



Ghent University Botanical Garden

in partnership with

Westonbirt
The National
Arboretum

Acer L. and *Dipteronia* Oliv. (Sapindaceae)
VEGETATIVE KEY TO SPECIES IN CULTIVATION

Jan De Langhe

in collaboration with

Dan Crowley

(15 October 2015 - 24 January 2018)



Vegetative identification key.

Introduction:

This key is based on vegetative characteristics, and therefore also of use when flowers and fruits are absent.

- Use a 10x hand lens to check bud scale scars, membranous pocket-like domatia, pubescence, marginal teeth and venation pattern in general.
- Look at the entire plant. Young specimens, shade and strong shoots give an atypical view.
- Beware of hybridisation, especially with plants raised from seed other than wild origin.

Abbreviations used in this key:

- **L/W** = length/width
- **LS** = lower surface
- **US** = upper surface

Taxa treated in this key: → p16.

Taxa referred to synonymy in this key: → p17.

Remarks: → p17.

References:

- herbarium Royal Botanic Gardens Edinburgh
- herbarium Royal Botanic Gardens Kew
- JDL herbarium
- living specimens, in various arboreta, botanic gardens and collections
- literature:

Bean, W.J. - (1976) - *Acer* in Trees and Shrubs hardy in the British Isles vol.1, p.185-240. [online edition](#)

Bean, W.J. - (1988) - *Acer* in Trees and Shrubs hardy in the British Isles Supplement, p.36-62.

Chen - (2010) - A New species of *Acer* (*Aceraceae*) from Northern Thailand, *Blumea* 55, 242-245

de Jong, P.C. - (1989) - *Acer* in European Garden Flora vol.5, p.131-153.

Eom, de Jong and Chang - (2011) - A reappraisal of the *Acer wilsonii* complex and related species in China, *Korean J. Pl. Taxon*, vol 41/4 p.329-337.

Fang, W. - (1939) - *Acer* in A Monograph of Chinese *Aceraceae*, 346 p.

Grimshaw, J. - (2009) - *Acer* in New Trees in Cultivation, p.69-115.

Lee, S. - (1963) - *Acer* in Forest Botany of China Supplement, p.196-224.

Li Hui-Lin. - (1963) - *Acer* in Woody Flora of Taiwan, p.485-491.

Ogata, K. - (1965) - A dendrological study of the Japanese *Aceraceae*, *Bull. Tokyo Univ. Forests* no. 60, p.1-99.

Ogata, K. - (1999) - *Acer* in Flora of Japan vol. 2c, p60-73.

Rehder A. - (1933) - New species, varieties, and combinations. *Acer* sect. *Macrantha*, *Journal of the Arnold Arboretum* 14, p.211-222.

Rehder A. - (1940) - *Acer* in Manual of cultivated trees and shrubs hardy in North America, p.566-586.

RHS - (2014) - *Acer* in The Hillier Manual of Trees & Shrubs, p.15-26.

Sargent, C.S. - (1921) - *Acer* in Manual of the trees of North America, p.681-702.

Schneider, C.K. - (1912) - *Acer* in Illustriertes Handbuch der Laubholzkunde 2, p.192-245.

van Gelderen, D.M., de Jong, P.C. & Oterdoom, H.J. - (1994) - *Maples of the World*, 458 p.

Wiegrefe S., Angus H., Gregory P. & Otis D. - (2002) - International Maple Symposium 2002, 88p.

Xu T., Chen, Y., de Jong P.C., Oterdoom H.J. & Chang C.-S. - (2008) - *Acer* in Flora of China vol.11, p.517-553. [online edition](#)

Aknowledgements:

The authors are particularly grateful to Hugh Angus, Wolfgang Bopp, Piotr Banaszczak, Mona Bourell, Koen Camelbeke, Barry Clarke, Allen Coombes, Herlinde De Jaeck, Piet de Jong, Philippe de Spoelberch, Maurice Foster, Francisco Garin, Paul Goetghebeur, Peter Gregory, John Grimshaw, Tom Hudson, Douglas Justice, Isabel Larridon, Andy Marsh, Jean Merret, Keith Rushforth, Jan Van Bogaert, Cor van Gelderen, Beryl Zhuang and Rolf Zumbunn for extra help with constructive comments and specimens or testing the key during various stages of development.

Their explicit thanks for support goes to Arboretum Keracoual, Arboretum Wespelaar, Ghent University Botanical Garden, Hillier Gardens and Arboretum, Iturraran Botanical Garden, Royal Botanic Gardens Edinburgh, Royal Botanic Gardens Kew and Wakehurst, Tregrehan Garden, Westonbirt Arboretum, the staff at RBG Edinburgh Herbarium and RBG Kew Herbarium.

Copyright © 2015-2018 Jan De Langhe and Dan Crowley

Non-commercial use authorized with mentioning "Jan De Langhe - Ghent University BG and Dan Crowley - Westonbirt Arboretum".

[Plantentuin Universiteit Gent](#)

[Arboretum Wespelaar](#)

[Westonbirt Arboretum](#)

KEY TO GENERA

Leaves pinnately compound, leaflets 7-13(-15). Current year shoot base with scars scarcely apparent (10× LENS) [samara orbicular or obovate-orbicular]. *Dipteronia*

Leaves simple, OR palmately compound, OR IF pinnately compound then leaflets 3-7(-9). Current year shoot base clearly with 2-many pairs of bud scale scars (10× LENS) [samara wing-like]. *Acer*

KEY TO genus *Dipteronia*

Rachis and petiolules initially green. Lateral petiolule 2-10(-20) mm, often clearly increasing in length from top to base of rachis [samara obovate to orbicular <3 cm]. *D. sinensis*

Rachis and petiolules initially pruinose. Lateral petiolule ≤8 mm, usually +/- equal in length along rachis [samara orbicular ≥5 cm]. *D. dyeriana*

