

## Supplementary Information File

### Darwin returns to the Galapagos: genetic and morphological analyses confirm the presence of *Tramea darwini* at the archipelago (Odonata, Libellulidae)

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**Supplementary Table S1:** List of *Tramea* species included in the present study. For the specimens sequenced for this study (highlighted in bold), we list collection site, collection date, sex, collector/s data and GenBank accession numbers. Abbreviations for collectors are: AC-R - Adolfo Cordero-Rivera; AB - Alfredo Bolaños; MOL-C - M. Olalla Lorenzo-Carballa; RWG - Rosser W. Garrison; NvE - Natalia von Ellenrieder; RM - R. Mohabie; JK - Jens Kipping; PE - Paula Evans; AVE - Arthur V. Evans. n.a. indicates that a sequence could not be obtained for a particular specimen/locus.

Species	Voucher ID	Collection site	Coordinates	Sex	Collection date	Collector/s	GenBank accession Nos.			Reference
							COI	16S	ITS	
<i>Tramea darwini</i>	ACR5165	Camino, Puerto Villamil, Isabela Island, Galapagos	0.9568 °S 90.978 °W	♂	1 August 2018	AC-R	MW246873	MW246903	MW246933	This study
<i>T. darwini</i>	ACR5171	Poza las Diablas, Puerto Villamil, Isabela Island, Galapagos	0.9571 °S 90.978 °W	♀	2 August 2018	AC-R	MW246874	MW246904	MW246934	This study
<i>T. darwini</i>	ACR5174	Poza las Diablas, Puerto Villamil, Isabela Island, Galapagos	0.9571 °S 90.978 °W	♂	2 August 2018	AC-R	MW246875	MW246905	MW246935	This study
<i>T. darwini</i>	ACR5175	Poza las Diablas, Puerto Villamil, Isabela Island, Galapagos	0.9571 °S 90.978 °W	♀	2 August 2018	AC-R	MW246876	MW246906	MW246936	This study
<i>T. darwini</i>	ACR5176	Poza las Diablas, Puerto Villamil, Isabela Island, Galapagos	0.9571 °S 90.978 °W	♀	2 August 2018	AC-R	MW246877	MW246907	MW246937	This study
<i>T. darwini</i>	ACR5177	Poza las Diablas, Puerto Villamil, Isabela Island, Galapagos	0.9571 °S 90.978 °W	♂	2 August 2018	AC-R	MW246878	MW246908	MW246938	This study
<i>T. darwini</i>	ACR5178	Cerro Mesa, Puerto Ayora, Santa Cruz Island, Galapagos	0.6433 °S 90.2876 °W	♂	7 August 2018	AC-R	MW246879	MW246909	MW246939	This study
<i>T. darwini</i>	ACR5179	Cerro Mesa, Puerto Ayora, Santa Cruz Island, Galapagos	0.6433 °S 90.2876 °W	♀	7 August 2018	AC-R	MW246880	MW246910	MW246940	This study
<i>T. darwini</i>	ACR5180	Cerro Mesa, Puerto Ayora, Santa Cruz Island, Galapagos	0.6433 °S 90.2876 °W	♂	7 August 2018	AC-R	MW246881	MW246911	MW246941	This study

<i>T. darwini</i>	ACR5181	Cerro Mesa, Puerto Ayora, Santa Cruz Island, Galapagos	0.6433 °S 90.2876 °W	♂	7 August 2018	AC-R	MW246882	MW246912	MW246942	This study
<i>T. darwini</i>	ACR5182	Cerro Mesa, Puerto Ayora, Santa Cruz Island, Galapagos	0.6433 °S 90.2876 °W	♂	7 August 2018	AC-R	MW246883	MW246913	MW246943	This study
<i>T. darwini</i>	ACR5183	Cerro Mesa, Puerto Ayora, Santa Cruz Island, Galapagos	0.6433 °S 90.2876 °W	♀	7 August 2018	AC-R	MW246884	MW246914	MW246944	This study
<i>T. darwini</i>	F2MOLC	Road by Cucuve Eco-Hostal, San Cristobal Island, Galapagos	0.91 °S 89.589 °W	♀	1 August 2018	MOL-C	MW246885	MW246915	n.a.	This study
<i>T. darwini</i>	F3MOLC	Road by Cucuve Eco-Hostal, San Cristobal Island, Galapagos	0.91 °S 89.589 °W	♀	1 August 2018	MOL-C	MW246886	MW246916	MW246945	This study
<i>T. darwini</i>	F8MOLC	Finca Guadalupe, San Cristobal Island, Galapagos	0.927 °S 89.4862 °W	♀	2 August 2018	AB, MOL-C	MW246887	MW246917	MW246946	This study
<i>T. darwini</i>	M1MOLC	Road by Cucuve Eco-Hostal, San Cristobal Island, Galapagos	0.91 °S 89.589 °W	♂	1 August 2018	MOL-C	MW246888	MW246918	MW246947	This study
<i>T. darwini</i>	M2MOLC	Road by Cucuve Eco-Hostal, San Cristobal Island, Galapagos	0.91 °S 89.589 °W	♂	1 August 2018	MOL-C	MW246889	MW246919	MW246948	This study
<i>T. darwini</i>	M5MOLC	Finca Guadalupe, San Cristobal Island, Galapagos	0.927 °S 89.4862 °W	♂	2 August 2018	AB, MOL-C	MW246890	MW246920	MW246949	This study
<i>T. darwini (= calverti)</i>	RWG35312	Konawaruk watershed, Potaro- Siparuni Region, Guyana	5.315 °N 58.9067 °W	♀	19 September 2014	RWG, RM	MW246898	MW246928	MW246954	This study
<i>T. darwini (= calverti)</i>	RWG14805	Arroyo Yacui, Salta Province, Argentina	22.371 °S 63.7725 °W	♂	6 November 2006	RWG, NvE	MW246892	MW246922	MW246950	This study
<i>T. cophysa</i>	RWG42956	Roadside pool on route 2, Formosa Province, Argentina	26.049 °S 58.0667 °W	♀	5 November 2007	RWG, NvE	MW246902	MW246932	MW246955	This study
<i>T. cophysa</i>	RWG18540	Bañado La Estrella, Formosa Province, Argentina	24.459°S 60.3881°W	♂	18 February 2008	RWG, NvE	MW246893	MW246923	MW246951	This study
<i>T. cophysa</i>	RWG27024	Dique el Tunal, Salta Province, Argentina	25.222°S 64.4753°W	♂	27 January 2012	NvE, RWG	MW246896	MW246926	MW246953	This study

