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REFERENCES

- Abrahamczyk S, Janssens Sb, Xixima L, Ditsch B, Fischer E. 2016. *Impatiens pinganoensis* (Balsaminaceae), a new species from Angola. *Phytotaxa* 261 (3): 240–250. <http://dx.doi.org/10.11646/phytotaxa.261.3.3>.
- Abrahamczyk S, Lozada-Gobilard S, Ackermann M, Fischer E, Krieger V, Redling A, Weigend M. 2017. A question of data quality – testing Pollination systems in Balsaminaceae. *PLoS One* 12: 1–14. <https://doi.org/10.1371/journal.pone.0186125>.
- Ackermann M, Weigend M. 2006. Nectar, floral morphology, and pollination syndrome in *Loasaceae* subfam. Loasoideae (Cornales). *Ann. Bot.* 99:503–514.
- Aigner PA. 2001. Optimality modeling and fitness trade-offs: when should plants become pollinator specialists? *Oikos* 95: 177–184.
- Akiyama S. 2017. *Impatiens prainii* (Balsaminaceae), a new record for the Flora of Nepal and the Flora of Myanmar. *J. Jpn. Bot.* 92(5): 314–319.
- Akiyama S. 2018. Lectotypification of *Impatiens radiata* and *I. graciliflora* (Balsaminaceae). *J. Jpn. Bot.* 93(1): 54–60.
- Akiyama S, Ohba H. 2015a. Studies of *Impatiens* (Balsaminaceae) of Nepal 1. *Impatiens amplexicaulis* Edgew. and *I. chungtienensis* Y. L. Chen. *Bull. Natl. Mus. Nat. Sci., Ser. B.* 41(3): 113–124.
- Akiyama S, Ohba H. 2015b. Studies of *Impatiens* (Balsaminaceae) of Nepal 2. *Impatiens jurpia*, *I. urticifolia*, and Allied Species. *Bull. Natl. Mus. Nat. Sci., Ser. B.* 41(4): 161–178.
- Akiyama S, Ohba H, Wu S. 1995. Distribution of *Impatiens* in Yunnan with Note on Distribution Pattern of Himalayan Elements in Yunnan, SW China. *Bull. Natl. Mus. Nat. Sci., Ser. B* 21(4): 151–168.
- Akiyama S, Ohba H, Wu SK. 1996. Further Note of *Impatiens* (Balsaminaceae) from Yunnan, China. *Bull. Natl. Mus. Nat. Sci., Ser. B* 22(4): 135–144.
- Alvarez I., Wendel JF. 2003. Ribosomal ITS sequences and plant phylogenetic inference. *Mol. Phylogenet. Evol.* 29: 417–434. [https://doi.org/10.1016/S1055-7903\(03\)00208-2](https://doi.org/10.1016/S1055-7903(03)00208-2)
- Amaratunga KLD. 1970. Note on the flowering plants of Mutturajawera. *Phytologia*: 452–464.
- Anderberg AA, Rydin C, Kallersjo M. 2002. Phylogenetic relationships in the order Ericales s.l.: analyses of molecular data from five genes from the plastid and mitochondrial genomes. *Am. J. Bot.* 89: 677–687.
- Anderson J. 1871. Chapter XV Hotha to Bhamo. *A report on the expedition to western Yunnan via Bhamo*. Calcutta, Office of the superintendent of government printing.
- APG. 1998. An ordinal classification for the families of flowering plants. *Ann. MO. Bot. Gard.* 85 (4): 531–553
- APG II. 2003. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG II. *Bot. J. Linn. Soc.* 141: 399–436.

REFERENCES

- APG III. 2009. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Bot. J. Linn. Soc.* 161: 105–121.
- Armbruster WS. 2014. Floral specialization and angiosperm diversity: phenotypic divergence, fitness trade-offs and realized pollination accuracy. *AoB PLANTS* 6: plu003; <https://doi:10.1093/aobpla/plu003>
- Armbruster WS, Herzig AL. 1984. Partitioning and sharing of pollinators by four sympatric species of *Dalechampia* (Euphorbiaceae) in Panama. *Ann. MO. Bot. Gard.* 71: 1–16.
- Armbruster WS, Edwards ME, Debevec EM. 1994. Character displacement generates assemblage structure of Western Australian triggerplants (*Stylidium*). *Ecology* 75: 315–329.
- Armbruster WS, Muchhala N. 2009. Associations between floral specialization and species diversity: cause, effect, or correlation? *Evol. Ecol.* 23: 159–179.
- Armbruster WS, Shi XQ, Huang SQ. 2014. Do specialized flowers promote reproductive isolation? Realized pollination accuracy of three sympatric *Pedicularis* species. *Ann. Bot.* 113: 331–340.
- Backer CA. 1935. *Semeiocardium* Zoll., a misinterpreted genus of Balsaminaceae. *Gard. Bull. Str. Settl.* 9: 70–72.
- Baker HG, Baker I. 1983. Floral nectar sugar constituents in relation to pollinator type. In: Jones CE, Little RJ, eds. *Handbook of experimental pollination biology*. New York: Van Nostrand Reinhold Co., 117–141.
- Baker JG. 1884. Contributions to the Flora of Madagascar. – Part I. Polypetale. *Bot. J. Linn. Soc.*: 87–159.
- Baker JG. 1887. Further contributions to the Flora of Madagascar. *J. Linn. Soc.* 22: 441–537.
- Barnes E. 1939. The species of Geraniaceae occurring on the Travancore high range including the description of a new balsam. *J. India. Bot. Soc.* 18(3): 95–105.
- Barnhart JH. 1895. Family Nomenclature. *Bull. Torrey. Bot. Club.* 22(1): 1–24.
- Bartoš M, Janeček S. 2014. Pollinator-induced twisting of flowers sidesteps floral architecture constraints. *Curr. Biol.* 24: R793–R795.
- Beardsley PM, Yen A, Olmstead RG. 2003. AFLP phylogeny of *Mimulus* section *Erythranthe* and the evolution of hummingbird pollination. *Evolution* 57:1397–1410.
- Bentham G, Hooker JD. 1883. *Genera plantarum ad exemplaria imprimis in herbariis Kewensibus servata*. London, L. Reeve & co.
- Bhaskar V. 2012. *Taxonomic Monograph on Impatiens L. (Balsaminaceae) of Western Ghats: The key genus for endemism*. Centre for Plant Taxonomic Studies, Bangalore, 283 pp.
- Biswas KP. 1966. *Plant of Darjeeling and the Sikkim Himalayas I*. West Bengal, West Bengal Government Press.
- Blankinship JW. 1905. *Supplement to the flora of Montana*. Science Studies, Montana College of Agriculture and Mechanic Arts. Botany 1: 33–109.
- Bleeker P. 1858. Lets over de Natuurlijke Geschiedenis van Madoera, H. Zollinger. *Natuurkundig Tijdschrift voor Nederlandsch-Indië* 17: 245.

- Blume CL. 1823. *Catalogus van eenige der Merkwaardigste Zoo in- als Uitheemse Gewassen te Vinden in 's Lands Plantentuin te Buitenzorg Opgemaakt Door C. L. Blume*, M.D. Batavia, Directeur van Voorz. Tuin.
- Blume CL. 1825. *Bijdragen tot de flora van Nederlandsch Indië*, Batavia, Ter lands drukkerij.
- Boberg E, Alexandersson R, Jonsson M, Maad J, Ågren J, Nilsson LA. 2014. Pollinator shifts and the evolution of spur length in the moth-pollinated orchid *Platanthera bifolia*. *Ann. Bot.* 113(2): 267–275.
- Borah S, Gogoi R, Satyanarayana P, Yu SX. 2015. Lectotypification of the name *Impatiens toppinii* Dunn, a new addition of the species for flora of India. *Telopea* 18: 33–37. <http://dx.doi.org/10.7751/telopea8324>
- Bose GC. 1920. *A manual of Indian botany*. London, Blackie and Son Limited.
- Bremer B, Bremer K, Heidari N, Erixon P, Olmstead RG, Anderberg AA, Källersjö M, Barkhordarian E. 2002. Phylogenetics of asterids based on 3 coding and 3 noncoding DNA at higher taxonomic levels. *Mol. Phylogenet. Evol.* 24: 274–301.
- Brenan JPM. 1945. The generic name *Petalonema*. *J. Arnold. Arboretum.* 26: 212–213.
- Caris PL, Geuten KP, Janssens SB, Smets EF. 2006. Floral development in three species of *Impatiens* (Balsaminaceae). *Am. J. Bot.* 93: 1–14.
- Chen YL. 1978. Notulae de Genere *Impatiens* L. Florae Sinicae. *Acta. Phytotaxon. Sin.* 16: 36–55.
- Chen YG. 1988. *Impatiens platysepala*. *Bull. Bot. Res. Harbin.* 8(2): 6.
- Chen YL. 2000. Three new species of *Impatiens* L. from China. *Acta. Phytotaxon. Sin.* 38(6): 557–562.
- Chen YL, Akiyama S, Ohba H. 2007. Balsaminaceae. In: Wu, ZY, Raven PH, Hong DY. (Eds.) *Flora of China*, vol. 12. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis: 43–113.
- Chew PT, Suran S, Ibrahim A. 1997. Checklist of Vascular Plants in the Nature Reserves of Singapore. *Gardens' Bulletin Singapore* 49: 161–223.
- Chinh VT, Huong NTT, Quang BH, Suksathan P. 2015. A new record of *Impatiens kamtilongensis* Toppin (Balsaminaceae) for Vietnam flora. *TAP CHI SINH HOC* 37(3): 332–335.
- Christenhusz MJM, Jarvis C. 2010. Typification of ornamental plants 3: *Impatiens balsamina* (Balsaminaceae). *Phytotaxa* 3: 61–61.
- Clarke CB. 1877. Botanic Note from Darjeeling to Tongo. *J. Linn. Soc. Bot.* 15: 116–165.
- Clarke KR. 1993. Non-parametric multivariate analyses of changes in community structure. *Aust. J. Ecol.* 18: 117–143.
- Clarke KR, Gorley RN. 2006. *Primer v6: user manual/tutorial*. Plymouth: Primer-E Ltd.
- Collett CB, Hemsley WB. 1890. On the collection of plants from upper Burma and the Shan States. *J. Linn. Soc. Bot.* 28: 1–375.
- Collett CB, Hemsley WB. 1891. On the collection of Plants from Upper Burma and the Shan States. *Beihefte zum Botanischen Centralblatt*: 454–455.