KEY TO GROUPS for genus *Acer*

- 01 a Plant wintergreen AND lamina unlobed or 0-3-lobed, LS often distinctly glaucous. *Oblonga* and *Hyptiocarpa* **GROUP A** → p3
- b Plant deciduous, OR lamina compound or 3-more lobed, OR LS (yellowish)green. 02
- 02 a Leaves predominantly compound. *Negundo*, *Pentaphylla* and *Trifoliata* ... **GROUP B** → p4
- b Leaves always simple. 03
- 03 a Petiole lactiferous (shoots, buds and larger veins may be lactiferous too). 04
- b Petiole not lactiferous OR with translucent sap. 07
- 04 a Second year and older branch wood green, not woody (sometimes red to brown in part, sometimes with bluish bloom). *Macrophylla* and *Platanoidea* **GROUP C** → p4
- b Second year and older branch wood grey to brown and woody, often striate. 05
- 05 a Well developed shoot at base with 8-12 pairs of bud scale scars AND lamina predominantly 3-5-lobed. *Lithocarpa* **GROUP D** → p5
- b Well developed shoot at base with 5-8 pairs of bud scale scars (10× LENS) AND lamina predominantly 3-5-lobed, OR lamina predominantly 5-9-lobed. *Platanoidea* 06
- 06 a Lamina predominantly 3-5-lobed. **GROUP E** → p6
- b Lamina predominantly 5-9-lobed. **GROUP F** → p6
- 07 a Well developed shoot at base with >4 pairs of bud scale scars (10× LENS). (*Acer*, *Ginnala*, *Indivisa*, *Lithocarpa*, *Pubescentia* and *Rubra*) 08
- b Well developed shoot at base with 2-4 pairs of bud scale scars (10× LENS). (*Arguta*, *Glabra*, *Macrantha*, *Palmata*, *Parviflora*, *Spicata* and *Wardiana*) 10

08 a	Lamina unlobed or 0-3-lobed, 5-lobed laminas absent. <i>Acer, Ginnala, Indivisa, Oblonga</i> and <i>Pubescentia</i>	GROUP G → p7
b	Lamina 3-5- <u>OR</u> 5-7-lobed.	09
09 a	Terminal lobe predominantly with 6-numerous teeth/side. <i>Acer, Lithocarpa</i> and <i>Rubra</i>	GROUP H → p8
b	Terminal lobe predominantly with 0-6 teeth/side. <i>Acer, Lithocarpa</i>	GROUP I → p9
10 a	Bud stipitate (10× LENS, remove petiole if necessary). (<i>Arguta, Glabra, Macrantha, Parviflora, Spicata</i> and <i>Wardiana</i>)	11
b	Bud sessile (10× LENS, remove petiole if necessary). <i>Palmata</i>	13
11 a	Lamina LS basal vein axils without membranous pockets (10× LENS). <i>Arguta, Glabra, Macrantha, Parviflora, Spicata</i> and <i>Wardiana</i>	GROUP J → p10
b	Lamina LS basal vein axils, and often also secondary vein axils with (sometimes tiny) membranous pockets (10× LENS). <i>Macrantha</i>	12
12 a	Lamina predominantly unlobed or unlobed to 3-lobed.	GROUP K → p11
b	Lamina predominantly 3-5-lobed or 5-lobed.	GROUP L → p12
13 a	Lamina always unlobed.	GROUP M → p13
b	Lamina unlobed to 3(-more)-lobed.	14
14 a	Lamina unlobed to 3-lobed, <u>OR</u> 3-lobed.	GROUP N → p13
b	Lamina 3-more lobed.	15
15 a	Lamina 3-5(-more)-lobed, 5-lobed lamina <u>ALWAYS</u> present.	GROUP O → p13
b	Lamina 7(-more)-lobed <u>AND</u> 5-lobed lamina absent.	GROUP P → p14

GROUP A (*Oblonga* and *Hyptiocarpa*):
Plant wintergreen AND lamina unlobed or unlobed to 3-lobed, LS often distinctly glaucous.

01 a	Lamina unlobed to 3-lobed.	<i>A. paxii</i>
b	Lamina unlobed (juvenile growth sometimes 3-lobed).	02
02 a	Lamina LS pubescent (10× LENS - fading in autumn).	<i>A. coriaceifolium</i>
b	Lamina LS glabrous (10× LENS).	03
03 a	Lamina midvein length/petiole length ratio 6/1-8/1.	<i>A. pinnatinervium</i>
b	Lamina midvein length/petiole length ratio 2/1-4/1.	04
04 a	Lamina LS secondary veins 5-6/side.	<i>A. laurinum</i>
b	Lamina LS secondary veins 6-8(-more)/side.	05
05 a	Lamina largest width below the middle, acumen with acute point.	<i>A. oblongum</i>
b	Lamina largest width in the middle, acumen with blunt point.	<i>A. albopurpurascens</i>

GROUP B (*Negundo*, *Pentaphylla* and *Trifoliata*):
Leaves predominantly compound.

- 01 a Leaf palmately 5-7-foliolate. ***A. pentaphyllum***
- b Leaf 3-foliolate, OR pinnately 5-9-foliolate. 02
- 02 a Terminal bud covered by 2 green/reddish +/- valvate scales, shoot at base with <5 pairs of irregularly contiguous bud scale scars (×10 LENS). 03
- b Terminal bud covered by ≥4 dark brown/black imbricate scales, shoot at base with >5 pairs of closely contiguous bud scale scars (×10 LENS). 05
- 03 a Second year shoot predominantly brown and fully brown after 2 years. ***A. cissifolium***
- b Second year shoot green (sometimes purplish) and usually so on older branch-wood. ... 04
- 04 a Leaflets always 3, margin predominantly entire to dentate in apical part. ***A. henryi***
- b Leaflets 3-5(-9), IF always 3-foliolate, then margin predominantly serrate to dentate/lobed from below the middle towards apex. ***A. negundo***
- Shoot predominantly glabrous (10× LENS).
- Leaflets 3-7(-9). Margin irregularly lobed or dentate to sub-entire (10× LENS). ***A. negundo* var. *negundo***
- Leaflets 3(-5). Margin regularly coarsely serrate (10× LENS). ***A. negundo* var. *mexicanum***
- Shoot pubescent (10× LENS).
- Leaflets 3(-5), LS glabrous to slightly pubescent on midvein (10× LENS). ***A. negundo* var. *texanum***
- Leaflets 3-7, LS at first densely white pubescent (10× LENS). ***A. negundo* var. *californicum***
- 05 a Petiole glabrous. Leaflet margin +/- regularly serrate, predominantly with ≥10 teeth/side. ***A. mandshuricum***
- b Petiole pubescent. Leaflet margin +/- entire to coarsely and bluntly dentate, or dentate to lobed, predominantly with ≤8 teeth or lobes/side. 06
- 06 a Bark coarse and fibrous, vertically fissured. Leaflet LS pubescence predominantly restricted to midvein and secondary veins (10× LENS). ***A. triflorum***
- b Bark smooth or peeling. Leaflet LS pubescent on venation and surface (10× LENS). 07
- 07 a Bark peeling in papery curls. Lateral leaflet margin irregularly dentate/lobed, with 2-3 teeth or lobes/side usually clearly decreasing in size towards apex. ***A. griseum***
- b Bark +/- smooth, not peeling. Lateral leaflet margin variable: +/- undulate and from entire to shallowly dentate with 3-8 almost equal sized teeth. ***A. maximowiczianum***

GROUP C (*Macrophylla* and *Platanoidea*):
Second year and older branch wood green, not woody.

