TIGRE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	mar	Pasture	P_VELAZCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	may	Pasture	P_VELAZCO	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	aug	Pasture	P_VELAZCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	feb	Forest	A_CORTEZ	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	mar	Forest	A_CORTEZ	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
2016_2017	may	Forest	A_CORTEZ	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
2016_2017	jun	Forest	A_CORTEZ	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0
2016_2017	oct	Forest	A_CORTEZ	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Year	Month	Habitat	Site	A_ILAESUM	B_NEW	CANTHI_SP	C_CENTRALE	C_ARDENS	C_PSEUDOPERC	C_PSEUDOPUNC	C_MORS	C_CYAN	C_EURY	C_IND	C_FEMORALIS	C_SUBH	C_VASQ	C_LAEVICEPS	C_LUGU	C_SALLEI	C_CORY	C_GILLI	D_CARRI	D_PSEUDOP	D_SCABR	D_AMPL	D_COL	D_SATA	E_ANGUSTULUS	E_MEXIC	E_MAYA	O_SP	O_ASPE	O_BATESI	O_LAND	O_INC	O_RHIN	O_VIOL	P_ENDYM	P_MEX	P_SALL	P_TRID	S_OVA	U_BONE	U_MICRO	U_PLATY
2016_2017	feb	Forest	B_VISTA	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0
2016_2017	mar	Forest	B_VISTA	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
2016_2017	jun	Forest	B_VISTA	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	1	0	0	1	0	1	0	0	0	0	1	0	0
2016_2017	aug	Forest	B_VISTA	1	0	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	oct	Forest	B_VISTA	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2016_2017	feb	Forest	C_COYAME	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0
2016_2017	jun	Forest	C_COYAME	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1
2016_2017	aug	Forest	C_COYAME	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2016_2017	oct	Forest	C_COYAME	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	feb	Forest	C_TIGRE	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
2016_2017	mar	Forest	C_TIGRE	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	may	Forest	C_TIGRE	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0
2016_2017	jun	Forest	C_TIGRE	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	aug	Forest	C_TIGRE	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	oct	Forest	C_TIGRE	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	feb	Forest	EST_BIO	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2016_2017	mar	Forest	EST_BIO	1	0	0	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	jun	Forest	EST_BIO	1	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	1	0	0
2016_2017	aug	Forest	EST_BIO	1	0	0	1	0	0	0	1	1	1	0	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2016_2017	feb	Forest	EL_GALLO	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
2016_2017	mar	Forest	EL_GALLO	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	may	Forest	EL_GALLO	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0