<i>T. abdominalis</i>	RWG14727	National Park El Rey, Salta Province, Argentina	24.709°S 64.640°W	♂	30 October 2006	RWG, NvE	MW246891	MW246921	n.a.	This study
<i>T. basilaris</i>	RWG36592	Shakawe-Sehitwa Nokaneng, Botswana,	19.511°S 22.124°E	♂	15 January 2009	JK	MW246899	MW246929	n.a.	This study
<i>T. basilaris</i>	RF1190	-	-	-	-	-	AB709199	AB708255	AB707305	Futahasi 2011 [24]
<i>T. basilaris</i>	RF1191	-	-	-	-	-	AB709200	AB708256	AB707306	Futahasi 2011 [24]
<i>T. basilaris</i>	RF1192	-	-	-	-	-	AB709201	AB708257	AB707307	Futahasi 2011 [24]
<i>T. binotata</i>	RWG26737	Pond by Ruta 2, Misiones Province, Argentina	25.851°S 54.557°W	♂	2 February 2012	RWG, NvE	MW246895	MW246925	MW246952	This study
<i>T. lacerata</i>	RWG42566	Harrison Lake National Fish Hatchery, Charles City Co., Virginia U.S.A.	37.336°N 77.188°W	♂	18 August 2018	RWG, NvE, AVE, PE	MW246901	MW246931	n.a.	This study
<i>T. lacerata</i>	RF1682	-	-	-	-	-	AB709202	AB708258	AB707308	Futahasi 2011 [24]
<i>T. virginia</i>	RWG33892	South China Agricultural University Guangdong Province, China	23.159°N 113.357°E	♂	12 June 2014	RWG	MW246897	MW246927	n.a.	This study
<i>T. virginia</i>	RF964	-	-	-	-	-	AB709226	AB708282	AB707332	Futahasi 2011 [24]
<i>T. virginia</i>	RF1477	-	-	-	-	-	AB709227	AB708283	AB707333	Futahasi 2011 [24]
<i>T. virginia</i>	RF1478	-	-	-	-	-	AB709228	AB708284	AB707334	Futahasi 2011 [24]
<i>T. carolina</i>	RWG24681	Harrison Lake National Fish Hatchery, Charles City Co., Virginia U.S.A.	25.851°S 54.557°W	♂	3 June 2011	RWG	MW246894	MW246924	n.a.	This study
<i>T. carolina</i>	RWG42564	Harrison Lake National Fish Hatchery, Charles City Co., Virginia U.S.A.	25.851°S 54.557°W	♂	18 August 2018	RWG, NvE, AVE & PE	MW246900	MW246930	n.a.	This study

<i>T. loewii</i>	RF1751	-	-	- -	-	AB709206	AB708262	AB707312	Futahasi 2011 [24]
<i>T. loewii</i>	RF1752	-	-	- -	-	AB709207	AB708263	AB707313	Futahasi 2011 [24]
<i>T. loewii</i>	RF1753	-	-	- -	-	AB709208	AB708264	AB707314	Futahasi 2011 [24]
<i>T. propinqua</i>	RF1324	-	-	- -	-	AB709209	AB708265	AB707315	Futahasi 2011 [24]
<i>T. transmarina</i>	RF1553	-	-	- -	-	AB709222	AB708278	AB707328	Futahasi 2011 [24]
<i>T. transmarina</i>	RF1583	-	-	- -	-	AB709223	AB708279	AB707329	Futahasi 2011 [24]
<i>T. transmarina</i>	RF1754	-	-	- -	-	AB709224	AB708280	AB707330	Futahasi 2011 [24]
<i>Pantala flavescens</i>	RF935	-	-	- -	-	AB709104	AB708160	AB707210	Futahasi 2011 [24]

**Supplementary Table S2:** Primer combinations used to amplify mitochondrial (*COI* and *16S*) and nuclear (*ITS*) DNA of the *Tramea* species included in this study.

Locus	Forward primer (5'-3')	Reverse primer (5'-3')	Reference
Cytochrome oxidase I ( <i>COI</i> )	Odo-LCO1490 TTTCTACWAACCAYAAAGATATT GG	Odo-HCO2198 TAAACTCWGGRTGTCCAAARAAT CA	Dijkstra et al 2014 [25]
	COI-S0 TACCAATTATAATTGGAGGATTY GG	COI-AS0 CTTCTGGATGTCCAAARAATCA	Futahasi 2011 [24]
Large ribosomal subunit ( <i>16S</i> )	16S-H3080 CCGGTCTGAACTCAGATCACGT	16S-L2510 CGCCTGTTATCAAAAACAT	Palumbi 1991 [23]
Internal Transcribe d Spacer ( <i>ITS</i> )	ITS-F0 GGAAAGATGCCAAACTTGA	ITS-5.8S-AS2 CGTCGATGTTCATGTGTCCT	
		ITS-28S-AS0 CCTCCGCTTATTAATATGCTTAAATT C	Futahasi 2011 [24]
	ITS-5.8S-S1 CGGTGGATCACTCGGCTCGT	ITS-28S-AS6 CTTTCCCTCCGCTTATTAATATGCT	

**Supplementary Table S3:** Estimates of divergence over sequence pairs between the *Tramea* species included in this study (p-distances) as estimated by MEGA X for the mtDNA datasets. The number of base differences per site from averaging over all sequence pairs between groups are shown. Values above diagonal correspond to genetic distances estimated from the *COI* dataset, whereas values below diagonal correspond to distances estimated using the *16S* dataset.

