

Table S1. Descriptive statistics for each separate data partition and combined matrices used in parsimony analyses.

DNA region / dataset	<i>ndhF</i>	<i>rpl16</i>	<i>trnL-F</i>	Total dataset
Melinidinae (number of taxa)	111	74	72	111
Outgroup (number of taxa)	14	9	11	14
Alignment length (bp)	2130	1187	1172	4490
Parsimony informative sites	297 (13.94%)	115 (9.68%)	127 (10.83%)	539 (12%)
Tree length	661	221	247	1174
Consistency index (CI)	0.561	0.665	0.692	0.587
Retention index (CR)	0.856	0.793	0.846	0.831

Table S2. Taxa, voucher information, and GenBank accession numbers for *ndhF*, *rpl16*, and *trnL-F*, respectively. Species/sequences not analyzed in [11] are indicated with an asterisk (*); sequences obtained for this study are indicated with double asterisk (**) and regions with no sequence data are indicated with a dash (-); herbarium acronyms follow [54].

Ingroup (Melinidinae)	<i>ndhF</i>	<i>rpl16</i>	<i>trnL-F</i>
<i>Brachiaria ambigens</i> Chiov.*	MF998656*	–	–
<i>Brachiaria humbertiana</i> A. Camus (1)*	LN908062*	–	–
<i>Brachiaria humbertiana</i> (2)*	MF998517*	–	–
<i>Brachiaria nana</i> Stapf*	MF998514*	–	–
<i>Brachiaria pseudodichotoma</i> Bosser (1)	GU594627	GU594521	GU594587
<i>Brachiaria pseudodichotoma</i> (2)	MF998520*	–	–
<i>Brachiaria subrostrata</i> A. Camus	MF998492*	–	–
<i>Brachiaria umbellata</i> (Trin.) Clayton	MF998493*	–	–
<i>Chaetium bromoides</i> (J. Presl) Benth.	AY029626	GU594519	AF509962
<i>Eriochloa acuminata</i> (J.Presl) Kunth	GU594634	GU594528	GU594594
<i>Eriochloa distachya</i> Kunth	GU594617	GU594510	GU594573
<i>Eriochloa fatmensis</i> (Hochst. & Steud.) Clayton*	MF998531*	HQ999912*	–
<i>Eriochloa meyeriana</i> (Nees) Pilg.	GU594623	GU594516	GU594583
<i>Eriochloa montevidensis</i> Griseb.	GU594598	GU594491	GU594535
<i>Eriochloa nana</i> Arriaga	GU594605	GU594498	GU594553
<i>Eriochloa polystachya</i> Kunth	GU594629	GU594523	GU594589
<i>Eriochloa procera</i> (Retz.) C.E. Hubb. *	MF998529*	–	–
<i>Eriochloa punctata</i> (L.) Ham.	FJ486528	FJ486555	GU594554

<i>Eriochloa sericea</i> (Scheele) Munro ex Vasey	GU594635	GU594529	GU594595
<i>Eriochloa setosa</i> (A. Rich.) Hitchc.	GU594625	GU594518	GU594585
<i>Eriochloa subulifera</i> Stapf*	MF998530*	–	–
<i>Eriochloa villosa</i> (Thunb.) Kunth*	KM538704*	–	KX372423*
<i>Leucophrys mesocoma</i> (Nees) Rendle	GU594628	GU594522	GU594588
<i>Megathyrsus infestus</i> (Andersson) B.K. Simon & S.W.L. Jacobs	GU594618	GU594511	GU594575
<i>Megathyrsus maximus</i> (Jacq.) B.K. Simon & S.W.L. Jacobs	LN908130*	FJ486550	GU594547
<i>Melinis minutiflora</i> P. Beauv. (1)	FJ486524	FJ486551	GU594549
<i>Melinis minutiflora</i> (2)	AM849212*	–	–
<i>Melinis minutiflora</i> (3)	MF998508*	–	–
<i>Melinis repens</i> (Willd.) Zizka (1)	FJ486532	FJ486559	GU594561
<i>Melinis repens</i> (2)	KP878958*	KP879020*	MT263048*
<i>Moorochloa eruciformis</i> (Sm.) Veldkamp	FJ486525	FJ486552	GU594550
<i>Moorochloa malacodes</i> (Mez & K.Schum.) Veldkamp	FJ486536	FJ486564	GU594576
<i>Panicum deustum</i> Thunb. (1) = <i>Batochloa deusta</i> (Thunb.) Salariato & Zuloaga	GU594631	GU594525	GU594591
<i>Panicum deustum</i> (2) Ethiopia, Gamu-Gofa region, <i>I. Friis</i> 9510 (K)	OQ383273**	OQ383280**	OQ383277**
<i>Panicum deustum</i> (3) Democratic Republic of the Congo, Beni, <i>J. Bequaert</i> 3398 (BR)	OQ383274**	–	OQ383278**
<i>Panicum trichocladum</i> Hack. ex K.Schum. (1)* = <i>Megathyrsus trichocladum</i> (Hack. ex K. Schum.) Salariato & Zuloaga	LN908153*	–	–
<i>Panicum trichocladum</i> (2) Democratic Republic of the Congo, Burundi, <i>J. Lambinon</i> 7573 (BR)	OQ383275**	OQ383281**	–
<i>Panicum vollesenii</i> Renvoize* = <i>Megathyrsus vollesenii</i> (Renvoize) Salariato & Zuloaga Tanzania, Liwale District, <i>K. Vollesen</i> 3871 (K)	OQ383276**	OQ383282**	OQ383279**
<i>Rupichloa acuminata</i> (Renvoize) Salariato & Morrone	FJ486540	FJ486568	GU594562
<i>Rupichloa decidua</i> (Morrone & Zuloaga) Salariato & Morrone (1)	FJ486526	FJ486553	GU594551

