Supplementary Materials

New proposal of epiphytic Bromeliaceae functional groups to include nebulophytes and shallow tanks

New Proposal of Epiphytic Bromeliaceae Functional Groups to Include Nebulophytes and Shallow Tanks

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Table S1. Tests of Significance of Squared Mahalanobis Distances for the Discriminant Analysis. F tests with 15 and 55 degrees of freedom. Dist. represents the Mahalanobis distance between the groups. **p<0.001.

	CAM tank		C_3 tank		Shallow tank		Pseudobulbs		Nebulophyte	
Class	F	Dist.	F	Dist.	F	Dist.	F	Dist.	F	Dist.
CAM tank		0.0	10.7	20.8**	13.2	31.5**	20.6	64.6**	24.5	64.0**
C_3 tank	10.7	20.8**		0.0	13.4	30.1**	22.7	67.8**	26.5	65.3**
Shallow tank	13.2	31.5**	13.4	30.1**		0.0	3.6	12.4**	6.2	18.2**
Pseudobulbs	20.6	64.6**	22.7	67.8**	3.6	12.3**		0.0	5.5	20.2**
Nebulophyte	24.5	64.0**	26.5	65.3**	6.2	18.2**	5.5	20.2**		0.0

Table S2. Species functional group affiliation, number of records and number of traits represented within the trait database.

Species	**Records**	**Traits**	**Functional group**
Aechmea abbreviata L.B. Sm.	14	9	Shallow tank
Aechmea angustifolia Poepp. & Endl.	14	12	Shallow tank
Aechmea aquilega (Salisb.) Griseb.	138	19	CAM tank
Aechmea bracteata (Sw.) Griseb.	263	21	CAM tank
Aechmea brevicollis L. B. Sm.	18	9	Shallow tank
Aechmea bromeliifolia (Rudge) Baker	191	22	CAM tank
Aechmea castelnavii Baker.	9	8	CAM tank
Aechmea chantinii (Carr.) Baker	12	12	CAM tank
Aechmea cucullata H. Luther.	10	9	CAM tank
Aechmea dichlamydea Baker	33	15	CAM tank
Aechmea echinata (Leme) Leme.	9	8	CAM tank
Aechmea farinosa (Regel) L. B. Sm.	9	8	Shallow tank
Aechmea fasciata (Lindl.) Baker	13	13	CAM tank
Aechmea fendleri André ex Mez.	73	18	CAM tank
Aechmea filicaulis (Griseb.) Mez.	17	15	CAM tank
Aechmea gamosepala Wittm.	13	13	CAM tank
Aechmea gurkeniana E. Pereira & Moutinho.	9	8	CAM tank
Aechmea hoppii (Harms) L. B. Sm.	9	8	CAM tank
Aechmea lingulata (L.) Baker	33	15	CAM tank
Aechmea manzanaresiana H. Luther	9	8	CAM tank
Aechmea mariae-reginae H. Wendl.	9	8	CAM tank

Aechmea mertensii (G.Mey.) Schult. & Schult. f.	37	19	CAM tank
Aechmea milsteiniana L. B. Sm. & Read.	9	8	CAM tank
Aechmea nallyi L. B. Sm.	9	8	CAM tank
Aechmea nudicaulis Griseb.	229	22	CAM tank
Aechmea paniculigera (Sw.) Griseb.	12	12	CAM tank
Aechmea pubescens Baker.	14	12	CAM tank
Aechmea racinae L. B. Sm.	10	9	Shallow tank
Aechmea rodriguesiana (L. B. Sm.) L. B. Sm.	14	13	CAM tank
Aechmea servitensis André.	175	14	Shallow tank
Aechmea setigera Mart. ex Schult. & Schult. f.	23	19	CAM tank
Aechmea tillandsioides (Mart. ex Schult. & Schult. f.) Baker	77	21	CAM tank
Aechmea tomentosa Mez.	5	5	CAM tank
Aechmea weilbachii Didr.	20	10	CAM tank
Aechmea woronowii Harms	9	8	CAM tank
Araeococcus micranthus Brongn	32	15	Shallow tank
Araeococcus pectinatus L. B. Sm.	12	11	Nebulophyte
Billbergia amoena (Lodd.) Lindl.	21	17	CAM tank
Billbergia euphemiae E. Morren.	16	15	C_3 tank
Billbergia manarae Steyerm.	12	11	CAM tank
Billbergia meyeri Mez.	9	8	Shallow tank
Billbergia porteana Brongniart ex Beer	185	20	CAM tank
Billbergia sanderiana E. Morren	12	11	CAM tank
Billbergia stenopetala Harms	12	11	CAM tank
Billbergia zebrina (Herbert) Lindl.	13	12	CAM tank
Canistropsis billbergioides (Schult. & Schult. f.) Leme.	52	10	CAM tank
Canistrum lanigerum H. Luther & Leme.	9	8	CAM tank
Canistrum seidelianum W. Weber	9	8	Shallow tank
Catopsis berteroniana (Schult. & Schult. f.) Mez	175	23	C_3 tank
Catopsis floribunda (Brongn.) L. B. Smith.	21	19	C_3 tank
Catopsis juncifolia Mez & Wercklé.	16	15	C_3 tank
Catopsis morreniana Mez	140	21	C_3 tank
Catopsis nitida (Hook.) Griseb.	177	20	C_3 tank
Catopsis nutans (Sw.) Griseb.	34	16	C_3 tank

