



## Supplement

The following supplementary materials are available for this article: Wong, S.Y., A.R. Nor Fathiah, W. Hetterscheid. 2022. Phylogeny of *Amorphophallus* (Araceae) on Borneo with notes on the floral biology of three species. *Taiwania* 67(1): 55-66. Doi: 10.6165/tai.2022.67.55

**Table S1.** List of *Amorphophallus* species included in this study with vouchers (herbarium location) and GenBank accession Number.

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***Amorphophallus albispatus* Hett.** THAILAND. Central Thailand: Ratchaburi, North-West of Ratburi. AM117 (HBG number: 2014-G-35, old/parallel number: H.AM 777). ITS: KY490526, *matK*: KY490480, *PhyC*: KY490434.

***Amorphophallus angulatus* Hett. & A. Vogel.** MALAYSIA. Sarawak: Miri, Beluru, Lambir Hills NP. 04 12 14.4N 114 02 33.9E. AM29 (SAR). ITS: KY490513, *matK*: KY490467, *PhyC*: --.

***Amorphophallus angulatus* Hett. & A. Vogel.** MALAYSIA. Sarawak: Miri, Marudi, Mulu NP. 04 02 42.2N 114 48 55.5E. AM33 (SAR). ITS: KY490516, *matK*: KY490470, *PhyC*: KY490425.

***Amorphophallus angulatus* Hett. & A. Vogel.** MALAYSIA. Sarawak: Sri Aman, Lubok Antu, Nanga Segerak. 01 24 48.6N 112 00 15.6E. AM110 (SAR). ITS: KY490519, *matK*: KY490473, *PhyC*: KY490427.

***Amorphophallus angulatus* Hett. & A. Vogel.** Obtained from Claudel *et al.* (2017), H.AM 1823. ITS1: KX389724, *matK*: KT794013, *PhyC*: --.

***Amorphophallus atroviridis* Hett.** THAILAND. Central Thailand: Lop Buri. AM119 (HBG number: 2014-G-187, old/parallel number: H.AM. 1506). ITS: KY490528, *matK*: KY490482, *PhyC*: KY490436.

***Amorphophallus atroviridis* Hett.** Obtained from Claudel *et al.* (2017), H.AM 683. ITS1: KX389731, *matK*: KU523419, *PhyC*: --.

***Amorphophallus bangkokensis* Ganep.** Obtained from Claudel *et al.* (2017), H.AM 1343. ITS1: KX389732, *matK*: KU523420, *PhyC*: --.

***Amorphophallus beccarii* Engl.** Obtained from Claudel *et al.* (2017). ITS1: KX389734 (H.AM 620), *matK*: AF387383 (H.AM 525), *PhyC*: --.

***Amorphophallus borneensis* (Engl.) Engl. & Gehrm.** AM22 (SAR) (clone # AGA-2402-01). ITS: KY490507, *matK*: KY490461, *PhyC*: KY490423.

***Amorphophallus borneensis* (Engl.) Engl. & Gehrm.** Obtained from Claudel *et al.* (2017). ITS1: KX389735 (H.AM 1516), *matK*: KU523421 (H.AM 1516), *PhyC*: --.

***Amorphophallus boyceanus* Hett.** THAILAND. Peninsular: Tale Ban. AM115 (HBG number: 2012-G-78, old/parallel number: H.AM 515). ITS: KY490524, *matK*: KY490478, *PhyC*: KY490432.

***Amorphophallus brachyphyllus* Hett.** MALAYSIA. Sarawak: Kuching, Bau, Gua Angin. 01 24 54.8N 110 08 08.2E. AM20 (SAR). ITS: KY490505, *matK*: KY490459, *PhyC*: KY490421.

***Amorphophallus brachyphyllus* Hett.** Obtained from Claudel *et al.* (2017), HBG 2007-G-061. ITS1: KX389737, *matK*: KU523423, *PhyC*: --.