- 01 a Lamina lobes deeply dentate to (sub)lobed. ***A. macrophyllum***
- b Lamina lobes entire. 02

02 a	Lamina predominantly unlobed or unlobed to 3-lobed.	A. catalpifolium	
	b Lamina predominantly 3-7-lobed.		03
03 a	Lamina LS pubescent throughout (10× LENS).		04
	b Lamina LS glabrous, except vein axils (10× LENS).		07
04 a	Lamina predominantly 5-7-lobed.	A. tibetense	
	b Lamina predominantly (0-)3-5-lobed.		05
05 a	Lobe apices acute-acuminate, <15 mm.	A. lobelii	
	b Lobe apices acuminate to caudate, up to 35 mm.		06
06 a	Lamina rather variable (0-)3-5-lobed.	A. longipes	
	b Lamina predominantly 5-lobed.	A. cappadocicum subsp. sinicum	
07 a	Lamina predominantly 5-7 lobed.	A. cappadocicum subsp. cappadocicum	
	b Lamina (0-)3-5-lobed or predominantly 5-lobed.		08
08 a	Terminal lobe predominantly clearly wider than long - 'broad shouldered lamina'.	A. amplum	
	b Terminal lobe predominantly longer than wide.		09
09 a	5-lobed lamina with all lobes predominantly acuminate to caudate.		10
	b 5-lobed lamina with basal lobes predominantly obtuse to acute (other lobes acute to caudate).		11
10 a	Lamina predominantly 5-lobed.	A. cappadocicum subsp. sinicum	
	b Lamina (0-)3-5-lobed.	A. shenkanense	
11 a	Lateral lobes +/- abruptly acuminate.	A. lobelii	
	b Lateral lobes gradually acuminate to caudate.	A. chapaense	

GROUP D (*Lithocarpa*):
Well developed shoot at base with 8-12 pairs of bud scale scars (10× LENS)
AND lamina predominantly 3-5-lobed.

01 a	Petiole very lactiferous (instant dripping sap).		02
	b Petiole slightly lactiferous (sap appears slowly).		03
02 a	Current year shoot and petiole soon glabrescent (10× LENS). Lamina terminal lobe apex caudate [flowers red].	A. sinopurpurascens	
	b Current year shoot and petiole +/- appressed pubescent (10× LENS). Lamina terminal lobe apex acuminate [flowers greenish].	A. tsinglingense	
03 a	Terminal lobe with 1-3 teeth/side.	A. amamiense	
	b Terminal lobe with 2-5(-more) teeth/side.	A. diabolicum	

GROUP E (*Platanoidea*):

Well developed shoot at base with 5-8 pairs of bud scale scars (10× LENS)
AND Lamina 3-5-lobed or 5-lobed.

- 01 a Lamina LS pubescent (10× LENS). 02
 - b Lamina LS glabrous, or pubescence restricted to (basal) vein axils (10× LENS). 05
- 02 a All lobe apices obtuse to acute. **A. campestre**
 - b Terminal and/or lateral lobe apices acute to acuminate or caudate. 03
- 03 a Lobe margins entire. **A. fulvescens**
 - b Lobe margins at least in part dentate. 04
- 04 a Shoot glabrous (10× LENS). Lamina width ≤midvein length. **A. miaotaiense**
 - b Shoot pubescent (10× LENS). Lamina width ≥midvein length. **A. miyabei**
- 05 a Lamina (0-)3-5-lobed. **A. tenellum**
 - b Lamina predominantly 5-lobed. 06
- 06 a Midvein length predominantly ≤6 cm. **A. divergens**
 - b Midvein length predominantly 6-10 cm. 07
- 07 a Lamina LS vein axils glabrous (10× LENS). Lobes occasionally dentate. **A. truncatum**
 - b Lamina LS vein axils pubescent (10 × LENS). Lobes entire. 08
- 08 a Lamina base predominantly cordate. **A. pictum**
 - b Lamina base predominantly truncate. **A. pictum** subsp. **macropterum**

GROUP F (*Platanoidea*):

Lamina 5-9-lobed.

- 01 a Lamina predominantly 7-lobed or 7-9-lobed. 02
 - b Lamina predominantly 5-7-lobed. 03
- 02 a Lamina base shallowly to deeply cordate. LS basal vein axils brownish pubescent (10× LENS). **A. pictum** subsp. **savatieri**
 - b Lamina base truncate to sub-cordate. LS basal vein axils pale pubescent (10× LENS).
 **A. okamotoanum**
- 03 a Terminal lobe margin dentate to occasional dentate. 04
 - b Terminal lobe margin always entire. 06
- 04 a Lateral lobe margin consistently dentate. **A. platanoides**
 - b Lateral lobe margin inconsistently dentate. 05

- 05 a Lamina LS vein axils pubescent (10× LENS). **A. turkestanicum**
- b Lamina LS vein axils glabrous (10× LENS). **A. truncatum**
- 06 a Lamina LS glabrous (10× LENS). **A. truncatum**
- b Lamina LS pubescent at least in vein axils (10× LENS). **A. pictum** sensu lato
- Lamina LS pubescent throughout (10× LENS). **A. pictum** subsp. **pictum**
 - Lamina LS glabrous, OR only pubescent in vein axils or along midvein and secondary veins (10× LENS).
 - Lobes shallow to halfway lamina. **A. pictum** subsp. **mono**
 - Lobes ≥halfway lamina.
 - Lamina LS glabrous except secondary vein axils (10× LENS). **A. pictum** subsp. **dissectum**
 - Lamina LS pubescent along veins (10× LENS). **A. pictum** subsp. **dissectum** f. **connivens**

GROUP G (*Acer*, *Ginnala*, *Indivisa*, *Oblonga*, *Pubescentia*):
Lamina unlobed or 0-3-lobed, 5-lobed laminae absent.