REFERENCES

- Comber HF. 1934. Diagnoses specierum novarum in herbario Horti Regii Botanici Edinburgensis cognitarum DCI–DCXIII. *Notes. Roy. Bot. Gard. Edinburgh*. 18: 221–249.
- Cong YY, Liu KM, Cai XZ, Tian SZ. 2008. *Impatiens fugongensis* (Balsaminaceae), a new species from Yunnan, China. *Bot. Stud.* 49: 161–165.
- Cosacov A, Cocucci AA, Sersic AN. 2014. Geographical differentiation in floral traits across the distribution range of the Patagonian oil-secreting *Calceolaria polyrhiza*: do pollinators matter? *Ann. Bot.* 113: 251–266.
- Craib WG. 1911. List of Siamese plants with descriptions of new species. *Bull. Misc. Inform. Kew*: 1–59.
- Craib WG. 1926a. Contributions to the flora of Siam. Additamentum XVIII. *Bull. Misc. Inform. Kew* 4: 154–174. <https://doi.org/10.2307/4118686>
- Craib WG. 1926b. Balsaminaceae. *Florae Siamensis Enumeratio* 2: 208–214.
- Cronquist A. 1981. *An Integrated System of Classification of Flowering Plants*. New York Columbia University Press.
- Cronquist A. 1988. *The evolution and classification of flowering plants*. Ed. 2. New York Bot. Gard., Bronx.
- Čuda J, Rumlerová Z, Brůna J, Skálová H, Pyšek P. 2007. Floods affect the abundance of invasive *Impatiens glandulifera* and its spread from river corridors. *Divers. Distrib.* 23: 342–354.
- Dahlgren R. 1983. General aspects of angiosperm evolution and macrosystematics. *Nord. J. Dahlgren. Bot.* 3: 119–149.
- Dahlgren R. 1989. An updated angiosperm classification. *Bot. J. Linn. Soc.* 100(3): 197–203. <https://doi.org/10.1111/j.1095-8339.1989.tb01717.x>
- Dalechamps J. 1587. *Historia generalis plantarum*. Lugduni: Apud Gvlielmvm Rovillivm.
- Dalsgaard B, Magard E, Fjelds J, Gonzalez AMM, Rahbek C, Olesen JM, Ollerton J, Alarcon R, Araujo AC, Cotton PA, Lara C, Machado CG, Sazima I, Sazima M, Timmermann A, Watts S, Sandel B, Sutherland WJ, Svenning J-C. 2011. Specialization in plant-hummingbird networks is associated with species richness, contemporary precipitation and quaternary climate-change velocity. *PLoS ONE* 6: 1–7.
- Darriba D, Taboada GL, Doallo R, Posada D. 2012. jModelTest 2: more models, new heuristics and parallel computing. *Nature Methods* 9(8), 772.
- Darwin CR. 1862. *On the various contrivances by which British and foreign orchids are fertilized by insects*. London: John Murray.
- De Candolle AP. 1824. Ordo XLVIII. Balsaminaceae. *Prodromus systematis naturalis regni vegetabilis, sive, Enumeratio contracta ordinum generum specierumque plantarum huc usque cognitarum, juxta methodi naturalis, normas digesta auctore Aug. Pyramo de Candolle* 1: 685–688.
- Delavay JM. 1889. Geraniaceae. *Plantae Delavayanæ*: 109–123.

- Del Hoyo J, Elliott A, Sargatal J, Christie DA, de Juana E. (eds.). 2018. *Handbook of the Birds of the World Alive*. Lynx Edicions, Barcelona. (retrieved from <http://www.hbw.com/> on 22 March 2018).
- Dessai JRN, Janarthanam MK. 2011. The genus *Impatiens* (Balsaminaceae) in the northern and parts of central Western Ghats. *Rheedea* 21(1): 23–80.
- De Jager ML, Ellis AG. 2014. Floral polymorphism and the fitness implications of attracting pollinating and florivorous insects. *Ann. Bot.* 113: 213–222.
- De la Bandera MC, Traveset A. 2006. Breeding system and spatial variation in the pollination biology of the heterocarpic *Thymelaea velutina* (Thymelaeaceae). *Plant. Syst. Evol.* 257: 9–23.
- De Merxem DG, Borremans B, de Jager ML, Johnson T, Jooste M, Ros P, Zenni RD, Ellis AG, Anderson B. 2009. The importance of flower visitors not predicted by floral syndromes. *S. Afr. J. Bot.* 75: 660–667.
- Dietrich D. 1839. *Synopsis plantarum sect. I. Vimariae*, Bernh. Frieder. Voigtii.
- Diels L. 1912. *Plantae Chinenses Forrestianae*. *Notes Roy. Bot. Gard. Edinburgh* 7: 1–410.
- Dodoens R. 1583. *Stirpium historiae pemptades sex*. *Antverpiæ*, Ex officina Christophori Plantini.
- Don D. 1825. Balsaminaceae. *Prodromus florum Nepalensis*: 203–204.
- Don G. 1831. *A General History of the Dichlamydeous Plants I*. London.
- Doyle JJ, Doyle JL. 1987. A rapid DNA isolation procedure for small quantities of fresh leaf tissue. *Phytochemical Bulletin* 19: 11–15.
- Druce GC. 1913. The Abridgement of Miller's Gardeners dictionary of 1754. *Report / Botanical Exchange Club and Society of the British Isles*. 3(5): 426–436.
- Drummond AJ, Rambaut A. 2007. BEAST: Bayesian evolutionary analysis by sampling trees. *BMC. Evol. Biol.* 7: 214.
- Duffy KJ, Johnson SD. 2017. Specialized mutualisms may constrain the geographical distribution of flowering plants. *Proc. R. Soc. B* 284: 20171841. <http://dx.doi.org/10.1098/rspb.2017.1841>
- Du Mortier BC. 1829. *Analyse des familles des plantes: avec l'indication des principaux genres qui s'y rattachent part B*. Tournay, J. Casterman.
- Eaton DAR, Fenster CB, Hereford J, Huang SQ, Ree RH. 2012. Floral diversity and community structure in *Pedicularis* (Orobanchaceae). *Ecology* 93: S182–S194.
- Endress PK. 2012. The immense diversity of floral monosymmetry and asymmetry across angiosperms. *Bot. Rev.* 78: 345–397.
- Engler A, Prantl K. 1931. *Die natürlichen Pflanzenfamilien*. Leipzig.
- Erpenbach A. 2006. *Blütenökologie madagassischer Springkräuter (Impatiens, Balsaminaceae)*. Diploma thesis, University of Bonn.
- Faegri K, van der Pijl L. 1979. *The principles of pollination ecology*. Oxford: Pergamon.
- Farris JS, Källersjö M, Kluge AG, Bult C. 1995. Testing significance of incongruence. *Cladistics* 10: 315–319.

REFERENCES

- Fedde F. 1905. Novorum generum, specierum, varietatum, formarumque Siphonogamarum Index. Just's botanischer jahresbericht. *Systematisch geordnetes repertorium der botanischen literatur aller länder*: 361–634.
- Felsenstein J. 1985. Confidence limits on phylogenies: An approach using the bootstrap. *Evolution* 39: 783–791.
- Fenster CB, Armbruster WS, Wilson P, Dudash MR, Thomson JD. 2004. Pollination syndromes and floral specialization. *Annu. Rev. Ecol. Evol. Syst.* 35: 375–403.
- Fischer CEC. 1926. Contributions to the Flora of Burma. *Bull. Misc. Inform. Kew*: 446–468.
- Fischer E, Rahelivololona ME. 2002. New taxa of *Impatiens* (Balsaminaceae) from Madagascar. I. *Adansonia* 24(2): 271–294.
- Fischer E, Rahelivololona ME. 2004. New taxa of *Impatiens* (Balsaminaceae) from Madagascar. III. *Adansonia* 24(2): 37–52.
- Fischer E, Rahelivololona M.É. 2007a. New taxa of *Impatiens* (Balsaminaceae) from Madagascar. IV. *Adansonia*, sér. 329 (2): 269–315.
<http://sciencepress.mnhn.fr/sites/default/files/articles/pdf/a2007n2a8.pdf>
- Fischer E, Rahelivololona M.É. 2007b. New taxa of *Impatiens* (Balsaminaceae) from Madagascar. V. New species of *Impatiens* from Masoala Peninsula. *Adansonia*, sér. 329 (2): 317–332.
- Fischer E, Rahelivololona M.É. 2016. New taxa of *Impatiens* (Balsaminaceae) from Madagascar VIII. *Impatiens max-huberi*, a new species from Marojejy and Anjanaharibe-Sud. *Phytotaxa* 244(2): 317–332. <http://dx.doi.org/10.11646/phytotaxa.244.2.7>.
- Fishbein M, Venable DL. 1996. Diversity and temporal change in the effective pollinators of *Asclepias tuberosa*. *Ecology* 77: 1061–1073.
- Fitch WM. 1971. Toward defining the course of evolution: minimum change for a specific topology. *Syst. Zool.* 20: 406–416.
- Forest F, Goldblatt P, Manning JC, Baker D, Colville JF, Devey DS, Jose S, Kaye M, Buerki S. 2014. Pollination system shift as triggers of speciation in painted petal irises (Lapeirousia: Iridaceae). *Ann. Bot.* 113: 357–371.
- Freitas L, Galetto L, Sazima M. 2006. Pollination by hummingbirds and bees in eight syntopic species and a putative hybrid of Ericaceae in Southeastern Brazil. *Plant. Syst. Evol.* 258: 49–61.
- Fujihashi H, Akiyama S, Ohba H. 2002. Origin and relationships of the Sino-Himalayan *Impatiens* (Balsaminaceae) based on molecular phylogenetic analysis, chromosome numbers and gross morphology. *Jap. Bot.* 77: 284–295.
- Geuten K, Smets E, Schols P, Yuan Y.-M, Janssens S, Küpfer P, Pyck N. 2004. Conflicting phylogenies of balsaminoid families and the polytomy in Ericales: combining data in a Bayesian framework. *Mol. Phylogenet. Evol.* 31: 711–729.
<http://dx.doi.org/10.1016/j.ympev.2003.09.014>.
- Gilg EF. 1909. Balsaminaceae Africanae. *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 43: 97–128.