	<i>T. darwini</i>	<i>T. calverti</i>	<i>T. cophysa</i>	<i>T. virginia</i>	<i>T. basilaris</i>	<i>T. propinqua</i>	<i>T. transmarina</i>	<i>T. loewii</i>	<i>T. lacerata</i>	<i>T. binotata</i>	<i>T. abdominalis</i>	<i>T. carolina</i>
<i>T. darwini</i>		0.004	0.033	0.072	0.086	0.071	0.074	0.070	0.117	0.115	0.076	0.091
<i>T. calverti</i>	0.000		0.036	0.075	0.088	0.074	0.076	0.073	0.119	0.116	0.078	0.093
<i>T. cophysa</i>	0.013	0.013		0.079	0.089	0.078	0.080	0.078	0.109	0.107	0.078	0.091
<i>T. virginia</i>	0.008	0.008	0.013		0.065	0.001	0.017	0.007	0.107	0.107	0.050	0.081
<i>T. basilaris</i>	0.010	0.010	0.019	0.007		0.066	0.066	0.066	0.130	0.128	0.075	0.096
<i>T. propinqua</i>	0.008	0.008	0.013	0.002	0.008		0.016	0.007	0.106	0.106	0.049	0.081
<i>T. transmarina</i>	0.009	0.009	0.014	0.003	0.009	0.005		0.018	0.105	0.104	0.050	0.081
<i>T. loewii</i>	0.008	0.008	0.013	0.000	0.006	0.002	0.003		0.104	0.104	0.050	0.079
<i>T. lacerata</i>	0.049	0.049	0.056	0.055	0.053	0.054	0.054	0.054		0.002	0.105	0.124
<i>T. binotata</i>	0.006	0.006	0.011	0.010	0.016	0.010	0.011	0.010	0.052		0.103	0.122
<i>T. abdominalis</i>	0.010	0.010	0.019	0.018	0.018	0.018	0.019	0.018	0.050	0.016		0.071
<i>T. carolina</i>	0.018	0.018	0.019	0.022	0.027	0.022	0.023	0.022	0.050	0.020	0.020	

**Supplementary Table S4:** Estimates of divergence over sequence pairs between the *Tramea* species included in this study (p-distances) as estimated by MEGA X for the nDNA dataset (ITS). The number of base differences per site from averaging over all sequence pairs between groups are shown.

	<i>T. darwini</i>	<i>T. calverti</i>	<i>T. cophysa</i>	<i>T. virginia</i>	<i>T. basilaris</i>	<i>T. propinqua</i>	<i>T. transmarina</i>	<i>T. loewii</i>	<i>T. lacerata</i>	<i>T. binotata</i>
<i>T. darwini</i>										
<i>T. calverti</i>	0.003									
<i>T. cophysa</i>	0.067	0.066								
<i>T. virginia</i>	0.033	0.031	0.070							
<i>T. basilaris</i>	0.038	0.037	0.079	0.015						
<i>T. propinqua</i>	0.033	0.031	0.070	0.006	0.014					
<i>T. transmarina</i>	0.042	0.041	0.077	0.010	0.023	0.013				
<i>T. loewii</i>	0.036	0.035	0.072	0.018	0.026	0.018	0.026			
<i>T. lacerata</i>	0.114	0.118	0.110	0.119	0.124	0.118	0.125	0.119		
<i>T. binotata</i>	0.020	0.018	0.068	0.027	0.036	0.027	0.036	0.030	0.115	

**Supplementary Information Data S1:** Results of species delimitation analyses for the *ITS* (A), *16S* (B) and *COI* (C) *Tramea* datasets using ABGD (<https://bioinfo.mnhn.fr/abi/public/abgd/abgdweb.html>).

**A:**

ABGD Web results using JC69 Jukes-Cantor mesure of distance

Data: Ingroup\_ITS\_alignment.fasta

Jukes Cantor distance doneJC Partition 1 : found 25 groups (prior maximal distance P= 0.001000)

Partition 2 : found 8 groups (prior maximal distance P= 0.001668)

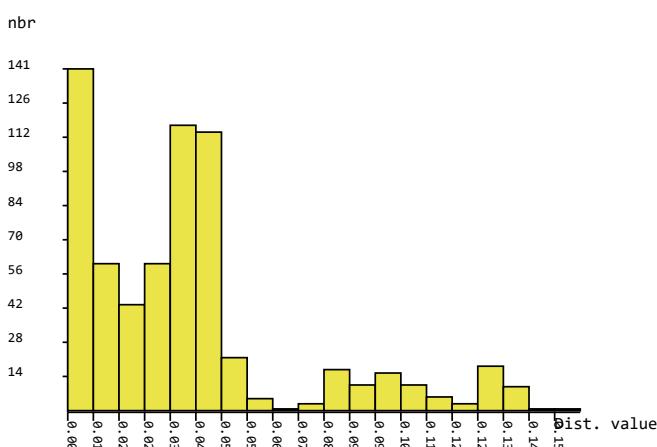
Partition 3 : found 7 groups (prior maximal distance P= 0.002783)

Partition 4 : found 7 groups (prior maximal distance P= 0.004642)