- 01 a Lamina apex predominantly obtuse to acute. 02
- b Lamina apex acute to acuminate. 05
- 02 a Plant deciduous. Petiole at least in part of foliage >lamina midvein length. 03
- b Plant (semi-)evergreen. Petiole always <lamina midvein length. 04
- 03 a Petiole (soon) glabrous (10× LENS). **A. monspessulanum**
- b Petiole pubescent (10× LENS). **A. yui**
- 04 a Midvein length <4 cm. **A. sempervirens**
- b Midvein length 4-6(-more) cm. **A. obtusifolium**
- 05 b Lamina unlobed AND secondary veins 15-25/side. **A. carpinifolium**
- b Lamina unlobed or (0-)3-lobed OR secondary veins <15/side. 06
- 06 a Lamina 3-lobed AND terminal lobe L/W ratio >2/1. **A. pilosum**
- b Lamina unlobed or (0-)3-lobed AND terminal lobe L/W ratio <2/1. 07
- 07 a Lamina LS blue-green to grey-green. 08
- b Lamina LS green. 09
- 08 a Margin +/- irregularly coarsely serrate, >5 teeth >1 mm/side (10× LENS). .. **A. pycnanthum**
- b Margin entire to finely serrate, teeth predominantly <1 mm (10× LENS). . **A. buergerianum**
- 09 a Midvein length predominantly 12-20 cm. **A. sterculiaceum**
- b Midvein length predominantly 3-12 cm. **A. tataricum**
- Lamina midvein length predominantly <5 cm (strong shoots excluded). **A. tataricum** subsp. **semenovii**
 - Lamina midvein length predominantly 7-12 cm.

- Lamina predominantly unlobed, or with shallow lobes <1 cm deep. **A. tataricum** subsp. **tataricum**
- Lamina predominantly deeply lobed at base. **A. tataricum** subsp. **ginnala**

GROUP H (*Acer*, *Lithocarpa* and *Rubra*):
Lamina 3-5- OR 5-7-lobed.
Terminal lobe with 6-numerous teeth/side.

- 01 a Terminal lobe apex obtuse to acute. **02**
- b Terminal lobe apex acute to acuminate or caudate. **03**
- 02 a Midvein length <7 cm, terminal lobe predominantly $\geq 1/2$ midvein length. **A. granatense**
- b Midvein length 6-12 cm, terminal lobe predominantly <1/2 midvein length. **A. opalus**
 - Mature lamina predominantly >10 cm wide, rather thick, LS densely pubescent. ... **A. opalus** subsp. **obtusatum**
 - Mature lamina predominantly <10 cm wide, rather thin, LS pubescent along veins. **A. opalus** subsp. **opalus**
- 03 a Terminal lobe largest width clearly above its basal third. **04**
- b Terminal lobe largest width at its base or almost so. **07**
- 04 a Terminal bud green. **A. pseudoplatanus**
- b Terminal bud (dark) brown or reddish at least in part. **05**
- 05 a Sinus terminal/lateral lobe rather wide and U-shaped. **A. saccharinum**
- b Sinus terminal/lateral lobe rather narrow and V-shaped. **06**
- 06 a Lamina LS pubescent on venation (10x LENS). **A. diabolicum**
- b Lamina LS pubescence restricted to vein axils (10 x LENS). **A. heldreichii**
 - Terminal lobe LW ratio clearly >2/1. **A. heldreichii** subsp. **heldreichii**
 - Terminal lobe LW ratio predominantly <2/1.
 - Terminal lobe very narrow at its base. **A. heldreichii** subsp. **macropterum**
 - Terminal lobe wide at its base. **A. heldreichii** subsp. **trautvetteri**
- 07 a Bruised lamina emits a pungent scent. **A. sterculiaceum**
 - Midvein length 15-30 cm. **A. sterculiaceum** subsp. **sterculiaceum**
 - Midvein length 10-15 cm. **A. sterculiaceum** subsp. **franchetii**
- b Bruised lamina emits no pungent scent. **08**
- 08 a Lamina lobe apices conspicuously acuminate to caudate, ≥ 1 cm long. **A. caesium**
 - Lamina (3-)5-7-lobed. Current year (and often 2nd year) shoot prominently bloomed. **A. caesium** subsp. **giraldii**
 - Lamina 3-5-lobed. Current year shoot slightly bloomed. **A. caesium** subsp. **caesium**
- b Lamina lobe apices acute to (sub-)acuminate, <1 cm long. **09**
- 09 a Bud brownish. Lamina often remarkably large, Ø 15-30 cm. **A. velutinum**
- b Bud green or reddish AND lamina predominantly smaller. **10**

- 10 a Terminal bud green. Lamina terminal lobe with ≥ 5 secondary veins/side longer than 1 cm. *A. pseudoplatanus*
- b Terminal bud green to reddish. Lamina terminal lobe with < 5 secondary veins/side longer than 1 cm. *A. rubrum*

GROUP I (*Acer* and *Lithocarpa*):
Lamina 3-5- OR 5-7-lobed.
Lamina terminal lobe predominantly with 0-6 teeth/side.

- 01 a Petiole slightly lactiferous (sap appears slowly) OR bruised lamina emits a pungent scent. *A. amamiense*
- b Petiole not lactiferous AND bruised lamina emits no pungent scent. 02
- 02 a Terminal lobe slender, L/W ratio $> 2/1$ *A. heldreichii* subsp. *heldreichii*
- b Terminal lobe rather wide, L/W ratio $< 2/1$ 03
- 03 a Terminal bud green. *A. pseudoplatanus*
- b Terminal bud (dark) brown or reddish at least in part. 04
- 04 a Lamina midvein length predominantly > 10 cm AND lobe apices acuminate. 05
- b Lamina midvein length predominantly < 10 cm OR lobe apices blunt to acute. 07
- 05 a Petiole base stipulate. *A. nigrum*
- b Petiole base without persistent stipules. 06
- 06 a Petiole thick and densely pubescent. *A. skutchii*
- b Petiole slender and glabrous. *A. saccharum*
- 07 a Petiole predominantly \geq midvein length AND terminal lobe base $<$ lobe length (basal lobe apices usually situated as high as or lower than lamina base). 08
- b Petiole predominantly $<$ midvein length, OR terminal lobe base $>$ lobe length (basal lobe apices usually situated clearly above the lamina base). 09
- 08 a Terminal lobe predominantly $\geq 1/2$ midvein length. *A. granatense*
- b Terminal lobe predominantly $< 1/2$ midvein length. *A. hyrcanum*
- Lamina margin with crenate to subrounded teeth. *A. hyrcanum* subsp. *keckianum*
 - Lamina margin with obtuse to acute or acute to acuminate teeth.
 - Lamina LS blue green. *A. hyrcanum* subsp. *intermedium*
 - Lamina LS green: - Lamina lobe apices acute to acuminate. *A. hyrcanum* subsp. *tauricolum*
 - Lamina lobe apices obtuse to acute. *A. hyrcanum* subsp. *hyrcanum*
- 09 a Terminal lobe predominantly $< 1/2$ midvein length. *A. opalus*
- Mature lamina predominantly > 10 cm wide, rather thick, LS densely pubescent. .. *A. opalus* subsp. *obtusatum*
 - Mature lamina predominantly < 10 cm wide, rather thin, LS pubescent along veins. *A. opalus* subsp. *opalus*
- b Terminal lobe predominantly $> 1/2$ midvein length. 10