- Gogoi R, Borah S. 2013. *Impatiens lohitensis*, a new species of *Impatiens* (Balsaminaceae) from Arunachal Pradesh, India. *Taiwania* 58: 15–19.
- Gogoi R, Borah S. 2014. *Impatiens paramjitiana*, a new species of Balsaminaceae from Arunachal Pradesh, India. *Phytotaxa* 175 (3): 171–175. <https://doi.org/10.11646/phytotaxa.175.3.8>
- Gogoi R, Borah S. 2015a. *Impatiens siangensis* (Balsaminaceae), a new species from Arunachal Pradesh, India. *Phytotaxa* 192 (2): 117–120.
- Gogoi R, Borah S. 2015b. *Impatiens dalaiensis* (Balsaminaceae) a new species from Arunachal Pradesh, India. *Phytotaxa* 207 (3): 286–290.
- Gogoi R, Barbhuiya HA, Borah S. 2013. Rediscovery of *Impatiens laevigata* var. *grandifolia* (Balsaminaceae) from NE India. *Taiwania* 58(4): 311–315. <http://dx.doi.org/10.6165/tai.2013.58.311>
- Gogoi R, Borah S. 2013. *Impatiens sicutifer* Hook.f. (Balsaminaceae) and *Tricarpelema chinense* D.Y.Hong (Commelinaceae) Two Additions to the Flora of India from Lohit Valley of Arunachal Pradesh, India. *Taiwania* 58(2): 146–150. <http://dx.doi.org/10.6165/tai.2013.58.146>
- Gogoi R, Odyuo N, Daimary R. 2015a. *Impatiens parkinsonii* C.E.C.Fish. (Balsaminaceae), a new addition to flora of India and Note on its typification. *Teloepa* 18: 383–387. <http://dx.doi.org/10.7751/teloepa9100>
- Gogoi R, Borah S, Satyanarayana P. 2015b. *Impatiens fugongensis*, *I. yui* and *I. xanthina* (Balsaminaceae), Three New Additions to Flora of India. *J. Jpn. Bot.* 90: 270–275.
- Goldberg A. 1986. Classification, Evolution and Phylogeny of the Families of Dicotyledons. *Smithson. Contrib. Bot.* 58: 1–314.
- Goldblatt P, Manning JC. 2006. Radiation of pollination systems in the Iridaceae of sub-Saharan Africa. *Ann. Bot.* 97: 317–344.
- Gómez JM, Muñoz-Pajares AJ, Abdelaziz M, Lorite J, Perfectti F. 2014. Evolution of pollination niches and floral divergence in the generalist plant *Erysimum mediohispanicum*. *Ann. Bot.* 113: 237–249.
- Grant V. 1949. Pollination systems as isolating mechanisms in angiosperms. *Evolution* 3(1): 82–97.
- Grant V. 1994. Modes and origins of mechanical and ethological isolation in angiosperms. *Proc. Natl. Acad. Sci. USA.* 91: 3–10.
- Grant V, Grant KA. 1965. *Flower pollination in the phlox family*. New York: Columbia University Press.
- Grey-Wilson C. 1980a. *Impatiens of Africa*. Rotterdam, Balkema. 235 pp.
- Grey-Wilson C. 1980b. *Hydrocera triflora*, Its Floral Morphology and Relationship with *Impatiens*: Studies in Balsaminaceae V. *Kew. Bull.* 35(1): 213–219.
- Grey-Wilson C. 1985. Balsaminaceae. In: *A revised handbook of the flora of Ceylon*. Dassanayaka MD, Fosberg FR. (ed.). Amerind publ. Co. Pvt. Ltd., New Delhi.: 76–120.
- Grey-Wilson C. 1989a. *Semeiocardium* Zoll.; Is It a Good Genus? Studies in Balsaminaceae: IX. *Kew. Bull.* 44: 107–113.

REFERENCES

- Grey-Wilson C. 1989b. The *Impatiens jurpia* Complex: Studies in Balsaminaceae: X. *Kew. Bull.* 44 (1): 115–122.
- Grey-Wilson C. 1989c. *Impatiens cymbifera* and Its Allies. Studies in Balsaminaceae: XI. *Kew. Bull.* 44 (4): 711–716. <http://www.jstor.org/stable/4110435>
- Grey-Wilson C. 1989d. A Revision of Sumatran *Impatiens*: Studies in Balsaminaceae: VIII. *Kew. Bull.* 44: 67–106.
- Grey–Wilson C. 2008. *Impatiens forrestii*. *Curtis's. Bot. Mag.* 25: 139–145.
- Guo H, Zhang CF, Zhang LZ, Yu SX. 2016. *Impatiens guiqingensis* (Balsaminaceae), a new species from Gansu, China. *Phytotaxa* 247 (3): 229–233. <http://dx.doi.org/10.11646/phytotaxa.247.3.6>
- Gupta RK. 2014. Taxonomy and Distribution of Different Honeybee Species. In: Gupta R., Reybroeck W., van Veen J., Gupta A. (eds) *Beekeeping for Poverty Alleviation and Livelihood Security*. Springer, Dordrecht.
- Hall TA. 1999. BioEdit: A user-friendly biological sequence alignment editor and analysis program for Windows 95/98/NT. *Nucleic. Acids. Symp.* 41: 95–98.
- Hammer Ø, Harper DAT, Ryan PD. 2001. PAST: paleontological statistics software package for education and data analysis. *Palaeontologia Electronica* 4: 1–9.
- Handel–Mazzetti H. 1933. Balsaminaceae: *Symbolae sinicae: botanische Ergebnisse der Expedition der Akademie der Wissenschaften in Wein nach Südwest–China* 1914–1918 7: 646–654.
- Hara H. 1966. *The Flora of Eastern Himalaya*. Tokyo, University of Tokyo Press.
- Hara H, Williams LHJ. 1979. *An enumeration of the flowering plants of Nepal* 3. London, Trustees of British Museum (Natural History).
- Hareesh VS, Gogoi R, Sabu M. 2017. *Impatiens pseudocitrina* (Balsaminaceae), a new species from Arunachal Pradesh, Northeast India. *Phytotaxa* 282 (3): 231–234.
- Henkel A. 1906. *Wild medicinal plants of the United States*. Washington. Government Printing Office.
- Hill AW. 1938. *Index Kewensis plantarum phanerogamarum*, suppl. 9. London, E Prelo Clarendoniano.
- Hileman LC. 2014. Trends in flower symmetry evolution revealed through phylogenetic and developmental genetic advances. *Phil. Trans. R. Soc. B* 369: 20130348. <http://dx.doi.org/10.1098/rstb.2013.0348>
- Höck F. 1909. Allgemeine Pflanzengeographie und Pflanzengeographie aussereuropäischer Länder. Just's botanischer jahresbericht. *Systematisch geordnetes repertorium der botanischen literatur aller länder*. 421–556.
- Hooker JD. 1875. *Impatiens* L. In *The Flora of British India* 1. L. Reeve & Co., London, UK: 440–483.
- Hooker JD. 1901. *Impatiens psittacina*. *Curtis's. Bot. Mag.* 127: t. 7809.