Catopsis sessiliflora (Ruiz & Pav.) Mez.	576	22	C_3 tank
Fascicularia bicolor (Ruiz & Pav.) Mez.	78	11	C_3 tank
Goudea ospinae (H.Luther) W.Till & Barfuss	15	10	C_3 tank
Guzmania altsonii L. B. Sm.	9	8	C_3 tank
Guzmania angustifolia (Baker) Wittm.	24	14	C_3 tank
Guzmania blassii Rauh	9	8	C_3 tank
Guzmania calothyrsus Mez	9	8	C_3 tank
Guzmania desautelsii Read & L. B. Sm.	17	11	C_3 tank
Guzmania dissitiflora (André) L. B. Sm.	9	8	C_3 tank
Guzmania donnellsmithii Mez ex Donn. Sm.	26	13	C_3 tank
Guzmania eduardii André ex Mez	9	8	C_3 tank
Guzmania fosteriana L. B. Sm.	144	15	C_3 tank
Guzmania glomerata Mez & Wercklé.	13	10	C_3 tank
Guzmania laeta H. E. Luther	161	14	C_3 tank
Guzmania lingulata (L.) Mez	409	25	C_3 tank
Guzmania megastachya (Baker) Mez	33	15	C_3 tank
Guzmania melinonis Regel	9	8	C_3 tank
Guzmania mitis L. B. Sm.	155	16	C_3 tank
Guzmania monostachia (L.) Rusby ex Mez	223	23	C_3 tank
Guzmania musaica (Linden & André) Mez	16	14	C_3 tank
Guzmania nicaraguensis Mez & C. F. Baker	9	8	C_3 tank
Guzmania osyana (E. Morren) Mez	9	8	C_3 tank
Guzmania patula Mez & Wercklé	140	16	C_3 tank
Guzmania plicatifolia L. B. Sm.	9	8	C_3 tank
Guzmania rauhiana H. E. Luther	9	8	C_3 tank
Guzmania remyi L. B. Sm.	10	9	C_3 tank
Guzmania retusa L. B. Sm.	16	13	C_3 tank
Guzmania sanguinea (André) André ex Mez	14	13	C_3 tank
Guzmania scherzeriana Mez	16	11	C_3 tank
Guzmania subcorymbosa L. B. Sm.	125	19	C_3 tank
Guzmania tarapotina Ule	9	8	C_3 tank
Guzmania triangularis L. B. Sm.	296	14	C_3 tank
Guzmania wittmackii (André) André ex Mez	13	12	C_3 tank
Guzmania zahnii (Hook. f.) Mez	19	10	C_3 tank

Josemania singularis (Mez & Wercklé) W.Till & Barfuss	13	12	C_3 tank
Lemeltonia monadelpha (E.Morren) Barfuss W. & Till	206	21	Shallow tank
Lutheria splendens (Brongn.) Barfuss & W.Till	21	18	C_3 tank
Lymania globosa Leme	10	9	CAM tank
Mezobromelia pleiosticha (Griseb.) Utley & H. Luther	12	11	C_3 tank
Neoregelia carolinae (Beer) L. B. Sm.	19	15	CAM tank
Neoregelia chlorosticta (É. Morren) L. B. Sm.	12	11	CAM tank
Neoregelia eltoniana W. Weber	9	8	CAM tank
Neoregelia gavionensis Martinelli & Leme	12	11	CAM tank
Neoregelia nivea Leme	12	11	Shallow tank
Nidularium bicolor (E. Pereira) Leme	9	8	CAM tank
Nidularium billbergioides (Schult. & Schult. f.) L. B. Sm.	12	12	Shallow tank
Nidularium fulgens Lemaire	14	13	CAM tank
Nidularium innocentii Lemaire	16	14	C_3 tank
Nidularium procerum Lindman	19	17	CAM tank
Nidularium purpureum Beer	10	9	CAM tank
Nidularium rutilans E. Morren	11	9	CAM tank
Quesnelia imbricata L. B. Sm.	9	8	Shallow tank
Quesnelia marmorata (Lemaire) R. W. Read	12	11	CAM tank
Racinaea adpressa (André) J. R. Grant	298	14	C_3 tank
Racinaea contorta (Mez & Pittier ex Mez) M. A. Spencer & L. B. Sm.	162	18	C_3 tank
Racinaea dyeriana (André) Barfuss & W.Till	8	8	C_3 tank
Racinaea ghiesbreghtii (Baker) M.A.Spencer & L.B.Sm.	96	18	C_3 tank
Racinaea tetrantha (Ruiz & Pav.) M. A. Spencer & L. B. Sm.	315	14	C_3 tank
Ronnbergia columbiana E. Morren	9	8	Shallow tank
Ronnbergia tonduzii (Mez & Pittier) Aguirre-Santoro	9	8	Shallow tank
Tillandsia albida Mez & Purpus	24	15	Shallow tank
Tillandsia australis Mez	12	11	C_3 tank
Tillandsia baileyi Rose ex Small	15	14	Pseudobulbs

Tillandsia balbisiana Schult. & Schult. f.	264	23	Pseudobulbs
Tillandsia bartramii Elliott	9	9	Nebulophyte
Tillandsia bergeri Mez	12	12	Nebulophyte
Tillandsia biflora Ruiz & Pav.	149	15	C_3 tank
Tillandsia brachycaulos Schltdl.	576	22	Shallow tank
Tillandsia bulbosa Hook	265	25	Pseudobulbs
Tillandsia butzii Mez	270	21	Pseudobulbs
Tillandsia capitata Griseb	9	9	Shallow tank
Tillandsia caput-medusae E. Morren	19	16	Pseudobulbs
Tillandsia carlsoniae L. B. Sm.	9	8	CAM tank
Tillandsia chaetophylla Mez	8	8	Nebulophyte
Tillandsia circinnata Schltdl.	17	9	Pseudobulbs
Tillandsia compacta Griseb	10	10	C_3 tank
Tillandsia complanata Benth	341	22	C_3 tank
Tillandsia concolor L. B. Sm.	300	20	Shallow tank
Tillandsia copanensis Rauh & Rutschm.	12	11	CAM tank
Tillandsia dasyliriifolia Baker	262	17	CAM tank
Tillandsia deppeana Steud	40	16	C_3 tank
Tillandsia eistetteri Ehlers	124	15	Nebulophyte
Tillandsia elongata Kunth	300	20	Shallow tank
Tillandsia excelsa Griseb	14	12	C_3 tank
Tillandsia exserta Mez	9	8	Shallow tank
Tillandsia fasciculata Sw.	531	25	Shallow tank
Tillandsia festucoides Brongn. ex Mez	93	19	Nebulophyte
Tillandsia filifolia Schltdl. & Cham.	142	18	Nebulophyte
Tillandsia flagellata L. B. Sm.	10	9	Shallow tank
Tillandsia flexuosa Sw.	376	20	Shallow tank
Tillandsia funckiana Baker	24	15	Nebulophyte
Tillandsia gardneri Lindl.	14	12	CAM tank
Tillandsia gymnobotrya Baker	12	10	C_3 tank
Tillandsia hammeri Rauh & Ehlers	8	8	Nebulophyte
Tillandsia heterophylla E. Morren	16	12	C_3 tank
Tillandsia imperialis E. Morren ex Roezl	17	15	C_3 tank
Tillandsia intermedia Mez	149	16	Pseudobulbs
Tillandsia ionantha Planch.	379	24	Nebulophyte
Tillandsia juncea (Ruiz & Pav.) Poir.	511	23	Nebulophyte
Tillandsia kirchhoffiana Wittm.	197	18	C_3 tank
Tillandsia krukoffiana L. B. Sm.	12	11	CAM tank
Tillandsia landbeckii Phil.	36	15	Nebulophyte
Tillandsia latifolia Meyen	17	13	Shallow tank

