









Table S1. Voucher and Genbank numbers for taxa newly added to the 4-gene tree (Figs. 1 and S1). All others from Estep et al. (2014).

Species (specimen #)	Voucher	Herbarium	REP1	EP8	EP7	D8	APO1
<i>Chionachne koenigii</i> (057)	Kellogg Chio-6-D-93	MO					
<i>Chionachne koenigii</i> (122)	Kellogg Chio-8-D-93	MO					
<i>Elionurus citreus</i> (140)	Jacobs 9561	TCD					
<i>Elionurus muticus</i> (015)	Malcomber 3077	MO					
<i>Hemarthria altissima</i> (036)	Malcomber 3061	MO					
<i>Hemarthria compressa</i> (111)	Kellogg PI 404118	MO					
<i>Hemarthria longiflora</i> (149)	Teerawatananon & Sungkaew 100704-3	THNHM					
<i>Hemarthria pratensis</i> (150)	Teerawatananon & Sungkaew 892	THNHM					
<i>Hemarthria uncinata</i> (071)	Kellogg PI 401713	MO (sterile)					
<i>Heteropholis sulcata</i> (017)	Malcomber 3103	MO					
<i>Mnesithea formosa</i> (158)	Jacobs 9526	TCD					
<i>Oxyrhachis gracillima</i> (044)	Malcomber 3092	MO					
<i>Phacelurus huillensis</i> (026)	Malcomber 3087	MO					
<i>Polytoca digitata</i> (161)	Teerawatananon & Sungkaew 844	THNHM					
<i>Polytoca wallichiana</i> (162)	Teerawatananon & Sungkaew 683	THNHM					
<i>Rhytachne rottboelloides</i> (027)	Malcomber 3105	MO					
<i>Rhytachne rottboelloides</i> (029)	Malcomber 3106	MO					
<i>Rottboellia aurita</i> (030)	Kellogg PI 404628	A					
<i>Rottboellia cylindrica</i> (191)	Kellogg 1258	MO					
<i>Rottboellia lepidura</i> (059)	Malcomber 3060	MO					
<i>Rottboellia selleana</i> (031)	Kellogg PI 404763	A					

<i>Rottboellia selloana</i> (074)	<i>Kellogg PI</i> 404304	MO					
<i>Sorghum versicolor</i> (040)	<i>Kellogg PI</i> 260273	MO					
<i>Tripsacum australe</i> var. <i>hirsutum</i> (174)	<i>Kellogg MIA</i> 34499	MO					
<i>Tripsacum</i> <i>cundinamarcae</i> (175)	<i>Kellogg MIA</i> 34640	MO					
<i>Tripsacum dactyloides</i> (178)	<i>Kellogg MIA</i> 34723	MO (living collection)					
<i>Tripsacum floridanum</i> (109)	<i>Kellogg MIA</i> 34719	MO					
<i>Tripsacum laxum</i> (179)	<i>Kellogg MIA</i> 34792	MO					
<i>Tripsacum peruvianum</i> (117)	<i>Kellogg MIA</i> 34501	N/A					
<i>Tripsacum pilosum</i> var <i>guatemalense</i> (173)	<i>Kellogg MIA</i> 34721	N/A					
<i>Urelytrum digitatum</i> (042)	<i>Malcomber</i> 3109	MO					
<i>Vossia cuspidata</i> (180)	<i>Pasquet 1098</i>	MO					
<i>Zea diploperennis</i> (043)	<i>Ortiz &amp; Gomez</i> K-1996-1827	A					
<i>Zea luxurians</i> (096)	<i>Kellogg G-42</i>	MO					
<i>Zea perennis</i> (114)	<i>Kellogg AMES</i> 21872	MO					

Table S2. Voucher information and assembly statistics for transcriptome data.