- Hooker JD. 1904a. On the species of *Impatiens* in the Wallichian Herbarium of the Linnean society. *J. Proc. Linn. Soc. Bot.* 37(257): 22–32.
- Hooker JD. 1904b. An epitome of the British Indian species of *Impatiens*. *Rec. Bot. Surv. India* 4(1): 1–10.
- Hooker JD. 1905. An epitome of the British Indian species of *Impatiens*. *Rec. Bot. Surv. India* 4(2): 11–35.
- Hooker JD. 1908. Les espèces du genre “*Impatiens*” dans l’Herbier du Muséum de Paris. *Nouvelles Archives Du Museum D’histoire Naturelle De Paris* 4(10): 233–273.
- Hooker JD. 1909. On Some Species of *Impatiens* from Indochina and the Malayan Peninsula. *Bull. Misc. Inform. Kew* 1: 1–12.
- Hooker JD. 1910a. Indian species of *Impatiens*. generis *Impatiens* species indicae novae et minus rite cognitae a cl. A. Meebold detectae. *Bull. Misc. Inform. Kew* 8: 291–300.
- Hooker JD. 1910b. *Hooker’s Icones Plantarum* 4(5 part 1): T.2901–2925.
- Hooker JD. 1911a. Balsaminaceae. In *Flore Générale L’Indo–Chine* by in H. Lecomte 1: 611–629.
- Hooker JD. 1911b. On Some Species of *Impatiens* from the Malayan Peninsula II. *Kew. Bull.* 6: 209–210.
- Hooker JD. 1911c. On the Balsaminaceae of the State of Central. *Kew. Bull.* 5: 209–210.
- Hooker JD. 1911d. *Hooker’s Icones plantarum* 4(5 part 3): T.2951–2975.
- Hooker JD, Thomson T. 1859. Praecursores ad Floram Indicam –Balsaminaceae. *J. Linn. Soc. Bot.* 4: 106–157.
- Hooker WJ. 1824. *Exotic Flora*. Edinburgh, W. Blackwood. Edinburgh.
- Hooker WJ. 1852. *Curtis’s. Bot. Mag.* 3. London. Reeve and co.: T.4623–4688.
- Hou K. 1982. *A Dictionary of the Families and Genera of Chinese Seed Plants* 2. Beijing, Kexue Chubanshe.
- Huang SH, Shui YM, Chen WH. 2003. New Taxa of *Impatiens* from Yunnan. *Acta. Bot. Yunnanica*. 25(3): 261–280.
- Huang SQ, Shi XQ. 2013. Floral isolation in Pedicularis: how do congeners with shared pollinators minimize reproductive interference? *New Phytol.* 199: 858–865.
- Huelsenbeck J, Ronquist F. 2001. *MRBAYES: Bayesian inference of phylogenetic trees.* *Bioinformatics* 17: 754–755. <https://doi.org/10.1093/bioinformatics/17.8.754>
- Hutchinson J. 1959. *The Families of Flowering Plants I. Dicolyledons*, 2nd edition. Oxford: Clarendon Press.
- IUCN. 2012. *IUCN Red List Categories and Criteria: Version 3.1. Second edition*. Gland, Switzerland and Cambridge, UK: IUCN, 32 pp.
- Janeček Š, Bartoš M, Njabo KY. 2015. Convergent evolution of sunbird pollination systems of *Impatiens* species in tropical Africa and hummingbird systems of the New World. *Biol. J. Linn. Soc.* 115: 127–133.

REFERENCES

- Janecek S, Patacova E, Bartos M, Padysakova E, Spitzer L, Tropek R. 2011. Hovering sunbirds in the Old World: occasional behaviour or evolutionary trend? *Oikos* 120: 178–183.
- Janssens SB. 2008. *Evolutionary studies in Balsaminaceae: Integration of evidence from molecular and morphological data*. PhD Thesis. K.U.Leuven, Leuven.
- Janssens SB, Geuten K, Yuan YM, Song Y, Kupfer P, Smets E. 2006. Phylogenetics of *Impatiens* and *Hydrocera* (Balsaminaceae) using chloroplast *atpB-rbcL* spacer sequences. *Syst. Bot.* 31: 171–180. <https://doi.org/10.1600/036364406775971796>
- Janssens SB, Geuten K, Viaene T, Yuan YM, Song Y, Smets EF. 2007. Evolution of the AP3/DEF K-domain in *Impatiens* and its use for phylogenetic reconstruction. *Mol. Phylogenet. Evol.* 43: 225–239.
- Janssens SB, Knox EB, Huysmans S, Smets EF, Merckx VSFT. 2009. Rapid radiation of *Impatiens* (Balsaminaceae) during Pliocene and Pleistocene: Result of a global climate change. *Mol. Phylogenet. Evol.* 52: 806–824. <https://doi.org/10.1016/j.ympev.2009.04.013>
- Janssens SB, Fischer E, Steivart T. 2010. New insights into the origin of epiphytic *Impatiens* (Balsaminaceae) in West Central Africa based on molecular phylogenetic analysis. *Taxon* 59: 1508–1518.
- Janssens SB, Dessein S, Smets E. 2011. Portrayal of *Impatiens nzabiana*: a morphological, molecular and biogeographic study of a new Gabonese species. *Syst. Bot.* 36: 440–448. <http://www.bioone.org/doi/full/10.1600/036364411X569624>
- Janssens SB, Wilson SY, Yuan YM, Nagels A, Smets EF, Huysmans S. 2012. A total evidence approach using palynological characters to infer the complex evolutionary history of the Asian *Impatiens* (Balsaminaceae). *Taxon* 61: 355–367. <https://doi.org/10.1093/aob/mcs065>
- Janssens SB, Ballings P, Mertens A, Dessein S. 2018. A new endemic *Impatiens* species on Mount Gorongosa (Mozambique) demonstrates the conservation importance of montane areas in Africa. *Phytotaxa* 333(1): 73–85. <http://dx.doi.org/10.11646/phytotaxa.333.1.5>.
- Jesson LK, Barrett SCH. 2002. Enantiostyly in *Wachendorfia* (Haemodoraceae): the influence of reproductive systems on the maintenance of the polymorphism. *Am. J. Bot.* 89: 253–262.
- Johnson SD. 1997. Pollination ecotypes of *Satyrium hallackii* (Orchidaceae) in South Africa. *Bot. J. Linn. Soc.* 123: 225–235. <https://doi.org/10.1111/j.1095-8339.1997.tb01415.x>
- Johnson SD, Linder HP, Steiner KE. 1998. Phylogeny and radiation of pollination systems in *Disa* (Orchidaceae). *Am. J. Bot.* 85(3): 402–411.
- Johnson SD. 2010. The pollination niche and its role in the diversification and maintenance of the southern African flora. *Philos. Trans. Royal Soc. B* 365: 499–516.
- Johnson SD, Peter CI, Ellis AG, Boberg E, Botes C, Van der Niet T. 2011. Diverse pollination systems of the twin spurred orchid genus *Satyrium* in African grasslands. *Plant. Syst. Evol.* 292: 95–103.
- Johnson SD, Steiner KE. 1997. Long-Tongued Fly Pollination and Evolution of Floral Spur Length in the *Disa draconis* Complex (Orchidaceae). *Evolution* 51(1): 45–53.
- Johnson SD, Steiner KE. 2003. Specialized pollination systems in southern Africa. *S. Afr. J. Sci.* 99: 345–348.

- Johnson SD, Wester P. 2017. Stefan Vogel's analysis of floral syndromes in the South African flora: An appraisal based on 60 years of pollination studies. *Flora* 232: 200–206.
<https://doi.org/10.1016/j.flora.2017.02.005>
- Johnson SD, Steiner KE, Kaiser R. 2005. Deceptive pollination in two subspecies of *Disa spathulata* (Orchidaceae) differing in morphology and floral fragrance. *Plant. Syst. Evol.* 255: 87–98.
- Kalisz S, Vogler DW, Hanley KM. 2004. Context-dependent autonomous self-fertilization yields reproductive assurance and mixed mating. *Nature* 430: 884–887.
- Kato M. 1988. Bumblebee visits to *Impatiens* spp. – pattern and efficiency. *Oecologia* 76: 364–370.
- Kato M, Itino T, Hotta M, Inoue T. 1991. Pollination of four Sumatran *Impatiens* species by hawkmoths and bees. *Tropics* 1: 59–73.
- Katoh K, Misawa K, Kuma K, Miyata T. 2002. MAFFT: a novel method for rapid multiple sequence alignment based on fast Fourier transform. *Nucleic Acids Res.* 30: 3059–3066.
<https://doi.org/10.1093/nar/gkf436>
- Karthigeyan K, Gogoi R. 2016. Lectotypification of two Indian species of *Impatiens* L. (Balsaminaceae). *Phytotaxa* 288 (2): 193–196.
- Kay KM, Reeves PA, Olmstead RG, Schemske DW. 2005. Rapid speciation and the evolution of hummingbird pollination in neotropical *Costus* subgenus *Costus* (Costaceae): evidence from nrDNA ITS and ETS sequences. *Am. J. Bot.* 92: 1899–1910
- Kishore K, Kalita H, Rinchen D, Lepcha B. 2012. Evidence of functional specialization and pollination syndrome in *Amomum subulatum* Roxb. (Zingiberaceae). *Current Science* 103: 193–199.
- Knuth P. 1898. Die bisher in Europa und in arktischen Gebiet gemachten blütenbiologischen. *Handbuch der Blütenbiologie*. Vol. I–III Wilhelm Engelmann Verlag, Leipzig: 245–248.
- Kress WJ, DeFilipps RA, Farr E, Daww Yin-Yin-Kyi. 2003. *A Checklist of the Trees, Shrubs, herb, and Climbers of Myanmar (Revised from the original works by Lace, R. Rodger, H. G. Hundley, and U Chit Ko Ko on the "List of Trees, Shrubs, herb and Principal Climbers, etc. Recorded from Burma")*. Contributions from the United States National Herbarium 45.
<http://www.jstor.org/stable/23493222>.
- Kulloli SK, Sreekala AK. 2009. *International Journal of Ecology and Environmental Sciences* 35 (2–3): 211–218.
- Kulloli SK, Sreekala AK, Pandurangan AG. 2009a. Floral biology of *Impatiens trichocarpa* Hook.f., (Balsaminaceae) an endemic Balsam of Western Ghats. *Indian J. Sci. Technol.* 2(2): 30–34.
- Kulloli SK, Ramasubbu R, Sreekala AK, Pandurangan AG. 2009b. Reproductive ecology of *Impatiens campanulata* Wight – a rare and endemic balsam of southern Western Ghats. *Ecol. Environ. Conserv.* 15: 235–239.
- Kulloli SK, Sreekala AK, Pandurangan AG, Ramasubbu R. 2010. Pollination biology in *Impatiens gardneriana* Wight (Balsaminaceae). *Advances in pollen spore research* 28: 131–141.
- Kulloli SK, Sreekala AK, Pandurangan AG. 2015. Floral biology and breeding systems in *Impatiens grandis* Heyne ex Wallich. *International Journal of Current Research* 17(12): 23417–23425.