Tillandsia leiboldiana Schltdl.	20	18	C_3 tank
Tillandsia limbata Schltdl.	14	12	CAM tank
Tillandsia lucida E.Morren ex Baker	12	11	C_3 tank
Tillandsia lymanii Rauh	12	11	CAM tank
Tillandsia makoyana Baker	126	16	CAM tank
Tillandsia multicaulis Steud.	334	20	C_3 tank
Tillandsia paleacea C. Presl	20	17	Nebulophyte
Tillandsia paucifolia Baker	21	19	Pseudobulbs
Tillandsia pentasticha Rauh & Wülfingh.	8	8	Nebulophyte
Tillandsia polystachia (L.) L.	557	24	Shallow tank
Tillandsia pruinosa Sw.	21	18	Pseudobulbs
Tillandsia pseudosetacea Ehlers & Rauh	9	9	Nebulophyte
Tillandsia punctulata Schltdl. & Cham.	361	20	C_3 tank
Tillandsia recurvata (L.) L.	196	22	Nebulophyte
Tillandsia rhomboidea André	9	8	C_3 tank
Tillandsia rodrigueziana Mez	9	8	Shallow tank
Tillandsia roland-gosselinii Mez	9	8	CAM tank
Tillandsia rothii Rauh	133	15	Shallow tank
Tillandsia rotundata (L. B. Sm.) C. S. Gardner	9	8	CAM tank
Tillandsia schiedeana Steud.	326	22	Nebulophyte
Tillandsia sessemocinoi López-Ferr., Espejo & P.Blanco	7	7	Nebulophyte
Tillandsia setacea Sw.	11	11	Nebulophyte
Tillandsia setiformis Ehlers	8	8	Nebulophyte
Tillandsia streptophylla Scheidw. ex E. Morren	446	21	Shallow tank
Tillandsia stricta Sol. ex Ker Gawl.	26	19	Nebulophyte
Tillandsia subulifera Mez	35	15	Pseudobulbs
Tillandsia suescana L. B. Sm.	11	10	C_3 tank
Tillandsia tenuifolia L.	195	20	Shallow tank
Tillandsia tovarensis Mez	170	19	C_3 tank
Tillandsia tricolor Schltdl. & Cham.	69	20	Shallow tank
Tillandsia usneoides (L.) L.	97	23	Nebulophyte
Tillandsia utriculata L.	506	24	CAM tank
Tillandsia variabilis Schltdl.	11	11	Shallow tank
Tillandsia venusta Mez & Wercklé	43	19	C_3 tank
Tillandsia xerographica Rohweder	15	13	CAM tank
Tillandsia yucatana Baker	50	16	Pseudobulbs
Vriesea fenestralis Linden & André	12	12	C_3 tank
Vriesea fosteriana L. B. Sm.	12	12	C_3 tank

Vriesea guttata Linden & André	11	11	C_3 tank
Vriesea neoglutinosa Mez	31	14	C_3 tank
Vriesea zamorensis (L. B. Sm.) L. B. Sm.	27	10	C_3 tank
Wallisia anceps (G.Lodd.) Barfuss & W.Till	411	24	Shallow tank
Werauhia gigantea (Mart. ex Schult. f.) J. R. Grant	11	11	C_3 tank
Werauhia lutheri S. Pierce & Aranda.	14	9	C_3 tank
Werauhia marnier-lapostollei (L. B. Sm.) J. R. Grant	13	13	C_3 tank
Werauhia sanguinolenta (Cogn. & Marchal) J. R. Grant	22	18	C_3 tank
Werauhia viridiflora (Regel) J. R. Grant	12	11	C_3 tank

Table S3. Spearman rank order correlations. Height=adult plant height, FP=force to punch, LA=leaf area, LD=leaf dry matter content, SLA=specific leaf area, $\delta^{13}C$= leaf carbon isotope signature, C=leaf carbon content per leaf dry mass, LCh=leaf chlorophyll content per leaf dry mass, LI=leaf index (leaf length/leaf width), LL=leaf length, $\delta^{15}N$= leaf nitrogen isotope signature, N=leaf nitrogen content per leaf dry mass, P=leaf phosphorus content per leaf dry mass, LT=leaf thickness, TD=leaf trichomes density, LWC=total leaf water content, LW=leaf width, A_{max}=light saturated photosynthetic rate per leaf area, SD=abaxial stomatal density, SL=stomatal length, SW=stomatal width, LWA=leaf water content on area basis, TC=tank capacity. Upper diagonal show Spearman correlations, lower diagonal shows p value, p >0.05.