Species (specimen #)	Collector	Herbarium	GenBank #
<i>Chionachne koenigii</i> (057)	Kellogg Chio-6-D-93	MO	
<i>Arthraxon micans</i> (231)	Pasquet 1242	MO	
<i>Tripsacum dactyloides</i> (041)	Kellogg 1160	MO	
<i>Tripsacum australe</i> (174)	Kellogg MIA 34499	MO	
<i>Tripsacum cundinamarcae</i> (175)	Kellogg MIA 34640	MO	
<i>Tripsacum laxum</i> (179)	Kellogg MIA 34792	MO	
<i>Tripsacum peruvianum</i> (117)	Kellogg MIA 34501	N/A	
<i>Zea perennis</i> (114)	Kellogg AMES 21872	MO	
<i>Vossia cuspidata</i> (180)	Pasquet 1098	MO	
<i>Urelytrum digitatum</i> (042)	Malcomber 3109	MO	
<i>Chrysopogon nigritanus</i> (272)	Pasquet 1200	MO	
<i>Schizachyrium brevifolium</i> (291)	Kellogg Kew MSB 443797	MO	
<i>Hemarthria compressa</i> (111)	Kellogg PI 404118	MO	
<i>Rottboellia</i> sp.			
<i>Themeda triandra</i>	Kellogg PI 206349	MO	
<i>Saccharum officinarum</i>	Welker s.n.	MBG-1999-0450	
<i>Arundinella hirta</i>	PI 263793	MO	
<i>Arundinella hookeri</i>	Kew 0050290	NA	
<i>Miscanthus sacchariflorus</i> (SRR871074)			
<i>Miscanthus sinensis</i> (SRR916839)			

Species (specimen #)	Contigs	Genes	Isoforms per Contig	Average Length	Assembled Bases
<i>Chionachne koenigii</i> (057)	93739	71025	1.3198	974.71	91367893
<i>Arthraxon micans</i> (231)	143720	103595	1.3873	961.52	138190303
<i>Tripsacum dactyloides</i> (041)	137609	93445	1.4726	852.95	117374159
<i>Tripsacum australe</i> (174)	160514	117343	1.3679	860.99	138200786
<i>Tripsacum cundinamarcae</i> (175)	143318	102374	1.3999	847.38	121445172
<i>Tripsacum laxum</i> (179)	123675	89435	1.3828	862.02	106610721
<i>Tripsacum peruvianum</i> (117)	188848	132058	1.4300	779.72	147249268
<i>Zea perennis</i> (114)	113144	81949	1.3807	962.25	108872367
<i>Vossia cuspidata</i> (180)	115196	86697	1.3287	941.59	108467466
<i>Urelytrum digitatum</i> (042)	198517	136465	1.4547	671.84	133371534
<i>Chrysopogon nigritanus</i> (272)	90858	90848	1.0001	667.1	60611225
<i>Schizachyrium brevifolium</i> (291)	102101	102089	1.0001	636.42	64978634
<i>Hemarthria compressa</i> (111)	74072	58992	1.2556	952.84	70578851
<i>Rottboellia</i> sp.	157784	131011	1.2044	752.98	118807483
<i>Themeda triandra</i>	110981	78989	1.4050	807.51	89618351
<i>Saccharum officinarum</i>	118238	83981	1.4079	814.99	96362962

<i>Arundinella hirta</i>	125753	87984	1.4293	730.18	91822865
<i>Arundinella hookeri</i>	67209	58113	1.1565	773.66	51997081
<i>Miscanthus sacchariflorus</i> (SRR871074)	63502	58445	1.0865	671.59	42647193
<i>Miscanthus sinensis</i> (SRR916839)	58185	47212	1.232	597.73	34778631



Table S3. Voucher and GenBank accession numbers of plastome data. Accession numbers beginning with SRR refer to short read data downloaded from GenBank.

