sustainability

MDPI

Supplementary Material 1

Table S1. Structural values and uses for each species recorded in active and fallow AFSs, and TDF areas in Zacualpan, Colima, Mexico.

Family	Species	Author	Presence	Uses	Ab	RD	FR	RDOM	BA	H	IV (%)
Fabaceae	*Coursetia glandulosa*	A.Gray	FOR, ACT, REC, INT, ADV	2, 6	190	14.9	93	6.9004	3.12	4.6	38.4
Malvaceae	*Heliocarpus terebinthinaceus*	(DC.) Hochr.	FOR, ACT, REC, INT, ADV	**9**, **2**, 16, **17**, **4**	106	8.3	93	4.0783	1.844	5.4	35.2
Fabaceae	*Senna atomaria*	(L.) H.S. Irwin & Barneby	FOR, ACT, REC, INT, ADV	2, **3**, 1, **5**	55	4.3	93	0.5618	0.254	4.4	32.7
Fabaceae	*Senegalia macilenta**	(Rose) Britton & Rose	FOR, ACT, INT, ADV	**3**, **4**, **5**, **6**, **7**, **12**, **13**, **19**	209	16.3	73	4.1911	1.895	4.6	31.3
Fabaceae	*Vachellia farnesiana*	(L.) Wight & Arn.	FOR, ACT, REC, INT, ADV	10, 11, 2, **4**, **13**, **7**, **17**	44	3.4	73	0.5485	0.248	3.7	25.8
Capparaceae	*Crateva palmeri*	Rose	ACT, REC, INT, ADV	1, 2, 16	42	3.3	60	0.3605	0.163	3.2	21.2
Fabaceae	*Pithecellobium dulce*	(Roxb.) Benth.	ACT, REC, INT, ADV	**1**, **2**, **3**, **4**, **5**, **6**, 14, 3, 1,7, 11, **8**, **9**, 10, **11**, **13**	26	2.0	47	13.6239	6.16	8.8	20.8
Anacardiaceae	*Spondias purpurea*	L.	FOR, ACT, REC, INT, ADV	**4**, 14, **2**, **1**, **3**, **5**, **8**, **9**, 15	37	2.9	53	6.0600	2.74	5.8	20.8
Fabaceae	*Vachellia campechiana*	(Mill.) Seigler & Ebinger	FOR, ACT, REC, INT, ADV	2, 4, 3, 7	19	1.5	60	0.4490	0.203	4.4	20.6
Petiveriaceae	*Ledenbergia macrantha*	Standl.	FOR, ACT, REC, INT	**1**	22	1.7	53	4.8303	2.184	7.1	20.0

