

**Table S1. Species of Mantodea used to construct the phylogenetic relationships along with GenBank accession numbers**

Family	Subfamilies	Species	Genome length	GenBank No.	References
Amelidae	/	<i>Yersinia mexicana</i>	16,193 bp	MW357303	[7]
Amorphoscelidae	Amorphoscelinae	<i>Amorphoscelis hainana</i>	15,792 bp	MW340855	Unpublished
Deroplatyidae	Deroplatyinae	<i>Deroplatys desiccata</i>	16,065 bp	KY689113	[10]
Eremiaphilidae	Iridinae	<i>Schizocephala bicornis</i>	16,026 bp	KY689135	[10]
		<i>Humbertiella nada</i>	15,866 bp	KU201315	[30]
		<i>Humbertiella nada</i>	15,682 bp	KX434857	This study
		<i>Theopompa milligratulata</i>	16,046 bp	KX434849	This study
Gonypetidae	Gonypetinae	<i>Theopompa</i> sp. FY-2016a isolate Hainan	17,370 bp	KU201313	[30]
		<i>Theopompa</i> sp. FY-2016a isolate Yunnan	16,431 bp	KU201314	[30]
		<i>Amantis nawai</i>	15,684 bp	KY689114	[10]
		<i>Spilomantis occipitalis</i>	15,767 bp	KX434816	This study
Iridopterygidae	Iridopteryginae	<i>Hapalopeza occipitalis</i>	15,510 bp	KX091854.1	Unpublished
		<i>Iridopterygidae</i> JZ-2017	16,528 bp	KY689120	[10]
	Caliridinae	<i>Caliris</i> sp. JZ-2017	15,433 bp	KY689126	[10]
		<i>Arria pallida</i>	16,240 bp	MT594484	Unpublished
Haaniidae	Haaniinae	<i>Haania</i> sp. JZ-2017	14,810 bp	KY689130	[10]
		<i>Haania vitalisi</i>	13,628 bp	KX434845	This study
		<i>Sinomiopteryx grahami</i>	15,978 bp	KX434860	This study
	Acromantinae	<i>Psychomantis borneensis</i>	15,493 bp	MG520077	[66]
		<i>Ambivia undata</i>	15,684 bp	KY689128	[10]
		<i>Anaxarcha zhengi</i>	16,620 bp	KU201320	[30]
		<i>Creobroter elongata</i>	15,578 bp	KX091851	Unpublished
		<i>Creobroter gemmatus</i>	15,716 bp	KU201319	[30]
	Hymenopodinae	<i>Creobroter jiangxiensis</i>	15,801 bp	KY689134	[10]
		<i>Creobroter urbanus</i>	15,720 bp	KY689137	[10]
		<i>Odontomantis</i> sp. JZ-2017	15,831 bp	KY689121	[10]
		<i>Theopropus elegans</i>	15,660 bp	KY689125	[10]
		<i>Ceratomantis saussurii</i>	15,664 bp	KX091850	Unpublished
Hymenopodidae	Oxypilinae	<i>Hestiasula</i> sp. FS-2017	15,999 bp	KX091855	Unpublished
		<i>Hestiasula</i> sp. JZ-2017	15,839 bp	KY689115	[10]
		<i>Parablepharis kuhlii (asiatica)</i>	16,130 bp	KY689117	[10]
	Phyllothelyinae	<i>Phyllothelys breve</i>	15,896 bp	MT024239	[84]
		<i>Phyllothelys shaanxiense</i>	15,586 bp	KX091863	Unpublished
		<i>Phyllothelys</i> sp. 1 JZ-2017	16,467 bp	KY689119	[10]
		<i>Phyllothelys</i> sp. 2 JZ-2017	16,239 bp	KY689129	[10]
		<i>Sibylla pretiosa</i>	15,829 bp	KY689116	[10]
	/	<i>Leptomantella tonkinae</i>	15,527 bp	OK480879	Unpublished
		<i>Leptomantella albella</i>	15,534 bp	KJ463364	[68]
Mantidae	Choeradodinae	<i>Asiadodis yunnanensis</i>	15,527 bp	MW357297	[7]
	Hierodulinae	<i>Hierodula chinensis</i>	14,882 bp	KY689131	[10]