REFERENCES

- Lamarck J. 1785. *Encyclopedie Methodique*. Botanique 1. Paris, Panckoucke.
- Launert E. 1962. New and little known species from the Flora Zambesiaca area. *Boletim da Sociedade Broteriana* 36: 47–65.
- Lens F, Eeckhout S, Zwartjes R, Smets E, Janssens SB. 2012. The multiple fuzzy origins of woodiness within Balsaminaceae using an integrated approach. Where do we draw the line?. *Ann. Bot.* 109(4): 783–799. <https://doi.org/10.1093/aob/mcr310>
- Lewis F. 1919. Note on animal and plant life in the Vedda country. *Spolia zeylanica*: 119–165.
- Lewis PO. 2001. A Likelihood Approach to Estimating Phylogeny from Discrete Morphological Character Data. *Sys. Biol.* 50(6): 913–925.
- Linnaeus C. 1753. *Species plantarum* 2. Stockholm (Holmiæ), Impensis Laurentii Salvii.
- Linnaeus C. 1754. *Genera plantarum*. Stockholm (Holmiæ), Impensis Laurentii Salvii.
- Lunell J. 1916. Enumerantur Plantae Dakotae Septentrionalis Vasculares VIII. *The American Midland Naturalist*. 465–501.
- Maddison WP, Maddison DR. 2011. *Mesquite: A modular system for evolutionary analysis*. Version 2.75. <http://mesquiteproject.org>.
- Maddison WP, Maddison DR. 2018. *Mesquite: A modular system for evolutionary analysis*. Version 3.40 <http://mesquiteproject.org>.
- Mayfield MM, Waser NM, Price MV. 2001. Exploring the ‘most effective pollinator principle’ with complex flowers: bumblebees and *Ipomopsis aggregata*. *Ann. Bot.* 88: 591–596.
- McNeill J, Barrie FR, Buck WR, Demoulin V, Greuter W, Hawksworth DL, Herendeen PS, Knapp S, Marhold K, Prado J, Prud’homme van Reine WF, Smith GE, Wiersema JH, Turland NJ (Eds.). 2012. *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code) adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011*. [Regnum Vegetabile 154.] A.R.G. Gantner Verlag, Ruggell, 240 pp.
- Meisner CF. 1843. LII. Balsamineae. *Plantarum vascularium genera: secundum ordines naturales digesta eorumque differentiae et affinitates tabulis diagnostacis expositae*: 42.
- Merrill ED. 1917. *An Interpretation of Rumphius’s Herbarium Amboinense*. Manila, Bureau of Printing.
- Merrill ED. 1921. Balsaminaceae. *A Bibliographic Enumeration of Bornean Plants*: 363.
- Miller P. 1754. *The gardeners dictionary: containing the methods of cultivating and improving all sorts of trees, plants, and flowers, for the kitchen, fruit, and pleasure gardens, as also those which are used in medicine 1*. London, John and James Rivington.
- Miller TJ, Raguso RA, Kay KM. 2014. Novel adaptation to hawkmoth pollinators in *Clarkia* reduces efficiency, not attraction of diurnal visitors. *Ann. Bot.* 113: 317–329.
- Miquel FAW. 1860. *Flora van Nederlandsch Indie*. Amsterdam, C. G. van der Post.
- Mohandass D. 2013. Pollination ecology of *Impatiens rufescens* (Balsaminaceae) an endemic annual herb from Nilgiri Mountains Western Ghats India. *International Journal of Ecology and Environmental Science* 39: 59–63.

- Moore G, Zika PF, Rushworth CA. 2012. *Impatiens ecornuta*, a new name for *Impatiens ecalcarata*. (Balsaminaceae), a Jewelweed from the United States and Canada. *Novon* 22(1): 60–61. <https://doi.org/10.3417/2011088>.
- Morgan RF. 2007. *Impatiens: the vibrant world of Busy Lizzies, Balsams, and Touch-me-nots*. Portland, OR: Timber Press: 172 pp.
- Morgan RJ, Yuan YM, Ge XJ. 2005. *Impatiens namchabarwensis*. *Bot. Mag.* 22(4): 205–208.
- Nienhuis CM, Dietzsch AC, Stout JC. 2009. The impacts of an invasive alien plant and its removal on native bees. *Apidologie* 40: 450–463.
- Nieuwland JA, Lunell J. 1916. Enumerantur plantae Dakotae septentrionalis vasculares. *American Midland Naturalist* 4: 474.
- Odyuo N, Deori C, Gogoi R. 2015. Rediscovery of *Impatiens khasiana* Hook.f. after more than a century. *Telopia* 18: 85–89. <http://dx.doi.org/10.7751/telopea8505>.
- Ollerton J. 2012. Biogeography: are tropical species less specialised? *Curr. Biol.* 22: R914–R915.
- Ollerton J, Cranmer L. 2002. Latitudinal trends in plant-pollinator interactions: are tropical plants more specialised? *Oikos* 98: 340–350.
- Pagel M. 1994. Detecting correlated evolution on phylogenies: a general method for the comparative analysis of discrete characters. *Proc. R. Soc. London, Ser B* 255: 37–45.
- Pagel M. 1999. The Maximum Likelihood Approach to Reconstructing Ancestral Character States of Discrete Characters on Phylogenies. *Syst. Biol.* 48(3):612–622.
- Pauw A, Stanway R. 2015. Unrivalled specialization in a pollination network from South Africa reveals that specialization increases with latitude only in the Southern Hemisphere. *J. Biogeogr.* 42: 652–661.
- Perrier de la Bâthie H. 1927. Un nouveau genre de Balsaminees. *Bulletin de l'Académie Malgache* 10: 22.
- Perrier de la Bâthie H. 1934. Les *Impatiens* de Madagascar. *Archives de Botanique, Mémoires* 7: 1–124.
- Peter A. 1928. *Abhandlungen der Koniglichen Gesellschaft der Wissenschaften*. Gottingen, Mathematisch-Physikalische Klasse.
- Peter A. 1928. Balsaminaceae. *Abhandlungen der Koniglichen Gesellschaft der Wissenschaften Gottingen* 13: 84.
- Peter CI, Johnson SD. 2014. A pollinator shift explains floral divergence in an orchid species complex in South Africa. *Ann. Bot.* 113: 277–288.
- Pianka ER. 1966. Latitudinal gradients in species diversity—a review of concepts. *American Naturalist* 100: 33–46.
- Piddington H. 1832. *An English index to the plants of India*. Calcutta, The Baptist Mission press.
- Posada D, Crandall KA. 1998. Modeltest: Testing the model of DNA substitution. *Bioinformatics* 14: 817–818. <https://doi.org/10.1093/bioinformatics/14.9.817>.

REFERENCES

- Potgieter CJ, Edwards TJ. 2005. The *Stenobasipteron wiedemanni* (Diptera, Nemestrinidae) pollination guild in eastern southern Africa. *Ann. MO. Bot. Gard.* 92: 254–267.
- Prabhukumar KM, Hareesh VS, Sreekumar VB, Nirmesh TK, Balachandran I. 2015. *Impatiens neomodesta* (Balsaminaceae) – a new species from Western Ghats, India, *Webbia* 70: 231–235.
- Prain D. 1903. Order XXIX. Geraniaceae. *Bengal Plants*: 293–297.
- Prain D. 1922. *Hooker's Icones Plantarum* 5(1). London. Dulau & Co.
- Price MV, Waser NM, Irwin RE, Campbell DR, Brody AK. 2005. Temporal and spatial variation in pollination of a montane herb: a seven-year study. *Ecology* 86: 2106–2116.
- Pusalkar PK, Singh DK. 2010. Three New Species of *Impatiens* (Balsaminaceae) from Western Himalaya, India. *Taiwania* 55(1): 13–23.
- Raju VS, Nair VJ, Narayana LL, Dutt BSM. 2002. Proposal to conserve the name *Hydrocera* against *Tytonia* (Balsaminaceae). *Taxon* 51: 383–384.
- Ramadevi D, Narayana LL. 1990 Morphology of the flower and fruit of *Hydrocera triflora* Wight and Arn. emend Venkat. and Dutt—an elucidation. *Proc. Indian. Acad. Sci. (Plant Sci.)* 100(1): 43–49.
- Ramasubbu R, Sreekala AK, Pandurangan AG, Kulloli SK. 2009. Floral phenology, pollination and pollen-pistil interactions of *Impatiens phoenicea* Bedd. from the Southern Western Ghats. *Advances in pollen spore research* 27:183–194.
- Ramasubbu R, Sreekala AK, Pandurangan AG, Kulloli SK. 2011. Reproductive ecology of *Impatiens platyadena* Fischer, a critically endangered balsam of Western Ghats. *Curr. Sci.* 100: 1550–1554.
- Rao, R. V. S., K. R. Ayyangar, and R. Sampathkumar. 1986. On the karyological characteristics of some members of Balsaminaceae. *Cytologia* 51: 251–260.
- Ree RH, Donoghue MJ. 1999. Inferring rates of change in flower symmetry in Asterid angiosperms. *Syst. Biol.* 48: 633–641. doi:10.1080/106351599260201.
- Reveal JL. 1993. A Splitter's guide to the higher taxa of the flowering plants (Magnoliophyta) generally arranged to follow the sequence proposed by Thorne (1992) with certain modification. *Phytologia* 74(3): 203–263.
- Richard A. 1822. Balsamine. *Dictionnaire classique d'histoire naturelle*. Paris, Rey et Gravier, Libraries-Editeurs, Auai des Augustins.
- Ridley HN. 1914. Decades Kewenses. *Bull. Misc. Inform. Kew* 9: 323–332.
- Ridley HN. 1922. *The Flora of the Malay Peninsula*. L.Reeve & Co. London.
- Robertson JL, Wyatt R. 1990. Evidence for pollination ecotypes in the yellow-fringed orchid, *Platanthera ciliaris*. *Evolution* 44: 121–133.
- Ronquist F, Teslenko M, Van der Mark P, Ayres DL, Darling A, Höhna S, Larget B, Liu L, Suchard MA, Huelsenbeck JP. 2012. MrBayes 3.2: efficient Bayesian phylogenetic inference and model choice across a large model space. *Sys. Biol.* 3: 539–542. <https://doi.org/10.1093/sysbio/sys029>.

