Overlooked diversity in Epipterygium tozeri





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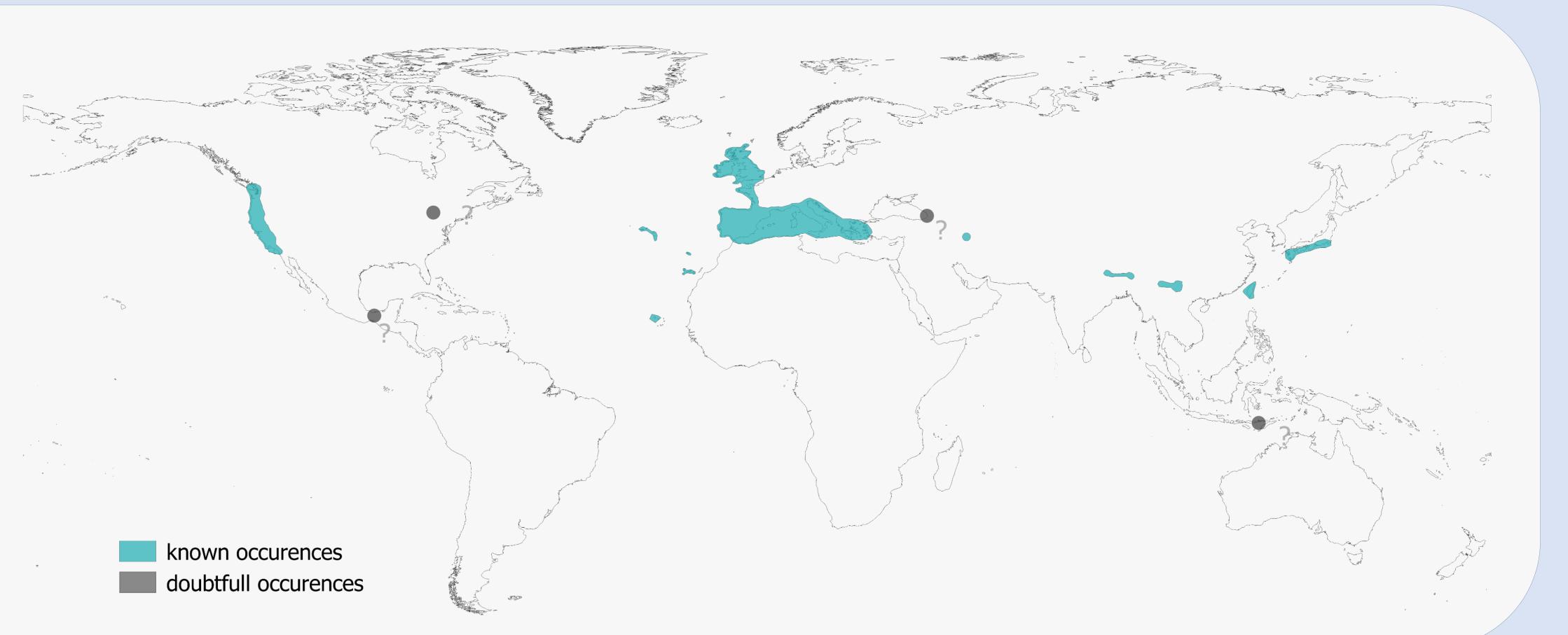


Jubiläumssymposium zum 50-jährigen Bestehen der BLAM e.V. 20. - 22. April 2018, Frankfurt, Germany

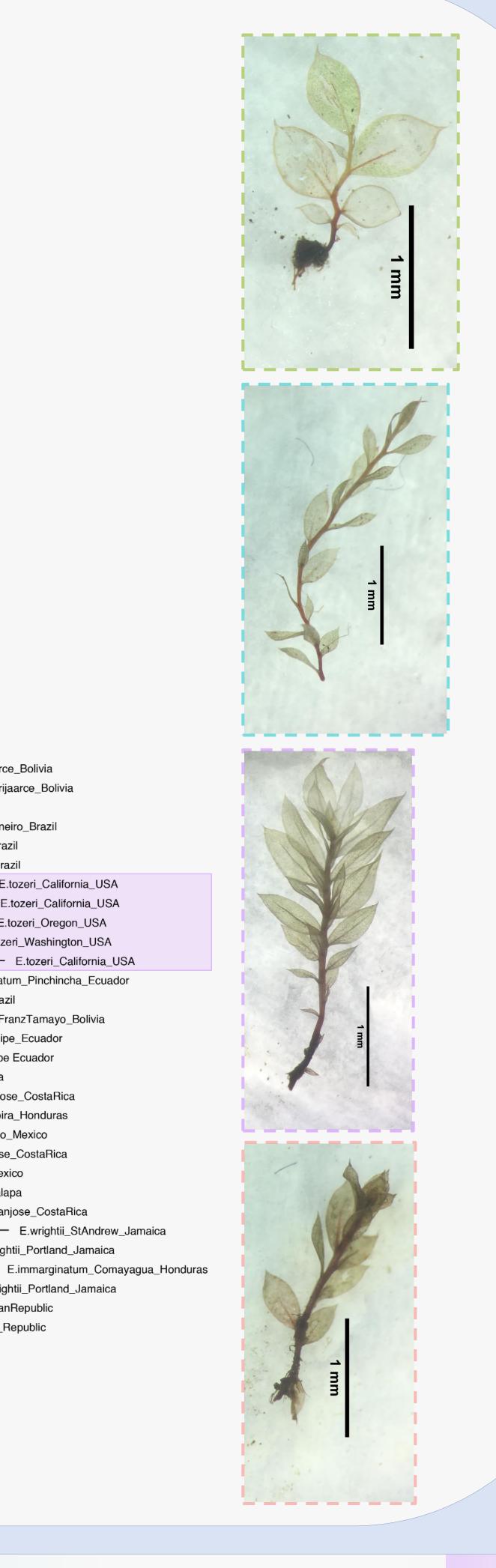
(Grev.) Lindb. Epipterygium tozeri (Bryaceae) shows a holarctic distribution with disjunct areas in western North America, the Mediterranean and Central Asia. Specimens from different geographic regions were all lumped into *E. tozeri*.