- 10 a Lamina LS (yellowish)green AND terminal lobe apex acuminate/caudate. ... *A. leucoderme*
 b Lamina LS pale green to greyish green AND terminal lobe apex +/- acute. 11
- 11 a Lamina lobe apices rounded to acute, LS venation pubescent with rather long forward directed hairs. *A. floridanum*
 b Lamina lobe apices rounded, LS venation pubescent with rather short spreading hairs. *A. grandidentatum*

**GROUP J (*Arguta, Glabra, Macrantha, Parviflora, Spicata* and *Wardiana*):
 Lamina LS basal vein axils without membranous pockets (10× LENS).**

- 01 a Lamina unlobed, OR with 2 shallow lateral lobes. 02
 b Lamina 3-5-lobed AND lateral lobes often >2 cm. 04
- 02 a Lamina often with 2 shallow lateral lobes, base truncate to rounded or shallowly cordate. *A. stachyophyllum*
 - Multi-stemmed with invasive suckers from base. Lamina often <5 cm. . *A. stachyophyllum* subsp. *betulifolium*
 - Multi-stemmed. Lamina often >5 cm. *A. stachyophyllum* subsp. *stachyophyllum*
 b Lamina unlobed and base always cordate. 03
- 03 a Tertiary veins deeply impressed on lamina US, elevated on LS. *A. distylum*
 b Tertiary veins rather poorly visible to the naked eye on both sides. *A. sikkimense*
- 04 a Lamina LS pale green to blue-green AND completely glabrous (10× LENS). *A. glabrum*
 - Lamina <6 cm across. *A. glabrum* subsp. *glabrum*
 - Lamina >6 cm across. *A. glabrum* subsp. *douglasii*
 b Lamina LS green to grey-green AND at least pubescent in vein axils (10× LENS). 05
- 05 a Terminal lobe coarsely serrate/dentate, predominantly with ≤15 teeth/side. 06
 b Terminal lobe rather finely serrate to double-serrate, with >15 teeth/side. 08
- 06 a Terminal lobe widening at its base, sinus with lateral lobe wide. *A. spicatum*
 b Terminal lobe narrowing at its base, sinus with lateral lobe narrow. 07
- 07 a Lamina base deeply cordate, midvein length predominantly >10 cm. *A. ukurunduense*
 b Lamina base shallowly cordate, midvein length predominantly <10 cm. *A. barbinerve*
- 08 a Terminal lobe predominantly wider than long. *A. nipponicum*
 b Terminal lobe longer than wide. 09
- 09 a Lamina 3-lobed AND terminal lobe L/W ratio 3/1-2/1. *A. wardii*
 b Lamina unlobed, or (3-)5(-7) lobed AND terminal lobe L/W ratio predominantly <2/1. 10
- 10 a Lamina base truncate to shallowly cordate. *A. acuminatum*
 b Lamina base (deeply) cordate. 11

- 11 a Lamina Ø predominantly >10 cm, petiole 5-15 cm. **A. caudatum**
 b Lamina Ø 5-10 cm, petiole 2-10 cm. **A. argutum**

GROUP K (*Macrantha*):
 Lamina LS vein axils with membranous pockets.
 Lamina predominantly unlobed or unlobed to 3-lobed.

- 01 a 3-lobed lamina with lobes extending +/- from apical half. 02
 b Mature lamina unlobed or with lobes extending from basal half. 03
- 02 a Lamina width predominantly 10 cm and midvein length <15cm **A. chienii**
 b Lamina width 10-15(-more) cm and midvein length 12-25 cm. **A. pensylvanicum**
- 03 a Lamina margin (sub)entire. **A. sikkimense** var. **sikkimense**
 b Lamina margin distinctly serrate. 04
- 04 a Lamina L/W ratio predominantly +/- 2/1. 05
 b Lamina L/W ratio clearly <2/1. 06
- 05 a Lamina 7-14 x 4-8 cm **AND** petiole always red. **A. laxiflorum**
 b Lamina 10 x 4 cm **AND** petiole green (sometimes partly red). **A. caudatifolium**
- 06 a Lamina predominantly distinctly lobed with apices acuminate to caudate. **A. forrestii**
 b Lamina predominately unlobed; **OR IF lobed** then with apices obtuse to acute. 07
- 07 a Midvein length predominantly ≤8 cm. 08
 b Midvein length >8 cm. 09
- 08 a Lamina LS membranous pockets obvious, **ALSO** in secondary/tertiary vein axils (10x LENS). **A. davidii** subsp. **grosseri**
 b Lamina LS membranous pockets restricted to midvein/secondary vein axils (10x LENS).
 **A. crataegifolium**
- 09 a Lamina LS membranous pockets obvious, **ALSO** several in secondary/tertiary vein axils (10x LENS). 10
 b Lamina LS membranous pockets restricted to basal vein axils, or to midvein/secondary vein axils (10x LENS). 11
- 10 a Lateral lobes absent or with apices obtuse and below the middle. . **A. davidii** subsp. **davidii**
 b Lateral lobes with apices acute and at or above the middle. **A. capillipes**
- 11 a Lamina LS membranous pockets obvious in basal and midvein/secondary vein axils (10x LENS). **A. morifolium**
 b Lamina LS membranous pockets predominantly scarcely distinguishable in basal vein axils (10x LENS). **A. sikkimense** var. **serrulatum**

GROUP L (*Macrantha*):
Lamina LS vein axils with membranous pockets.
Lamina predominantly 3-5-lobed or 5-lobed.