	TC	LWA	SW	SL	SD	A_{max}	LW	LWC	TD	LT	P	N	$\delta^{15}N$	LL	LI	LD	LCh	C	$\delta^{13}C$	SLA	LA	FP	Height
Height	5.30E-01	-1.20E-01	-2 E-01	4.20E-04	5.40E-01	5.58E-01	5.71E-01	5.70E-01	-2.52E-01	-7.10E-02	-1.50E-01	-7.11E-02	3.38E-01	6.25E-01	-1.93E-01	3.47E-01	-6.09E-02	1.11E-01	-9.20E-02	7.50E-02	6.20E-01	3.30E-01	
FP	1.50E-01	-1.70E-02	-2.8E-01	-8.60E-02	3.90E-01	4.42E-01	2.59E-01	2.50E-01	2.43E-01	-2 E-01	4.90E-02	-3.36E-02	3.58E-01	4.72E-01	1.03E-01	-5.20E-02	3.08E-01	5.61E-01	-2.60E-01	-1.70E-01	2.20E-01		7 E-02
LA	8.40E-01	-1.50E-01	-8.40E-02	1.40E-01	5.60E-01	6.63E-01	8.50E-01	9.24E-01	-4.15E-01	-1.3E-01	-5.70E-02	2.57E-02	4.30E-01	6.69E-01	-4.47E-01	3.42E-01	-2.80E-01	4.09E-02	-5.40E-02	5.40E-02		2.00E-01	7.40E-15
SLA	1.70E-01	-6.30E-01	-1.10E-01	1.30E-02	2.40E-01	6.25E-01	6.87E-02	-1.65E-01	-3.15E-01	-5.70E-01	1.00E-01	1.47E-01	2.93E-01	1.25E-02	-1.00E-01	-2.91E-02	-1.75E-02	2.50E-01	-4.60E-01		5.70E-01	3.30E-01	5.00E-01
$\delta^{13}C$	-7.90E-02	3.10E-01	-4.50E-02	-3.60E-01	-2 E-01	-5.94E-01	-8.34E-02	1.04E-01	2.35E-01	5.30E-01	-3.20E-02	-2.01E-01	-3.60E-01	2.02E-02	7.96E-02	-1.25E-01	-4.75E-01	-4.06E-01		5.80E-07	4.50E-01	1.23E-01	3.20E-01
C	9.70E-02	-2.20E-01	-5.90E-01	9.70E-02	3.9E-01	2.88E-01	7.91E-02	1.52E-02	-2.67E-02	-3.40E-01	-1.60E-02	1.43E-01	2.56E-01	1.20E-01	-3.03E-02	3.87E-01	4.36E-01		1.42E-03	9.80E-02	7.60E-01	6.64E-03	4.20E-01
LCh	-2.30E-01	-2.80E-01	5.70E-02	2.40E-01	-8.30E-02	5.38E-01	-1.62E-01	-3.50E-01	4.63E-02	-2.60E-01	-6.80E-02	4.05E-01	1.34E-01	-1.70E-01	1.70E-01	-3.04E-01		3.76E-02	3.93E-03	9.30E-01	1.00E-01	2.14E-01	7.40E-01
LD	3.60E-01	-1.80E-01	-1.80E-01	1.10E-01	3.50E-01	-4.40E-02	1.09E-01	4.20E-02	1.26E-01	-3.40E-01	-3.90E-01	-1.10E-01	1.30E-01	2.29E-01	-2.24E-02		2.19E-01	2.37E-02	3.92E-01	8.40E-01	1.60E-02	7.93E-01	2.10E-02
LI	-4.40E-01	9.80E-02	-4.20E-03	1.40E-01	-5.10E-02	-4.88E-01	-7.12E-01	-5.12E-01	3.12E-01	1.20E-01	1.30E-01	7.21E-02	-3.30E-01	1.20E-01		8.79E-01	3.28E-01	8.20E-01	2.68E-01	3 E-01	3.00E-11	5.51E-01	3 E-02
LL	5.20E-01	-1.30E-01	-1.80E-01	2.10E-01	4.60E-01	3.71E-01	5.01E-01	6.81E-01	-1.61E-01	-8.60E-02	-2.10E-02	-5.96E-02	3.09E-01		8.97E-02	1.13E-01	3.29E-01	3.66E-01	7.79E-01	9 E-01	1.80E-27	3.67E-03	5.30E-15
$\delta^{15}N$	5.10E-01	-2.30E-01	-5.40E-01	-2.00E-01	4.80E-01	7.07E-01	4.54E-01	4.00E-01	-3.11E-01	-2.10E-01	3.20E-02	2.23E-01		9.80E-03	5.05E-03	4.49E-01	5.31E-01	4.99E-02	2.71E-03	3.20E-02	2.30E-04	8.56E-02	6 E-03
N	2.10E-03	-4.40E-02	-1.10E-01	-2 E-01	1.80E-01	2.25E-01	-5.37E-02	7.07E-02	-1.99E-01	-1.60E-01	1.30E-01		7.39E-02	6.22E-01	5.50E-01	5.31E-01	4.00E-02	2.80E-01	9.60E-02	2.80E-01	8.30E-01	8.79E-01	5.70E-01
P	2.10E-03	2 E-01	-2.30E-01	-2.6E-01	-1.10E-02	-1.49E-01	-1.24E-01	-7.97E-02	-4.64E-01	9.40E-02		3.62E-01	8.41E-01	8.72E-01	3.11E-01	2.70E-02	7.83E-01	9.25E-01	8.11E-01	4.90E-01	6.60E-01	8.52E-01	2.80E-01
LT	2.40E-01	4.50E-01	3.40E-01	1.30E-01	-3.10E-01	-6.71E-01	-1.20E-01	-1.56E-03	1.30E-01		5.50E-01	2.54E-01	1.25E-01	4.01E-01	2.33E-01	1.95E-02	1.78E-01	2.11E-02	2.91E-08	3.80E-08	2.20E-01	2.44E-01	5.20E-01
TD	4.30E-01	2.60E-01	-6.90E-02	-2.30E-01	-1.50E-01	-5.00E-01	-3.52E-01	-1.99E-01		3 E-01	4.30E-03	1.96E-01	3.53E-02	1.71E-01	6.85E-03	4.93E-01	8.15E-01	8.75E-01	4.41E-02	1.10E-02	2.40E-04	2.64E-01	3.70E-02
LWC	7.70E-01	1.50E-01	8.70E-02	3.90E-03	3.70E-01	3.74E-01	8.01E-01		1.20E-01	9.90E-01	6.10E-01	6.29E-01	4.86E-03	7.69E-14	1.88E-07	8.08E-01	8.66E-02	9.27E-01	3.22E-01	1.20E-01	3.20E-39	2.18E-01	2.20E-07
LW	7.50E-01	-1.80E-01	-8.60E-02	8.30E-02	3.90E-01	7.03E-01		1.01E-21	2.09E-03	2.40E-01	3.50E-01	6.56E-01	9.06E-05	3.21E-14	1.44E-32	4.55E-01	3.53E-01	5.51E-01	2.46E-01	4.80E-01	3.40E-57	1.27E-01	2.80E-12
A_{max}	6.50E-01	-7.60E-01	-8.70E-02	-5.20E-01	6.30E-01		2.51E-06	5.45E-02	2.10E-02	6.20E-04	4.10E-01	3.01E-01	7.12E-04	2.59E-02	2.96E-03	8.87E-01	7.09E-02	3.18E-01	1.70E-04	2.20E-04	1.40E-05	2.00E-01	1.10E-03
SD	6 E-01	-2.50E-01	-5.10E-01	-1.10E-01		5.27E-05	6.30E-05	2.51E-03	2.44E-01	6.90E-03	9.40E-01	2.37E-01	8.32E-04	1.02E-06	6.16E-01	2.71E-02	6.74E-01	1.74E-02	4.89E-02	3.10E-02	1.20E-09	2.91E-02	2.30E-07
SL	1.70E-01	-1.30E-01	6.70E-01		4.70E-01	1.95E-01	5.88E-01	9.87E-01	2.56E-01	4.30E-01	3 E-01	3.56E-01	3.79E-01	1.65E-01	3.68E-01	5.89E-01	3.21E-01	6.94E-01	1.48E-02	9.40E-01	3.80E-01	6.96E-01	10 E-01
SW	-1.90E-02	8.60E-02		2.60E-05	2.70E-03	8.50E-01	6.39E-01	7.32E-01	7.48E-01	9.40E-02	4 E-01	6.33E-01	1.80E-02	3.27E-01	9.82E-01	5.87E-01	8.46E-01	1.27E-02	8.09E-01	6.40E-01	6.50E-01	4.34E-01	3.50E-01
LWA	-2.20E-01		7.40E-01	5.80E-01	4.90E-02	4.23E-06	9.20E-02	1.44E-01	4.17E-02	1.80E-04	2 E-01	7.64E-01	1.13E-01	2.15E-01	3.52E-01	2.97E-01	1.75E-01	1.75E-01	2.37E-03	2.90E-11	1.70E-01	9.33E-01	3.10E-01
TC		3.40E-02	9.20E-01	2.90E-01	6.90E-11	2.00E-05	1.54E-34	2.23E-19	1.77E-04	2 E-02	1.00E+00	9.88E-01	4.39E-05	1.13E-14	2.23E-10	1.10E-02	2.00E-01	5.09E-01	2.89E-01	7.50E-02	8.50E-51	3.84E-01	9.70E-10

