

**Integrative taxonomy and evolutionary ecology of the
anthophilous *Drosophila lutzii* species complex (Diptera,
Drosophilidae) provide evidence for range expansion of
*Drosophila alei***

**Tuane Letícia Carvalho^a, Juliana Cordeiro^{b,*}, Bruna Nornberg^c, Hermes José
Schmitz^d and Lizandra Jaqueline Robe^a**

¹ Programa de Pós-Graduação em Biodiversidade Animal – PPGBA, Universidade
Federal de Santa Maria – UFSM, Santa Maria, RS, Brazil

² Departamento de Ecologia, Zoologia e Genética, Instituto de Biologia, Universidade
Federal de Pelotas – UFPel, Pelotas, RS, 96020000, Brazil

³ Instituto de Ciências Biológicas – ICB, Universidade Federal do Rio Grande – FURG,
Rio Grande, RS, Brazil

⁴ Instituto Latino-Americano de Ciências da Vida e da Natureza, Universidade Federal
da Integração Latino-Americana – UNILA, Foz do Iguaçu, Paraná, Brazil

*Corresponding author; e-mail: jlncdr@gmail.com

ORCID iDs: Carvalho: 0000-0001-5227-3009; Cordeiro: 0000-0003-0902-9638;
Nornberg: 0000-0002-2383-5137; Schmitz: 0000-0003-4487-1898; Robe: 0000-0001-
8506-9143

Supplementary material

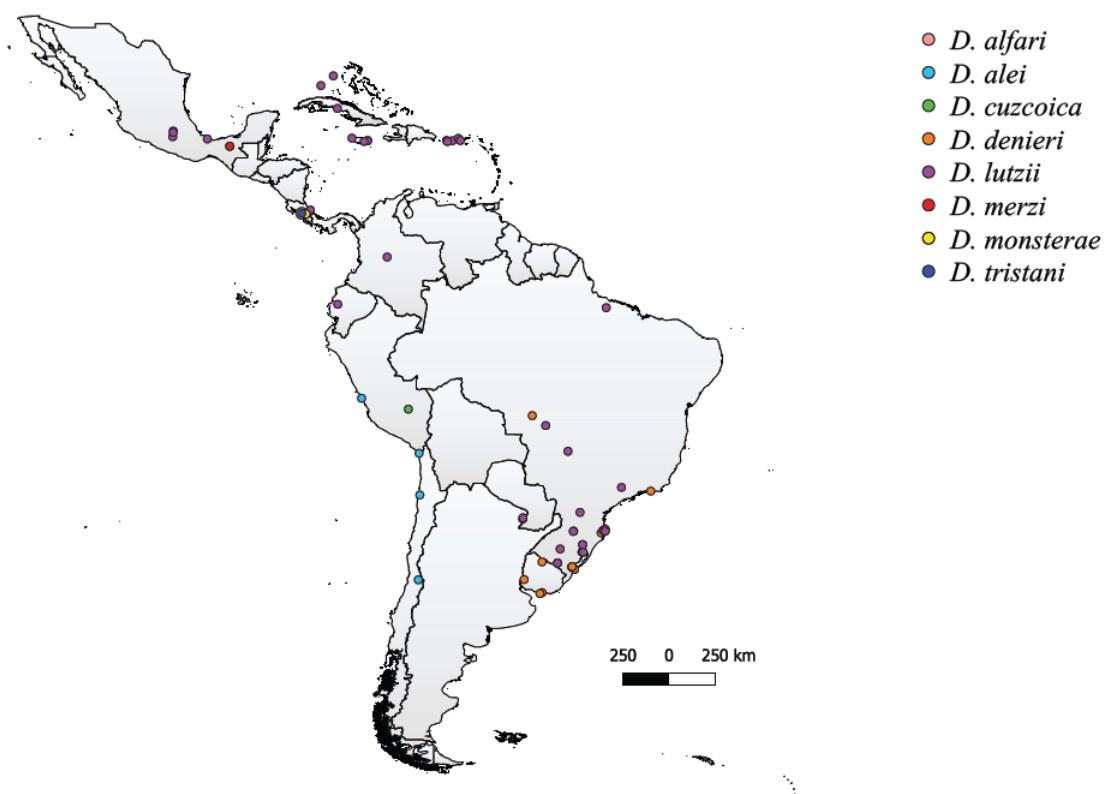


Figure S1. Distribution map of the eight species belonging to the *Drosophila lutzii* group, according to registers retrieved from TaxoDros (Bächli 2020). The Hawaiian Islands are not shown.



