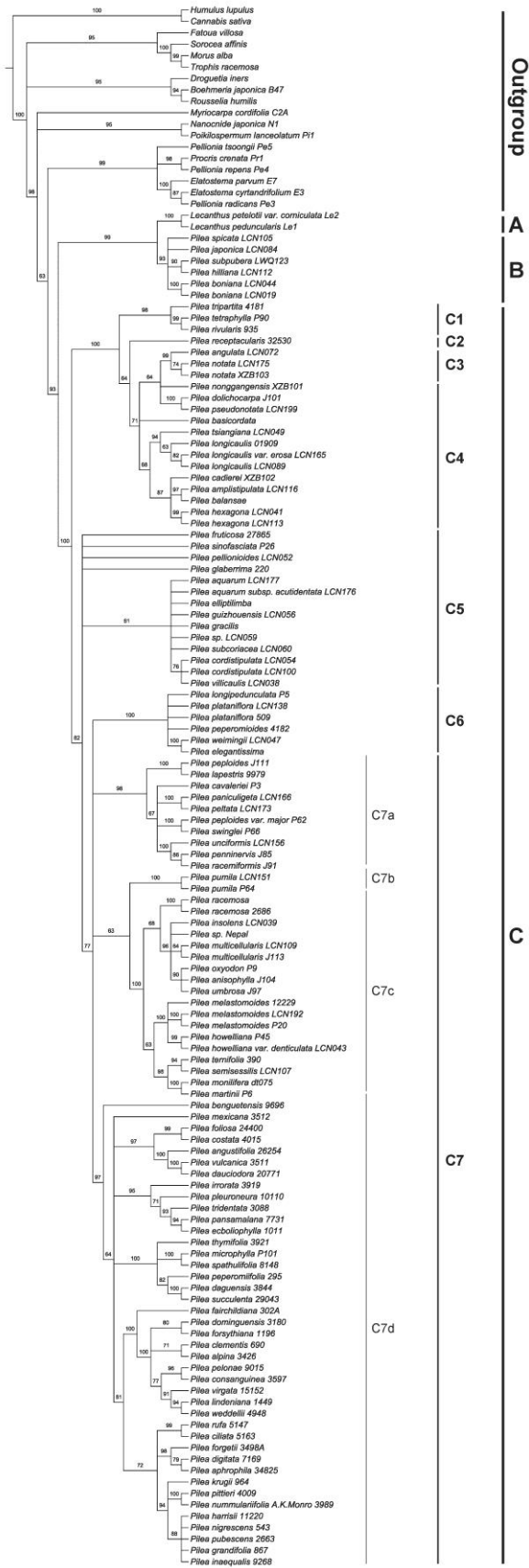


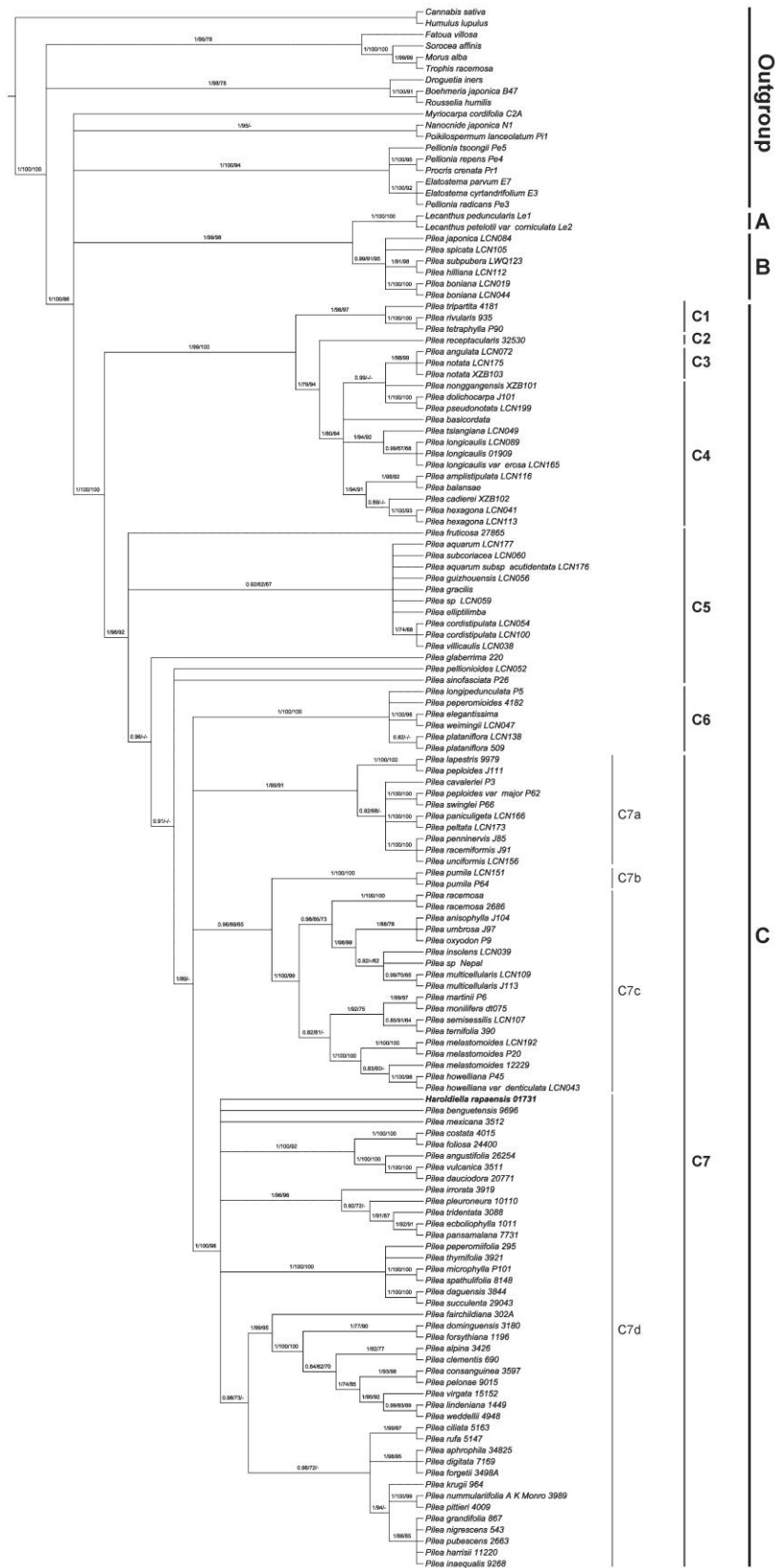
789

790 Fig. S1. Phylogenetic tree of *Pilea* generated from maximum likelihood (ML) of cpDNA dataset
 791 (*trnL-F* spacer and *rbcL*). Numbers on the branches indicate the bootstrap values ($\geq 60\%$).