***Amorphophallus bufo* Ridl.** Obtained from Claudel *et al.* (2017), H.AM 1575. ITS1: KX389739, *matK*: KU523424, *PhyC*: --.

***Amorphophallus commutatus* (Schott) Engl.** Obtained from Claudel *et al.* (2017). ITS1: KX389746 (H.AM 1402), *matK*: AF387392 (H.AM 218), *PhyC*: --.

***Amorphophallus costatus* Hett.** MALAYSIA. Sarawak: Sri Aman, Lubok Antu, Nanga Segerak. 01 24 53.3N 112 00 15.6E. AM111 (SAR). ITS: KY490520, *matK*: KY490474, *PhyC*: KY490428.

***Amorphophallus declinatus* Hett.** PHILIPPINES. Palawan. AM114 (SAR) (HBG number: 2014-G-176, old/parallel number: H.AM 1006). ITS: KY490523, *matK*: KY490477, *PhyC*: KY490431.

***Amorphophallus declinatus* Hett.** Obtained from Claudel *et al.* (2017), H.AM 1007. ITS1: KX389754, *matK*: KU523434, *PhyC*: --.

***Amorphophallus decussilvae* Baker & Alderw.** Obtained from Claudel *et al.* (2017). ITS1: KX389755 (H.AM 118), *matK*: AF387388 (H.AM 549), *PhyC*: --.

***Amorphophallus discophorus* Backer & Alderw.** INDONESIA. AM113. (HBG number: 2012-G-7, old/parallel number: s.n.). ITS: KY490522, *matK*: KY490476, *PhyC*: KY490430.

***Amorphophallus discophorus* Backer & Alderw.** Obtained from Claudel *et al.* (2017), H.AM 572. ITS1: KX389756, *matK*: KU523435, *PhyC*: --.

***Amorphophallus eburneus* Bogner.** MALAYSIA. Sarawak: Kuching, Padawan, Kampung Danu. 01 17 07.2N 110 15 08.8E. AM15 (SAR). ITS: KY490501, *matK*: KY490455, *PhyC*: --.

***Amorphophallus eburneus* Bogner.** MALAYSIA. Sarawak: Kuching, Padawan, Kampung Bengoh. 01 15 35.0N 110 15 37.7E. AM19 (SAR). ITS: KY490504, *matK*: KY490458, *PhyC*: KY490420.

***Amorphophallus eburneus* Bogner.** Obtained from Claudel *et al.* (2017). ITS1: KX389760 (H.AM 311), *matK*: AF387390 (H.AM 029), *PhyC*: --.

***Amorphophallus elegans* Ridl.** Obtained from Claudel *et al.* (2017), EX1. ITS1: KX389763, *matK*: KU523439, *PhyC*: --.

***Amorphophallus galbra* F.M. Bailey.** Obtained from Claudel *et al.* (2017). ITS1: KX389768 (H.AM 1521), *matK*: AF387393 (unknown), *PhyC*: --.

***Amorphophallus gigas* Teijsm. & Binnend.** INDONESIA. Sumatra. AM121 (SAR) (HBG Number: 2007-G-74, old/parallel number: s.n.). ITS: KY490530, *matK*: KY490484, *PhyC*: KY490438.

***Amorphophallus gigas* Teijsm. & Binnend.** Obtained from Claudel *et al.* (2017), H.AM 1305. ITS1: KX389770, *matK*: KU523445, *PhyC*: --.

***Amorphophallus haematospadix* Hook. f.** MALAYSIA. AM120 (SAR) (HBG number: 2007-G-75, old/parallel number: H.AM 1357). ITS: KY490529, *matK*: KY490483, *PhyC*: KY490437.

***Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Lundu, Sematan, Kampung Sebako. 01 42 09.0N 109 42 28.2E. AM3 (SAR). ITS: KY490489, *matK*: KY490443, *PhyC*: KY490412.

***Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Lundu, Gunung Perigi. 01 44 24.9N 109 49 03.9E. AM4 (SAR). ITS: KY490490, *matK*: KY490444, *PhyC*: --.