<b>Species (specimen #)</b>	<b>Voucher/ Cultivar</b>	<b>Herbarium/ Source</b>	<b>Reference</b>	<b>GenBank number</b>
<i>Anadelphia scyphofera</i> (256)	<i>Pasquet 1237</i>	MO	This study	
<i>Andropogon abyssinicus</i>	<i>Pasquet 1097</i>	MO	Arthan et al. 2017	KY596148
<i>Andropogon burmanicus</i>	<i>Arthan071</i>	BKF	Arthan et al. 2017	KY596164
<i>Andropogon burmanicus</i>	<i>Traiperm 572</i>	BKF,MO	Arthan et al. 2017	KY596167
<i>Andropogon distachyos</i>	<i>Arthan050</i>	BKF	Arthan et al. 2017	KY596133
<i>Andropogon eucomus</i> (001)	<i>Malcomber 3089</i>	MO	This study	
<i>Andropogon gerardii</i>	<i>McAllister 807</i>	MO	McAllister et al. 2018	MH181165
<i>Andropterum stolzii</i> (050)	<i>Malcomber 3091</i>	MO	This study	
<i>Apluda mutica</i> (100)	<i>Kellogg PI 219568</i>	MO	This study	
<i>Arthraxon hispidus</i>	<i>Arthan023</i>	BKF	Arthan et al. 2017	KY596179
<i>Arthraxon lanceolatus</i>	<i>Arthan001</i>	BKF	Arthan et al. 2017	KY596127
<i>Arthraxon lanceolatus</i>	<i>Arthan059</i>	BKF	Arthan et al. 2017	KY596185
<i>Arthraxon microphyllus</i>	<i>Traiperm 537</i>	BKF	Arthan et al. 2017	KY596183
<i>Arthraxon prionodes</i>	<i>Kellogg PI 659331</i>	MO	Arthan et al. 2017	KY596138
<i>Arundinella deppeana</i>	<i>Clark et al. 1680</i>	XAL	Burke et al. 2016	KU291490
<i>Arundinella hirta</i> (SRR2163563)	<i>PI 246756</i>	MO	Washburn et al.; This study	
<i>Arundinella hookeri</i> (SRR2163560)	<i>Kew 0050290</i>	N/A	Washburn et al.; This study	
<i>Arundinella nepalensis</i> (115)	<i>Kellogg PI 384059</i>	MO	This study	
<i>Bothriochloa alta</i>	<i>Duvall s.n.</i>	DEK	Burke et al. 2016	KU291492
<i>Bothriochloa decipiens</i> (086)	<i>Kellogg PI 239153</i>	MO	McAllister et al. 2018	
<i>Bothriochloa bladhii</i> (087)	<i>Kellogg PI 301632</i>	MO	This study	
<i>Capillipedium spicigerum</i> (090)	<i>Kellogg PI 301773</i>	MO	This study	
<i>Capillipedium venustum</i>	"PI 11713" (invalid number)	N/A	Burke et al. 2016	KU291493
<i>Chasmopodium caudatum</i> (120)	<i>Kellogg Kew MSB 0184054</i>	MO	This study	