- 01 a Lamina with sinus terminal/lateral lobe very narrow to overlapping. 02
 b Lamina with sinus terminal/lateral lobe clearly spreading. 03
- 02 a Terminal lobe L/W ratio predominantly $\geq 2/1$, apex caudate. ***A. micranthum***
 b Terminal lobe L/W ratio clearly $< 2/1$, apex acuminate to +/- caudate. ***A. tschonoskii***
 - Lobes acuminate. Shoot and petiole green to vaguely red. ***A. tschonoskii* subsp. *tschonoskii***
 - Lobes acuminate to +/- caudate. Shoot and petiole red to conspicuously so. . ***A. tschonoskii* subsp. *koreanum***
- 03 a Mature lamina outline always obovate. 04
 b Mature lamina outline variable, from ovate to ovate-orbicular, or ovate to obovate. 05
- 04 a Young shoot green. Lamina midvein length 12-25 cm. ***A. pensylvanicum***
 b Young shoot +/- whitish-blue bloomed. Lamina midvein length < 15 cm. ***A. rufinerve***
- 05 a Larger 5-lobed lamina width 12-15 cm AND outline pentagonal/orbicular. ***A. tegmentosum***
 b Larger 5-lobed lamina width ≤ 12 cm OR outline ovate. 06
- 06 a Lamina LS pubescent along veins (10x LENS). ***A. pectinatum***
 - Mature lamina LS secondary veins pubescent with single hairs. ***A. pectinatum* subsp. *pectinatum***
 - Petiole AND mature lamina LS secondary veins stellate pubescent. ***A. pectinatum* subsp. *taronense***
 b Lamina LS glabrous or almost so, or pubescence restricted to vein axils (10x LENS). .. 07
- 07 a Terminal lobe relatively narrow, L/W ratio +/- 2/1. 08
 b Terminal lobe relatively wide, L/W ratio clearly $< 2/1$, often +/- 1/1. 09
- 08 a Mature lamina midvein length 10-14 cm. ***A. aff. pectinatum* (e.g. BSWJ 8270, KR 3012)**
 b Mature lamina midvein length predominantly 8-10 cm. ***A. maximowiczii***
- 09 a Bud and petiole US predominantly green. 10
 b Bud and petiole US predominantly red. 11
- 10 a Lamina midvein length predominantly < 8 cm. ***A. davidii* subsp. *grosseri***
 b Lamina midvein length predominantly > 8 cm. ***A. metcalfii***
- 11 a Lamina always 5-lobed. ***A. rubescens***
 b Lamina (0-)3-5-lobed. 12
- 12 a Lamina LS with membranous pockets obvious, also several in tertiary vein axils (10x LENS). ***A. capillipes***
 b Lamina LS with membranous pockets in secondary vein axils but predominantly absent in most tertiary vein axils (10x LENS). ***A. morifolium***

GROUP M (*Palmata*):
Lamina always unlobed.

- 01 a Basal secondary veins ending between lamina basal third and apical half. ... ***A. cordatum***
 b Basal secondary veins ending in lamina basal third. 02
- 02 a Lamina secondary veins predominantly ≤ 6 /side. ***A. fabri***
 b Lamina secondary veins predominantly 7-12/side. ***A. laevigatum***
 - Petiole glabrous. ***A. laevigatum* var. *laevigatum***
 - Petiole pubescent. ***A. laevigatum* var. *salweenense***

GROUP N (*Palmata*):
Lamina unlobed to 3-lobed, OR 3-lobed.

- 01 a Lamina terminal/lateral lobe sinus predominantly in basal third. ***A. tutcheri***
 b Lamina terminal/lateral lobe sinus predominantly above basal third. 02
- 02 a Current year growth lamina with petiole pubescent. ***A. fenzelianum***
 b Current year growth lamina with petiole glabrous. 03
- 03 a Larger mature lamina +/- as long as wide, sometimes wider than long. ***A. wilsonii***
 b Larger mature lamina clearly longer than wide. ***A. calcaratum***

GROUP O (*Palmata*):
Lamina 3-5(-more)-lobed, 5-lobed laminas ALWAYS present.

- 01 a Lamina 3-5-lobed, OR 5-lobed. 02
 b Lamina 5-7-lobed. 06
- 02 a Lamina 3-5-lobed AND base cuneate to subrounded. ***A. wilsonii***
 b Lamina predominantly 5-lobed (sometimes few 3-4-lobed laminas present) AND base truncate to cordate. 03
- 03 a Petiole stout, thick and short: $\leq 1/3$ midvein length, OR basal lobe lowermost margin entire to serrate in apical third (10x LENS). ***A. sinense***
 b Petiole slender: predominantly $\geq 1/2$ midvein length AND basal lobe lowermost margin serrate from base to apex or at least in apical half (10x LENS). 04
- 04 a Lamina US secondary veins clearly impressed (mature lamina basal width predominantly +/- 3/4 total width). ***A. elegantulum***
 b Lamina US secondary veins +/- elevated (mature lamina basal width 1/2-3/4 total width). .. 05

- 05 a Lamina LS basal vein axils clearly pubescent (10× LENS). *A. oliverianum*
 b Lamina LS basal vein axils scarcely pubescent (10× LENS). *A. serrulatum*
- 06 a Petiole densely pubescent. *A. pubipalmatum*
 b Petiole glabrous or almost so. 07
- 07 a Lamina LS veinlets densely pubescent with remarkable tufts (10× LENS). ... *A. erianthum*
 b Lamina LS veinlets glabrous or almost so (10× LENS). 08
- 08 a Midvein length predominantly 3-9 cm. 09
 b Midvein length predominantly 8-15 cm. 10
- 09 a Lamina margin irregularly double serrate (10× LENS). *A. palmatum*
 b Lamina margin regularly simple serrate (10× LENS). *A. amoenum* var. *amoenum*
- 10 a Lamina LS purplish. *A. aff. campbellii*
 b Lamina LS greenish. 11
- 11 a Terminal lobe margin rather finely serrate, with 2-more teeth between two secondary veins or their forks. *A. campbellii*
 b Terminal lobe margin rather coarsely serrate, with 0-1 teeth between two secondary veins or their forks. *A. flabellatum*

GROUP P (*Palmata*):
 Lamina 7(-more)-lobed AND 5-lobed lamina absent.