Cactaceae	*Stenocereus queretaroensis**	(F.A.C. Weber) Buxb.	FOR, ACT, INT, ADV	**1**	21	1.6	53	4.2508	1.922	4.1	19.7
Fabaceae	*Conzattia multiflora**	(B.L.Rob.) Standl.	FOR, ACT, INT, ADV	1	17	1.3	53	1.4708	0.665	7.1	18.7
Cannabaceae	*Celtis iguanaea*	(Jacq.) Sarg.	FOR, ACT, INT, ADV	**1**, 2	16	1.3	53	0.0907	0.041	3.3	18.2
Fabaceae	*Enterolobium cyclocarpum*※	(Jacq.) Griseb.	ACT, REC, INT	4, 14, 3, 1, 7, 2, 8	6	0.5	33	16.3885	7.41	16.5	16.7
Malvaceae	*Guazuma ulmifolia*	Lam.	FOR, ACT, REC, INT, ADV	**2**, 9, **1**, 23, 7, **3**, **4**, 16, 24, 18, 25, 12, 19, 15, 20, **5, 8**	16	1.3	40	1.2054	0.545	4.9	14.2
Burseraceae	*Bursera sarcopoda**+	P.G.Wilson	FOR, ACT, INT, ADV	6, 3	14	1.1	40	0.8471	0.383	5.4	14.0
Apocynaceae	*Tabernaemontana tomentosa**	(Greenm.) A.O. Simões & M.E. Endress	FOR, ACT, REC, INT, ADV	6, 3, 27	11	0.9	40	0.3753	0.169	4.8	13.7
Urticaceae	*Urera pacifica**	V.W. Steinm.	FOR, REC, ADV		6	0.5	40	0.4291	0.194	3.6	13.6
Salicaceae	*Casearia corymbosa*	Kunth	FOR, ACT, ADV	6, 20, 15, 2, 1, 27	23	1.8	33	0.2136	0.096	3.2	11.8
Burseraceae	*Bursera heteresthes*+	Bullock	FOR, ACT, ADV	21, 12, 3, 2	9	0.7	33	0.9377	0.424	6.8	11.7
Cannabaceae	*Celtis caudata*	Planch.	FOR, ACT, ADV	1, 3	12	0.9	33	0.2787	0.126	5.8	11.5
Cactaceae	*Pachycereus pecten-aboriginum**	(Engelm. ex S. Watson) Britton & Rose	FOR, ACT, INT	15, 9, 2, 4, 7, 3, 12, 20, 3, 5	8	0.6	33	0.3517	0.159	3.9	11.4
Annonaceae	*Sapranthus violaceus*	(Dunal) Saff.	FOR, ACT, REC, ADV		7	0.5	33	0.1283	0.058	4.2	11.3
Cordiaceae	*Cordia elaeagnoides**	D.C.	REC, ADV	2, **6**, 9, 10, 7, 8, **5, 17**	75	5.9	20	5.5071	2.49	6.1	10.5
Sapotaceae	*Sideroxylon capiri*‡	(A. DC.) Pittier	FOR, ACT, ADV	**1**, 2, 4, **6**, 7, **8**	5	0.4	27	2.1475	0.971	8.2	9.7
Rubiaceae	*Randia tetracantha**	(Cav.) DC.	FOR, INT, ADV	2	16	1.3	27	0.0964	0.043	3.1	9.3
Celastraceae	*Crossopetalum uragoga*	(Jacq.) Kuntze	FOR, ACT, INT		11	0.9	27	0.1822	0.082	4.5	9.2
Malvaceae	*Ceiba aesculifolia*	(Kunth) Britten & Baker f.	FOR, ACT, ADV	**1**, **2**, **9**, 10, 8, 15	8	0.6	27	0.2006	0.090	5.2	9.2
Fabaceae	*Erythrina lanata**	Rose	FOR, INT, ADV	10, 6, 2	8	0.6	27	0.0763	0.034	3.5	9.1
Apocynaceae	*Tabernaemontana donnell-smithii*	Rose	ACT, REC, ADV		5	0.4	27	0.2729	0.123	3.9	9.1