<i>Chionachne koenigii</i> (057)	Kellogg Chio-6-D-93	MO	This study	
<i>Chrysopogon aciculatus</i> (326)	Sumadijaya 714	MO	This study	
<i>Chrysopogon gryllus</i>	Kellogg PI 250984	A	Arthan et al. 2017	KY596161
<i>Chrysopogon orientalis</i>	Traiperm 578	BKF	Arthan et al. 2017	KY596177
<i>Chrysopogon serrulatus</i>	Kellogg PI 219580	A,MO	Welker et al. 2016	NC029884
<i>Chrysopogon zizanioides</i>	Kellogg Vet-MRL-001 (Sunshine)	MO	Arthan et al. 2017	KY596158
<i>Cleistachne sorghoides</i> (293)	M. Bigazzi & M. Tardelli 719	FT	This study	
<i>Rottboellia lepidura</i> (059)	Malcomber 3060	MO	This study	
<i>Coix aquatica</i> (SRR1634981)	N/A	N/A	This study	
<i>Coix lacryma-jobi</i>	Arthan072	BKF	Arthan et al. 2017	KY596160
<i>Coleataenia prionitis</i>	Morrone 6195	SI	Cotton et al. (Unpublished)	KJ920228
<i>Cymbopogon flexuosus</i>	Arthan027	BKF	Arthan et al. 2017	KY596169
<i>Cymbopogon martinii</i> (048)	Kellogg PI 219582	MO	This study	
<i>Dichanthium annulatum</i> (013)	Kellogg PI 240155	A/GH	This study	
<i>Dichanthium sericeum</i> (SRR2163562)	PI 213880	MO	Washburn et al.; This study	
<i>Dichanthium sericeum</i>	Traiperm 571	BKF	Arthan et al. 2017	KY596128
<i>Diectomis fastigiatus</i> (239)	Pasquet 1191	MO	This study	
<i>Diheteropogon amplexans</i>	"PI 12585" (invalid number)	N/A	Burke et al. 2016	KU291497
<i>Diheteropogon hagerupii</i> (183)	Kellogg Kew MSB 0254456	MO	This study	
<i>Dimeria lawsonii</i> (508)	Kiran Raj 81018	MO	This study	
<i>Dimeria ornithopoda</i>	Traiperm 575	BKF	Arthan et al. 2017	KY596130
<i>Elionurus muticus</i> (015)	Malcomber 3077	MO	This study	
<i>Elionurus tripsacoides</i> (198)	Layton & Zhong 168	MO	This study	
<i>Elymandra grallata</i> (254)	Pasquet 1184	MO	This study	
<i>Eremochloa ciliaris</i>	Traiperm 524	BKF	Arthan et al. 2017	KY596146

<i>Eremochloa eriopoda</i>	Traiperm 591	BKF	Arthan et al. 2017	KY596134
<i>Eriochrysis cayennensis</i>	Welker 519	ICN	Welker et al. 2016	KU961861
<i>Eriochrysis cayennensis</i>	Welker 365	ICN	Welker et al. 2016	KU961862
<i>Eriochrysis laxa</i>	Welker 489	ICN	Welker et al. 2016	KU961863
<i>Eriochrysis pallida</i> (568)	Pasquet 1162	MO	Welker et al. 2018	
<i>Eriochrysis villosa</i>	Welker 481B	ICN	Welker et al. 2016	KU961860
<i>Euclasta condylotricha</i> (232)	Pasquet 1245	MO	This study	
<i>Eulalia aurea</i>	"PI 12153" (invalid number)	N/A	Burke et al. 2016	KU291499
<i>Eulalia aurea</i> (098)	Kellogg PI 249139	MO	This study	
<i>Eulalia contorta</i>	Traiperm 573	BKF	Arthan et al. 2017	KY596143
<i>Eulalia siamensis</i>	Traiperm 557	BKF	Arthan et al. 2017	KY596149
<i>Eulaliopsis binata</i>	Traiperm 567	BKF	Arthan et al. 2017	KY596182
<i>Exothea abyssinica</i> (211)	Pasquet 1102	MO	This study	
<i>Garnotia tenella</i>	Traiperm 552	BKF	Arthan et al. 2017	KY596184
<i>Garnotia thailandica</i>	Traiperm 535	BKF	Arthan et al. 2017	KY596171
<i>Germainia capitata</i>	Arthan028	BKF	Arthan et al. 2017	KY596175
<i>Hackelochloa granularis</i> (205)	Pasquet 1113	MO	This study	
<i>Hemarthria altissima</i> (036)	Malcomber 3061	MO	This study	
<i>Hemarthria compressa</i> (111)	Kellogg PI 404118	MO	This study	
<i>Hemarthria uncinata</i> (071)	Kellogg PI 401713	MO (sterile)	This study	
<i>Hemisorghum mekongense</i>	Traiperm 569	BKF	Arthan et al. 2017	KY596132
<i>Heteropogon contortus</i>	Arthan035	BKF	Arthan et al. 2017	KY596145
<i>Heteropogon contortus</i> (065)	Kellogg PI 271177	MO	This study	
<i>Heteropogon triticeus</i>	Arthan017	BKF	Arthan et al. 2017	KY596153
<i>Heteropogon triticeus</i>	Arthan034	BKF	Arthan et al. 2017	KY596142
<i>Homozeugos eylesii</i> (258)	Pasquet 1161	MO	This study	
<i>Hyparrhenia diplandra</i>	Arthan012	BKF	Arthan et al. 2017	KY596163
<i>Hyparrhenia hirta</i> (095)	Kellogg PI 300696	MO	This study	
<i>Hyparrhenia rufa</i> (108)	Kellogg PI 356815	MO	This study	
<i>Hyperthelia dissoluta</i> (204)	Kellogg 1137	MO	This study	
<i>Imperata cylindrica</i>	Burke 21	DEK	Burke et al. 2016	KU291466
<i>Ischaemum afrum</i>	PI 364924	A	Burke et al. 2016	KU291467
<i>Ischaemum rugosum</i> (186)	Kellogg Kew MSB 0183574	MO	This study	
<i>Iseilema macratherum</i>	PI 257760	N/A	Burke et al. 2016	KU291468