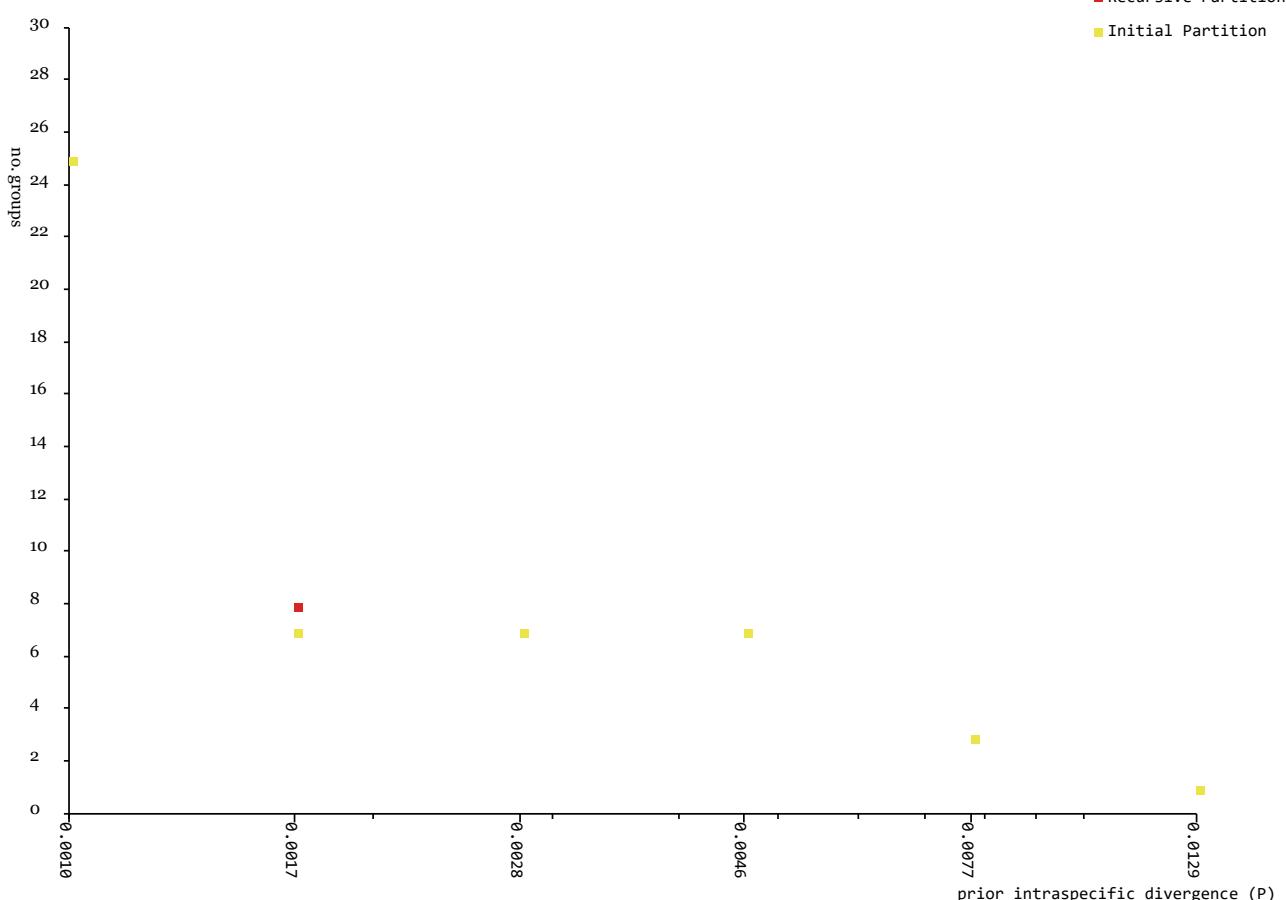
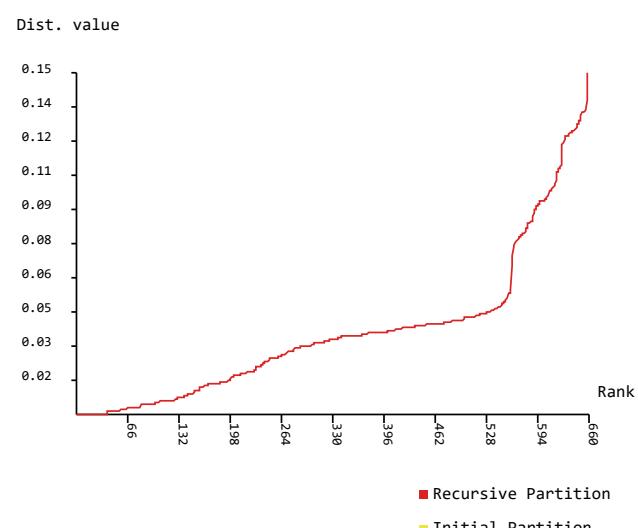
Partition 5 : found 3 groups (prior maximal distance P= 0.007743)

Partition 6 : found 1 groups (prior maximal distance P= 0.012915)

Histogram of distances



Ranked distances



**Groups identified by ABGD analysis for the ITS data:**

**Group[ 1 ] n: 19** ;id: ACR5165\_Tramea\_calverti ACR5171\_Tramea\_calverti  
ACR5174\_Tramea\_calverti ACR5175\_Tramea\_calverti ACR5176\_Tramea\_calverti  
ACR5177\_Tramea\_calverti ACR5178\_Tramea\_calverti ACR5179\_Tramea\_calverti  
ACR5180\_Tramea\_calverti ACR5181\_Tramea\_calverti ACR5182\_Tramea\_calverti  
ACR5183\_Tramea\_calverti F3-MOLC\_Tramea\_calverti F8-MOLC\_Tramea\_calverti M1-  
MOLC\_Tramea\_calverti M2-MOLC\_Tramea\_calverti M5-MOLC\_Tramea\_calverti  
RWG14805\_Tramea\_calverti RWG35312\_Tramea\_calverti  
**Group[ 2 ] n: 7** ;id: RF964\_Tramea\_virginia RF1324\_Tramea\_propinqua  
RF1477\_Tramea\_virginia RF1478\_Tramea\_virginia RF1553\_Tramea\_transmarina  
RF1583\_Tramea\_transmarina RF1754\_Tramea\_transmarina  
**Group[ 3 ] n: 3** ;id: RF1190\_Tramea\_basilaris RF1191\_Tramea\_basilaris  
RF1192\_Tramea\_basilaris  
**Group[ 4 ] n: 1** ;id: RF1682\_Tramea\_lacerata  
**Group[ 5 ] n: 3** ;id: RF1751\_Tramea\_loewii RF1752\_Tramea\_loewii RF1753\_Tramea\_loewii  
**Group[ 6 ] n: 3** ;id: RWG18540\_Tramea\_cophysa RWG27024\_Tramea\_cophysa  
RWG42956\_Tramea\_cophysa  
**Group[ 7 ] n: 1** ;id: RWG26737\_Tramea\_binotata