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- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Bau, Singai. 01 30 20.1N 110 10 46.6E. AM6 (SAR). ITS: KY490492, *matK*: KY490446, *PhyC*: KY490413.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Lundu, Gunung Gading NP. 01 41 28.3N 109 50 43.6E. AM7 (SAR). ITS: KY490493, *matK*: KY490447, *PhyC*: KY490414.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Bau, Kampung Segong, Gunung Moi. AM8 (SAR). ITS: KY490494, *matK*: KY490448, *PhyC*: KY490415.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Bau, Kampung Peninjau, Gunung Muan/Serembu. 01 26N 110 13E. AM9 (SAR). ITS: KY490495, *matK*: KY490449, *PhyC*: KY490416.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Padawan, Puncak Borneo, Sungai Semangas. 01 08 34.3N 110 13 38.2E. AM11 (SAR). ITS: KY490497, *matK*: KY490451, *PhyC*: --.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Samarahan, Serian, Taman Rekreasi Ranchar. 01 08 34.9N 110 35 02.4E. AM14 (SAR). ITS: KY490500, *matK*: KY490454, *PhyC*: --.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Padawan, Kampung Bengoh-Danu. 01 15 38.6N 110 15 31.4E. AM18 (SAR). ITS: KY490503, *matK*: KY490457, *PhyC*: --.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Miri, Marudi, Mulu NP. AM26 (SAR) (clone # AGA-2221-01). ITS: KY490511, *matK*: KY490465, *PhyC*: --.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Miri, Marudi, Mulu NP. 04 02 29.4N 114 48 44.3E. AM34 (SAR). ITS: KY490517, *matK*: KY490471, *PhyC*: --.
- Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Sematan, Kampung Pueh. 01 49 18.33N 109 41 39.22E. AM123 (SAR). ITS: KY490532, *matK*: KY490486, *PhyC*: KY490440.
- Amorphophallus hewittii* Alderw.** Obtained from Claudel *et al.* (2017), H.AM 1435. ITS1: KX38976, *matK*: KU523450, *PhyC*: --.
- Amorphophallus hirsutus* Teijsm. & Binn.** Obtained from Claudel *et al.* (2017). ITS1: KX389778 (H.AM 1573), *matK*: AF387395 (H.AM 567), *PhyC*: --.
- Amorphophallus hottae* Bogner & Hett.** MALAYSIA. Sabah. AM24 (SAR) (clone # AGA-1455-01, H.AM 1057). ITS: KY490509, *matK*: KY490463, *PhyC*: --.
- Amorphophallus hottae* Bogner & Hett.** Obtained from Claudel *et al.* (2017), H.AM 915. ITS1: KX389731, *matK*: KU523419, *PhyC*: --.
- Amorphophallus infundibuliformis* Hett., A. Dearden & A. Vogel.** MALAYSIA. Sarawak: Kuching, Bau, Batu Taring. AM5 (SAR). ITS: KY490491, *matK*: KY490445, *PhyC*: --.
- Amorphophallus infundibuliformis* Hett., A. Dearden & A. Vogel.** MALAYSIA. Sarawak: Kuching, Padawan, Puncak Borneo. 01 08 34.3N 110 13 38.2E. AM12. ITS: KY490498, *matK*: KY490452, *PhyC*: KY490418.
- Amorphophallus infundibuliformis* Hett., A. Dearden & A. Vogel.** MALAYSIA. Sarawak: Kuching, Lundu, Gunung Gading NP. 01 41 59.6N 109 50 15.8E AM122. ITS: KY490531, *matK*: KY490485, *PhyC*: KY490439.