Fabaceae	*Zapoteca formosa*	(Kunth) H.M. Hern.	FOR, INT	4	8	0.6	27	0.0044	0.002	2.5	9.1
Rubiaceae	*Randia armata*	(Sw.) DC.	FOR, INT, ADV		4	0.3	27	0.1194	0.054	3.8	9.0
Caricaceae	*Jacaratia mexicana*	A. DC.	ACT, REC, ADV	**1**, 2, **5**	7	0.5	20	4.2199	1.908	7.4	8.3
Moraceae	*Ficus cotinifolia*	Kunth	FOR, ACT	2, 1, 16, 4, **8**, 5	6	0.5	20	2.1365	0.966	10.5	7.5
Bixaceae	*Cochlospermum vitifolium*	(Willd.) Spreng.	FOR	4, 2, 3, 1, 11, 22, 7, 15, 6, 12	5	0.4	20	1.9750	0.893	7.0	7.5
Malpighiaceae	*Malpighia ovata**	Rose	INT, ADV		8	0.6	20	0.1365	0.061	6.9	6.9
Meliaceae	*Trichilia trifolia*	L.	FOR, ADV		7	0.5	20	0.1964	0.088	3.5	6.9
Nyctaginaceae	*Guapira petenensis*≈	(Lundell) Lundell	FOR, ACT		6	0.5	20	0.2212	0.1	3.0	6.9
Annonaceae	*Annona macroprophyllata*	Donn.Sm.	FOR, INT, ADV	1, 2, **3**, **5**	7	0.5	20	0.1002	0.045	4.0	6.9
Burseraceae	*Bursera grandifolia*	(Schltdl.) Engl.	FOR, ADV	12, 2, 3	4	0.3	20	0.2787	0.126	5.6	6.9
Burseraceae	*Bursera excelsa*	(Kunth) Engl.	FOR, ACT	2, 6, 20, 21, 5	5	0.4	20	0.1643	0.074	3.7	6.9
Fabaceae	*Lysiloma divaricatum*	(Jacq.) J.F. Macbr.	ACT, INT, ADV	3, **6**, **7**, 13, 12, 8, **5,** 4	6	0.5	20	0.0420	0.019	3.3	6.8
Fabaceae	*Apoplanesia paniculata*	C.Presl	ACT, INT	11, 2, 7	3	0.2	20	0.1168	0.052	5.0	6.8
Convolvulaceae	*Ipomoea sp.*		FOR		3	0.2	13	3.1848	1.44	11.6	5.6
Malvaceae	*Ceiba pentandra*	(L.) Gaertn.	FOR	4, 14, 2, 3, 1, 9, 10, 20	5	0.4	13	0.8404	0.38	10.3	4.9
Burseraceae	*Bursera penicillata**	(DC.) Engl.	FOR		6	0.5	13	0.3295	0.149	6.1	4.7
Picramniaceae	*Alvaradoa amorphoides*	Liebm.	ACT, ADV	2, 6, 7, 8, 3, 15	6	0.5	13	0.0854	0.038	3.9	4.6
Surianaceae	*Recchia mexicana**	D.C.	FOR, ADV		5	0.4	13	0.0858	0.038	5.4	4.6
Ebenaceae	*Diospyros aff. latifolia*		ACT, INT	**1**	3	0.2	13	0.1338	0.060	5.3	4.6
Anacardiaceae	*Cyrtocarpa procera**	Kunth	ACT, ADV	**2, 1, 4**	2	0.2	13	0.2044	0.092	7.6	4.6
Cactaceae	*Opuntia fuliginosa**°	Griffiths	ACT, INT	2. 7, 4, 5, 10, 1	2	0.2	13	0.2008	0.090	5.8	4.6
Apocynaceae	*Cascabela ovata*	(Cav.) Lippold	FOR, ADV	2	3	0.2	13	0.0438	0.019	3.9	4.5
Fabaceae	*Lonchocarpus lanceolatus*	Benth.	FOR, ACT	6	2	0.2	13	0.0885	0.040	2.7	4.5
Annonaceae	*Annona mucosa*	Jacq.	REC	2, 3, 1	2	0.2	13	0.0597	0.027	3.7	4.5