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**Group[ 1 ] n: 19** ;id: ACR5165\_Tramea\_calverti ACR5171\_Tramea\_calverti  
ACR5174\_Tramea\_calverti ACR5175\_Tramea\_calverti ACR5176\_Tramea\_calverti  
ACR5177\_Tramea\_calverti ACR5178\_Tramea\_calverti ACR5179\_Tramea\_calverti  
ACR5180\_Tramea\_calverti ACR5181\_Tramea\_calverti ACR5182\_Tramea\_calverti  
ACR5183\_Tramea\_calverti F3-MOLC\_Tramea\_calverti F8-MOLC\_Tramea\_calverti M1-  
MOLC\_Tramea\_calverti M2-MOLC\_Tramea\_calverti M5-MOLC\_Tramea\_calverti  
RWG14805\_Tramea\_calverti RWG35312\_Tramea\_calverti  
**Group[ 2 ] n: 4** ;id: RF964\_Tramea\_virginia RF1324\_Tramea\_propinqua  
RF1477\_Tramea\_virginia RF1478\_Tramea\_virginia  
**Group[ 3 ] n: 3** ;id: RF1190\_Tramea\_basilaris RF1191\_Tramea\_basilaris  
RF1192\_Tramea\_basilaris  
**Group[ 4 ] n: 1** ;id: RF1682\_Tramea\_lacerata  
**Group[ 5 ] n: 3** ;id: RF1751\_Tramea\_loewii RF1752\_Tramea\_loewii RF1753\_Tramea\_loewii  
**Group[ 6 ] n: 3** ;id: RWG18540\_Tramea\_cophysa RWG27024\_Tramea\_cophysa  
RWG42956\_Tramea\_cophysa  
**Group[ 7 ] n: 1** ;id: RWG26737\_Tramea\_binotata  
**Group[ 8 ] n: 3** ;id: RF1553\_Tramea\_transmarina RF1583\_Tramea\_transmarina  
RF1754\_Tramea\_transmarina

**B:**

ABGD Web results using JC69 Jukes-Cantor mesure of distance

Data: 16S\_ingroup\_alignment.fasta

Jukes Cantor distance doneJC Partition 1 : found 13 groups (prior maximal distance P= 0.001000)

Partition 2 : found 13 groups (prior maximal distance P= 0.001668)

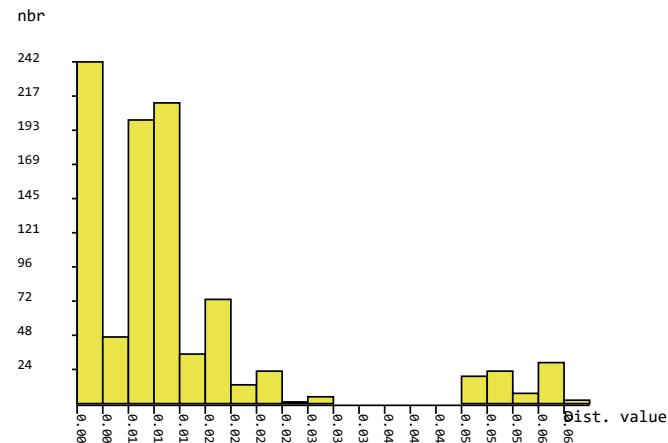
Partition 3 : found 9 groups (prior maximal distance P= 0.002783)

Partition 4 : found 9 groups (prior maximal distance P= 0.004642)

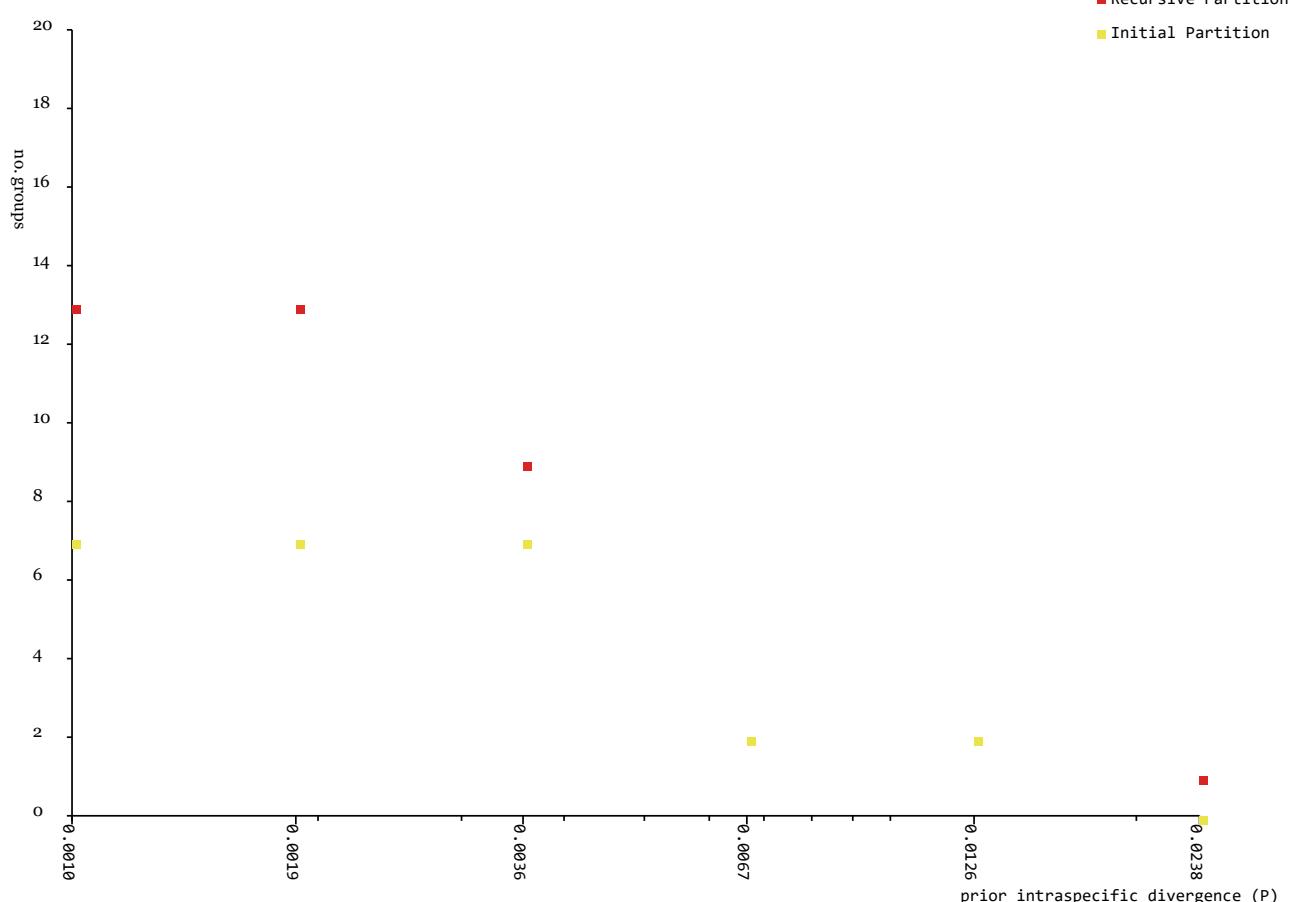
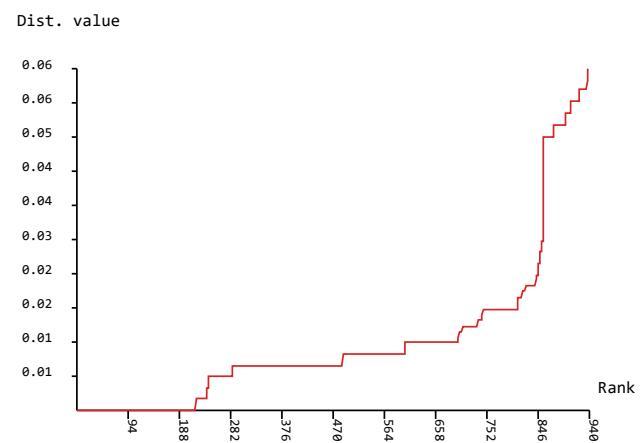
Partition 5 : found 2 groups (prior maximal distance P= 0.007743)