3

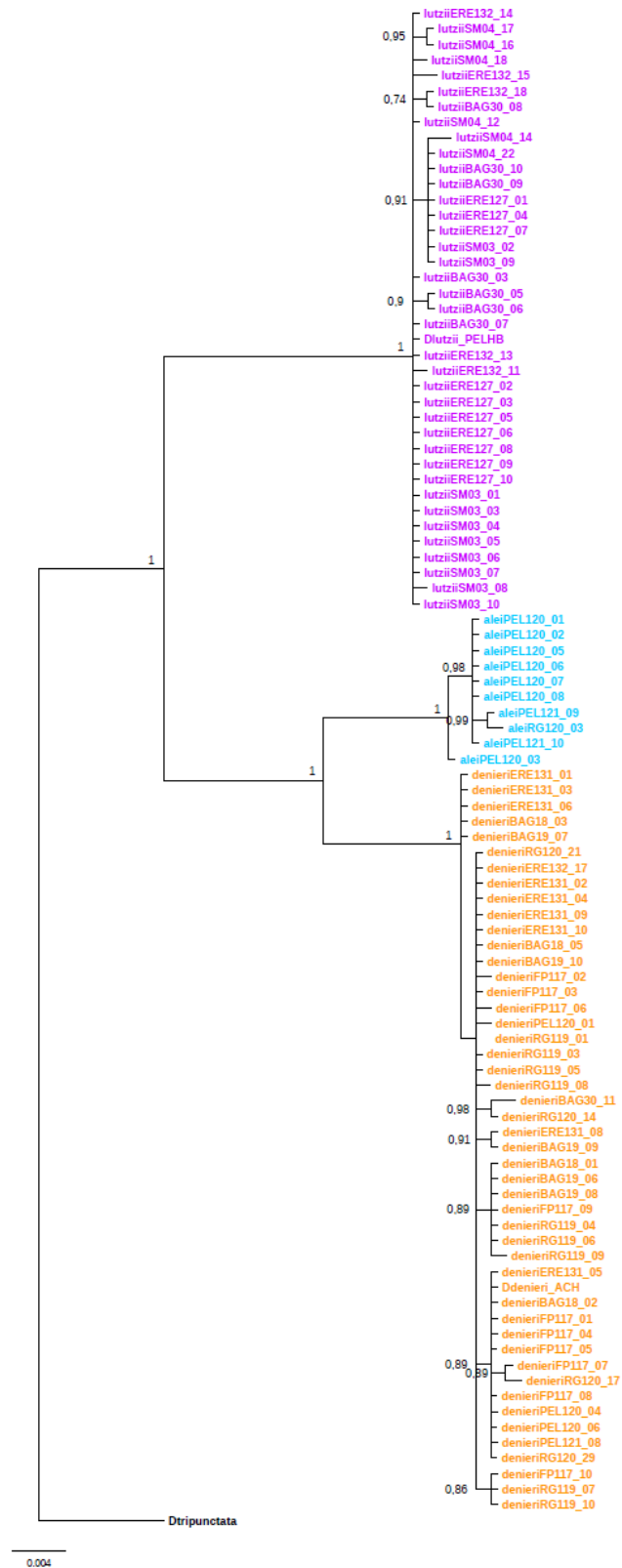


Figure S3. Phylogenetic relationship based on Bayesian Inference of COII data for 97 specimens of the *Drosophila lutzii* complex from Southern Brazil.

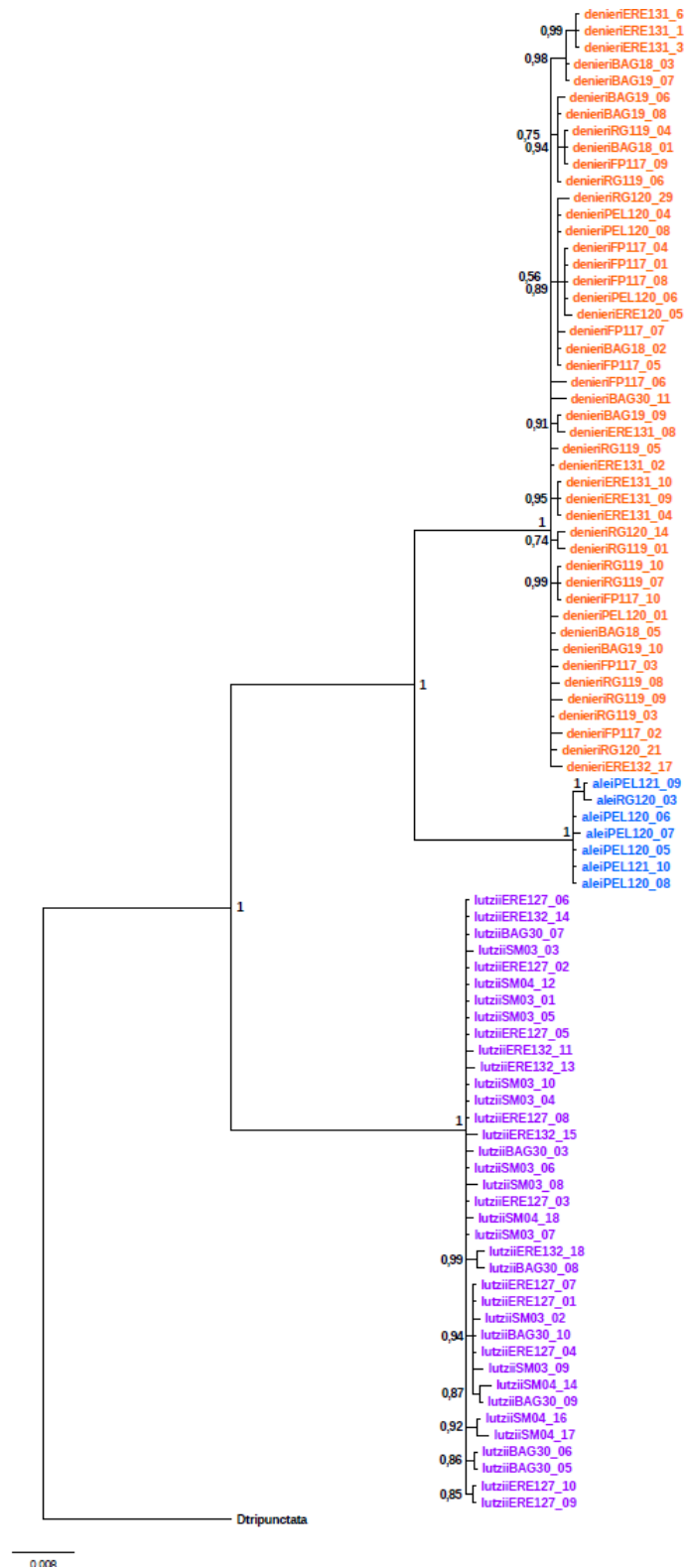


Figure S4. Phylogenetic relationship based on Bayesian Inference of COI+COII concatenated data for 90 specimens of the *Drosophila lutzii* complex from Southern Brazil.