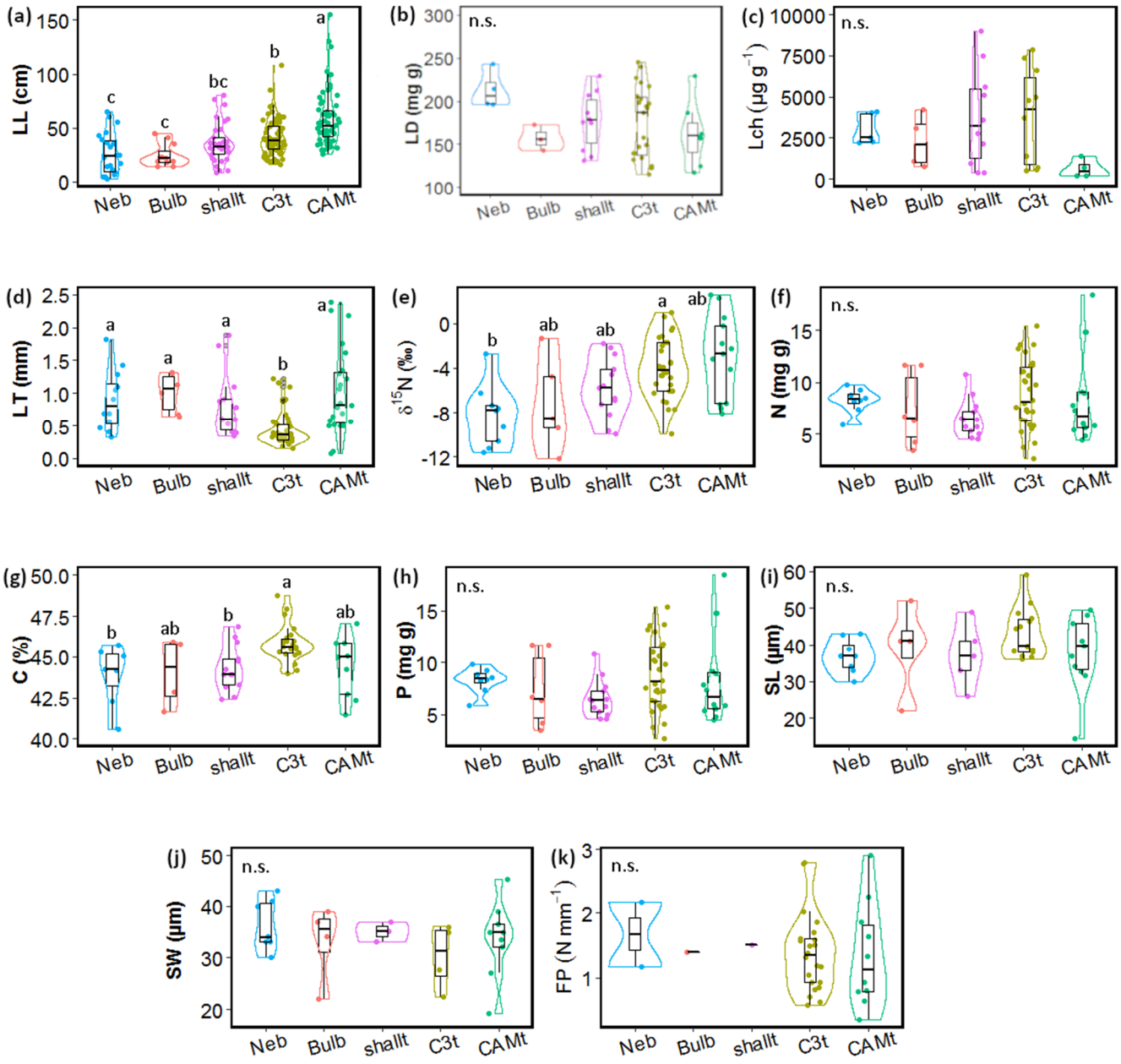

Figure S1. Comparison of functional traits between five epiphytic Bromeliaceae functional groups. Neb=nebulophytes; Bulb=pseudobulbs; ShallT=shallow tanks; C3T=C_3 tank and CAMT=CAM tanks. FP=force to punch; LD=leaf dry matter content; SLA=specific leaf area; C=leaf carbon content per leaf dry mass; LCh=leaf chlorophyll content per leaf dry mass; LL=leaf length; $\delta^{15}N$=leaf nitrogen isotope signature; N=leaf nitrogen content per leaf dry mass; P=leaf phosphorus content per leaf dry mass; SL=stomatal length; SW=stomatal width. Groups with different letters are significantly different (Wilcoxon post-hoc test, $p < 0.05$), n.s.= non-significant differences.