Partition 6 : found 2 groups (prior maximal distance P= 0.012915)

Histogram of distances



Ranked distances



### **Groups identified by ABGD analysis for the 16S data:**

**Group[ 1 ] n: 21** ;id: ACR5165\_Tramea\_calverti ACR5171\_Tramea\_calverti  
ACR5174\_Tramea\_calverti ACR5175\_Tramea\_calverti ACR5176\_Tramea\_calverti  
ACR5177\_Tramea\_calverti ACR5178\_Tramea\_calverti ACR5179\_Tramea\_calverti  
ACR5180\_Tramea\_calverti ACR5181\_Tramea\_calverti ACR5182\_Tramea\_calverti  
ACR5183\_Tramea\_calverti F2-MOLC\_Tramea\_calverti F3-MOLC\_Tramea\_calverti F8-  
MOLC\_Tramea\_calverti M1-MOLC\_Tramea\_calverti M2-MOLC\_Tramea\_calverti M5-  
MOLC\_Tramea\_calverti RWG14805\_Tramea\_calverti RWG26737\_Tramea\_binotata  
RWG35312\_Tramea\_calverti  
**Group[ 2 ] n: 14** ;id: RF964\_Tramea\_virginia RF1190\_Tramea\_basilaris  
RF1191\_Tramea\_basilaris RF1192\_Tramea\_basilaris RF1324\_Tramea\_propinqua  
RF1477\_Tramea\_virginia RF1478\_Tramea\_virginia RF1583\_Tramea\_transmarina  
RF1751\_Tramea\_loewii RF1752\_Tramea\_loewii RF1753\_Tramea\_loewii  
RF1754\_Tramea\_transmarina RWG33892\_Tramea\_virginia RWG36592\_Tramea\_basilaris  
**Group[ 3 ] n: 1** ;id: RF1553\_Tramea\_transmarina  
**Group[ 4 ] n: 2** ;id: RF1682\_Tramea\_lacerata RWG42566\_Tramea\_lacerata  
**Group[ 5 ] n: 1** ;id: RWG14727\_Tramea\_abdominalis  
**Group[ 6 ] n: 3** ;id: RWG18540\_Tramea\_cophysa RWG27024\_Tramea\_cophysa  
RWG42956\_Tramea\_cophysa  
**Group[ 7 ] n: 2** ;id: RWG24681\_Tramea\_carolina RWG42564\_Tramea\_carolina

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**Group[ 1 ] n: 20** ;id: ACR5165\_Tramea\_calverti ACR5171\_Tramea\_calverti  
ACR5174\_Tramea\_calverti ACR5175\_Tramea\_calverti ACR5176\_Tramea\_calverti  
ACR5177\_Tramea\_calverti ACR5178\_Tramea\_calverti ACR5179\_Tramea\_calverti  
ACR5180\_Tramea\_calverti ACR5181\_Tramea\_calverti ACR5182\_Tramea\_calverti  
ACR5183\_Tramea\_calverti F2-MOLC\_Tramea\_calverti F3-MOLC\_Tramea\_calverti F8-  
MOLC\_Tramea\_calverti M1-MOLC\_Tramea\_calverti M2-MOLC\_Tramea\_calverti M5-  
MOLC\_Tramea\_calverti RWG14805\_Tramea\_calverti RWG35312\_Tramea\_calverti  
**Group[ 2 ] n: 10** ;id: RF964\_Tramea\_virginia RF1324\_Tramea\_propinqua  
RF1477\_Tramea\_virginia RF1478\_Tramea\_virginia RF1583\_Tramea\_transmarina  
RF1751\_Tramea\_loewii RF1752\_Tramea\_loewii RF1753\_Tramea\_loewii  
RF1754\_Tramea\_transmarina RWG33892\_Tramea\_virginia  
**Group[ 3 ] n: 1** ;id: RF1553\_Tramea\_transmarina  
**Group[ 4 ] n: 2** ;id: RF1682\_Tramea\_lacerata RWG42566\_Tramea\_lacerata  
**Group[ 5 ] n: 1** ;id: RWG14727\_Tramea\_abdominalis  
**Group[ 6 ] n: 3** ;id: RWG18540\_Tramea\_cophysa RWG27024\_Tramea\_cophysa  
RWG42956\_Tramea\_cophysa  
**Group[ 7 ] n: 2** ;id: RWG24681\_Tramea\_carolina RWG42564\_Tramea\_carolina  
**Group[ 8 ] n: 1** ;id: RWG26737\_Tramea\_binotata  
**Group[ 9 ] n: 4** ;id: RF1190\_Tramea\_basilaris RF1191\_Tramea\_basilaris  
RF1192\_Tramea\_basilaris RWG36592\_Tramea\_basilaris