<i>Rupichloa decida</i> (2)	FJ486539	FJ486567	–
<i>Scutachne dura</i> (Griseb.) Hitchc. & Chase	GU594616	GU594509	GU594572
<i>Thuarea involuta</i> (G. Forst.) R. Br. ex Sm. (1)	GU594624	GU594517	GU594584
<i>Thuarea involuta</i> (2)	MF998491*	–	–
<i>Thuarea perrieri</i> A. Camus*	MF998490*	–	–
<i>Tricholaena monachne</i> (Trin.) Stapf & C.E. Hubb. (1)	FJ486535	FJ486563	GU594574
<i>Tricholaena monachne</i> (2)	HE577883*	–	–
<i>Tricholaena monachne</i> (3)	MF998509*	–	–
<i>Urochloa adspersa</i> (Trin.) R.D. Webster	GU594599	GU594492	GU594537
<i>Urochloa arizonica</i> (Scribn. & Merr.) Morrone & Zuloaga	GU594614	GU594507	GU594569
<i>Urochloa arrecta</i> (Hack.) Morrone & Zuloaga (1)	FJ486517	FJ486544	GU594536
<i>Urochloa arrecta</i> (2)	MF998513*	–	MK424972*
<i>Urochloa arrecta</i> (3)	MF998523*	–	MK424973*
<i>Urochloa bovonei</i> (Chiov.) A.M. Torres & C.M. Morton	FJ486530	FJ486557	GU594557
<i>Urochloa brachyura</i> (Hack.) Stapf*	MF998533*	HQ999943*	–
<i>Urochloa brizantha</i> (A. Rich.) R.D. Webster (1)	FJ486520	FJ486546	GU594542
<i>Urochloa brizantha</i> (2)	LN908057*	–	–
<i>Urochloa brizantha</i> (3)	MF998528*	–	–
<i>Urochloa comata</i> (Hochst. ex A. Rich.) Sosef	GU594620	GU594513	GU594580
<i>Urochloa decumbens</i> (Stapf) R.D. Webster (1)	FJ486529	FJ486556	GU594555
<i>Urochloa decumbens</i> (2)	MF998527*	–	–
<i>Urochloa deflexa</i> (Schumach.) H. Scholz (1)	FJ486534	FJ486562	GU594571
<i>Urochloa deflexa</i> (2)	MF998524*	–	–
<i>Urochloa dictyoneura</i> (Fig. & De Not.) Veldkamp	FJ486523	FJ486549	GU594546
<i>Urochloa discifera</i> (E. Fourn.) Morrone & Zuloaga	GU594604	GU594497	GU594548
<i>Urochloa distachya</i> (L.) T.Q. Nguyen (1)	FJ486518	FJ486545	GU594538
<i>Urochloa distachya</i> (2)	LN908059*	–	–
<i>Urochloa dura</i> (Stapf) A.M. Torres & C.M. Morton	GU594610	GU594503	GU594564
<i>Urochloa echinolaenoides</i> Stapf	GU59463	GU594526	GU594592