2016_2017	jun	Forest	EL_GALLO	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2016_2017	oct	Forest	EL_GALLO	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	feb	Forest	EJEGAL	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
2016_2017	mar	Forest	EJEGAL	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	1	0	1
2016_2017	may	Forest	EJEGAL	1	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
2016_2017	jun	Forest	EJEGAL	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0
2016_2017	oct	Forest	EJEGAL	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016_2017	feb	Forest	MEGALLO	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2016_2017	mar	Forest	MEGALLO	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2016_2017	jun	Forest	MEGALLO	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Year	Month	Habitat	Site	A_ILAESUM	B_NEW	CANTHI_SP	C_CENTRALE	C_ARDENS	C_PSEUDOPERC	C_PSEUDOPUNC	C_MORS	C_CYAN	C_EURY	C_IND	C_FEMORALIS	C_SUBH	C_VASQ	C_LAEVICEPS	C_LUGU	C_SALLEI	C_CORY	C_GILLI	D_CARRI	D_PSEUDOP	D_SCABR	D_AMPL	D_COL	D_SATA	E_ANGUSTULUS	E_MEXIC	E_MAYA	O_SP	O_ASPE	O_BATESI	O_LAND	O_INC	O_RHIN	O_VIOL	P_ENDYM	P_MEX	P_SALL	P_TRID	S_OVA	U_BONE	U_MICRO	U_PLATY
2016_2017	oct	Forest	MEGALLO	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2016_2017	feb	Forest	NANCIYAGA	1	0	0	1	0	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
2016_2017	mar	Forest	NANCIYAGA	1	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
2016_2017	may	Forest	NANCIYAGA	1	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
2016_2017	jun	Forest	NANCIYAGA	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
2016_2017	aug	Forest	NANCIYAGA	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
2016_2017	oct	Forest	NANCIYAGA	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
2016_2017	feb	Forest	PIPIAPAN	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2016_2017	mar	Forest	PIPIAPAN	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1
2016_2017	may	Forest	PIPIAPAN	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0
2016_2017	jun	Forest	PIPIAPAN	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
2016_2017	aug	Forest	PIPIAPAN	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2016_2017	oct	Forest	PIPIAPAN	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
2016_2017	mar	Forest	SONPASO	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2016_2017	may	Forest	SONPASO	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
2016_2017	aug	Forest	SONPASO	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
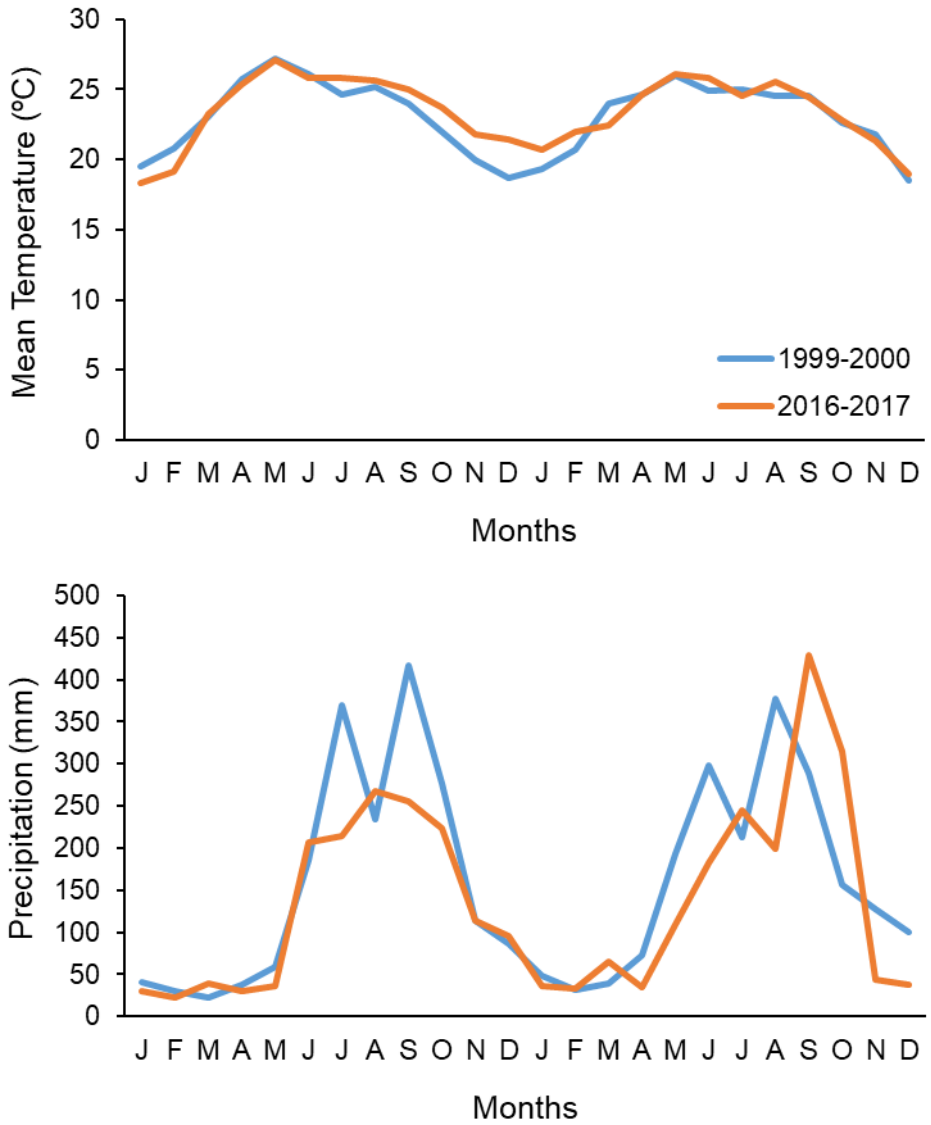
Figure S1. Average values of temperature (ºC) and precipitation (mm) during 1999-2000 and 2016-2017 in Veracruz, Mexico. Data obtained from the website of the Government of Mexico (https://smn.conagua.gob.mx/es/climatologia/temperaturas-y-lluvias/resumenes-mensuales-de-temperaturas-y-lluvias).