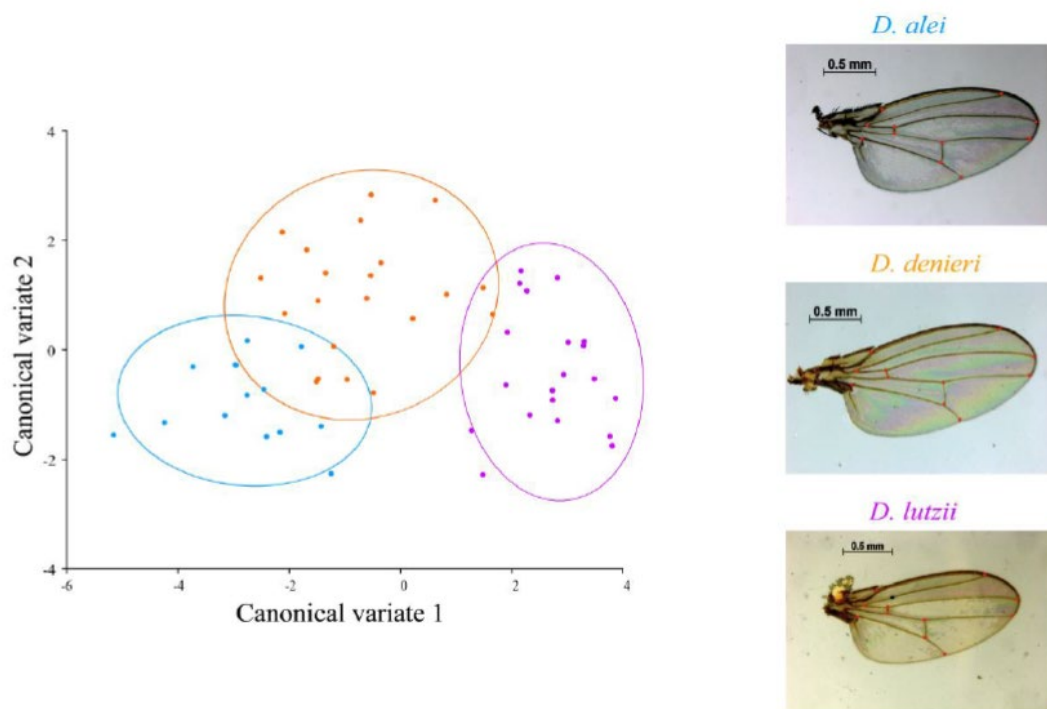
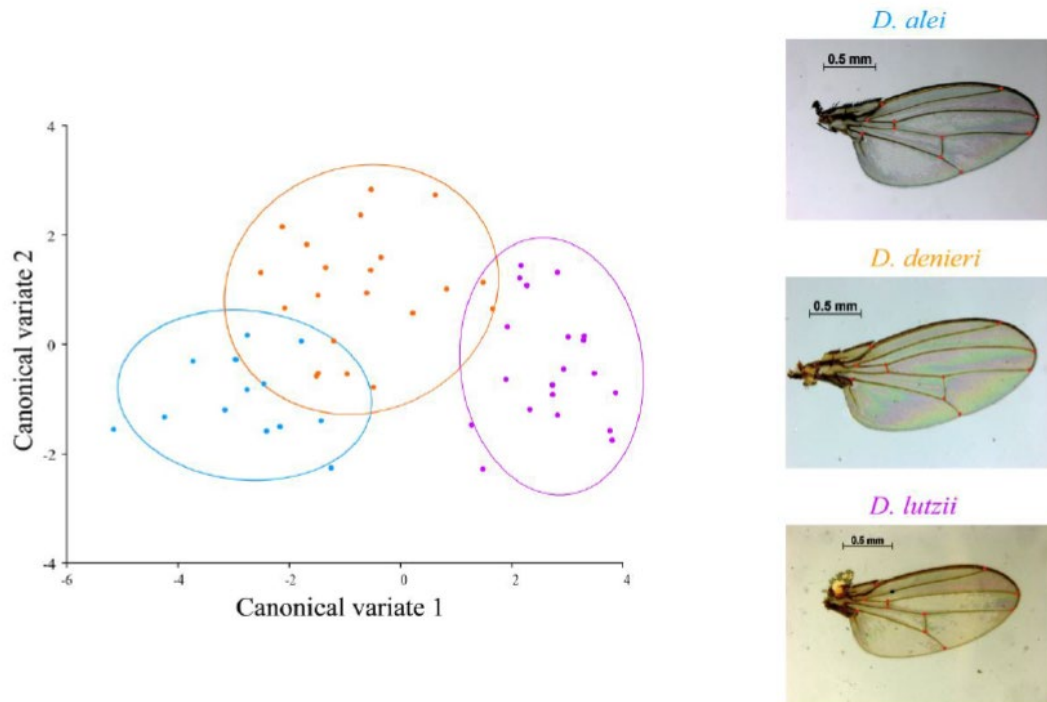


Figure S5. Scatter plot of Canonical Variate Analysis (CVA) showing the distribution of variation in wing shape among the three species of the *D. lutzii* complex. CV1 explains 87.98% and CV2 explains 12.02% of the total variation. Colors refer to the three different species, whose wings are depicted to the right.