		<i>Hierodula formosana</i>	16,266 bp	KR703238	[67]
		<i>Hierodula membranacea</i>	16,122 bp	KR703239	Unpublished
		<i>Hierodula membranacea</i>	14,795 bp	KY689112	[10]
		<i>Hierodula patellifera</i>	15,748 bp	KX091856	Unpublished
		<i>Hierodula patellifera</i>	16,999 bp	KX611803	[44]
		<i>Hierodula</i> sp. JYZ-2020	16,748 bp	MW357298	[7]
		<i>Hierodula zhangi</i>	16,235 bp	MW357299	[7]
		<i>Hierodulella</i> sp. JZ-2017	15,477 bp	KY689136	[10]
		<i>Rhombodera brachynota</i>	16,616 bp	KX611802	[44]
		<i>Rhombodera brachynota</i>	16,067 bp	KY689124	[10]
		<i>Rhombodera latipronotum</i>	15,543 bp	KX091864	Unpublished
		<i>Rhombodera longa</i>	15,886 bp	MT110155	[8]
		<i>Rhombodera</i> sp. FY-2017	15,910 bp	KX619654	[44]
		<i>Rhombodera valida</i>	16,308 bp	KX611804	[44]
		<i>Tamolanica tamolana</i>	16,055 bp	DQ241797	[29]
		<i>Mantis religiosa</i>	15,534 bp	KU201317	[30]
	Mantinae	<i>Mantis religiosa</i>	15,521 bp	MN356097	[65]
		<i>Statilia maculata</i>	15,775 bp	KX900484	[69]
		<i>Statilia</i> sp. FY-2016a	16,294 bp	KU201316	[30]
		<i>Mesopteryx alata</i>	18,074 bp	MW357300/KX434813	[7]
		<i>Sphodromantis lineola</i>	15,475 bp	KY689123	[10]
	Tenoderinae	<i>Tenodera sinensis</i>	15,531 bp	KU201318	[30]
		<i>Tenodera sinensis</i>	15,533 bp	KX673199	[11]
		<i>Tenodera sinensis</i>	15,533 bp	KY689132	[10]
		<i>Pseudovates chlorophaea</i>	16,253 bp	KX434838	This study
	Vatinae	<i>Pseudovates peruviana</i>	15,690 bp	MW357301	[7]
		<i>Stagmatoptera biocellata</i>	16,366 bp	MW357302	[7]
Metallyticidae	/	<i>Metallyticus</i> sp. JZ-2017	15,056 bp	KY689122	[10]
	Nanomantinae	<i>Sceptuchus simplex</i>	15,548 bp	KY689133	[10]
Nanomantidae		<i>Eomantis yunnanensis</i>	15,466 bp	KY689138	[10]
	Tropidomantinae	<i>Pliacanthopus bimaculatus</i>	15,941 bp	MT679725	[22]
		<i>Tropidomantis tenera</i>	15,609 bp	KY689127	[10]
	Heterochaetinae	<i>Heterochaeta</i> sp. JZ-2017	15,576 bp	KX434823	This study
		<i>Paratoxodera polyacantha</i>	15,999 bp	MG049920	[12]
Toxoderidae	Toxoderinae	<i>Stenotoxodera porioni</i>	15,633 bp	KY689118	[10]
		<i>Toxodera hauseri</i>	15,616 bp	KX434837	[12]
	Oxyothespinae	<i>Cheddikulama straminea</i>	16,236 bp	OM910844	This study
Thespidae	Thespinae	<i>Carrikerella</i> sp.	16,053 bp	OM910846	This study
	Corydiidae	<i>Eupolyphaga sinensis</i>	15,553 bp	FJ830540	[72]
Blattodea (outgroup)	Cryptocercidae	<i>Cryptocercus kye bangensis</i>	15,720 bp	KP872847	[72]
		<i>Termes hospes</i>	16,461 bp	KP091693	[70]
	Termitidae	<i>Macrotermes barneyi</i>	15,940 bp	JX050221	[71]