

Supplementary Table 11.1. Selected Asterid fossils

clade	taxon	organ	source	minimum age estimate (Mya)	reference
Cornales	<u><i>Hironoia fusiformis</i></u>	fruit	Late Cretaceous (Early Coniacian) Kamikitaba locality, Honshu, Japan.	87	Takahashi et al. 2002
Hydrangeaceae	<i>Tylerianthus crossmanensis</i>	flower	Late Cretaceous (Turonian), New Jersey, USA	90	Gandolfo 1998
Hydrangeaceae	<i>Hydrangea knowltonii</i>	fruit, calyx	Middle Eocene, Oregon, USA	46	Manchester 1994
Cornaceae	<i>Cornus piggae</i>	fruit	Paleocene North Dakota, USA	58	Manchester et al. 2010
Cornaceae	<i>Nyssa</i>	fruit	Late Cretaceous (Campanian), Alberta, Canada	73	Manchester et al. 2015.
Cornaceae	Mastixioids	fruit	Late Cretaceous (Campanian-Maastrichtian) Central Europe	72	Knobloch and Mai, 1986
Cornaceae	<i>Amersinia obrullata</i>	infructescence, fruit	Paleocene, western North America, eastern Asia	58	Manchester et al 1999
Cornaceae	<i>Browniea serrata</i>	infructescence, fruit, flower	Paleocene western North America	58	Manchester and Hickey 2007
Ericales	<u><i>Paleoenkianthus sayrevillensis</i></u>	flower	Late Cretaceous (Turonian), New Jersey, USA	90	Nixon and Crepet 1993
Close to Pentaphylacaceae	<u><i>Pentapetalum trifasciculandricus</i></u>	flower	Late Cretaceous (Turonian), New Jersey	90	Martínez-Millan et al. 2009)
Actinidiaceae	<i>Parasaurauia allonensis</i>	flower	Late Cretaceous (Late Santonian), Georgia, USA	84	Keller et al. 1996
Ebenaceae	<u><i>Austrodiospyros cryptostoma</i></u>	staminate flowers	Late Eocene southern Australia	36	Basinger and Christophel 1985
Symplocaceae	<i>Symplocos</i>	fruit	Early Eocene to Miocene, Europe	50	Reid and Chandler 1933; Fritsch et al 2014
Styracaceae	<i>Rehderodendron</i>	fruit	Eocene to Miocene, Europe	50	Mai 1970; Vaudois-Mieja 1983; Manchester et al 2009
Icacinaceae	<i>Palaeophytocrene</i>	fruit	Paleocene North America, Colombia; early Eocene England; middle Eocene western North America	58	Reid and Chandler 1933; Manchester 1994; Collinson et al 2012; Stull et al 2012
Icacinaceae	<i>Pyrenacantha</i>	fruit	Middle Eocene Oregon, Oligocene	45	Manchester 1994; Stull et al. 2012

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Icacinaceae	<i>Phytocrene</i>	fruit	Middle Eocene, Tennessee USA	45	Stull et al. 2011
Eucommiaceae	<i>Eucommia</i>	fruit	Eocene Asia, North America; Miocene-Pliocene Europe	48	Manchester et al. 2009
Oleaceae	<i>Fraxinus</i>	fruit	Middle Eocene North America	45	Call and Dilcher 1992
Rubiaceae	<i>Emmenopterys dilcheri</i>	fruit	Middle Eocene, Oregon	45	Manchester 1994
Aquifoliaceae	<i>Ilex</i>	pollen	Middle Eocene, Germany	47	Manchester et al. 2015
Asteraceae	<i>Tubulifloridites lilliei</i>	pollen	Late Cretaceous (Campanian/Maastrichtian), Antarctica	71	Barreda et al. 2015
Asteraceae	<i>Raiguenrayun cura</i>	inflorescence	Eocene, Argentina	47.5	Barreda et al. 2012.
Apiaceae	<i>Carpites ulmiformis</i>	fruit	Late Cretaceous (Maastrichtian), Montana, Wyoming	67	Manchester and O'Leary 2010
Araliaceae	<i>Paleopanax oregonensis</i>	fruit	Middle Eocene, Oregon, USA	45	Manchester 1994
Adoxaceae	<i>Viburnum</i> sp.	pollen	Middle Eocene, BC, Canada	48	Manchester et al. 2015
Caprifoliaceae	<i>Dipelta</i> .	fruit	Middle Eocene, Mississippi, Late Eocene England	45	Reid and Chandler 1926; Manchester et al. 2008
Caprifoliaceae	<i>Diplodipelta</i>	fruit	Late Eocene to Miocene, western North America	35	Manchester and Donoghue 1995