Initial Partition with prior maximal distance $P=1.00e-03$
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10
Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11
denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08 denieriFP09
denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08 denieriRG01
denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07 denieriRG08
denieriRG09 denieriRG10 denieriRG14 denieriRG21 denieriRG29
Group[3] n: 37 ;id: lutziiBAG03 lutziiBAG05 lutziiBAG06 lutziiBAG07 lutziiBAG08
lutziiBAG09 lutziiBAG10 lutziiERE01 lutziiERE02 lutziiERE03 lutziiERE04 lutziiERE05
lutziiERE06 lutziiERE07 lutziiERE08 lutziiERE09 lutziiERE10 lutziiERE11 lutziiERE13
lutziiERE14 lutziiERE15 lutziiERE18 lutziiSM01 lutziiSM02 lutziiSM03 lutziiSM04
lutziiSM05 lutziiSM06 lutziiSM07 lutziiSM08 lutziiSM09 lutziiSM10 lutziiSM12
lutziiSM14 lutziiSM16 lutziiSM17 lutziiSM18

Initial Partition with prior maximal distance $P=1.67e-03$
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10

Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11

denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08 denieriFP09
denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08 denieriRG01
denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07 denieriRG08
denieriRG09 denieriRG10 denieriRG14 denieriRG21 denieriRG29
Group[3] n: 37 ;id: lutziiBAG03 lutziiBAG05 lutziiBAG06 lutziiBAG07 lutziiBAG08
lutziiBAG09 lutziiBAG10 lutziiERE01 lutziiERE02 lutziiERE03 lutziiERE04 lutziiERE05
lutziiERE06 lutziiERE07 lutziiERE08 lutziiERE09 lutziiERE10 lutziiERE11 lutziiERE13
lutziiERE14 lutziiERE15 lutziiERE18 lutziiSM01 lutziiSM02 lutziiSM03 lutziiSM04
lutziiSM05 lutziiSM06 lutziiSM07 lutziiSM08 lutziiSM09 lutziiSM10 lutziiSM12
lutziiSM14 lutziiSM16 lutziiSM17 lutziiSM18

Initial Partition with prior maximal distance P=2.78e-03
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10
Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11
denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08 denieriFP09
denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08 denieriRG01
denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07 denieriRG08
denieriRG09 denieriRG10 denieriRG14 denieriRG21 denieriRG29
Group[3] n: 37 ;id: lutziiBAG03 lutziiBAG05 lutziiBAG06 lutziiBAG07 lutziiBAG08
lutziiBAG09 lutziiBAG10 lutziiERE01 lutziiERE02 lutziiERE03 lutziiERE04 lutziiERE05
lutziiERE06 lutziiERE07 lutziiERE08 lutziiERE09 lutziiERE10 lutziiERE11 lutziiERE13
lutziiERE14 lutziiERE15 lutziiERE18 lutziiSM01 lutziiSM02 lutziiSM03 lutziiSM04
lutziiSM05 lutziiSM06 lutziiSM07 lutziiSM08 lutziiSM09 lutziiSM10 lutziiSM12
lutziiSM14 lutziiSM16 lutziiSM17 lutziiSM18

Initial Partition with prior maximal distance P=4.64e-03
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10
Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11
denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08 denieriFP09
denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08 denieriRG01
denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07 denieriRG08
denieriRG09 denieriRG10 denieriRG14 denieriRG21 denieriRG29
Group[3] n: 37 ;id: lutziiBAG03 lutziiBAG05 lutziiBAG06 lutziiBAG07 lutziiBAG08
lutziiBAG09 lutziiBAG10 lutziiERE01 lutziiERE02 lutziiERE03 lutziiERE04 lutziiERE05
lutziiERE06 lutziiERE07 lutziiERE08 lutziiERE09 lutziiERE10 lutziiERE11 lutziiERE13
lutziiERE14 lutziiERE15 lutziiERE18 lutziiSM01 lutziiSM02
lutziiSM03 lutziiSM04 lutziiSM05 lutziiSM06 lutziiSM07 lutziiSM08 lutziiSM09
lutziiSM10 lutziiSM12 lutziiSM14 lutziiSM16 lutziiSM17 lutziiSM18

Initial Partition with prior maximal distance $P=7.74e-03$
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10
Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11
denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08 denieriFP09
denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08 denieriRG01
denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07 denieriRG08
denieriRG09 denieriRG10 denieriRG14 denieriRG21 denieriRG29
Group[3] n: 37 ;id: lutziiBAG03 lutziiBAG05 lutziiBAG06 lutziiBAG07 lutziiBAG08
lutziiBAG09 lutziiBAG10 lutziiERE01 lutziiERE02 lutziiERE03 lutziiERE04 lutziiERE05
lutziiERE06 lutziiERE07 lutziiERE08 lutziiERE09 lutziiERE10 lutziiERE11 lutziiERE13
lutziiERE14 lutziiERE15 lutziiERE18 lutziiSM01 lutziiSM02 lutziiSM03 lutziiSM04
lutziiSM05 lutziiSM06 lutziiSM07 lutziiSM08 lutziiSM09 lutziiSM10 lutziiSM12
lutziiSM14 lutziiSM16 lutziiSM17 lutziiSM18