**C:**

ABGD Web results using JC69 Jukes-Cantor mesure of distance

Data: COI\_ingroup\_alignment.fasta

Jukes Cantor distance doneJC Partition 1 : found 26 groups (prior maximal distance P= 0.001000)

Partition 2 : found 26 groups (prior maximal distance P= 0.001668)

Partition 3 : found 12 groups (prior maximal distance P= 0.002783)

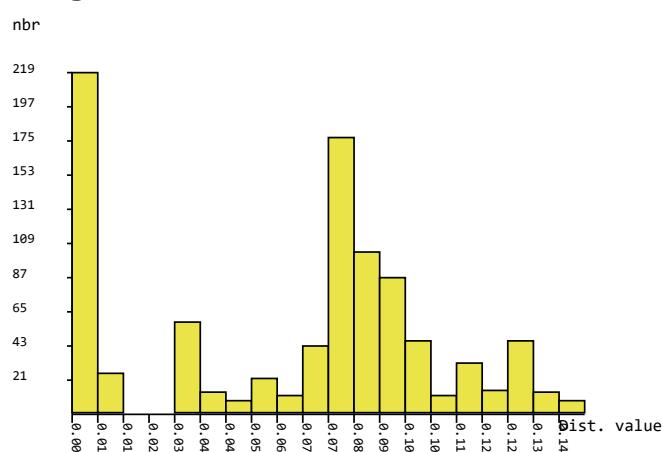
Partition 4 : found 12 groups (prior maximal distance P= 0.004642)

Partition 5 : found 12 groups (prior maximal distance P= 0.007743)

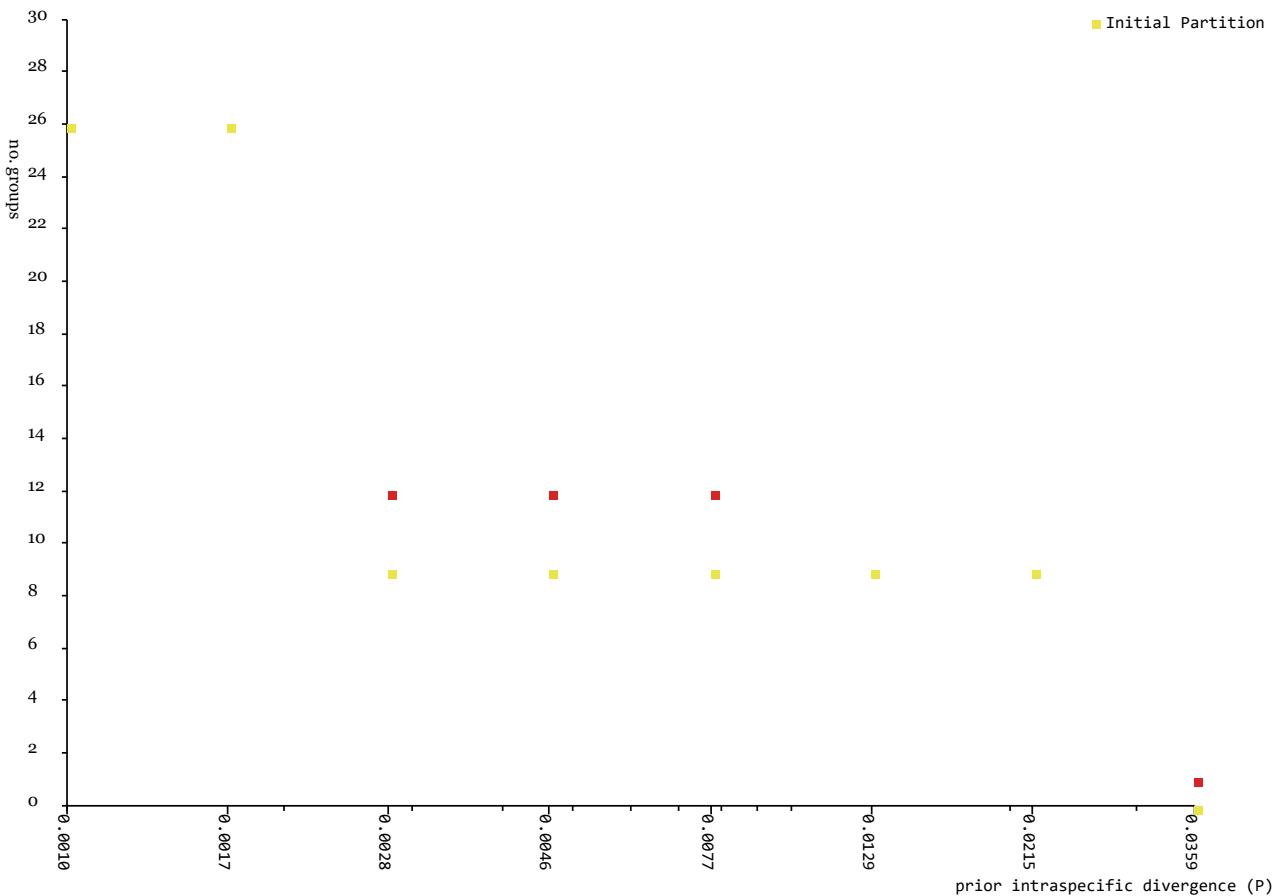
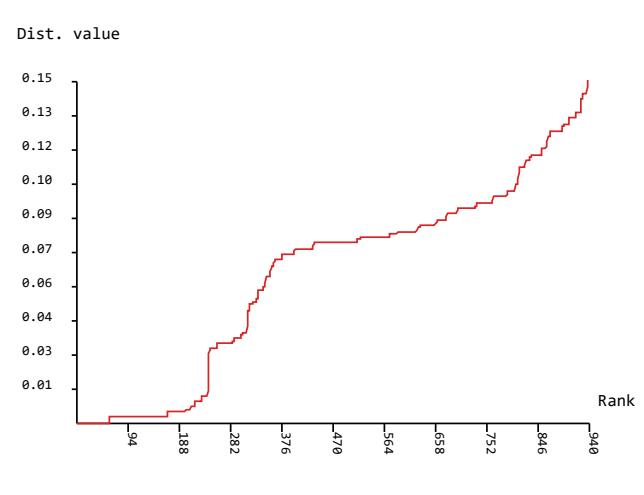
Partition 6 : found 9 groups (prior maximal distance P= 0.012915)