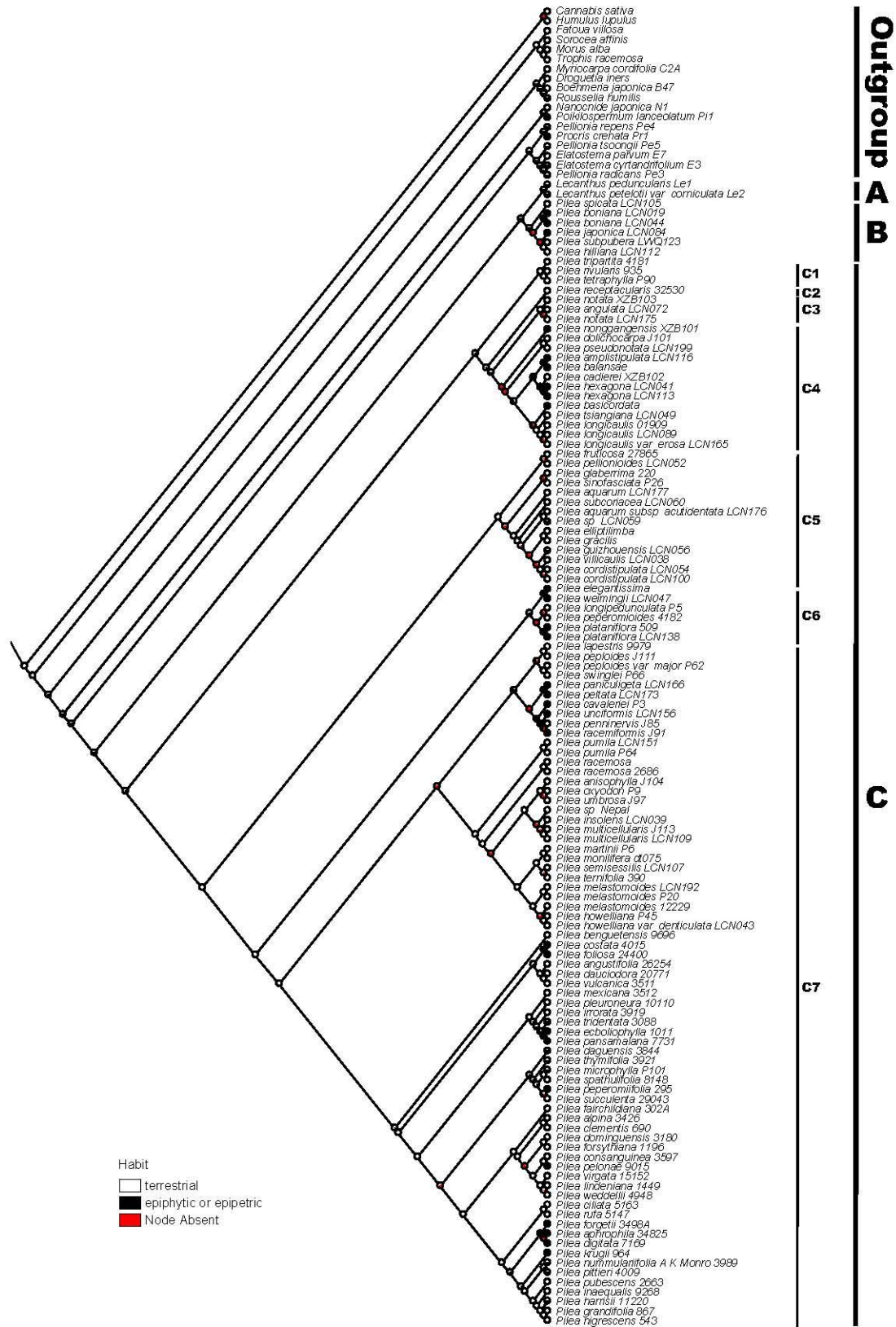
792

793 Fig. S2. Phylogenetic tree of *Pilea* generated from maximum likelihood (ML) of nrDNA dataset
 794 (nrITS). Numbers on the branches indicate the bootstrap values (≥60%).