Initial Partition with prior maximal distance $P=1.29e-02$
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10
Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11
denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08 denieriFP09
denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08 denieriRG01
denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07 denieriRG08
denieriRG09 denieriRG10 denieriRG14 denieriRG21 denieriRG29
Group[3] n: 37 ;id: lutziiBAG03 lutziiBAG05 lutziiBAG06 lutziiBAG07 lutziiBAG08
lutziiBAG09 lutziiBAG10 lutziiERE01 lutziiERE02 lutziiERE03 lutziiERE04 lutziiERE05
lutziiERE06 lutziiERE07 lutziiERE08 lutziiERE09 lutziiERE10 lutziiERE11 lutziiERE13
lutziiERE14 lutziiERE15 lutziiERE18 lutziiSM01 lutziiSM02 lutziiSM03 lutziiSM04
lutziiSM05 lutziiSM06 lutziiSM07 lutziiSM08 lutziiSM09 lutziiSM10 lutziiSM12
lutziiSM14 lutziiSM16 lutziiSM17 lutziiSM18

Initial Partition with prior maximal distance $P=2.15e-02$
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10
Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11
denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08
denieriFP09 denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08
denieriRG01 denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07

Initial Partition with prior maximal distance $P=3.59e-02$
Distance JC69 Jukes-Cantor MinSlope=1.500000

Group[1] n: 7 ;id: aleiRG03 Dalei05 Dalei06 Dalei07 Dalei08 Dalei09 Dalei10
Group[2] n: 46 ;id: denieriBAG01 denieriBAG02 denieriBAG03 denieriBAG05
denieriBAG06 denieriBAG07 denieriBAG08 denieriBAG09 denieriBAG10 denieriBAG11
denieriERE01 denieriERE02 denieriERE03 denieriERE04 denieriERE05 denieriERE06
denieriERE08 denieriERE09 denieriERE10 denieriERE17 denieriFP01 denieriFP02
denieriFP03 denieriFP04 denieriFP05 denieriFP06 denieriFP07 denieriFP08 denieriFP09
denieriFP10 denieriPEL01 denieriPEL04 denieriPEL06 denieriPEL08 denieriRG01
denieriRG03 denieriRG04 denieriRG05 denieriRG06 denieriRG07 denieriRG08
denieriRG09 denieriRG10 denieriRG14 denieriRG21 denieriRG29
Group[3] n: 37 ;id: lutziiBAG03 lutziiBAG05 lutziiBAG06 lutziiBAG07 lutziiBAG08
lutziiBAG09 lutziiBAG10 lutziiERE01 lutziiERE02 lutziiERE03 lutziiERE04 lutziiERE05
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lutziiERE08 lutziiERE09 lutziiERE10 lutziiERE11 lutziiERE13 lutziiERE14 lutziiERE15
lutziiERE18 lutziiSM01 lutziiSM02 lutziiSM03 lutziiSM04 lutziiSM05 lutziiSM06
lutziiSM07 lutziiSM08 lutziiSM09 lutziiSM10 lutziiSM12 lutziiSM14 lutziiSM16
lutziiSM17 lutziiSM18

Figure S6. Results obtained by the Automatic Barcode Gap Discovery (ABGD) strategy for the COI+COII dataset for 90 specimens of the *Drosophila lutzii* complex from Southern Brazil, using the default value for relative gap width (1.5%).

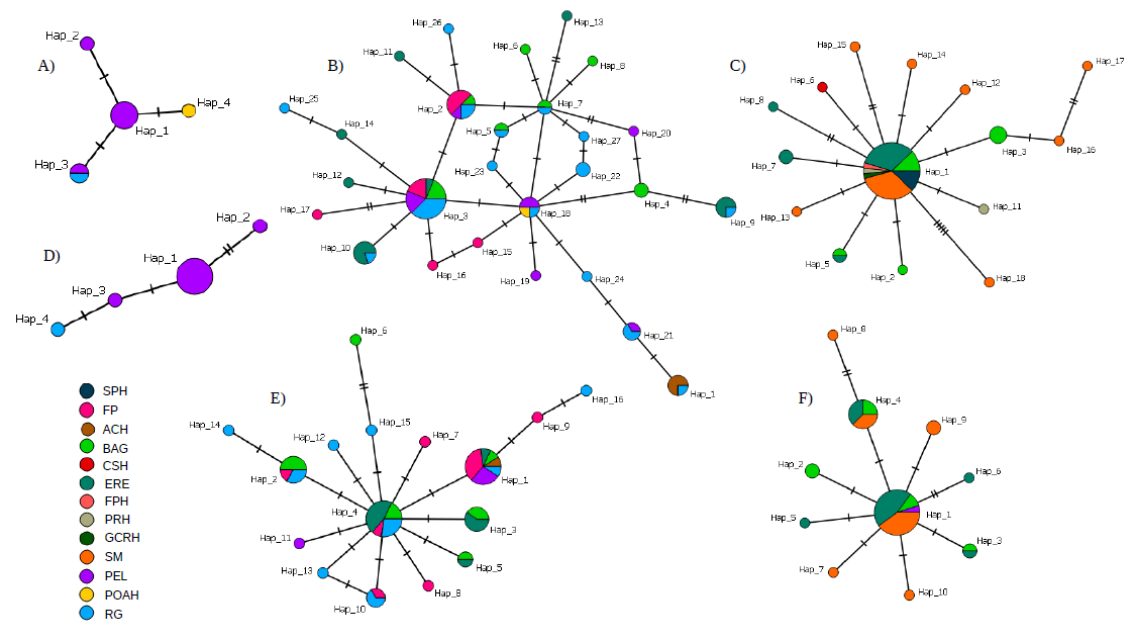


Figure S7. Genealogical relationship of the COI and COII mitochondrial haplotypes obtained for *D. alei* (A and D, respectively), *D. denieri* (B and E, respectively), and *D. lutzii* (C and F, respectively). Dashes represent mutational steps, and the diameter of the circles is proportional to the number of individuals belonging to each haplotype.