Malpighiaceae	*Lasiocarpus ferrugineus*	Gentry	FOR, INT		2	0.2	13	0.0376	0.017	4.8	4.5
Nyctaginaceae	*Pisonia aculeata*	L.	FOR, REC	2, 15	2	0.2	13	0.0177	0.008	4.4	4.5
Hernandiaceae	*Gyrocarpus jatrophifolius*	Domin	ACT, ADV	5, 26, 6, 12, 7	2	0.2	13	0.0075	0.003	2.5	4.5
Celastraceae	*Pristimera celastroides*	(Kunth) A.C. Sm.	FOR, REC	2, 14	2	0.2	13	0.0066	0.003	3.0	4.5
Bignoniaceae	*Tecoma stans*	(L.) Juss. ex Kunth	ADV	2,3,4,6,7,15,21,24,28	2	0.2	13	0.0044	0.002	2.8	4.5
Burseraceae	*Bursera kerberi**	Engl.	FOR	3, 15	2	0.2	13	0.0023	0.001	0.4	4.5
Amaranthaceae	*Lagrezia monosperma**	(Rose) Standl.	FOR, ADV		2	0.2	13	0.0022	0.001	2.3	4.5
Moraceae	*Ficus pringlei**	S.Watson	ACT	1, 4, **8**	1	0.1	7	2.1520	0.973	5.0	3.0
Fabaceae	*Myrospermum frutescens*	Jacq.	INT	2,3,4	9	0.7	7	0.9466	0.428	6.9	2.8
Moraceae	*Ficus petiolaris**	Kunth	FOR	2, 16, 1, 10, **8**	2	0.2	7	0.7785	0.352	12.5	2.5
Fabaceae	*Gliricidia sepium*	(Jacq.) Kunth ex Walp.	REC	1,**2**,3,**4**,14	9	0.7	7	0.0082	0.003	2.3	2.5
Euphorbiaceae	*Bernardia wilburi**↓	Mc.Vaugh	FOR		3	0.2	7	0.4246	0.192	4.9	2.4
Fabaceae	*Haematoxylum brasiletto*	H.Karst.	ADV	14, 2, 3, 6, 11, **9**, **13**, **10**	6	0.5	7	0.1749	0.079	5.5	2.4
Ehretiaceae	*Bourreria superba+*	I.M.Johnst.	ADV	10, 3	1	0.1	7	0.4976	0.225	7.3	2.4
Malpighiaceae	*Malpighia mexicana*	A.Juss.	ACT	2, 1, 3, 10	5	0.4	7	0.1542	0.069	3.7	2.4
Malvaceae	*Pseudobombax palmeri**	(S. Watson) Dugand	ADV		1	0.1	7	0.3952	0.178	8.0	2.4
Rubiaceae	*Rubiaceae*		FOR		4	0.3	7	0.1504	0.068	4.8	2.4
Fabaceae	*Lonchocarpus mutans*	M.Sousa	FOR	8, 16	3	0.2	7	0.2145	0.097	6.5	2.4
Anacardiaceae	*Astronium graveolens*	Jacq.	FOR	4, 2, 7	1	0.1	7	0.3649	0.165	17.0	2.4
Mutingiaceae	*Muntingia calabura*	*L.*	*ADV*	2, 15, 3, 6, 1, 4, 12, 16	4	0.3	7	0.0398	0.018	4.2	2.3
Cannabaceae	*Trema micranthum*	(L.) Blume	INT	7, 11, 8	2	0.2	7	0.1637	0.074	6.1	2.3
Fabaceae	*Leucaena leucocephala*	(Lam.) de Wit	ADV	4, 2, 14, 3, 1, 11, 8,15	2	0.2	7	0.1371	0.062	6.6	2.3
Meliaceae	*Swietenia humilis+*	Zucc.	ACT	**2**, **6**, **7**	1	0.1	7	0.2152	0.097	10.	2.3