795

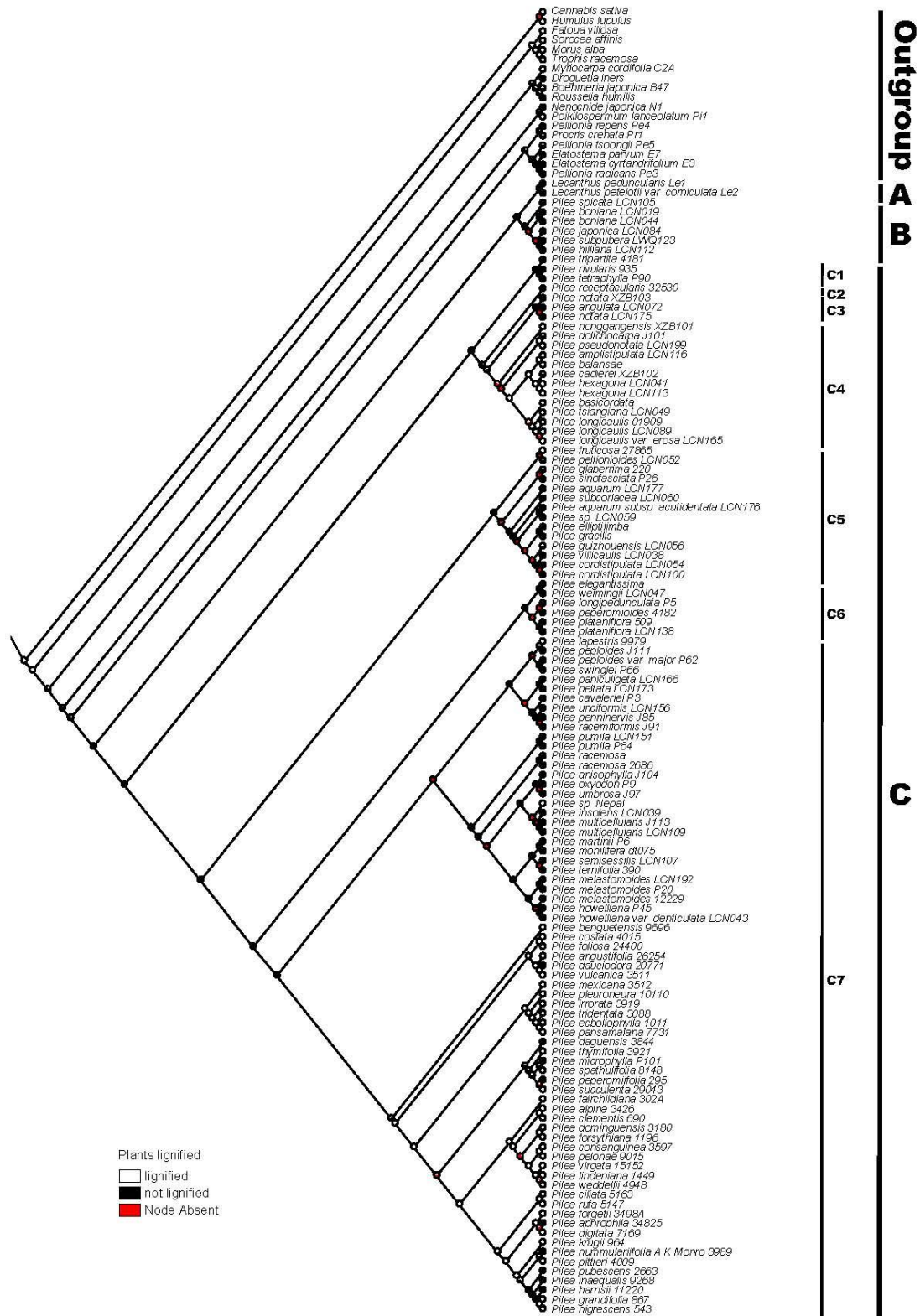
796 Fig. S3. Phylogenetic tree of *Pilea* (including *Haroldiella*) generated from Bayesian Inference (BI)
 797 of nrITS dataset. Numbers on the branches indicate the posterior probability (≥ 0.8) of BI and
 798 bootstrap values ($\geq 60\%$) of the maximum likelihood (ML) and the maximum parsimony (MP)
 799 analyses.