- Amorphophallus julaiihii* Ipor, Tawan & P.C. Boyce.** MALAYSIA. Sarawak: Miri, Marudi, Mulu NP. 04 02 29.4N 114 48 44.3E. AM109 (SAR). ITS: KY490518, *matK*: KY490472, *PhyC*: KY490426.
- Amorphophallus julaiihii* Ipor, Tawan & P.C. Boyce.** Obtained from Claudel *et al.* (2017), H.AM 1311. ITS1: KX389786, *matK*: KU523457, *PhyC*: --.
- Amorphophallus konkanensis* Hett., S.R. Yadaf & K.S. Patil.** Obtained from Claudel *et al.* (2017), H.AM 1134. ITS1: KX389791, *matK*: KU523461, *PhyC*: --.
- Amorphophallus lambii* Mayo & Widjaja.** MALAYSIA. Sabah. AM25 (clone # AGA-2457-01). ITS: KY490510, *matK*: KY490464, *PhyC*: --.
- Amorphophallus lambii* Mayo & Widjaja.** Obtained from Claudel *et al.* (2017). ITS1: KX389794 (H.AM 264), *matK*: AF387400 (H.AM 834), *PhyC*: --.
- Amorphophallus lambii* Mayo & Widjaja.** Obtained from Chartier *et al.* (2014). ITS1: --, *matK*: --, *PhyC*: JF776575.
- Amorphophallus lanceolatus* (Serebryanyi) Hett. & Claudel.** Obtained from Claudel *et al.* (2017), H.AM 179. ITS1: KX389717, *matK*: AF387426, *PhyC*: --.
- Amorphophallus longispathaceus* Engl. & Gehrm., PHILIPPINES.** AM118 (SAR) (HBG number: 2007-G-69, old/parallel number: s.n.). ITS: KY490527, *matK*: KY490481, *PhyC*: KY490435.
- Amorphophallus longispathaceus* Engl. & Gehrm.** Obtained from Claudel *et al.* (2017), H.AM 1346. ITS1: KX389753, *matK*: KU523433, *PhyC*: --.
- Amorphophallus manta* Hett. & Ittenb.** Obtained from Claudel *et al.* (2017), H.AM 1760. ITS1: KX389805, *matK*: KU523471, *PhyC*: --.
- Amorphophallus myosuroides* Hett. & A. Galloway.** Obtained from Claudel *et al.* (2017), H.AM 1500. ITS1: KX389811, *matK*: KU523474, *PhyC*: --.
- Amorphophallus niahensis* P.C. Boyce & Hett.** MALAYSIA. Sarawak: Miri, Gua Niah. AM23 (SAR) (clone # AGA-2401-01). ITS: KY490508, *matK*: KY490462, *PhyC*: --.
- Amorphophallus niahensis* P.C. Boyce & Hett.** MALAYSIA. Sarawak: Miri, Niah Suai, Niah NP. 03 49.378N 113 46.535E. AM32 (SAR). ITS: KY490515, *matK*: KY490469, *PhyC*: KY490424.
- Amorphophallus niahensis* P.C. Boyce & Hett.** Obtained from Claudel *et al.* (2017), H.AM 1509. ITS1: KX389815, *matK*: KU523476, *PhyC*: --.
- Amorphophallus obscurus* Hett. & Sizemore.** Obtained from Claudel *et al.* (2017), H.AM 1147. ITS1: KX389816, *matK*: KU523477, *PhyC*: --.
- Amorphophallus ongsakulii* Hett. & A. Galloway.** Obtained from Claudel *et al.* (2017), HBG 2007-G-114. ITS1: KX389818, *matK*: KU523478, *PhyC*: --.
- Amorphophallus opertus* Hett.** Obtained from Claudel *et al.* (2017), H.AM 585. ITS1: KX389820, *matK*: KU523480, *PhyC*: --.
- Amorphophallus paeoniifolius* Dennst. & Nicolson.** Obtained from Claudel *et al.* (2017). ITS1: KX389821 (H.AM 63), *matK*: AF387410 (H.AM 378), *PhyC*: --.
- Amorphophallus palawanensis* Bogner & Hett.** Obtained from Claudel *et al.* (2017), H.AM 124. ITS1: KX389822, *matK*: AF387411, *PhyC*: --.
- Amorphophallus pendulus* Bogner & Mayo.** MALAYSIA. Sarawak: Kuching, Bau. AM16 (SAR). ITS: KY490502, *matK*: KY490456,