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Bignoniaceae	*Handroanthus chrysanthus ↓‡*	(Jacq.) S.O. Grose	INT	6, 12, 11, 10, 7	1	0.1	7	0.2128	0.096	8.5	2.3
Rutaceae	*Zanthoxylum fagara*	(L.) Sarg.	INT	2, 1	1	0.1	7	0.1051	0.047	7.6	2.3
Fabaceae	*Mimosa acantholoba*	(Humb. & Bonpl. ex Willd.) Poir.	FOR	3,4,5	2	0.2	7	0.0221	0.01	4.4	2.3
Primulaceae	*Ardisia sp.*		ACT		1	0.1	7	0.1000	0.045	7.0	2.3
Combretaceae	*Combretum fruticosum*	(Loefl.) Stuntz	FOR	4, 2, 15, 10	2	0.2	7	0.0147	0.006	6.8	2.3
Fabaceae	*Poeppigia procera*	(Poepp. ex Spreng.) C. Presl	FOR	7, 6, 3, 4	2	0.2	7	0.0111	0.005	4.7	2.3
Fabaceae	*Albizia tomentosa*	(Micheli) Standl.	FOR	15, 4, 6, 10, 20, 2	1	0.1	7	0.0885	0.040	9.0	2.3
Capparaceae	*Capparis indica*	(L.) Druce	ACT	7, 13, 19, 6, 2	2	0.2	7	0.0022	0.001	2.9	2.3
Rubiaceae	*Randia sp.*		ACT		2	0.2	7	0.0020	0.001	4.6	2.3
Fabaceae	*Lonchocarpus rugosus*	Benth.	FOR	3, 6, 15, 10, 7, 6	1	0.1	7	0.0796	0.036	16.0	2.3
Fabaceae	*Lysiloma tergeminum**	Benth.	FOR	6, 3, 2, 4	1	0.1	7	0.0796	0.036	10.0	2.3
Apocynaceae	*Tabernaemontana ochoterenae*	L.O. Alvarado & Islas-Hern.	*ACT*		1	0.1	7	0.0466	0.021	5.8	2.3
Fabaceae	*Dalbergia congestiflora*+!*	Pittier	FOR	2,6,9,11	1	0.1	7	0.0436	0.019	5.7	2.3
Myrtaceae	*Eugenia sp.*		FOR		1	0.1	7	0.0407	0.018	7.0	2.3
Anacardiaceae	*Comocladia macrophylla*	(Hook. & Arn.) L.Riley	FOR		1	0.1	7	0.0318	0.014	3.8	2.3
Ehretiaceae	*Ehrethia latifolia*	Loisel.	FOR	9	1	0.1	7	0.0288	0.013	4.0	2.3
Ebenaceae	*Diospyros salicifolia*	Humb. & Bonpl. ex Willd.	ADV	1, 6, 3	1	0.1	7	0.0274	0.012	4.2	2.3
Rubiaceae	*Hintonia latiflora*	(DC.) Bullock	FOR	2, 27	1	0.1	7	0.0221	0.01	5.5	2.3
Fabaceae	*Hesperalbizia occidentalis*‡*	(Brandegee) Barneby & J.W.	FOR		1	0.1	7	0.0177	0.008	5.9	2.3

		Grimes									
Fabaceae	*Swartzia simplex*	(Sw.) Spreng.	FOR	4, 2, 1	1	0.1	7	0.0177	0.008	6.8	2.3
Cordiaceae	*Cordia dentata*	Poir.	REC	6, 13, 3, 2, 1	1	0.1	7	0.0134	0.006	2.4	2.3
Sapindaceae	*Serjania triquetra*	Radlk.	ACT	2	1	0.1	7	0.0100	0.004	4.6	2.3
Fabaceae	*Platymiscium lasiocarpum ⸸!*	Sandwith	ADV	6, 11, 7	1	0.1	7	0.0097	0.004	4.0	2.3
Sapindaceae	*Thouinia villosa**	D.C.	*ACT*		1	0.1	7	0.0084	0.003	6.5	2.3
Opiliaceae	*Agonandra racemosa*	(DC.) Standl.	FOR	2	1	0.1	7	0.0081	0.003	5.0	2.3
Capparaceae	*Morisonia americana*	L.	REC	4, 2, 1, 6	1	0.1	7	0.0044	0.002	6.0	2.2
Euphorbiaceae	*Sapium macrocarpum⁑*	Müll. Arg.	ADV	2	1	0.1	7	0.0038	0.001	4.2	2.2
Piperaceae	*Piper hispidum*	Sw.	ADV	2, 1, 14	1	0.1	7	0.0033	0.001	1.9	2.2
Fabaceae	*Andira inermis*	(W.Wright) Kunth ex DC.	FOR	4, 14, 3, 1, 10, 2, 7, 8	1	0.1	7	0.0028	0.001	2.1	2.2
Resedaceae	*Forchhammeria pallida**	Liebm.	FOR	3, 6	1	0.1	7	0.0027	0.001	3.3	2.2
Rubiaceae	*Exostema caribaeum*	(Jacq.) Roem. & Schult.	FOR	2	1	0.1	7	0.0025	0.001	2.8	2.2
Anacardiaceae	*Amphipterygium adstringens ↓*	(Schltdl.) Schiede ex Standl.	FOR	2	1	0.1	7	0.0022	0.001	3.7	2.2
Rubiaceae	*Guettarda elliptica*	Sw.	FOR	2	1	0.1	7	0.0022	0.001	2.1	2.2
Malvaceae	*Physodium adenodes**	(Goldberg) Fryxell	FOR		1	0.1	7	0.0022	0.001	2.6	2.2
Cactaceae	*Selenicereus ocamponis**	(Salm-Dyck) D.R. Hunt	FOR	1, 2, 5, 10	1	0.1	7	0.0022	0.001	1.6	2.2
Meliaceae	*Trichilia americana*	(Sessé & Moc.) T.D. Penn.	REC	15	1	0.1	7	0.0020	0.001	3.2	2.2
Burseraceae	*Bursera fagaroides*	(Kunth) Engl.	*ACT*	2, 3, 5, 20	1	0.1	7	0.0019	0.0009	10.0	2.2
Lamiaceae	*Condea albida**	(Kunth) Harley & J.F.B.Pastore	ADV	2	1	0.1	7	0.0012	0.0006	2.1	2.2
Poaceae	*Otatea acuminata**	(Munro) C.E. Calderón &	FOR	**1**, **7**, **12**, **9**, **5, 16**	1	0.1	7	0.0009	0.0004	2.1	2.2