- 01 a Lamina predominantly 9-13-lobed. 02
 b Lamina predominantly 7-9-lobed. 05
- 02 a Lamina base +/- truncate to (sub)cordate. *A. tenuifolium*
 b Lamina base cordate to deeply cordate. 03
- 03 a Petiole and lamina LS (soon) glabrous, except vein axils (10× LENS). *A. shirasawanum*
 b Petiole AND lamina LS secondary veins pubescent with long hairs (10× LENS). 04
- 04 a Terminal lobe predominantly ≤1/2 midvein length. *A. japonicum*
 b Terminal lobe predominantly >1/2 midvein length. *A. pseudosieboldianum*
 - Lobes 9-11. *A. pseudosieboldianum* subsp. *pseudosieboldianum*
 - Lobes 9-13. *A. pseudosieboldianum* subsp. *takesimensis*
- 05 a Lamina base +/- truncate to (sub)cordate. *A. tenuifolium*
 b Lamina base cordate to deeply cordate. 06
- 06 a Lamina US pubescent with long hairs (10× LENS). *A. duplicatoserratum*
 b Lamina US glabrous or almost so (10× LENS). 07

- 07 a Lamina midvein length predominantly 8-15 cm. 08
 b Lamina midvein length predominantly 3-9 cm. 09
- 08 a Terminal lobe LS rather finely serrate, with 2-more teeth between two secondary veins and their forks. *A. campbellii*
 b Terminal lobe LS rather coarsely serrate, with 0-1 teeth between two secondary veins and their forks. *A. flabellatum*
- 09 a Terminal lobe predominantly <1/2 midvein length. 10
 b Terminal lobe predominantly 1/2-3/4 midvein length. 11
- 10 a Lamina 7-9-lobed. Petiole glabrous (10× LENS). *A. circinatum*
 b Lamina 7-9(-11)-lobed. Petiole clearly pubescent (10× LENS). *A. sieboldianum*
- 11 a Terminal lobe >3/4 midvein length, margin incised double serrate (10× LENS).
 *A. amoenum* var. *matsumurae*
 b Terminal lobe <3/4 midvein length, margin simple serrate (10× LENS). *A. robustum*

Taxa treated in this identification key:

ACER

- A. acuminatum* (Arguta)
A. albopurpurascens (Oblonga)
A. amamiense (Lithocarpa)
A. amoenum (Palmata)
 - var. *amoenum*
 - var. *matsumurae*
A. amplum (Platanoidea)
A. argutum (Arguta)
A. barbinerve (Arguta)
A. buergerianum (Oblonga)
A. caesium (Acer)
 - subsp. *caesium*
 - subsp. *giraldii*
A. calcaratum (Palmata)
A. campbellii (Palmata)
A. aff. campbellii (Palmata)
A. campestre (Platanoidea)
A. capillipes (Macrantha)
A. cappadocicum (Platanoidea)
 - subsp. *cappadocicum*
 - subsp. *sinicum*
A. carpinifolium (Indivisa)
A. catalpifolium (Platanoidea)
A. caudatifolium (Macrantha)
A. caudatum (Spicata)
A. chapaense (Platanoidea)
A. chienii (Macrantha)
A. circinatum (Palmata)
A. cissifolium (Negundo)
A. cordatum (Oblonga)
A. coriaceifolium (Oblonga)
A. crataegifolium (Macrantha)
A. davidii (Macrantha)
 - subsp. *davidii*
 - subsp. *grosseri*
A. diabolicum (Lithocarpa)
A. distylum (Parviflora)
A. divergens (Platanoidea)
A. duplicatoserratum (Palmata)
A. elegantulum (Palmata)
A. erianthum (Palmata)
A. fabri (Palmata)
A. fenzelianum (Palmata)
A. flabellatum (Palmata)
A. floridanum (Acer)
A. forrestii (Macrantha)
A. fulvescens (Platanoidea)
A. glabrum (Glabra)
 - subsp. *douglasii*
 - subsp. *glabrum*
A. granatense (Acer)
A. grandidentatum (Acer)
A. griseum (Trifoliata)
A. heldreichii (Acer)
 - subsp. *heldreichii*
 - subsp. *macropterum*
 - subsp. *trautvetteri*
A. henryi (Negundo)
A. hyrcanum (Acer)
 - subsp. *hyrcanum*
 - subsp. *intermedium*
 - subsp. *keckianum*
 - subsp. *tauricolum*
A. HWJ 569 (Macrantha)
A. japonicum (Palmata)
A. laevigatum (Palmata)
 - var. *laevigatum*
 - var. *salweenense*
A. laurinum (Hyptiocarpa)
A. laxiflorum (Macrantha)
A. leucoderme (Acer)
A. lobelii (Platanoidea)
A. longipes (Platanoidea)
A. macrophyllum (Macrophylla)
A. mandshuricum (Trifoliata)
A. maximowiczianum (Trifoliata)
A. maximowiczii (Macrantha)
A. metcalfii (Macrantha)
A. miaotaiense (Platanoidea)
A. micranthum (Macrantha)
A. miyabei (Platanoidea)
A. monspessulanum (Acer)
A. morifolium (Macrantha)
A. negundo (Negundo)
 - subsp. *californicum*
 - subsp. *mexicanum*
 - subsp. *negundo*
 - subsp. *texanum*
A. nigrum (Acer)
A. nipponicum (Parviflora)
A. oblongum (Oblonga)
A. obtusifolium (Acer)
A. okamotoanum (Platanoidea)
A. oliverianum (Palmata)
A. opalus (Acer)
 - subsp. *obtusatum*
 - subsp. *opalus*
A. palmatum (Palmata)
A. paxii (Oblonga)
A. pectinatum (Macrantha)
 - subsp. *pectinatum*
 - subsp. *taronense*
A. aff. pectinatum (e.g. BSWJ 8270, KR 3012) (Macrantha)
A. pensylvanicum (Macrantha)
A. pentaphyllum (Pentaphylla)
A. pictum (Platanoidea)
 - subsp. *dissectum*
 - subsp. *dissectum* f. *connivens*
 - subsp. *macropterum*
 - subsp. *mono*
 - subsp. *pictum*
 - subsp. *savatieri*
A. pilosum (Pubescentia)
A. pinnatinervium (Hyptiocarpa)
A. platanoides (Platanoidea)
A. pseudoplatanus (Acer)
A. pseudosieboldianum (Palmata)
 - subsp. *pseudosieboldianum*
 - subsp. *takesimense*
A. pubipalmatum (Palmata)
A. pycnanthum (Rubra)
A. robustum (Palmata)
A. rubescens (Macrantha)
A. rubrum (Rubra)
A. rufinerve (Macrantha)
A. saccharinum (Rubra)
A. saccharum (Acer)
A. sempervirens (Acer)
A. serrulatum (Palmata)
A. shenkanense (Platanoidea)
A. shirasawanum (Palmata)
A. sieboldianum (Palmata)
A. sikkimense (Macrantha)
 - var. *serrulatum*
 - var. *sikkimense*
A. sinense (Palmata)
A. sinopurpurascens (Lithocarpa)
A. skutchii (Acer)
A. spicatum (Spicata)
A. stachyophyllum (Arguta)
 - subsp. *betulifolium*
 - subsp. *stachyophyllum*
A. sterculiaceum (Lithocarpa)
 - subsp. *franchetii*
 - subsp. *sterculiaceum*
A. tataricum (Ginnala)
 - subsp. *ginnala*
 - subsp. *semenovii*
 - subsp. *tataricum*
A. tegmentosum (Macrantha)
A. tenellum (Platanoidea)
A. tenuifolium (Palmata)
A. tibetense (Platanoidea)
A. triflorum (Trifoliata)
A. truncatum (Platanoidea)
A. tschonoskii (Macrantha)
 - subsp. *koreanum*
 - subsp. *tschonoskii*
A. tsinglingense (Lithocarpa)
A. turkestanicum (Platanoidea)
A. tutcheri (Palmata)
A. ukurunduense (Spicata)
A. velutinum (Acer)
A. wardii (Wardiana)
A. wilsonii (Palmata)
A. yui (Oblonga)