PhyC: --.  
***Amorphophallus pendulus* Bogner & Mayo.** Obtained from Claudel *et al.* (2017), BG Atlanta. ITS1: KX389823, *matK*: KU523481, PhyC: --.  
***Amorphophallus plicatus* Bok & H.J. Lam.** Obtained from Claudel *et al.* (2017), H.AM 1144. ITS1: KX389826, *matK*: KU523484, PhyC: --.  
***Amorphophallus polyanthus* Hett. & Sizemore.** Obtained from Claudel *et al.* (2017), H.AM 873. ITS1: KX389827, *matK*: KU523485, PhyC: --.  
***Amorphophallus prainii* Hook. f.** MALAYSIA. Kedah: Merbok, Bedong, Hutan Lipur Rekreasi Tupah. 05 44.048N 100 26.510E. *AM1* (SAR). ITS: KY490488, *matK*: KY490442, PhyC: KY490411.  
***Amorphophallus prainii* Hook. f.** MALAYSIA. Kelantan: Kuala Krai, Dabong, Gua Ikan. 05 21 15.3N 102 01 36.5E. *AM124* (SAR). ITS: KY490533, *matK*: KY490487, PhyC: KY490441.  
***Amorphophallus prainii* Hook. f.** Obtained from Claudel *et al.* (2017), H.AM 1030. ITS1: KX389828, *matK*: KU523486, PhyC: --.  
***Amorphophallus pulchellus* Hett. & Schuit.** Obtained from Claudel *et al.* (2017), H.AM 1589. ITS1: KX389830, *matK*: KU523488, PhyC: --.  
***Amorphophallus pusillus* Hett. & Serebryanyi.** Obtained from Claudel *et al.* (2017), H.AM 247. ITS1: KX389831, *matK*: AF387413, PhyC: --.  
***Amorphophallus ranchanensis* Ipor, A. Simon & Meekiong.** MALAYSIA. Sarawak: Samarahan, Serian, Taman Rekreasi Ranchan. 01 08 34.9N 110 35 02.4E. *AM13* (SAR). ITS: KY490499, *matK*: KY490453, PhyC: KY490419.  
***Amorphophallus ranchanensis* Ipor, A. Simon & Meekiong.** Obtained from Claudel *et al.* (2017), H.AM 1885. ITS1: KX389834, *matK*: KU523490, PhyC: --.  
***Amorphophallus rostratus* Hett.** Obtained from Claudel *et al.* (2017), H.AM 1559. ITS1: KX389837, *matK*: KU523492, PhyC: --.  
***Amorphophallus sagittarius* Steenis.** Obtained from Claudel *et al.* (2017), H.AM 49. ITS1: --, *matK*: AF387416, PhyC: --.  
***Amorphophallus salmoneus* Hett.** Obtained from Claudel *et al.* (2017), H.AM 0036. ITS1: KX389838, *matK*: KU523493, PhyC: --.  
***Amorphophallus scaber* Serebryanyi & Hett.** Obtained from Claudel *et al.* (2017), H.AM 1461. ITS1: KX389841, *matK*: KU523496, PhyC: --.  
***Amorphophallus serrulatus* Hett. & A. Galloway.** Obtained from Claudel *et al.* (2017), H.AM 1430. ITS1: KX389844, *matK*: KU523499, PhyC: --.  
***Amorphophallus* sp.** MALAYSIA. Sarawak: Kuching, Padawan, Puncak Borneo. *AM10* (SAR). ITS: KY490496, *matK*: KY490450, PhyC: KY490417.  
***Amorphophallus* sp.** MALAYSIA. Sarawak: Miri, Beluru, Lambir Hills NP. 04 12 14.4N 114 02 33.9E. *AM30* (SAR). ITS: KY490514, *matK*: KY490468, PhyC: --.  
***Amorphophallus spectabilis* Engl.** Obtained from Claudel *et al.* (2017), H.AM 1886. ITS1: KX389848, *matK*: KU523502, PhyC: --.  