Partition 7 : found 9 groups (prior maximal distance P= 0.021544)

Histogram of distances



Ranked distances



**Groups identified by ABGD analysis for the COI data:**

**Group[ 1 ] n: 20** ;id: ACR5177\_Tramea\_calverti ACR5181\_Tramea\_calverti  
ACR5183\_Tramea\_calverti M5-MOLC\_Tramea\_calverti ACR5165\_Tramea\_calverti  
ACR5171\_Tramea\_calverti ACR5174\_Tramea\_calverti ACR5175\_Tramea\_calverti  
ACR5176\_Tramea\_calverti ACR5178\_Tramea\_calverti ACR5179\_Tramea\_calverti  
ACR5180\_Tramea\_calverti ACR5182\_Tramea\_calverti F2-MOLC\_Tramea\_calverti F3-  
MOLC\_Tramea\_calverti F8-MOLC\_Tramea\_calverti M1-MOLC\_Tramea\_calverti M2-  
MOLC\_Tramea\_calverti RWG14805\_Tramea\_calverti RWG35312\_Tramea\_calverti  
**Group[ 2 ] n: 10** ;id: RF964\_Tramea\_virginia RF1324\_Tramea\_propinqua  
RF1477\_Tramea\_virginia RF1478\_Tramea\_virginia RF1583\_Tramea\_transmarina  
RF1751\_Tramea\_loewii RF1752\_Tramea\_loewii RF1753\_Tramea\_loewii  
RF1754\_Tramea\_transmarina RWG33892\_Tramea\_virginia  
**Group[ 3 ] n: 3** ;id: RF1190\_Tramea\_basilaris RF1191\_Tramea\_basilaris  
RF1192\_Tramea\_basilaris  
**Group[ 4 ] n: 1** ;id: RF1553\_Tramea\_transmarina  
**Group[ 5 ] n: 3** ;id: RF1682\_Tramea\_lacerata RWG26737\_Tramea\_binotata  
RWG42566\_Tramea\_lacerata  
**Group[ 6 ] n: 1** ;id: RWG14727\_Tramea\_abdominalis  
**Group[ 7 ] n: 3** ;id: RWG18540\_Tramea\_cophysa RWG27024\_Tramea\_cophysa  
RWG42956\_Tramea\_cophysa  
**Group[ 8 ] n: 2** ;id: RWG24681\_Tramea\_carolina RWG42564\_Tramea\_carolina  
**Group[ 9 ] n: 1** ;id: RWG36592\_Tramea\_basilaris

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**Group[ 1 ] n: 20** ;id: ACR5177\_Tramea\_calverti ACR5181\_Tramea\_calverti  
ACR5183\_Tramea\_calverti M5-MOLC\_Tramea\_calverti ACR5165\_Tramea\_calverti  
ACR5171\_Tramea\_calverti ACR5174\_Tramea\_calverti ACR5175\_Tramea\_calverti  
ACR5176\_Tramea\_calverti ACR5178\_Tramea\_calverti ACR5179\_Tramea\_calverti  
ACR5180\_Tramea\_calverti ACR5182\_Tramea\_calverti F2-MOLC\_Tramea\_calverti F3-  
MOLC\_Tramea\_calverti F8-MOLC\_Tramea\_calverti M1-MOLC\_Tramea\_calverti M2-  
MOLC\_Tramea\_calverti RWG14805\_Tramea\_calverti RWG35312\_Tramea\_calverti  
**Group[ 2 ] n: 7** ;id: RF964\_Tramea\_virginia RF1324\_Tramea\_propinqua  
RF1477\_Tramea\_virginia RF1478\_Tramea\_virginia RF1752\_Tramea\_loewii  
RF1754\_Tramea\_transmarina RWG33892\_Tramea\_virginia  
**Group[ 3 ] n: 3** ;id: RF1190\_Tramea\_basilaris RF1191\_Tramea\_basilaris  
RF1192\_Tramea\_basilaris  
**Group[ 4 ] n: 1** ;id: RF1553\_Tramea\_transmarina  
**Group[ 5 ] n: 3** ;id: RF1682\_Tramea\_lacerata RWG26737\_Tramea\_binotata  
RWG42566\_Tramea\_lacerata  
**Group[ 6 ] n: 1** ;id: RWG14727\_Tramea\_abdominalis  
**Group[ 7 ] n: 3** ;id: RWG18540\_Tramea\_cophysa RWG27024\_Tramea\_cophysa  
RWG42956\_Tramea\_cophysa  
**Group[ 8 ] n: 2** ;id: RWG24681\_Tramea\_carolina RWG42564\_Tramea\_carolina  
**Group[ 9 ] n: 1** ;id: RWG36592\_Tramea\_basilaris  
**Group[ 10 ] n: 1** ;id: RF1583\_Tramea\_transmarina  
**Group[ 11 ] n: 1** ;id: RF1751\_Tramea\_loewii  
**Group[ 12 ] n: 1** ;id: RF1753\_Tramea\_loewii