800

801 Fig. S4. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of habit.

802

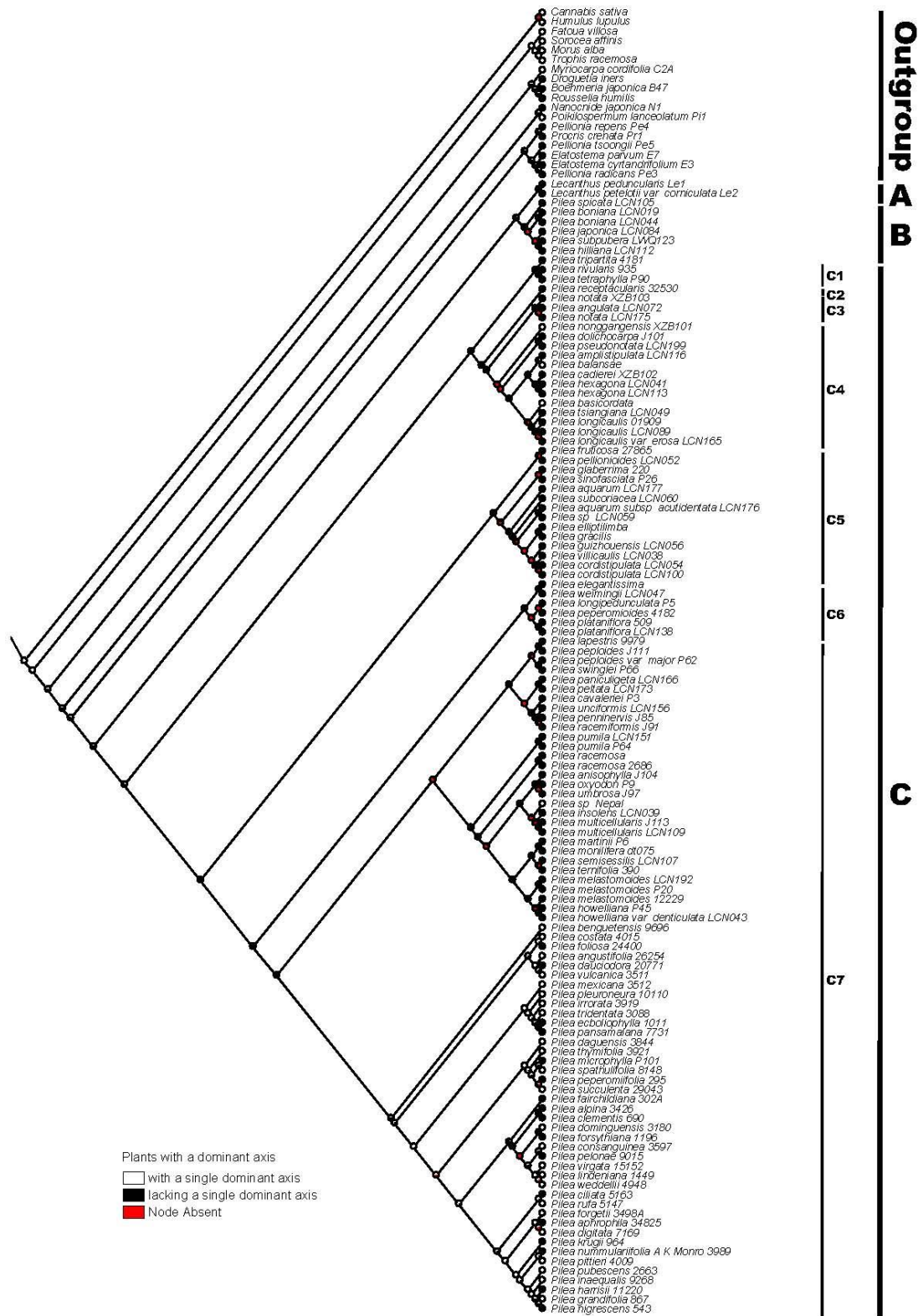


803

804 Fig. S5. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of plants