<i>Iseilema vaginiflorum</i> (213)	<i>E.J. Thompson MUT518- TBKS</i>		This study	
<i>Jardinea congoensis</i> (298)	<i>R. Jermain 4306</i>	Milan	This study	
<i>Kerriochloa siamensis</i>	<i>Traiperm 581</i>	BKF	Arthan et al. 2017	KY596117
<i>Kerriochloa siamensis</i>	<i>Traiperm 580</i>	BKF	Arthan et al. 2017	KY596120
<i>Loxodera bovonei</i> (520)	<i>Pasquet 1229</i>	MO	This study	
<i>Loxodera bovonei</i> (536)	<i>Pasquet 1256</i>	MO	This study	
<i>Loxodera caespitosa</i> (304)	<i>Pasquet 1268</i>	MO	This study	
<i>Microstegium vimineum</i> (124)	<i>Kellogg VA2</i>	MO	This study	
<i>Miscanthus ecklonii</i> (089)	<i>Kellogg 410159</i>	MO	This study	
<i>Miscanthus floridulus</i> (SRR486154)	US56-0022-03	N/A	Welker et al. 2018; JGI unpublished	
<i>Miscanthus junceus</i> (255)	<i>Pasquet 1213</i>	MO	This study	
<i>Miscanthus sacchariflorus</i>	N/A	GenBank	Nah et al. unpublished	NC028720
<i>Miscanthus sacchariflorus</i> (SRR486747)	EF03(01-03) var Hercules	N/A	This study; JGI unpublished	
<i>Miscanthus sinensis</i>	Niigata410	N/A	Tsuruta et al. unpublished	LC160131
<i>Miscanthus sinensis</i> (SRR559246)	IGR-2011-003	N/A	This study; JGI unpublished	
<i>Miscanthus transmorrisonensis</i> (SRR396850)	N/A	N/A	This study; JGI unpublished	
<i>Mnesithea formosa</i> (212)	<i>E. J. Thompson CHA812- TBKS</i>	BRI	This study	
<i>Mnesithea helferi</i>	<i>Traiperm 574</i>	BKF	Arthan et al. 2017	KY596162
<i>Monocymbium ceresiiforme</i> (203)	<i>Kellogg 1115</i>	MO	This study	
<i>Oxyrhachis gracillima</i> (303)	<i>Pasquet 1271</i>	MO	This study	
<i>Parahyparrhenia siamensis</i>	<i>Traiperm 583</i>	BKF	Arthan et al. 2017	KY596155
<i>Paspalum malacophyllum</i> (058)	<i>Kellogg PI 271572</i>	MO	This study	
<i>Paspalum vaginatum</i> (SRR2163016)	<i>PI 509022</i>	MO- 6635035	Washburn et al.; This study	
<i>Phacelurus huillensis</i> (024)	<i>Malcomber 3100</i>	MO	This study	
<i>Pogonatherum paniceum</i>	<i>Clark s.n.</i>	MO	Welker et al. 2016	NC029881