References used to compile data

1. Adams, W. W.; Martin, C. E. Physiological consequences of changes in life form of the Mexican epiphyte *Tillandsia deppeana* (Bromeliaceae). *Oecologia* **1986**, *70*, 298-304.
2. Agudelo, C. M.; Benavides, A. M.; Taylor, T.; Feeley, K. J.; Duque, A. Functional composition of epiphyte communities in the Colombian Andes. *Ecol.* **2019**, *100*, e02858. 10.1002/ecy.2858
3. Aoyama, E. M.; Sajo, M. Estructura foliar *de Aechmea* Ruiz & Pav. subgênero *Lamprococcus* (Beer) Baker e espécies relacionadas (Bromeliaceae). *Braz. J. Bot.* **2003**, *26*, 461-473.
4. Belmonte, E.; Arriaza, B.; Arismendi, M.; Sepúlveda, G. Foliar Anatomy of Three Native Species of *Tillandsia* L. from the Atacama Desert, Chile. *Plants* **2022**, *11*, 870.
5. Benzing, D. H.; Renfrow, A. The mineral nutrition of Bromeliaceae. *Bot. Gaz.* **1974,** *135*, 281-288.
6. Benzing, D. H.; Friedman, W. E. Patterns of foliar pigmentation in Bromeliaceae and their adaptive significance. *Selbyana* **1981**, *5*, 224-240.
7. Benzing, D. H.; Davidson, E. A. Oligotrophic *Tillandsia circinnata* Schlecht (Bromeliaceae): an assessment of its patterns of mineral allocation and reproduction. *Am. J. Bot.* **1979,** *66*, 386-397.
8. Benzing, D. H. An investigation of two bromeliad myrmecophytes: *Tillandsia butzii* Mez*, T. caput-medusae* E. Morren, and their ants. *Bull. Torrey Bot. Club*. **1970**, 109-115.
9. Benzing, D. H. Bromeliaceae: *Profile of an Adaptive Radiation*. Cambridge University Press, UK, 2000, pp.710
10. Benzing, D. H.; Burt, K. M. Foliar permeability among twenty species of the Bromeliaceae. *Bull. Torrey Bot. Club*. **1970**, 269-279.
11. Braga, M. M. N. Anatomia foliar de Bromeliaceae da Campina. *Acta Amazon.* **1977**, *7*, 5-74.
12. Brighigna, L.; Cecchi Fiordi, A.; Palandri, M. R. Structural characteristics of the mesophyll in some *Tillandsia* species. *Phytomorphology* **1984**, *34*, 191-200.
13. Caballero-Rueda, L. M.; Rodríguez, N.; Martin, C. Dinámica de elementos en epifitos de un bosque altoandino de la Cordillera Oriental de Colombia. *Caldasia* **1997**, *19*, 311-322.
14. Cach-Pérez, M. J.; Andrade, J. L.; Cetzal-Ix, W.; Reyes-García, C. Environmental influence on the inter- and intraspecific variation in the density and morphology of stomata and trichomes of epiphytic bromeliads of the Yucatan Peninsula. *Bot. J. Linn. Soc.* **2016**, *181*, 441-458.
15. Cardelús C.L.; Mack, M. The nutrient status of epiphytes and their host trees along an elevational gradient in Costa Rica. *Plant Ecol.* **2010**, *207*: 25-37.
16. Casañas, O. L.; Jáuregui, D. Morfoanatomía foliar de epífitas presentes en un bosque nublado, Altos de Pipe, Estado Miranda, Venezuela. *Acta Bot. Venez.* **2011**, *34*,153-176.
17. Leroy, C.; Gril, E.; Si Ouali, L.; Coste, S.; Gérard, B; Maillard, P.; Mercier, H.; Stahl, C.; Water and nutrient uptake capacity of leaf-absorbing trichomes vs. roots in epiphytic tank bromeliads. *Environ. Exp. Bot.* **2019**, *163*, 112-123.
18. Cogliatti-Carvalho, L.; Rocha-Pessôa, T. C.; Nunes-Freitas, A. F.; Rocha, C. F. D. Volume de água armazenado no tanque de bromélias, em restingas da costa brasileira. *Acta Bot. Bras.* **2010**, *24*, 84-95.
19. Crayn, D.M.; Winter, K.; Schulte, K.F.; Smith, J.A. Photosynthetic pathways in Bromeliaceae: phylogenetic and ecological significance of CAM and C3 based on carbon isotope ratios for 1893 species. *Bot. J. Linn. Soc.* **2015**, *178*, 169-221.
20. Crayn, D. M.; Winter, K.; Smith, J. A. C. Multiple origins of crassulacean acid metabolism and the epiphytic habit in the Neotropical family Bromeliaceae. *Proc. Natl. Acad. Sci. U.S.A* **2004**, *101*, 3703-3708.
21. de Oliveira, M. L.; de Melo, E. J.; Miguens, F. C. *Tillandsia stricta* Sol (Bromeliaceae) leaves as monitors of airborne particulate matter—A comparative SEM methods evaluation: Unveiling an accurate and odd HP-SEM method. *Microsc. Res. Tech.* **2016**, *79*, 869-879

22. de Oliveira, R. S.; de Oliveira Souza, S.; Aona, L. Y. S.; Souza, F. V. D.; Rossi, M. L.; de Souza, E. H. Leaf structure of *Tillandsia* species (Tillandsioideae: Bromeliaceae) by light microscopy and scanning electron microscopy. *Microsc. Res. Tech.* **2022**, *85*, 253-269.
23. Dézerald, O.; Talaga, S.; Leroy, C.; Carrias, J. F.; Corbara, B.; Dejean, A.; Céréghino, R. Environmental determinants of macroinvertebrate diversity in small water bodies: insights from tank-bromeliads. *Hydrobiologia* **2014**, *723*, 77-86.
24. Díaz-Álvarez, E. A.; de la Barrera, E. Drying protocol does not alter plant $\delta^{13}C$ and $\delta^{15}N$: a baseline survey for ecological studies. *Isotopes Environ. Health. Stud.* **2019**, *55*, 526-531.
25. Einzmann, H. J. R.; Beyschlag, J.; Hofhansl, F.; Wanek, W.; Zotz, G. Host tree phenology affects vascular epiphytes at the physiological, demographic and community level. *AoB Plants* **2015**, *7*, plu073, https://doi.org/10.1093/aobpla/plu073
26. Felix, J. D.; Avery, G. B.; Mead, R. N.; Kieber, R. J.; Willey, J. D. Nitrogen content and isotopic composition of Spanish Moss (*Tillandsia usneoides* L.): reactive nitrogen variations and source implications across an urban coastal air shed. *Environ. Process*. **2016**, *3*, 711-722.
27. Gómez, M. A.; Winkler, S. Bromelias en manglares del Pacífico de Guatemala. *Rev. Biol. Trop.* **1991**, 207-214.
28. Griffiths, H. Carbon balance during CAM: an assessment of respiratory CO_2 recycling in the epiphytic bromeliads *Aechmea nudicaulis* and *Aechmea fendleri. Plant Cell Environ.* **1988**, *11*, 603-611.
29. Griffiths, H.; Lüttge, U.; Stimmel, K. H.; Crook, C. E.; Griffiths, N. M.; Smith, J. A. C. Comparative ecophysiology of CAM and C3 bromeliads. III. Environmental influences on CO2 assimilation and transpiration. *Plant Cell Environ.* **1986**, *9*, 385-393.
30. Griffiths, H.; Smith, J. A. C.; Lüttge, U.; Popp, M.; Cram, W. J.; Diaz, M. A.; Lee, H. S. L.; Medina, E.; Schäfer, C.; Stimmel, K. H. Ecophysiology of xerophytic and halophytic vegetation of a coastal alluvial plain in northern Venezuela. IV. *Tillandsia flexuosa* Sw. and *Schomburgkia humboldtiana* Reichb., epiphytic CAM plants. *New Phytol.* **1989,** *111*, 273-282.
31. Hietz, P.; Wanek, W.; Popp, M. Stable isotopic composition of carbon and nitrogen and nitrogen content in vascular epiphytes along an altitudinal transect. *Plant Cell Environ.* **1999**, *22*, 1435–1443.
32. Hietz P.; Wanek W. Size-dependent variation of carbon and nitrogen isotope abundances in epiphytic bromeliads. *Plant Biol.* **2003**, *5*, 137-142.
33. Husk, G. J.; Weishampel, J. E.; Schlesinger, W. H. Mineral dynamics in Spanish moss, *Tillandsia usneoides* L. (Bromeliaceae), from Central Florida, USA. *Sci. Total Environ.* **2004**, *321*, 165-172.
34. Adams, W. W.; Martin, C. E. Morphological changes accompanying the transition from juvenile (atmospheric) to adult (tank) forms in the Mexican epiphyte *Tillandsia deppeana* (Bromeliaceae). *Am. J. Bot.* **1986**, *73*, 1207-1214.
35. Isley, P. T. *Tillandsia: the world's most unusual air plants*, 1rst ed; Botanical Press, 1987; 256 pp.
36. Latorre, C.; González, A. L.; Quade, J.; Fariña, J. M.; Pinto, R.; Marquet, P. A. Establishment and formation of fog-dependent *Tillandsia landbeckii* dunes in the Atacama Desert: Evidence from radiocarbon and stable isotopes. *J. Geophys. Res. Biogeosciences* **2011**,*116*, 1-12, doi:10.1029/2010JG001521
37. Leroy, C.; Carrias, J. F.; Céréghino, R.; Corbara, B. The contribution of microorganisms and metazoans to mineral nutrition in bromeliads. *J. Plant Ecol.* **2016**, *9*, 241-255.
38. Leroy, C.; Carrias, J. F.; Corbara, B.; Pélozuelo, L.; Dézerald, O.; Brouard, O.; Céréghino, R. Mutualistic ants contribute to tank-bromeliad nutrition. *Ann, Bot.* **2013**, *112*, 919-926.
39. Leroy, C.; Corbara, B.; Dejean, A.; Céréghino, R. Ants mediate foliar structure and nitrogen acquisition in a tank-bromeliad. *New Phytol.* **2009**, *183,* 1124-1133.
40. López-Ferrari, A. R.; Espejo-Serna, A.; Blanco, P. Circunscripción de *Tillandsia chaetophylla* Mez y descripción de *Tillandsia sessemocinoi* (Bromeliaceae: Tillandsioideae). *Acta Bot. Mex.* **2006**, *76*, 77-88.
41. Males, J.; Griffiths, H. Economic and hydraulic divergences underpin ecological differentiation in the Bromeliaceae. *Plant Cell Environ.* **2018**, *41*, 64-78.