- Rouleau E. 1981. *Guide to the generic names appearing in the Index Kewensis and its fifteen supplements*. Jules Chatelain Inc., Cowansville, Canada. unpagged.
- Roxburgh W. 1814. *Hortus Bengalensis, or a Catalogue of the Plants Growing in the Honourable East India Company's Botanical Garden at Calcutta*. Calcutta, the Mission press.
- Roxburgh W. 1832. *Flora indica, or, descriptions of Indian plants 1*. Calcutta, W. Thacker and Co.
- Roxburgh W, Carey W. 1824. *Flora Indica 2*. Serampore, the Mission press.
- Ruchisansakun S, Triboun P, Jenjittikul T. 2014. A new species of *Impatiens* (Balsaminaceae) from Southwestern Thailand. *Phytotaxa* 174: 237–241. <https://doi.org/10.11646/phytotaxa.174.4.5>.
- Ruchisansakun S, Van der Niet T, Janssens SB, Triboun P, Techaprasan J, Jenjittikul T, Suksathan P. 2015. Phylogenetic analyses of molecular data and reconstruction of morphological character evolution in Asian *Impatiens* section *Semeiocardium* (Balsaminaceae). *Syst. Bot.* 40: 1063–1074. <http://dx.doi.org/10.1600/036364415X690102>.
- Ruchisansakun S, Tangtorwongsakul P, Cozien RJ, Smets EF, Van der Niet T. 2016. Floral specialization for different pollinators and divergent use of the same pollinator among co-occurring *Impatiens* species (Balsaminaceae) from Southeast Asia. *Bot. J. Linn. Soc.* 181: 651–666. <http://dx.doi.org/10.1111/boj.12427>.
- Ruchisansakun S, Suksathsan P, Van der Niet T, Saw-Lwin, Janssens SB. 2017. *Impatiens tanintharyiensis* (Balsaminaceae), a new species from southern Myanmar. *Phytotaxa* 296 (2): 171–179. <http://dx.doi.org/10.11646/phytotaxa.296.2.6>.
- Ruchisansakun S, Suksathsan P, Van der Niet T, Smets EF, Saw-Lwin, Janssens SB. 2018a. Three new species of *Impatiens* (Balsaminaceae) from Myanmar. *Phytotaxa* 338 (1): 63–74. <http://dx.doi.org/10.11646/phytotaxa.338.1.5>.
- Ruchisansakun S, Suksathan P, Van der Niet T, Smets EF, Saw-Lwin, Janssens SB. 2018b. Balsaminaceae of Myanmar. *Blumea* in press.
- Rust RW. 1977. Pollination in *Impatiens capensis* and *Impatiens pallida* (Balsaminaceae). *Bull. Torrey. Bot. Club.* 104: 361–367.
- Safford WE. 1905. *The useful plants of the island of Guam*. Washington, Government Printing Office.
- Sargent RD, Ackerly DD. 2008. Plant-pollinator interactions and the assembly of plant communities. *Trends. Ecol. Evol.* 23: 123–130.
- Savolainen V, Chase MW, Hoot SB, Morton CM, Soltis DS, Bayer C, Fay MF, de Bruijn AY, Sullivan S, Qui Y-L. 2000. Phylogenetics of flowering plants based on combined analysis of plastid atpB and rbcL gene sequences. *Sys. Biol.* 49: 306–362.
- Schemske DW. 1978. Evolution of reproductive characteristics in *Impatiens* (Balsaminaceae): the significance of cleistogamy and chasmogamy. *Ecology* 59: 596–613.
- Schemske DW, Mittelbach GG, Cornell HV, Sobel JM, Roy K. 2009. Is there a latitudinal gradient in the importance of biotic interactions? *Annu. Rev. Ecol. Evol. Syst.* 40: 245–269.
- Schleuning M, Freund J, Klein A-M, Abrahamczyk S, Alarcon R, Albrecht M, Andersson GKS, Bazarian S, Boehning-Gaese K, Bommarco R, Dalsgaard B, Dehling DM, Gotlieb A, Hagen M, Hickler T, Holzschuh A, Kaiser-Bunbury CN, Krefl H, Morris RJ, Sandel B, Sutherland

REFERENCES

- WJ, Svenning J-C, Tschamtk T, Watts S, Weiner CN, Werner M, Williams NM, Winqvist C, Dormann CF, Bluethgen N. 2012. Specialization of mutualistic interaction networks decreases toward tropical latitudes. *Curr. Biol.* 22: 1925–1931.
- Schluter D, Price T, Mooers AØ, Ludwig D. 1997. Likelihood of ancestor states in adaptive radiation. *Evolution* 51:1699–1711.
- Schönenberger J, Anderberg AA, Sytsma KJ. 2005. Molecular phylogenetics and patterns of floral evolution in the Ericales. *Int. J. Plant Sci.* 166, 265–288 (doi:10.1086/427198).
- Schulze GM. 1935. Zur Gattung *Petalonema* Peter. *Repertorium novarum specierum regni vegetabilis* 39: 21–22.
- Scopoli JA. 1772. *Flora carniolica Exhibens Plantas Carnioliae Indigenas Tom II*. Impensis Ioannis Pauli Krauss, bibliopolae vindobonensis: 183–184.
- Shajitha PP, Dhanesh NR, Ebin PJ, Laly J, Aneesa D, Reshma J, Augustine J, Linu M. 2016a. A combined chloroplast *atpB-rbcL* and *trnL-F* phylogeny unveils the ancestry of balsams (*Impatiens* spp.) in the Western Ghats of India. *3 Biotech* 258–262.
- Shajitha PP, Dhanesh NR, Ebin PJ, Laly J, Aneesa D, Reshma J, Augustine J, Linu M. 2016b. Molecular Phylogeny of Balsams (Genus *Impatiens*) Based on ITS Regions of Nuclear Ribosomal DNA Implies Two Colonization Events in South India. *J. Appl. Biol. Biotechnol.* 4 (6): 1–9.
- Shimizu T. 1969. Some new species from Thailand. *Acta. Phytotaxon. Geobot.* 24: 35–42.
- Shimizu T. 1977. Some additional note on *Impatiens* (Balsaminaceae) of Thailand. *Acta. Phytotaxon. Geobot.* 28: 31–34.
- Shimizu T. 1970. Contributions to the Flora of Southeast Asia II: *Impatiens* of Thailand and Malaya. *Tonan Ajia Kenkyu (The Southeast Asian Studies)* 8(2): 187–217. <http://hdl.handle.net/2433/55621>.
- Shimizu T, Takao S. 1982. Taxonomic significance of the inner structure of the ovary in the genus *Impatiens* (Balsaminaceae). *Bot. Mag. (Shokubutsu-gakuzasshi). Tokyo* 95: 89–99.
- Shimizu T, Takao S. 1985. Taxonomic discussions on the four carpellate species of *Impatiens* (Balsaminaceae). *Acta. Phytotaxon. Geobot.* 36: 97–106.
- Shimizu T. 1987. A note on the distribution of genus *Impatiens* (Balsaminaceae) in Southeast Asia. *Acta. Phytotaxon. Geobot.* 38: 53–56.
- Shimizu T. 1991. New species of the Thai *Impatiens* (1). *J. Jap. Bot.* 66: 166–171.
- Shimizu T. 2000. New species of Thai *Impatiens* (Balsaminaceae) (2). *Bull. Natl. Sci. Mus. Ser. B.* 26: 35–42.
- Shimizu T, Suksathan P. 2004. Three new species of the *Impatiens* (Balsaminaceae), part 3. *Bull. Natl. Sci. Mus. Ser. B.* 30: 165–171.
- Shimizu T, Takao S. 1985. Taxonomic discussions on the fourcarpellate species of *Impatiens* (Balsaminaceae). *Acta. Phytotaxon. Geobot.* 36: 97–106.