Cactaceae	*Pereskiopsis diguetii**	Soderstr. (F.A.C. Weber) Britton & Rose	ADV	2	1	0.1	7	0.0009	0.0004	1.2	2.2
Primulaceae	*Bonellia macrocarpa*	(Cav.) B.Ståhl & Källersjö	FOR	10, 2, 18, 19	1	0.1	7	0.0008	0.0003	2.6	2.2
Piperaceae	*Piper abalienatum**	Trel.	ADV	2	1	0.1	7	0.0007	0.0003	2.3	2.2
Fabaceae	*Pterocarpus acapulcensis*↓	Rose	FOR	3, 2, 6	1	0.1	7	0.0004	0.0002	1.6	2.2
Aristolochiaceae	*Aristolochia taliscana**	Hook. & Arn.	FOR	2	1	0.1	7	0.0004	0.0002	4.5	2.2
Euphorbiaceae	*Euphorbia cotinifolia*°	L.	ADV	2, 14, 10	1	0.1	7	0.0003	0.0002	2.9	2.2
Bignoniaceae	*Tabebuia rosea*	(Bertol.) DC.	REC	2, 3, 1, 5, 6	1	0.1	7	0.0002	0.0001	1.9	2.2
Salicaceae	*Xylosma flexuosa*	(Kunth) Hemsl.	ADV		1	0.1	7	0.0002	0.0001	1.8	2.2

NOTES:

[1]**Species symbology:** *, Endemic; +, IUCN Endangered; ↓, IUCN Vulnerable; ≈ NT, IUCN Near Threatened; °, CITES II; !, NOM059 Extinction risk; ‡, NOM059 Endangered; ※, Colima's statal protection.

[2]**Presence abbreviations**: **FOR**, forest; **ACT**, active agroforestry system; **REC**, recent regeneration; **INT**, intermediate regeneration; **ADV**, advanced regeneration.

[3]**Uses:** The numbers correspond to uses recorded in the literature. Bold numbers designate the uses recorded in this study. **1**, edible; **2**, medicinal; **3**, fuel; **4**, fodder, **5**, live fences; **6**, timber; **7**, construction; **8**, shade; **9**, handicrafts; **10**, ornamental; **11**, colorant; **12**, utensil; **13**, poles; **14**, toxin; **15**, melliferous; **16**, paper; **17**, fiber; **18**, soap; **19**, tools; **20**, ceremonial or ritual; **21**, aromatic; **22**, textile; **23**, cosmetic; **24**, industrial; **25**, cultivation tutor; **26**, plaything; **27**, veterinary; **28**, insecticide.

[4]**Abbreviations of structural attributes**: **Ab**, abundance; **RD**, relative density; **RF**, relative frequency; **RDOM**, relative dominance; **BA**, basal area; H, height average; **IV%**, importance value percent.