 805 lignified.

806

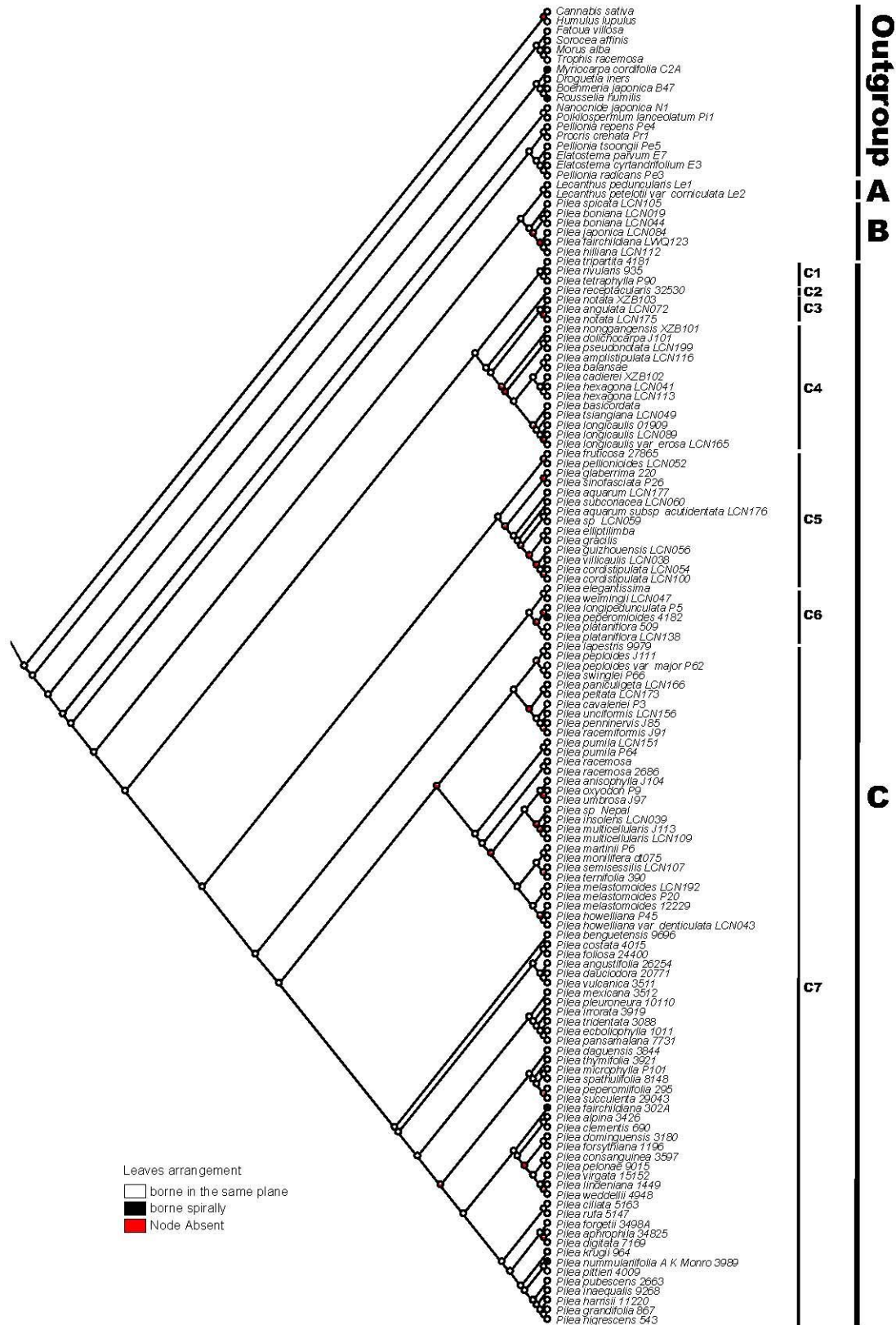
807



808

809 Fig. S6. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of plants