<i>Polytoca digitata</i>	Arthan054	BKF	Arthan et al. 2017	KY596178
<i>Polytoca digitata</i>	Arthan060	BKF	Arthan et al. 2017	KY596173
<i>Polytrias indica</i> (073)	Kellogg 1264	MO	This study	
<i>Pseudosorghum fasciculare</i>	Arthan067	BKF	Arthan et al. 2017	KY596157
<i>Pseudosorghum fasciculare</i>	Traiperm 512	BKF	Arthan et al. 2017	KY596139
<i>Rhytachne rottboellioides</i> (027)	Malcomber 3105	MO	This study	
<i>Rottboellia cochinchinensis</i>	Clark et al. 1698	ISC	Burke et al. 2016	KU291481
<i>Rottboellia cochinchinensis</i> (193)	Layton & Zhong 158	MO	This study	
<i>Rottboellia selloana</i> (074)	Kellogg PI 404304	MO	This study	
<i>Saccharum</i> hybrid	Cultivar SP80-3280	GenBank	Calsa et al. 2004	NC005878
<i>Saccharum</i> hybrid	RB867515	GenBank	Vidigal et al. unpublished	KX507245
<i>Saccharum</i> hybrid	Q155	GenBank	Massouh et al. unpublished	NC029221
<i>Saccharum</i> hybrid	SP-80-3290	GenBank	Calsa et al. 2004	NC005878
<i>Saccharum officinarum</i>	Cultivar NCo 310	GenBank	Asano et al. 2004	AP006714
<i>Saccharum officinarum</i> (SRR922218)	cultivar B4362	MO	Welker et al. 2018	
<i>Saccharum spontaneum</i> (SRR486146)	SES234B library	N/A	Welker et al. 2018	
<i>Sarga timorensis</i>	N/A	GenBank	Keepers et al. unpublished	NC023800
<i>Sarga versicolor</i> (SRR427175)	N/A	JGI; 2012-03-04	This study; JGI unpublished	4093395
<i>Schizachyrium sanguineum</i>	Welker 515	ICN	This study	
<i>Schizachyrium scoparium</i>	Kellogg V46	MO	This study	KY596154
<i>Sehima nervosum</i> (034)	Malcomber 3074	MO	This study	
<i>Setaria italica</i>	Yugul	GenBank	Diaz et al. unpublished	KJ001642
<i>Sorghastrum elliotti</i> (187)	Kellogg Kew MSB 0491101	MO	This study	
<i>Sorghastrum nutans</i>	Wysocki s.n.	DEK	Burke et al. 2016	KU291482
<i>Sorghastrum nutans</i> (035)	Kellogg PI 315744	A	This study	
<i>Sorghum bicolor</i>	BTx623	GenBank	Saski et al. 2009	NC008602
<i>Sorghum halepense</i> (SRR486216)	Gypsum9	N/A	This study; JGI unpublished	