42. Males J. Structure-function relationships in the water-use strategies and ecological diversity of the Bromeliaceae. PhD thesis, University of Cambridge. Cambridge, UK. 2017.
43. Marino, N. A.; Guariento, R. D.; Dib, V.; Azevedo, F. D.; Farjalla, V. F. Habitat size determine algae biomass in tank-bromeliads. *Hydrobiologia* **2011**, *678*, 191-199.
44. Martin, C. E. Physiological Ecology of the Bromeliaceae. *Bot. Rev.* **1994**, *60*, 1-82.
45. Martins, J. P. R.; Martins, A. D.; Pires, M. F.; Braga Junior, R. A.; Reis, R. O.; Dias, G. D. M. G.; Pasqual, M. Anatomical and physiological responses of *Billbergia zebrina* (Bromeliaceae) to copper excess in a controlled microenvironment. *Plant Cell, Tissue Organ Cult.* **2016**, *126*, 43-57.
46. Matos, J.A.; Rudolph, D.C. *Aspects of the life history of Tillandsia deppeana. In* Gardner, C.S. (Ed.), World Bromeliad Conference. Mission Press, Corpus Christi, TX, USA, 1984, pp. 71–75.
47. Maxwell, K.; Griffiths, H.; Borland, A. M.; Young, A. J.; Broadmeadow, M. S. J.; Fordham, M. C. Short-term photosynthetic responses of the C3-CAM epiphyte *Guzmania monostachia* var. *monostachia* to tropical seasonal transitions under field conditions. *Aust. J. Plant Physiol.* **1995**, *22*, 771-781.
48. Meisner, K. Functional relevance of heteroblasty in Bromeliaceae. PhD thesis, Carl von Ossietzky Universität, Oldenburg. 2012.
49. Nuzhyna, N. V.; Kolomiyets, T. V. Differences in anatomical and morphological structure of plants from the genus Neoregelia LB Sm. (Bromeliaceae) as a result of adaptation to arid environmental conditions. *Mod. Phytomorphol.* **2015**, *8*, 137-144.
50. Palací, C. A.; Brown, G. K.; Tuthill, D. E. Vegetative Morphology and Leaf Anatomy of *Catopsis* (Tillandsioideae: Bromeliaceae). *Selbyana* **2004**, *25*,138–50.
51. Pereira-Zaldívar, N. A.; Patiño-López, L. D.; Rodríguez-García, R.; Andrade, J. L.; Cach-Pérez, M. J.; Espadas-Manrique, C.; Barredo-Pool, F.; Reyes-García, C. Life form and anatomical traits related to trichome mediated external water transport in epiphytic Bromeliaceae. *Plant, cell and environ.* 2022 (Submitted).
52. Pereira, T. A. R.; de Oliveira, T. S.; da Silva, L. C.; Azevedo, A. A. Comparative leaf anatomy of four species of Bromelioideae (Bromeliaceae) occurring in the Atlantic Forest. *Brazil. Bot.* 2011, *89,* 243-253.
53. Petter, G.; Wagner, K.; Wanek, W.; Sánchez Delgado, E. J.; Zotz, G.; Cabral, J. S.; Kreft, H. Functional leaf traits of vascular epiphytes: Vertical trends within the forest, intra- and interspecific trait variability, and taxonomic signals. *Func. Ecol.* **2016**, *30,* 188-198.
54. Pierce, S. The jeweled armor of Tillandsia—Multifaceted or elongated trichomes provide photoprotection. *Aliso: A J. Syst. Floristic Bot.* **2007**, *23*, 44-52.
55. Pierce, S.; Winter, K.; Griffiths, H. Carbon isotope ratio and the extent of daily CAM use by Bromeliaceae. *New Phytol.* **2002**, 156, 75-83.
56. Proença, S. L.; Sajo, M. D. G. Anatomia foliar de bromélias ocorrentes em áreas de cerrado do Estado de São Paulo, Brasil. *Acta Bot. Brasil.* **2007**, *21*, 657-673.
57. Puccio, P. *Tillandsia tenuifolia* L. Monaco nature Encyclopedia. Available online: https://www.monaconatureencyclopedia.com/tillandsia-tenuifolia/?lang=es (accessed on July 2022).
58. Rammler H. Ökophysiologie von Epiphyten und Bäumen in einem Bergregenwald in Mexiko und einem Tieflandregenwald in Costa Rica. Master thesis, Universität für Bodenkultur, Wien. 2004.
59. Reyes-García, C. Ecofisiología de epifitas de selva baja caducifolia del género *Tillandsia* (bromeliaceae): Estacionalidad y fotosíntesis. Bachelor's thesis. Universidad nacional Autónoma de México, México. 2001.
60. Ribeiro, F.; Aoyama, E. Anatomia foliar de Bromeliaceae da trilha do rio Timbuí na Estação Biológica de Santa Lúcia, Santa Teresa–es. *Enciclopédia Biosfera* **2019**, *16*, 185-197.
61. Rosado-Calderón, A. T.; Tamayo-Chim, M.; de la Barrera, E.; Ramírez-Morillo, I. M.; Andrade, J. L.; Briones, O.; Reyes-García, C. High resilience to extreme climatic changes in the CAM epiphyte *Tillandsia utriculata* L. (Bromeliaceae). *Physiol. Plant.* **2020**, *168*, 547-562.
62. Schmidt, G.; Stuntz, S.; Zotz, G. Plant size - an ignored parameter in epiphyte ecophysiology. *Plant. Ecol.* **2001**, 153, *65*-72.