- Shui YM, Janssens S, Huang SH, Chen WH, Yang ZG. 2011. Three new species of *Impatiens* from China and Vietnam: preparation of flowers and morphology of pollen and seeds. *Syst. Bot.* 36: 428–439. <http://www.bioone.org/doi/full/10.1600/036364411X569615>.
- Sims J. 1810. *Curtis's Bot. Mag.* 31: 1237–1328.
- Singh RK. 2017. Lectotypification of three Linnaean names in *Impatiens* (Balsaminaceae). *Phytotaxa* 321 (3): 299–300.
- Singh V. 1971. Additions to Duthie's Flora of the Upper Gangetic Plain. *J. Bombay Nat. Hist. Soc.* 68(2): 339–346.
- Smith WW, Forrest G. 1915. Diagnoses specierum novarum in herbario Horti Regii Botanici Edinburgensis cognitarum. CIII–CL. *Notes Roy. Bot. Gard. Edinburgh.* 8(40): 313–348.
- Smith SD, Ane C, Baum DA. 2008. The role of pollinator shifts in the floral diversification of *Ipochroma* (Solanaceae). *Evolution* 63: 793–806.
- Soltis DE, Soltis PS, Chase MW, Mort ME, Albach DC, Zanis M, *et al.* 2000. Angiosperm phylogeny inferred from 18S rDNA, *rbcL*, and *atpB* sequences. *Bot. J. Linn. Soc.* 133: 381–461.
- Souvannakhommane K, Suksathan P. 2015. Two New Species of *Impatiens* (Balsaminaceae) from North of Lao PDR. *Taiwania* 60: 175–180.
- Sreekala AK. 2016. Reproductive ecology of *Impatiens pulcherrima* Dalzell (Balsaminaceae)—An endemic balsam of Western Ghats, India. *Advances In Pollen Spore Research* 34: 1–13.
- Sreekala AK, Kulloli SK. 2014. Pollination Ecology of *Impatiens maculata* Wight— An Endemic Balsam of Southern western Ghats. *Advances in Pollen Spore Research* 32: 1–13.
- Sreekala AK, Pandurangan AG. 2012. Reproductive Dynamics of *Impatiens verticillata* Wight (Balsaminaceae) - An endemic balsam of Western Ghats. *International Seminar on World Bioheritage Concerns over climate change*.
- Sreekala AK, Ramasubbu R, Kulloli SK, Pandurangan AG. 2007. Pollination biology of *Impatiens henslowiana* Arn. (Balsaminaceae). *Ind. J. Bot. Res.* 3(1), 165–171.
- Sreekala AK, Ramasubbu R, Pandurangan AG, Kulloli SK. 2008a. Pollination Biology of *Impatiens campanulata* Wight. (Balsaminaceae). *Advances in Pollen Spore Research* 26: 9–19
- Sreekala AK, Pandurangan AG, Ramasubbu R, Kulloli SK. 2008b. Reproductive biology of *Impatiens coelotropis* – a critically endangered balsam from the Western Ghats. *Curr. Sci.* 95(3): 386–388.
- Sreekala AK, Pandurangan AG, Ramasubbu R, Kulloli SK. 2011. Pollination biology of *Impatiens cuspidata* Wight and Arn. (Balsaminaceae), a rare and endemic balsam of the Western Ghats, India. *Journal of Threatened Taxa* 3(6): 1818–1825.
- Sreekala AK, Pandurangan AG, Kulloli SK. 2013. Reproductive Ecology of *Impatiens leptura* Hook.f. (Balsaminaceae). *Conference abstract in the National Seminar, Andhra University*.
- Stadler T. 2009. On incomplete sampling under birth-death models and connections to the sampling-based coalescent. *J Theor Biol.* 2009 Nov 7;261(1):58–66. <http://dx.doi.org/10.1016/j.jtbi.2009.07.018>.
- Stamp LD. 1924. Note on the Vegetation of Burma. *The Geographical Journal* 64(3): 231–237.

REFERENCES

- Stebbins GL. 1970. Adaptive radiation of reproductive characteristics in angiosperms. I. Pollination mechanisms. *Annual Review of Ecology and Systematics* 1: 307–326.
- Steudel ET. 1840. *Nomenclator botanicus, seu, Synonymia plantarum universalis* 1. Stuttgartiae, Tubingae.
- Steudel ET. 1841. *Nomenclator botanicus, seu, Synonymia plantarum universalis* 2. Stuttgartiae, Tubingae.
- Stibig HJ, Beuchle R. 2003. Forest cover map of Continental Southeast Asia at 1:4,000,000 derived from SPOT4–VEGETATION satellite images, Publications of the European Communities, EUR 20856 EN, Luxembourg.
- Strauss SY, Whittall JB. 2006. Non-pollinator agents of selection on floral traits. In: Harder LD, Barrett SCH, eds. *The ecology and evolution of flowers*. Oxford: Oxford University Press, 120–138.
- Suksathan P, Triboun P. 2009. Ten new species of *Impatiens* (Balsaminaceae) from Thailand. *Gardens' Bulletin Singapore* 61: 159–184.
- Swofford DL. 2003. *PAUP*. Phylogenetic analysis using parsimony (*and other methods)*. Version 4 beta 10. Sunderland: Sinauer Associates.
- Takhtajan A. 1980. Outline of the classification of flowering plants (Magnoliophyta). *The Botanical Review* 46: 225–359.
- Takhtajan A. 1997. *Diversity and Classification of flowering plants*. New York, Columbia University Press:643.
- Tan HTW, Ibrahim AB, Chua KS. 1992. Additions to the Flora of Singapore 1. *The Gardens' Bulletin Singapore* 44(2). 127–133.
- Tanaka N, Sugawara T, Mu-Mu-Aung, Murata J. 2015. *Impatiens kingdon-wardii* (Balsaminaceae), a new species from Mt. Victoria (Natma Taung), Myanmar. *Phytotaxa* 234 (1): 90–94. <http://dx.doi.org/10.11646/phytotaxa.234.1.7>
- Tanaka N, Ohi-Toma T, Ito Y, Mu-Mu-Aung, Murata J. 2018. New or Noteworthy Plant Collections from Myanmar (10): *Impatiens hukaungensis* (Balsaminaceae), a New Rheophyte from the Northern Region. *J. Jpn. Bot.* 93(1): 23–30.
- Tardieu–Blot M. 1944. Les *Impatiens* d'Indochine, répartition, affinités et description d'espèces nouvelles. *Notulae Systematicae* 11: 169–185.
- Tardieu–Blot M. 1945. Balsaminacees. *Flore Générale de L'Indo–Chine, Supplément*: 553–593.
- Techaprasan J, Klinbunga S, Ngamriabsakul C, Jenjittikul T. 2010. Genetic variation of *Kaempferia* (Zingiberaceae) in Thailand based on plastid DNA (*psbA-trnH* and *petA-psbJ*) sequences. *Genetics and Molecular Research* 9: 1957–1973.
- Tedder A, Carleial S, Golebiewska M, Kappel C, Shimizu KK, Stift M. 2015. Evolution of the selfing syndrome in *Arabis alpina* (Brassicaceae). *PLoS ONE* 10:1–17.
- Thorne RF. 1981. Phytochemistry and angiosperm phylogeny: a summary statement. In D. A. Young & D. S. Seigler (Eds), *Phytochemistry and Angiosperm Phylogeny*: 233–295. New York: Praeger.

- Thorne RF. 2000. The classification and geography of the flowering plants: dicotyledons of the class Angiospermae. *Botanical Review* 66 (4): 441–647. <http://dx.doi.org/10.1007/BF02869011>.
- Tian J, Liu K, Hu G. 2004. Pollination Ecology and Pollination System of *Impatiens reptans* (Balsaminaceae) Endemic to China. *Ann. Bot.* 93: 167–175.
- Tkach N, Heuchert B, Krüger C, Heklau H, Marx D, Braun U, Röser M. 2016. Type material in the herbarium of the Martin Luther University Halle-Wittenberg of species based on collections from Alexander von Humboldt's American expedition between 1799 and 1804 in its historical context. *Schlechtendalia* 29: 1–102.
- Tokuda N, Hattori M, Abe K, Shinohara Y, Nagano Y, Itino T. 2015. Demonstration of pollinator-mediated competition between two native *Impatiens* species, *Impatiens noli-tangere* and *I. textori* (Balsaminaceae). *Ecology and Evolution* 5: 1271–1277.
- Toppin SM. 1920. Note on the Balsams of Chitral and the Kachin Hills. *Bull. Misc. Inform. Kew* 10: 345–367. <https://doi.org/10.2307/4118598>.
- Tournefort JP. 1719. *Institutiones rei Herbariae*. Paris, E Typograpia Regia.
- Traveset A, Saez E. 1997. Pollination of *Euphorbia dendroides* by lizards and insects: spatio-temporal variation in patterns of flower visitation. *Oecologia* 111: 241–248.
- Tripp EA, Manos PS. 2008. Is floral specialization and evolutionary dead end? Pollination system transitions in *Ruellia* (Acanthaceae). *Evolution* 62: 1712–1737. doi:10.1111/j.1558-5646.2008.00398.x.
- Turczaninow N. 1859. Animadversiones ad Secundam partem catalogi plantarum herbaria universitatis charkowiensis. *Bulletin de la Societe imperiale des naturalistes de Moscou* 32(1): 258–277.
- Turczaninow N. 1863. Animadversiones ad catalogum primum et secundum herbaria universitatis Charkoviensis. *Bulletin de la Société des naturalistes de Moscou* 36: 545–615.
- Turner IM. 1993. The names used for Singapore plants since 1900. *The Gardens' Bulletin Singapore* 45(1): 1–287.
- Turner IM. 1995. A catalogue of the vascular plants of Malaya. *The Gardens' Bulletin Singapore* 47(1): 1–346.
- Turner IM, Tan HTW, Chua KS, Metcalfe DJ. 1994. Recent botanical collections from the Nature reserves of Singapore. *The Gardens' Bulletin Singapore* 47(1): 1–36.
- Turner W. 1568. *Turner's herbal*. Cologne, Germany. 417 pp. <http://www.rarebookroom.org/Control/turher/index.html>
- Ugoletti P, Reidy D, Jones MB, Stout JC. 2013. Do native bees have the potential to promote interspecific pollination in introduced *Impatiens* species? *Journal of Pollination Ecology* 11: 1–8.
- U.S. Dept. of Agriculture. 2016. *Floriculture crops 2015 summary*. National Agricultural Statistics Service, Washington, D.C.
- Utami N. 2009. The status of *Semeiocardium* Zoll. (Balsaminaceae). *Reinwardtia* 13: 21–23.