<i>Sorghum halepense</i> (278)	McKain 121	MO	This study	
<i>Sorghum propinquum</i> (SRR998982)	369-1	N/A	Mace et al. 2013: This study	
<i>Steinchisma decipiens</i> (SRR2163017)	PI 462236	MO-6635036	Washburn et al.; This study	
<i>Thelepogon elegans</i> (257)	Pasquet 1246	MO	This study	
<i>Themeda arguens</i>	Arthan020	BKF	Arthan et al. 2017	KY596129
<i>Themeda arundinacea</i>	Arthan064	BKF	Arthan et al. 2017	KY596123
<i>Themeda triandra</i>	Arthan070	BKF	Arthan et al. 2017	KY596125
<i>Themeda triandra</i> (116)	Kellogg PI 207932	USD-GRIN image	This study	
<i>Themeda villosa</i>	Arthan065	BKF	Arthan et al. 2017	KY596131
<i>Trachypogon chevalieri</i> (281)	Pasquet 1190	MO	This study	
<i>Tripidium arundinacea</i>	Isolate JW360	GenBank	Tsuruta et al. unpublished	NC030777
<i>Tripidium ravennae</i> (110)	Vela s.n.	MO	Welker et al. 2018	
<i>Tripsacum andersonii</i> (118)	Kellogg MIA 34430	N/A	This study	
<i>Tripsacum australe</i> (174)	Kellogg MIA 34499	MO	This study	
<i>Tripsacum cundinamarcae</i> (175)	Kellogg MIA 34640	MO (living collection)	This study	
<i>Tripsacum dactyloides</i> (SRR447807)	inbred line TDD39103	N/A	This study	
<i>Tripsacum dactyloides</i> (041)	Kellogg 1160	MO	This study	
<i>Tripsacum dactyloides</i> (178)	Kellogg MIA 34723	MO (living collection)	This study	
<i>Tripsacum floridanum</i> (109)	Kellogg MIA 34719	MO	This study	
<i>Tripsacum laxum</i> (179)	Kellogg MIA 34792	MO	This study	
<i>Tripsacum peruvianum</i> (117)	Kellogg MIA 34501	N/A	This study	
<i>Tripsacum pilosum</i> (173)	Kellogg MIA 34721	N/A	This study	
<i>Urelytrum agropyroides</i> (221)	Pasquet 1233	MO	This study	
<i>Urelytrum digitatum</i> (042)	Malcomber 3109	MO	This study	
<i>Vossia cuspidata</i> (180)	Pasquet 1098	MO	This study	
<i>Vossia cuspidata</i> (282)	Pasquet 1222	MO	This study	

<i>Zea diploperennis</i> (043)	<i>Ortiz &amp; Gomez K-1996-1827</i>	A	This study	
<i>Zea luxurians</i>	N/A	GenBank	Orton et al. 2016	KR873424
<i>Zea luxurians</i> (096)	<i>Kellogg G-42</i>	MO	This study	
<i>Zea mays</i>	A188	GenBank	Bosacchi, Gurdon, and Maliga 2015	KF241980
<i>Zea mays</i>	B73	GenBank	Bosacchi, Gurdon, and Maliga 2015	KF241981
<i>Zea mays</i>	N/A	GenBank	Maier et al. 1995.	NC001666
<i>Zea mays-B37C</i>	B37C	GenBank	Bosacchi, Gurdon, and Maliga 2015	KP966115
<i>Zea mays-B37N</i>	B37N	GenBank	Bosacchi, Gurdon, and Maliga 2015	KP966114
<i>Zea mays-B37S</i>	B37S	GenBank	Bosacchi, Gurdon, and Maliga 2015	KP966116
<i>Zea mays-B37T</i>	B37T	GenBank	Bosacchi, Gurdon, and Maliga 2015	KP966117
<i>Zea mays-huehuetenangensis</i>	<i>PI 441934</i>	GenBank	Orton et al. 2016	KR873422
<i>Zea nicaraguensis</i> (279)		MO (living collection)	This study	
<i>Zea perennis</i>	<i>AMES 21874</i>	GenBank	Orton et al. 2016	KR873423
<i>Zea perennis</i> (114)	<i>Kellogg AMES 21872</i>	MO	This study	

Table S4. Numbers of clades with the given taxon sister to a *Zea-Tripsacum* paralog. BSV = ML bootstrap support value for the relevant clade.

<b>Taxon</b>	<b>BSV5</b>	<b>BSV10</b>	<b>BSV15</b>	<b>BSV20</b>	<b>BSV25</b>	<b>BSV30</b>	<b>BSV35</b>
<i>Arthraxon</i>	42	39	35	33	29	27	24
<i>Chionachne</i>	50	48	44	42	37	35	28
<i>Chrysopogon</i>	23	22	22	21	17	16	12
<i>Rottboellia, Hemarthria</i>	123	120	113	103	85	71	65
<i>Thelepogon</i>	33	32	29	25	22	17	16
<i>Tripsacum, Zea, Zmays</i>	1880	1850	1804	1755	1698	1621	1536
<i>Urelytrum, Vossia</i>	595	589	578	566	542	504	461