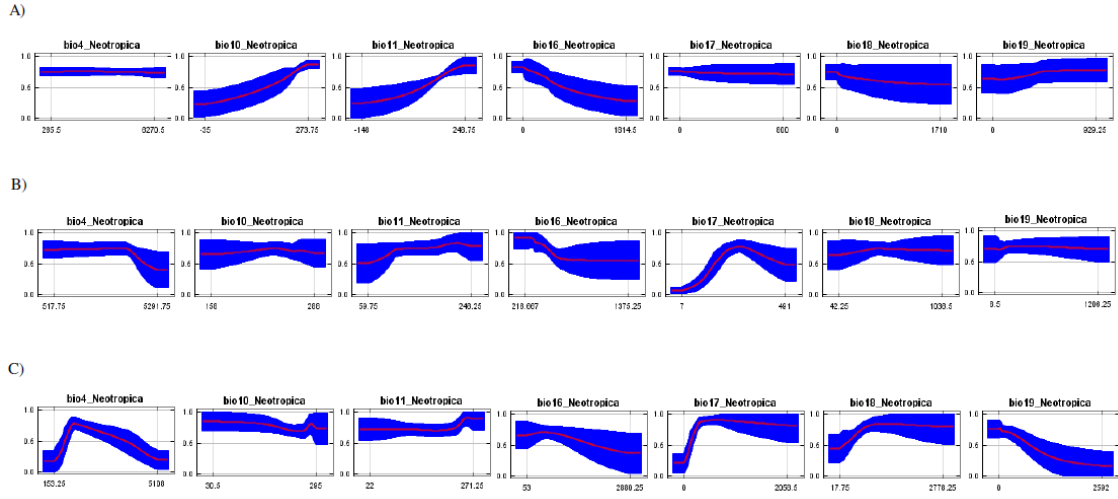


Figure S8. Response curves of *D. alei* (A), *D. denieri* (B), and *D. lutzii* (C) for Bio4 – temperature seasonality; Bio10 – mean temperature of the warmest quarter; Bio11 – mean temperature of the coldest quarter; Bio16 - precipitation of the wettest quarter of the year; Bio17 - precipitation of the driest quarter of the year; Bio18 - precipitation of the warmest quarter of the year; and, Bio19 - precipitation of the coldest quarter of the year, as estimated by maximum entropy for layers downloaded from PaleoClim database, with a resolution of 2.5 min.

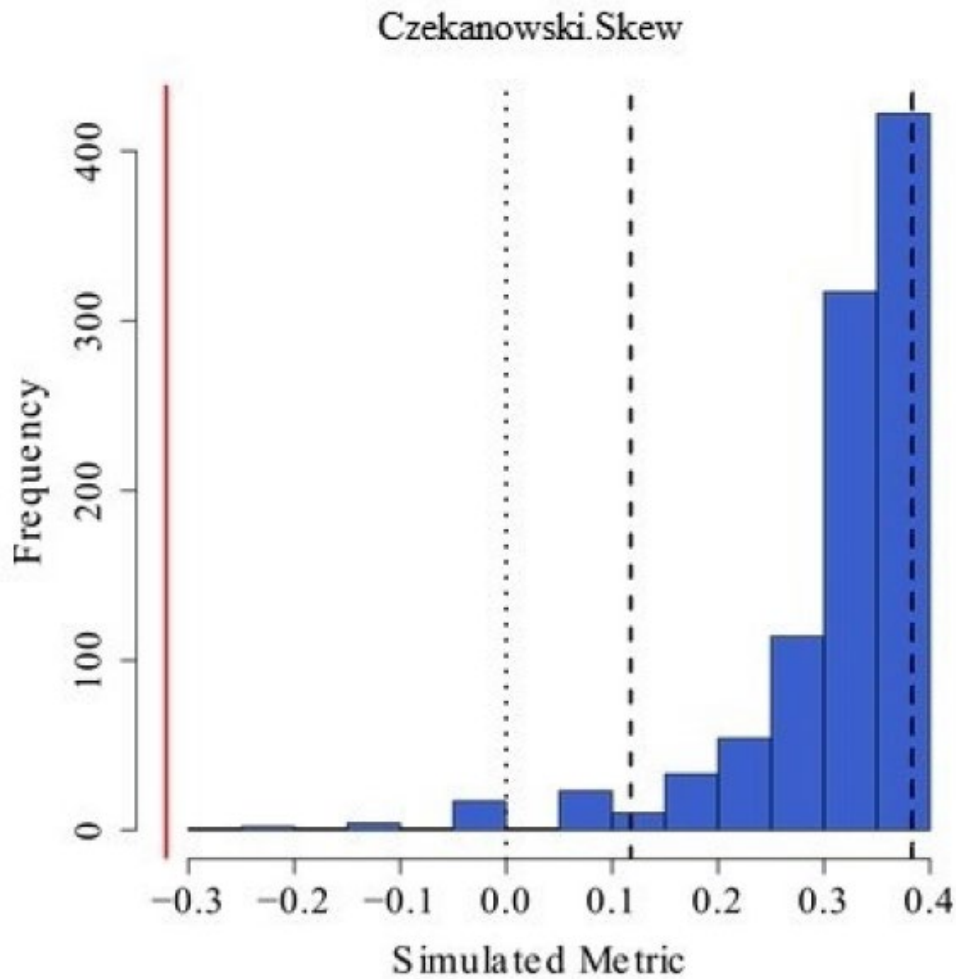


Figure S9. Histogram of the simulated Czekanowski.Skew index, presenting the observed index value (red line), and the one- and two-tailed 95% confidence intervals (dashed and dotted lines, respectively). The null model was used to test the significance of the mean measures through the RA3 randomization algorithm (niche breadth retained/zero states reshuffled), with 1,000 permutations. This analysis was performed at *EcoSimR* v0.1.0 package (Gotelli & Ellison 2013).