REFERENCES

- Utami N. 2012. Three new species of *Impatiens* (Balsaminaceae) from Sumatra, Indonesia. *Kew. Bull.* 67: 731–737. <https://doi.org/10.1007/s12225-012-9403-3>.
- Utami N, Ardiyani. 2015. Phylogenetic Study of Sumatran *Impatiens* (Balsaminaceae) Using Nuclear and Plastid DNA Sequences. *Acta Phytotax. Geobot.* 66 (2): 81–90.
- Valente LM, Manning JC, Goldblatt P, Vargas P. 2012. Did pollination shifts drive diversification in Southern African *Gladiolus*? Evaluating the model of pollinator-driven speciation. *American Naturalist* 180: 83–98.
- Van der Niet T, Johnson SD. 2012. Phylogenetic evidence for pollinator driven diversification of angiosperms. *Ann. Bot.* 27(6): 353–361. <http://dx.doi.org/10.1016/j.jtree.2012.02.002>.
- Van der Niet T, Peakall R, Johnsons SD. 2014a. Pollinator-driven ecological speciation in plants: new evidence and future perspectives. *Ann. Bot.* 113: 199–211.
- Van der Niet T, Pirie MD, Shuttleworth A, Johnson SD, Midgley JJ. 2014b. Do pollinator distributions underlie the evolution of pollination ecotypes in the Cape shrub *Erica plukenetii*? *Ann. Bot.* 113: 301–315.
- Van Rhede tot Draakestein H. 1689. *Horti Malabarici Pars nona* (Rheed. mal.). Amsterdam, Amstelaedami.
- Venkateswarlu J, Dutt BSM. 1961. Amended description of *Hydrocera triflora* Wt. and Arn. *The journal of the Bombay Natural History Society* 58: 545–547.
- Verma D, Lavaniaa S, Kumar DR, Kumar BS. 2016. Lectotypification of *Impatiens mengtzeana* (Balsaminaceae), an Addition to Flora of India. *Japanese Journal of Botany* 91: 52–56.
- Vivekananthan K, Rathakrishnan NC, Swaminathan MS, Ghara LK. 1997. Balsaminaceae. In: Hajra PK, Chakraverty RK, Dixit RD, Mondal MS, Chatterjee U. (Eds.) *Flora of India 4. Botanical Survey of India*, Kolkata, India: 95–229.
- Vlašánková A, Padyšáková E, Bartoš M, Mengual X, Janečková P, Janeček S. 2017. The nectar spur is not only a simple specialization for long-proboscid pollinators. *New Phytologist*: 1–8. <http://dx.doi.org/10.1111/nph.14677>
- Vogel S. 1954. *Blütenbiologische Typen als Elemente der Sipplgliederung: dargestellt anhand der Flora Südafrikas*. G. Fischer Jena.
- Wallich N. 1824. *Impatiens. Flora indica; or, Descriptions of Indian plants, by the late William Roxburgh. Edited by Dr. William Carey; to which are added descriptions of plants more recently discovered by Dr. Nathaniel Wallich 2*. Serampore, the Mission Press: 452–465.
- Wallich N. 1830. *Plantae Asiaticae Rariores; or, descriptions and Fig.s of a select number of unpublished East Indian plants I*. London, Treuttel and Würtz.
- Wallich N. 1831. *A Numerical List of dried specimens of plants in the East India Company's Museum: collected under the superintendence of Dr. Wallich of the Company's botanic garden at Calcutta*. London.
- Wang Q, Li YX, Pu XZ, Zhu LY, Tang Z, Liu Q. 2013. Pollinators and nectar robbers cause directional selection for large spur circle in *Impatiens oxyanthera* (Balsaminaceae). *Plant. Syst. Evol.* 299: 1263–1274.

- Wang Q, Gadagkar SR, Deng HP, Yang ZM, Yu FQ. 2016. *Impatiens shennongensis* (Balsaminaceae): a new species from Hubei, China. *Phytotaxa* 244: 96–100. <https://doi.org/10.11646/phytotaxa.244.1.8>.
- Wang S, Chen Y, Yang Y, Wu W, Liu Y, Fan Q, Zhou R. 2016. Phylogenetic relationships and natural hybridization in *Triadica* inferred from nuclear and chloroplast DNA analyses. *Biochemical Systematics and Ecology* 64: 142–148. <https://doi.org/10.1016/j.bse.2015.11.011>.
- Warburg O, Reiche K. 1895. Balsaminaceae. In Engler HGA, Prantl KAE [eds.], *Die naturlichen Pflanzenfamilien*, Teil 3, Abteilung 5, 383–392. Engelmann, Leipzig, Germany.
- Waser NM, Chittka L, Price MV, Williams NM, Ollerton J. 1996. Generalization in pollination systems, and why it matters. *Ecology* 77: 1043–1060.
- Waterman RJ, Bidartondo MI, Stofberg J, Combs JK, Gebauer G, Savolainen V, Barraclough TG, Pauw A. 2011. The effects of above- and belowground mutualisms on orchid speciation and coexistence. *American Naturalist* 177: E54–E68.
- Wettstein R. 1924. *Handbuch der Systematischen Botanik* 2 (3).
- Williams PH. 1998. An annotated checklist of bumblebees with an analysis of patterns of description (Hymenoptera: Apidae, Bombini). *Bulletin of The Natural History Museum (Entomology)* 67: 79–152.
- Wilson P. 1995. Selection for pollination success and the mechanical fit of *Impatiens* flowers around bumblebee bodies. *Biol. J. Linn. Soc.* 55: 355–383.
- White MJD. 1968. Models of speciation. *Science* 159:1065–1070.
- White TJ, Bruns T, Lee S, Taylor J. 1990. Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. Pp. 315–322 in *PCR protocols: A guide to methods and applications*. eds. Innis, M. A., D. H. Gelfand, J. J. Sninsky, and T. J. White.
- Whittall JB, Hodges SA. 2007. Pollinator shifts drive increasingly long nectar spurs in columbine flowers. *Nature* 447: 706–712.
- Wilson P. 1995. Selection for pollination success and the mechanical fit of *Impatiens* flowers around bumblebee bodies. *Biol. J. Linn. Soc.* 55: 355–383.
- Wight R, Arnott GAW. 1834. Balsaminaceae. *Prodromus Florae Peninsula Indiae Orientalis* 1: 134–141.
- Wight R. 1837. Contributions to Indian Botany 1. *The Madras Journal of Literature and Science* 5: 1–15.
- Wight R. 1840. *Illustrations of Indian Botany* 1. Madras, J.B. Pharoah.
- Wight R. 1846. *Icones Plantarum Indiae orientalis* 3. Cambridge, Athenæum press.
- Willdenow CL. 1798. *Caroli a Linné Species plantarum* 1(2). Berlin, G.C. Nauk.
- Wolf S, Moritz RFA. 2008. Foraging distance in *Bombus terrestris* L. (Hymenoptera: Apidae). *Apidologie* 39: 419–427.
- Wood CE. 1975. The Balsaminaceae in the Southeastern United States. *Arnold Arbor.* 56(4): 413–426.

REFERENCES

- Wu Z. 1984. Balsaminaceae. *Index Flora Yunnanensis* 1: 299–306.
- Wu Z. 2006. Balsaminaceae. *Flora Yunnanica* 16: 66–156.
- Yang B, Zhou SS, Kyaw-Win-Maung, Tan YH. 2017. Two new species of *Impatiens* (Balsaminaceae) from Putao, Kachin State, northern Myanmar. *Phytotaxa* 321 (1): 103–113. <https://doi.org/10.11646/phytotaxa.321.1.4>.
- Yu SX, Zhou XR, Xu GF, Meng L, Bi HY. 2010. Floral development in *Impatiens chishuiensis* (Balsaminaceae): formation of two well-developed anterolateral sepals and four carpels. *Plant. Syst. Evol.* 286: 21–26.
- Yu SX. 2012. *Balsaminaceae of China*. Beijing: Peking University Press.
- Yu SX, Janssens SB, Zhu XY, Lidén M, Gao TG, Wang W. 2015. Phylogeny of *Impatiens* (Balsaminaceae): integrating molecular and morphological evidence into a new classification. *Cladistics* 32: 179–197. <https://doi.org/10.1111/cla.12119>.
- Yuan YM, Song Y, Geuten K, Rahelivololona E, Wohlhauser S, Fischer E, Smets EF, Küpfer P. 2004. Phylogeny and biogeography of Balsaminaceae inferred from ITS sequence data. *Taxon* 53: 391–404. <https://doi.org/10.2307/4135617>.
- Zollinger H. 1858. Iets over de Natuurlijke Geschiedenis van Madoera. *Natuurkundig Tijdschrift voor Nederlandsch-Indië* 17: 243–245.