DIPTERONIA

- D. dyeriana*
D. sinensis

Taxa referred to synonymy in this identification key:

A. amplum subsp. *catalpifolium* = *A. catalpifolium* (Rehder)
A. campbellii subsp. *flabellatum* = *A. flabellatum* (Flora of China)
A. campbellii subsp. *sinense* = *A. sinense* (Flora of China)
A. campbellii subsp. *wilsonii* = *A. wilsonii* (Flora of China)
A. cappadocicum subsp. *divergens* = *A. divergens* (Flora of Turkey)
A. cappadocicum subsp. *lobelii* = *A. lobelii* (Flora Europaea)
A. cappadocicum subsp. *sinicum* var. *tricaudatum* = *A. shenkanense* (Flora of China)
A. caudatum subsp. *ukurunduense* = *A. ukurunduense* (Flora of China)
A. craibianum = *A. calcaratum* (New Trees)
A. franchetii = *A. sterculiaceum* subsp. *franchetii* (Flora of China/New Trees)
A. ginnala = *A. tataricum* subsp. *ginnala* (Flora of China/New Trees)
A. giraldii = *A. caesium* subsp. *giraldii* (Flora of China/New Trees)
A. grosseri = *A. davidii* subsp. *grosseri* (Flora of China/New Trees)
A. grosseri var. *hersii* = *A. davidii* subsp. *grosseri* (Flora of China/New Trees)
A. kawakamii = *A. caudatifolium* (Flora of China/New Trees)
A. komarovii = *A. tschonoskii* subsp. *koreanum* (Maples of the World)
A. mono = *A. pictum* (Flora of China/Flora of Japan/New Trees)
A. morrisonense sensu Li (1963) non Hayata = *A. rubescens* (Maples of the World)
A. negundo var. *interius* = *A. negundo* var. *texanum* (Flora of Missouri)
A. negundo var. *violaceum* = *A. negundo* var. *negundo* (Flora of Missouri)
A. nikoense = *A. maximowiczianum* (New Trees)
A. olivaceum = *A. elegantulum* (Flora of China/New Trees)
A. oliverianum subsp. *formosanum* = *A. serrulatum* (Flora of China)
A. opalus subsp. *hispanicum* = *A. granatense* (Flora Europaea)
A. palmatum subsp. *amoenum* = *A. amoenum* (Flora of Japan)
A. palmatum subsp. *matsumurae* = *A. amoenum* subsp. *matsumurae* (Flora of Japan)
A. palmatum subsp. *palmatum* = *A. palmatum* (Flora of Japan)
A. pectinatum subsp. *forrestii* = *A. forrestii* (Flora of China)
A. pectinatum subsp. *laxiflorum* = *A. laxiflorum* (Flora of China)
A. pectinatum subsp. *maximowiczii* = *A. maximowiczii* (Flora of China)
A. saccharum subsp. *skutchii* = *A. skutchii*. (Yalma L.Vargas-Rodriguez et al. in Brittonia 65/3)
A. saccharum subsp. *grandidentatum* = *A. grandidentatum* (Rehder)
A. saccharum subsp. *leucoderme* = *A. leucoderme* (Rehder)
A. saccharum subsp. *nigrum* = *A. nigrum* (Rehder)
A. schneiderianum = *A. oliverianum* (Flora of China)
A. shirasawanum var. *tenuifolium* = *A. tenuifolium* (Flora of Japan)
A. taronense = *A. pectinatum* subsp. *taronense* (Flora of China/New Trees)
A. trautvetteri = *A. heldreichii* subsp. *trautvetteri* (Maples of the World/New Trees)
A. tschonoskii var. *rubripes* = *A. tschonoskii* subsp. *koreanum* (Maples of the World)

Remarks:

The following taxa are believed to be in cultivation, though the authors require more material, before these can be included in the key:

A. bodinieri
A. hookeri
A. pauciflorum
A. tientaiense

Some plants in cultivation are intermediate in both floral and vegetative parts of *A. forrestii* and *A. laxiflorum*. Further work is required in order to establish the taxonomic relationship between these taxa.

A. pubipalmatum is included in the key, contrary to its treatment as synonym of *A. pauciflorum* in the Flora of China.

Plants in collections under the following names are usually something else:

A. discolor = *A. paxii*
A. erythranthum = *A. laevigatum*
A. heptaphlebium = *A. aff. campbellii*
A. pentapomicum = *A. monspessulanum*
A. reginae-amaliae = *A. sempervirens*
A. taiwanense = aff. *A. campbellii*