Questions:

- 1. Are the different populations morphologically distinguishable?
- 2. Is there genetic variation between the populations?



Results E.tozeri_SaoMiguel_Azores E.tozeri_SaoJorge_Azores E.tozeri_SaoJorge_Azores E.tozeri_SaoJorge_Azores E.tozeri_Pico_Azores E.tozeri LaPalma Canary E.tozeri_LaPalma_Canary E.tozeri_LaPalma_Canary E.tozeri_Madeira E.tozeri_Gomera_Canary E.tozeri Tenerife_Canary E.tozeri_Gomera_Canary E.tozeri_Gomera_Canary E.tozeri_Tenerife_Canary E.tozeri Tenerife Canary E.tozeri_LaGomera_Canary E.tozeri LaPalma_Canary E.tozeri_Aberdeenshire_Scotland E._tozeri_Tenerife_Canary E.tozeri_AltoDoruro_Portugal E.tozeri_Huelva_Spain E.tozeri_Algeciras_Spain E.tozeri_Madeira E.tozeri_Waterford_Ireland E.tozeri_DoruroLitoral_Portugal E.tozeri_Roquebrune_France E.tozeri_Minho_Portugal E.tozeri_Algeciras_Spain - E.tozeri_Granada_Spain E.tozeri_Tenerife_Spain E.tozeri_Maures_France E.tozeri_BeiraBaxa_Portugal E.tozeri_Iran 91 F E.immarginatum_Tarijaarce_Bolivia E.immarginatum_Tarijaarce_Bolivia E.spec_Parana_Brazil E.spec_RiodeJaneiro_Brazil E.puiggarii_Parana_Brazil E.wrightii_MinasGeiras_Brazil 100 E.tozeri_California_USA E.tozeri_California_USA E.tozeri_Oregon_USA 99 E.tozeri_Washington_USA E.tozeri_California_USA - E.immarginatum_Pinchincha_Ecuador E.spec_RiodeJaneiro_Brazil 100 E.immarginatum_LaPazFranzTamayo_Bolivia E.immarginatum_Chinchipe_Ecuador E.immarginatum_Chinchipe Ecuador E.immarginatum_SanJose_CostaRica 96 E.mexicanum_SanJose_CostaRica E.mexicanum_Lempira_Honduras E.mexicanum_Mpio_Mexico E.mexicanum_SanJose_CostaRica .mexicanum_Tepoztlan_Mexico E.mexicanum_Veracruz_Xalapa E.immarginatum_ProvincedeSanjose_CostaRica



Material & Methods

Material:

68 specimens from Alfons Schäfer-Verwimp, E, LG, LISU, MO, M, NY, S, TUM

Molecular Phylogenetics:

194 newly generated sequences of one nuclear (ITS) and two chloroplast (psbD + trnG) regions.

Maximum-Likelihood-Tree with 5000 Ultra-Fast-Bootstrap replicates.

Morphological Analysis:

PCA of 10 distinct characters and 4 ratios:

Dorsal leaf length Lateral leaf length Dorsal leaf width Lateral leaf width Lateral leaf L:W Dorsal leaf L:W

Median cell length | Marginal cell length | Stem length Marginal cell width | Costa length Median cell width Median cell L:W Marginal cell L:W

Results 0.4^{-} Region Atlantic Europe Continental Europe USA 0.2PC2 (16.33%) 0.0 -0.2

PC1 (41.45%)

-0.2

Epipterygium "Atlantic Europe"

E.convalleum_Moca_Bioko

100 E.tozeri_DeothangDistrict_Bhutan

E.TongsaDistrict_Bhutan

Dorsal leaves irregularly developed Lateral leaves ovate Leaf tip caudate

Epipterygium tozeri

E.wrightii_StAndrew_Jamaica

E.wrightii_Portland_Jamaica

E.wrightii_LaVega_DominicanRepublic

E.wrightii_Dominican_Republic

Dorsal leaves arranged in one row Lateral leaves spearshaped Wide internodal space

Epipterygium "USA"

Dorsal leaves in two rows Lateral leaves lanceolate Complanate appearence

Epipterygium "Asia"

0.2

Dorsal leaves well developed Lateral leafs acute Leaf surface mammilose

References

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