63. Silva, E. C. *Aechmea bromeliifolia* (Rudge) Baker (Bromeliaceae) cultivada in vitro e ex vitro: morfologia, anatomia e ultraestrutura. Master thesis. Universidade Federal de Goiás, Goiânia, Brazil, 2016.
64. Smith, J. A. C.; Griffiths, H.; Lüttge, U.; Crook, C. E.; Griffiths, N. M.; Stimmel, K. H. Comparative ecophysiology of CAM and C3 bromeliads. IV. Plant water relations. *Plant Cell Environ.* **1986**, *9*, 395-410.
65. Souza, G. M. D.; Estelita, M. E. M.; Wanderley, M. D. G. L. Anatomia foliar de espécies brasileiras de *Aechmea* subg. Chevaliera (Gaudich. ex Beer) Baker, Bromelioideae-Bromeliaceae. *Braz. J. Bot.* **2005**, *28*, 603-613.
66. Stefano, M.; Papini, A.; Brighigna, L. A new quantitative classification of ecological types in the bromeliad genus Tillandsia (Bromeliaceae) based on trichomes. *Rev. Biol. Trop.* **2008**, *56*, 191-203.
67. Stuntz, S.; Zotz, G. Photosynthesis in vascular epiphytes - a survey of 27 species of diverse taxonomic origin. *Flora* **2001**, *196*, 132-141.
68. Susan-Tepetlan, T. M.; Velázquez-Rosas, N.; Krömer, T. Cambios en las características funcionales de epífitas vasculares de bosque mesófilo de montaña y vegetación secundaria en la región central de Veracruz, México. *Bot. Sci.* **2015**, *93*, 1-11.
69. Terreros-Olivares, L. Revisión sistemática del complejo de especies de *Tillandsia juncea* (Ruiz & Pav.) Poir. Bromeliaceae. Master thesis, Universidad Metropolitana de México, México, 2012.
70. Versieux, L. M.; Medeiros, A. S. M. Leaf anatomical characterization of *Guzmania* Ruiz & Pav. and *Mezobromelia* LB Sm. (Tillandsioideae, Bromeliaceae). *J. Bromeliad Soc.* **2017**, *67*, 8-26
71. Vite-Posadas, J. A.; Brechú-Franco, A. E.; Laguna-Hernández, G.; Rojas-Bribiesca, M. G.; Osuna-Fernández, H. R. Morphoanatomical characterization and antimicrobial activity of *Tillandsia imperialis* (Bromeliaceae). *Polibotánica* **2011**, *31*, 20-29.
72. Wanek, W.; Zotz, G. Are vascular epiphytes nitrogen or phosphorus limited? A study of plant 15N fractionation and foliar N: P stoichiometry with the tank bromeliad Vriesea sanguinolenta. *New Phytol.* **2011**, *192*, 462-470.
73. Wania, R.; Hietz, P.; Wanek, W. Natural 15N abundance of epiphytes depends on the position within the forest canopy: source signals and isotope fractionation. *Plant Cell Environ.* **2002**, *25*, 581-589.
74. Wester, S.; Mendieta-Leiva, G.; Nauheimer, L.; Wanek, W.; Kreft, H.; Zotz, G. Physiological diversity and biogeography of vascular epiphytes at Río Changuinola. *Panama Flora* **2011**, *206*, 66–79.
75. Zambrano, A. R. C.; Linis, V. C.; Nepacina, M. R. J.; Silvestre, M. L. T.; Foronda, J. R. F.; Janairo, J. I. B. Wetting properties and foliar water uptake of *Tillandsia* L. *Biotribology* **2019**, *19*, 100103.
76. Zorger, B. B.; Arrivabene, H. P.; Milanez, C. R. D. Adaptive morphoanatomy and ecophysiology of *Billbergia euphemiae*, a hemiepiphyte Bromeliaceae. *Rodriguésia* **2019**, *70*, 1-10, doi.org/10.1590/2175-7860201970091.
77. Zotz G. How prevalent is crassulacean acid metabolism among vascular epiphytes? *Oecologia* **2004**, *138*, 184-192.
78. Zotz, G.; Asshoff, R. Growth in epiphytic bromeliads: response to the relative supply of phosphorus and nitrogen. *Plant Biol.* **2010**, *12*, 108-113.
79. Zotz, G.; Ziegler, H. The occurrence of crassulacean acid metabolism among vascular epiphytes from Central Panama. *New Phytol.* **1997**, *137*, 223-229.
80. Zotz, G.; Enslin, A.; Hartung, W.; Ziegler, H. Physiological and anatomical changes during the early ontogeny of the heteroblastic bromeliad, *Vriesea sanguinolenta*, do not concur with the morphological change from atmospheric to tank form. *Plant Cell Environ.* **2004**, *27*, 1341-1350.
81. Zotz, G.; Leja, M.; Aguilar-Cruz, Y.; Einzmann, H. J. How much water is in the tank? An allometric analysis with 205 bromeliad species. *Flora* **2020**, *264,* 151557, https://doi.org/10.1016/j.flora.2020.151557