<i>Urochloa foliosa</i> (R. Br.) R.D. Webster	GU594619	GU594512	GU594578
<i>Urochloa fusca</i> (Sw.) B.F. Hansen & Wunderlin	GU594601	GU594494	GU594540
<i>Urochloa glumaris</i> (Trin.) Veldkamp (1)	GU594626	GU594520	GU594586
<i>Urochloa glumaris</i> (2)	MF998518*	–	–
<i>Urochloa holosericea</i> (R. Br.) R.D. Webster	GU594630	GU594524	GU594590
<i>Urochloa humidicola</i> (Rendle) Morrone & Zuloaga (1)	FJ486521	FJ486547	GU594544
<i>Urochloa humidicola</i> (2)	MF998526*	–	–
<i>Urochloa jubata</i> (Fig. & De Not.) Sosef	FJ486531	FJ486558	GU594559
<i>Urochloa lachnantha</i> (Hochst.) A.M. Torres & C.M. Morton	GU594615	GU594508	GU594570
<i>Urochloa lata</i> (Schumach.) C.E. Hubb.	FJ486533	FJ486561	GU594567
<i>Urochloa leersioides</i> (Hochst.) A.M. Torres & C.M. Morton (1)	GU594608	GU594501	GU594560
<i>Urochloa leersioides</i> (2)	MF998516*	–	–
<i>Urochloa lorentziana</i> (Mez) Morrone & Zuloaga	FJ486522	FJ486548	GU594545
<i>Urochloa meziana</i> (Hitchc.) Morrone & Zuloaga	GU594602	GU594495	GU594541
<i>Urochloa mollis</i> (Sw.) Morrone & Zuloaga	GU594597	GU594490	GU594534
<i>Urochloa mosambicensis</i> (Hack.) Dandy (1)	FJ486516	FJ486542	GU594532
<i>Urochloa mosambicensis</i> (2)	MF998522*	–	–
<i>Urochloa mutica</i> (Forssk.) T.Q. Nguyen	MF998515*	GU594530	GU594596
<i>Urochloa nigropedata</i> (Munro ex Ficalho & Hiern) A.M. Torres & C.M. Morton	GU594606	GU594499	GU594556
<i>Urochloa oblita</i> (Swallen) Morrone & Zuloaga	FJ486538	FJ486566	GU594579
<i>Urochloa panicoides</i> P. Beauv. (1)	FJ486519	EU920055	EU920056
<i>Urochloa panicoides</i> (2)	MF998519*	–	–
<i>Urochloa paucispicata</i> (Morong) Morrone & Zuloaga	FJ486527	FJ486554	GU594552
<i>Urochloa plantaginea</i> (Link) R.D. Webster	MF998511*	FJ486543	GU594533
<i>Urochloa platynota</i> (K. Schum.) Pilg.	GU594609	GU594502	GU594563
<i>Urochloa platyphylla</i> (Munro ex C. Wright) R.D. Webster	GU594600	GU594493	GU594539
<i>Urochloa ramosa</i> (L.) T.Q. Nguyen*	MF998534*	–	–
<i>Urochloa reptans</i> (L.) Stapf	LN908063*	–	–

<i>Urochloa rudis</i> Stapf*	GU594633	GU594527	GU594593
<i>Urochloa ruziziensis</i> (R. Germ. & C.M. Evrard) Crins	GU594603	GU594496	GU594543
<i>Urochloa semiundulata</i> (Hochst. ex A. Rich.) Ashal. & V.J. Nair	LN908064*	HQ999876*	–
<i>Urochloa serrata</i> (Thunb.) Sosef (1)	GU594607	GU594500	GU594558
<i>Urochloa serrata</i> (2)	MF998532*	–	–
<i>Urochloa setigera</i> (Retz.) Stapf	GU594613	GU594506	GU594568
<i>Urochloa subquadriflora</i> (Trin.) R.D. Webster (1)	GU594612	GU594505	GU594566
<i>Urochloa subquadriflora</i> (2)	MF998512*	–	–
<i>Urochloa subulifolia</i> (Mez) Torres Gonz. & C.M. Morton	GU594611	GU594504	GU594565
<i>Urochloa texana</i> (Buckley) R.D. Webster	FJ486537	FJ486565	GU594577
<i>Urochloa xantholeuca</i> (Hack.) H. Scholz*	MF998655*	HQ999877*	–
<i>Yvesia madagascariensis</i> A. Camus (1)	MF998494*	–	–
<i>Yvesia madagascariensis</i> (2)	GU594636	–	–
Outgroup	<i>ndhF</i>	<i>rpl16</i>	<i>trnL-F</i>
<i>Aakia tuerckheimii</i> (Hack.) J.R. Grande	KF982003	–	–
<i>Anthaenantiopsis rojasiana</i> Parodi	MT180181	KF852999	MT180272
<i>Cenchrus ciliaris</i> L.	AY029625	HQ999878	EU940006
<i>Cenchrus echinatus</i> L.	AF499151	EU931890	EU940007
<i>Cenchrus setaceus</i> (Forssk.) Morrone	AY029673	–	EU940000
<i>Panicum antidotale</i> Retz.	AY188456	–	–
<i>Panicum ligulare</i> Nees ex Trin.	MG581772	–	–
<i>Panicum miliaceum</i> L.	AY188472	–	JQ972957
<i>Panicum repens</i> L.	HE575806	EU920053	GU594531
<i>Panicum venosum</i> Swallen	GU594622	GU594515	GU594582
<i>Paspalum notatum</i> Flügge	KF852941	KF853041	MT180275
<i>Setaria geminata</i> (Forssk.) Veldkamp	AY029662	EU931861	EU939981
<i>Setaria lachnea</i> (Nees) Kunth	EU741952	EU931863	EU939984
<i>Setaria viridis</i> (L.) P. Beauv.	U21976	–	AF499156