<b>Taxon</b>	<b>BSV40</b>	<b>BSV45</b>	<b>BSV50</b>	<b>BSV55</b>	<b>BSV60</b>	<b>BSV65</b>	<b>BSV70</b>
<i>Arthraxon</i>	17	11	9	6	6	6	3
<i>Chionachne</i>	23	19	16	15	14	11	7
<i>Chrysopogon</i>	11	8	7	6	6	6	4
<i>Rottboellia, Hemarthria</i>	60	46	39	29	21	17	13
<i>Thelepogon</i>	12	10	7	5	4	3	3
<i>Tripsacum, Zea, Zmays</i>	1441	1353	1281	1171	1069	937	835
<i>Urelytrum, Vossia</i>	423	375	330	279	233	198	165

<b>Taxon</b>	<b>BSV75</b>	<b>BSV80</b>	<b>BSV85</b>	<b>BSV90</b>	<b>BSV95</b>	<b>BSV100</b>
<i>Arthraxon</i>	1	0	0	0	0	0
<i>Chionachne</i>	6	5	5	4	3	1
<i>Chrysopogon</i>	3	3	3	3	2	1
<i>Rottboellia, Hemarthria</i>	12	9	5	5	4	1
<i>Thelepogon</i>	3	3	3	3	3	0
<i>Tripsacum, Zea, Zmays</i>	750	656	543	447	330	131
<i>Urelytrum, Vossia</i>	144	115	98	68	36	7



Table S5. Numbers of clades with the given taxon sister to the clade including both *Zea-Tripsacum* paralogs. BSV = ML bootstrap support value for the relevant clade.

<b>Taxon</b>	<b>BSV5</b>	<b>BSV10</b>	<b>BSV15</b>	<b>BSV20</b>	<b>BSV25</b>	<b>BSV30</b>	<b>BSV35</b>
<i>Arthraxon</i>	51	50	49	47	46	40	36
<i>Chionachne</i>	41	41	38	37	37	33	30
<i>Chrysopogon</i>	24	23	22	20	18	17	14
<i>Rottboellia, Hemarthria</i>	75	72	68	64	61	56	53
<i>Thelepogon</i>	17	17	16	15	11	11	10
<i>Tripsacum, Zea, Zmays</i>	58	57	53	49	43	39	37
<i>Urelytrum, Vossia</i>	213	208	206	201	196	186	175

<b>Taxon</b>	<b>BSV40</b>	<b>BSV45</b>	<b>BSV50</b>	<b>BSV55</b>	<b>BSV60</b>	<b>BSV65</b>	<b>BSV70</b>
<i>Arthraxon</i>	34	30	28	25	24	21	18
<i>Chionachne</i>	30	24	23	19	16	14	11
<i>Chrysopogon</i>	14	14	13	10	9	8	7
<i>Rottboellia, Hemarthria</i>	46	40	38	34	29	26	23
<i>Thelepogon</i>	8	7	7	7	6	5	5
<i>Tripsacum, Zea, Zmays</i>	32	32	25	24	22	15	13
<i>Urelytrum, Vossia</i>	165	158	153	136	126	118	104

<b>Taxon</b>	<b>BSV75</b>	<b>BSV80</b>	<b>BSV85</b>	<b>BSV90</b>	<b>BSV95</b>	<b>BSV100</b>
<i>Arthraxon</i>	16	16	14	11	6	2
<i>Chionachne</i>	9	8	6	6	3	1
<i>Chrysopogon</i>	5	4	4	4	3	2
<i>Rottboellia, Hemarthria</i>	22	18	12	7	6	3
<i>Thelepogon</i>	4	4	2	2	2	0
<i>Tripsacum, Zea, Zmays</i>	12	10	8	8	6	3
<i>Urelytrum, Vossia</i>	93	84	70	55	45	16