***Amorphophallus* sp. nov. Makiling (= *A. urceolatus*).** Obtained from Claudel *et al.* (2017), H.AM 1491. ITS1: KX389869, *matK*: KU523517, PhyC: --.  
***Amorphophallus sumawongii* (Bogner) Bogner & Mayo.** Obtained from Claudel *et al.* (2017). ITS1: KX389850 (H.AM 957), *matK*: AF387418 (H.AM 714), PhyC: --.  
***Amorphophallus terrestris* Hett. & Claudel.** Obtained from Claudel *et al.* (2017), H.AM 1568. ITS1: KX389857, *matK*: KU523508, PhyC: --.  
***Amorphophallus tinekeae* Hett. & A. Vogel.** MALAYSIA. Sabah: Gua Gomantung. *AM21* (SAR). ITS: KY490506, *matK*: KY490460, PhyC: KY490422.  
***Amorphophallus tinekeae* Hett. & A. Vogel.** Obtained from Claudel *et al.* (2017), H.AM 477. ITS1: KX389859, *matK*: KU523510, PhyC: --.  
***Amorphophallus titanum* (Becc.) Becc. ex Arcangeli.** AUSTRALIA. Adelaide. Mount Lofty Botanic Garden. *AM27* (SAR). ITS: KY490512, *matK*: KY490466, PhyC: --.  
***Amorphophallus titanum* (Becc.) Becc. ex Arcangeli.** INDONESIA. Sumatra. *AM116* (HBG number: 2007-G-138, old/parallel number: s.n.). ITS: KY490525, *matK*: KY490479, PhyC: KY490433.  
***Amorphophallus titanum* (Becc.) Becc. ex Arcangeli.** Obtained from Claudel *et al.* (2017). ITS1: KX389860 (HBG 2007-G-138), *matK*: AF387421 (BG Bonn), PhyC: --.  
***Amorphophallus variabilis* Blume.** INDONESIA. Java: Bogor. *AM112* (HBG number: 2007-G-142, old/parallel number: s.n.). ITS: KY490521, *matK*: KY490475, PhyC: KY490429.  
***Amorphophallus variabilis* Blume.** Obtained from Claudel *et al.* (2017). ITS1: KX389863 (H.AM 1034), *matK*: AF387422 (H.AM 467), PhyC: --.  
***Amorphophallus verticillatus* Hett.** Obtained from Claudel *et al.* (2017), H.AM 1341. ITS1: KX389864, *matK*: KU523513, PhyC: --.  
***Chlorospatha longipoda* (K. Krause) Madison.** Obtained from Chartier *et al.* (2014), --. ITS: --, *matK*: --, PhyC: JF776584.  
***Syngonium auritum* Schott.** ITS: --, *matK*: AM920611 (Obtained from Cabrera *et al.* 2008), PhyC: JF776612 (Obtained from Chartier *et al.* 2014).

**Table S2.** List of specimens investigated for floral biology: Taxon, collection locality, GPS, voucher, and GenBank accession number. Taxa are arranged alphabetically.

***Amorphophallus eburneus* Bogner.** MALAYSIA. Sarawak: Kuching, Padawan, Kampung Danu. 01 17 07.2N 110 15 08.8E. *AM15* (SAR). ITS: KY490501, *matK*: KY490455, PhyC: --.  
***Amorphophallus hewittii* Alderw.** MALAYSIA. Sarawak: Kuching, Padawan, Kampung Bengoh-Danu. 01 15 38.6N 110 15 31.4E. *AM18* (SAR). ITS: KY490503, *matK*: KY490457, PhyC: --.  
***Amorphophallus julaiihii* Ipor, Tawan & P.C. Boyce.** MALAYSIA. Sarawak: Miri, Marudi, Mulu NP. 04 02 29.4N 114 48 44.3E. *AM109* (SAR). ITS: KY490518, *matK*: KY490472, PhyC: KY490426.