Table S1. List of COI and COII sequences obtained for each species of the *D. lutzii* complex from Southern Brazil, with their respective collection site and GenBank Accession Numbers.

Locality	Code	Latitude_y	Longitude_x	Plant family	Plant species	<i>Drosophila species</i>	Sequence ID	COI accession number	COII accession number
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. alei</i>	aleiPEL120_01	-	MW114563
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. alei</i>	aleiPEL120_02	-	MW114564
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. alei</i>	aleiPEL120_03	-	MW114565
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. alei</i>	aleiPEL120_05	MT823013	MW114566
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. alei</i>	aleiPEL120_06	MT823014	MW114567
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. alei</i>	aleiPEL120_07	MT823015	MW114568
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. alei</i>	aleiPEL120_08	MT823016	MW114569
Pelotas - RS	PEL	31°48'53.4"S	52°25'42.3"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. alei</i>	aleiPEL121_09	MT823017	MW114570
Pelotas - RS	PEL	31°48'53.4"S	52°25'42.3"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. alei</i>	aleiPEL121_10	MT823018	MW114571
Porto Alegre - RS	POAH	30°04'12.4"S	51°07'06.9"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. alei</i>	aleiPOAH_02	MT823019	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. alei</i>	aleiRG120_03	MT823020	MW114572
Antônio Carlos - SC	ACH	27°31'03.373"S	48°46'18.23"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. denieri</i>	denieriACH	-	MW114573
Antônio Carlos - SC	ACH	27°31'03.373"S	48°46'18.23"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. denieri</i>	denieriACH_03	MT823021	-
Antônio Carlos - SC	ACH	27°31'03.373"S	48°46'18.23"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. denieri</i>	denieriACH_04	MT823022	-
Antônio Carlos - SC	ACH	27°31'03.373"S	48°46'18.23"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. denieri</i>	denieriACH_05	MT823023	-
Bagé - RS	BAG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriBAG18_01	MT823024	MW114574
Bagé - RS	BAG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriBAG18_02	MT823025	MW114575
Bagé - RS	BAG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriBAG18_03	MT823026	MW114576
Bagé - RS	BAG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriBAG18_05	MT823027	MW114577
Bagé - RS	BAG	31°20'08.5"S	54°06'19.6"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriBAG19_06	MT823028	MW114578
Bagé - RS	BAG	31°20'08.5"S	54°06'19.6"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriBAG19_07	MT823029	MW114579
Bagé - RS	BAG	31°20'08.5"S	54°06'19.6"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriBAG19_08	MT823030	MW114580
Bagé - RS	BAG	31°20'08.5"S	54°06'19.6"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriBAG19_09	MT823031	MW114581
Bagé - RS	BAG	31°20'08.5"S	54°06'19.6"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriBAG19_10	MT823032	MW114582
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriBAG30_11	MT823033	MW114583
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_01	MT823034	MW114584
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_02	MT823035	MW114585
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_03	MT823036	MW114586
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_04	MT823037	MW114587
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_05	MT823038	MW114588
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_06	MT823039	MW114589
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_07	MT823040	-
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_08	MT823041	MW114590
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_09	MT823042	MW114591
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita maxima</i>	<i>D. denieri</i>	denieriERE131_10	MT823043	MW114592

Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. denieri</i>	denieriERE132_17	MT823044	MW114593
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. denieri</i>	denieriERE132_19	MT823045	-
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_01	MT823046	MW114594
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_02	MT823047	MW114595
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_03	MT823048	MW114596
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_04	MT823049	MW114597
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_05	MT823050	MW114598
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_06	MT823051	MW114599
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_07	MT823052	MW114600
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_08	MT823053	MW114601
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_09	MT823054	MW114602
Águas Mornas - SC	FP	27°47'57.9"S	49°00'11.7"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriFP117_10	MT823055	MW114603
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. denieri</i>	denieriPEL120_01	MT823056	MW114604
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. denieri</i>	denieriPEL120_04	MT823057	MW114605
Pelotas - RS	PEL	31°46'08.4"S	52°25'05.1"W	Convolvulaceae	<i>Ipomoea alba</i>	<i>D. denieri</i>	denieriPEL120_06	MT823058	MW114606
Pelotas - RS	PEL	31°48'53.4"S	52°25'42.3"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriPEL121_08	MT823059	MW114607
Pelotas - RS	PEL	31°45'18.3"S	52°23'01.1"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. denieri</i>	denieriPELHA_11	MT823060	-
Pelotas - RS	PEL	31°45'29.5"S	52°24'05.05"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriPELHB_10	MT823061	-
Pelotas - RS	PEL	31°45'18.3"S	52°23'01.1"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. denieri</i>	denieriPELHA_07	MT823062	-
Pelotas - RS	PEL	31°45'18.3"S	52°23'01.1"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. denieri</i>	denieriPELHA_08	MT823063	-
Pelotas - RS	PEL	31°45'18.3"S	52°23'01.1"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. denieri</i>	denieriPELHA_09	MT823064	-
Porto Alegre - RS	POAH	30°04'12.4"S	51°07'06.9"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriPOAH_01	MT823065	-
Porto Alegre - RS	POAH	30°04'12.4"S	51°07'06.9"W	Solanaceae	<i>Brugmansia suaveolens</i>	<i>D. denieri</i>	denieriPOAH_06	MT823066	-
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_01	MT823067	MW114608
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_02	MT823068	-
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_03	MT823069	MW114609
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_04	MT823070	MW114610
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_05	MT823071	MW114611
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_06	MT823072	MW114612
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_07	MT823073	MW114613
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_08	MT823074	MW114614
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_09	MT823075	MW114615
Rio Grande - RS	RG	32°03'07"S	52°07'18"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG119_10	MT823076	MW114616
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_11	MT823077	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_12	MT823078	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_14	MT823079	MW114617
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_16	MT823080	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_17	-	MW114618
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_18	MT823081	-

Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_20	MT823082	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_21	MT823083	MW114619
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_23	MT823084	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_25	MT823085	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_26	MT823086	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_27	MT823087	-
Rio Grande - RS	RG	32°03'06.9"S	52°07'17.9"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. denieri</i>	denieriRG120_29	MT823088	MW114620
Pelotas - RS	PEL	31°45'29.5"S	52°24'05.05"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiPELHB	-	MW114621
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_02	MT823089	-
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_03	MT823090	MW114622
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_04	MT823091	-
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_05	MT823092	MW114623
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_06	MT823093	MW114624
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_07	MT823094	MW114625
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_08	MT823095	MW114626
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_09	MT823096	MW114627
Bagé - RS	BAG	31°20'06.5"S	54°06'41.3"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiBAG30_10	MT823097	MW114628
Caxias do Sul - RS	CSH	29°11'01.3"S	51°10'14.4"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiCSH_09	MT823098	-
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_01	MT823099	MW114629
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_02	MT823100	MW114630
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_03	MT823101	MW114631
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_04	MT823102	MW114632
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_05	MT823103	MW114633
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_06	MT823104	MW114634
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_07	MT823105	MW114635
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_08	MT823106	MW114636
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_09	MT823107	MW114637
Erechim - RS	ERE	27°37'21.6"S	52°16'02.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiERE127_10	MT823108	MW114638
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. lutzii</i>	lutziiERE132_11	MT823109	MW114639
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. lutzii</i>	lutziiERE132_13	MT823110	MW114640
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. lutzii</i>	lutziiERE132_14	MT823111	MW114641
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. lutzii</i>	lutziiERE132_15	MT823112	MW114642
Erechim - RS	ERE	27°35'36.0"S	52°13'45.3"W	Cucurbitaceae	<i>Cucurbita pepo</i>	<i>D. lutzii</i>	lutziiERE132_18	MT823113	MW114643
Florianópolis - SC	FPH	27°36'08.127"S	48°31'30.39"W	Convolvulaceae	<i>Ipomoea carnea</i>	<i>D. lutzii</i>	lutziiFPH_06	MT823114	-
Governador Celso Ramos - SC	GCRH	27°25'38.09"S	48°33'53.89"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. lutzii</i>	lutziiGCRH_05	MT823115	-
Guarapuava - PR	PRH	25°24'9.099"S	51°28'30.82"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiPRH_07	MT823116	-
Guarapuava - PR	PRH	25°24'9.099"S	51°28'30.82"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiPRH_08	MT823117	-
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_01	MT823118	MW114644
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_02	MT823119	MW114645

Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_03	MT823120	MW114646
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_04	MT823121	MW114647
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_05	MT823122	MW114648
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_06	MT823123	MW114649
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_07	MT823124	MW114650
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_08	MT823125	MW114651
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_09	MT823126	MW114652
Santa Maria - RS	SM	29°41'05.3"S	53°48'10.7"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM03_10	MT823127	MW114653
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_12	MT823128	MW114654
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_13	MT823129	-
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_14	MT823130	MW114655
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_16	MT823131	MW114656
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_17	MT823132	MW114657
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_18	MT823133	MW114658
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_19	MT823134	-
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_20	MT823135	-
Santa Maria - RS	SM	29°41'04.8"S	53°48'10.6"W	Convolvulaceae	<i>Ipomoea indica</i>	<i>D. lutzii</i>	lutziiSM04_22	-	MW114659
Águas de Lindóia - SP	SPH	22°28'17"S	46°37'36"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. lutzii</i>	lutziiSPH_01	MT823136	-
Águas de Lindóia - SP	SPH	22°28'17"S	46°37'36"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. lutzii</i>	lutziiSPH_02	MT823137	-
Águas de Lindóia - SP	SPH	22°28'17"S	46°37'36"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. lutzii</i>	lutziiSPH_03	MT823138	-
Águas de Lindóia - SP	SPH	22°28'17"S	46°37'36"W	Convolvulaceae	<i>Ipomoea cairica</i>	<i>D. lutzii</i>	lutziiSPH_04	MT823139	-

Table S2. Estimates of the relative contributions of the environmental variables employed to the reconstructed model under maximum entropy for each of the three species of the *D. lutzii* complex from Southern Brazil.

Variable	<i>D. alei</i>	<i>D. denieri</i>	<i>D. lutzii</i>
Bio-4 (temperature seasonality)	0,80	5,20	22,20
Bio-10 (mean temperature of the warmest quarter)	51,60	3,70	8,90
Bio-11 (mean temperature of the coldest quarter)	2,00	6,10	3,80
Bio-16 (precipitation of the wettest quarter)	14,00	26,70	1,60
Bio-17 (precipitation of the driest quarter)	0,10	50,20	42,90
Bio-18 (precipitation of the warmest quarter)	20,60	4,60	9,40
Bio-19 (precipitation of the coldest quarter)	10,80	3,50	11,20