 810 with a dominant axis.

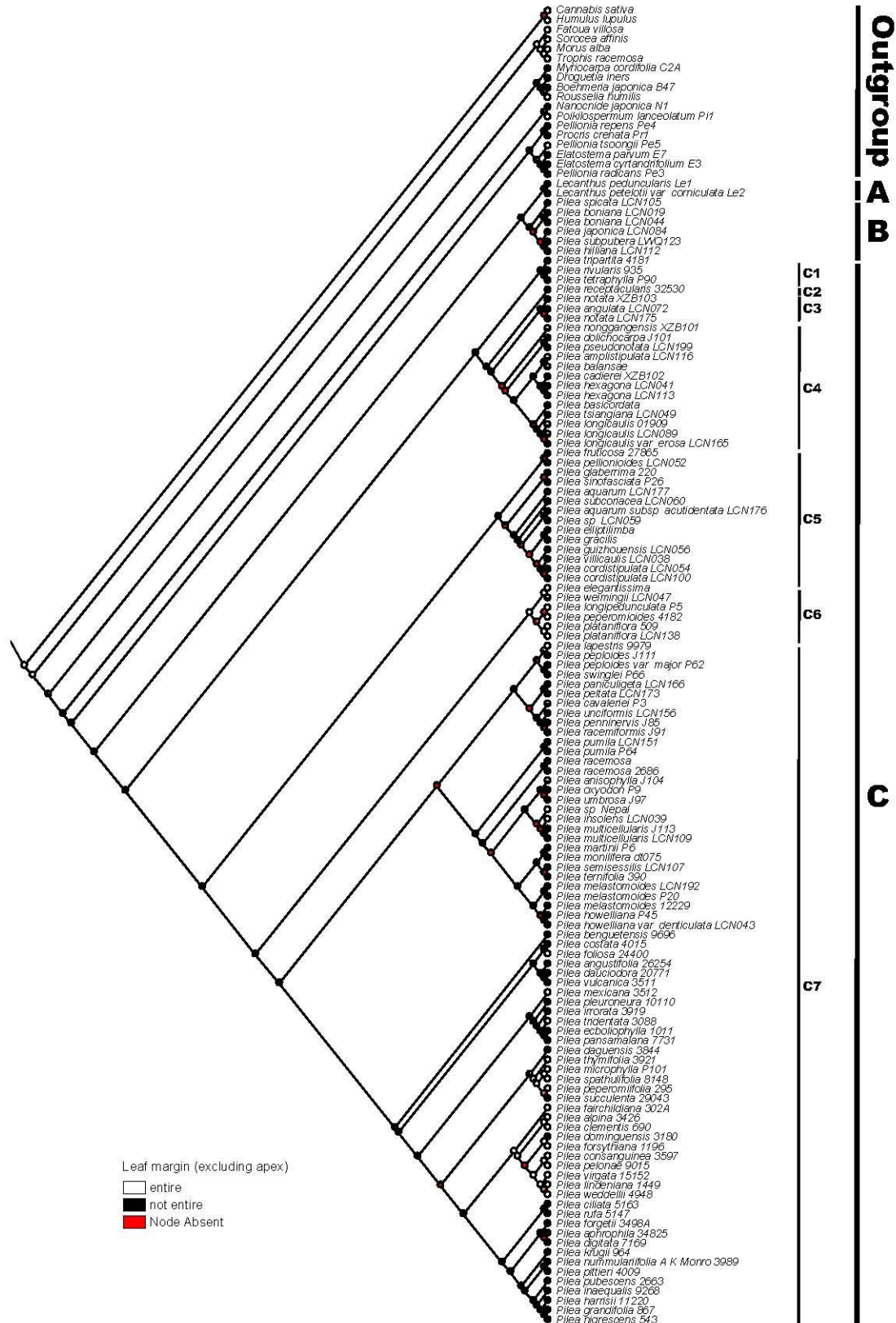
811



812

813 Fig. S7. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of leaves
 814 arrangement.

815



Outgroup A B C

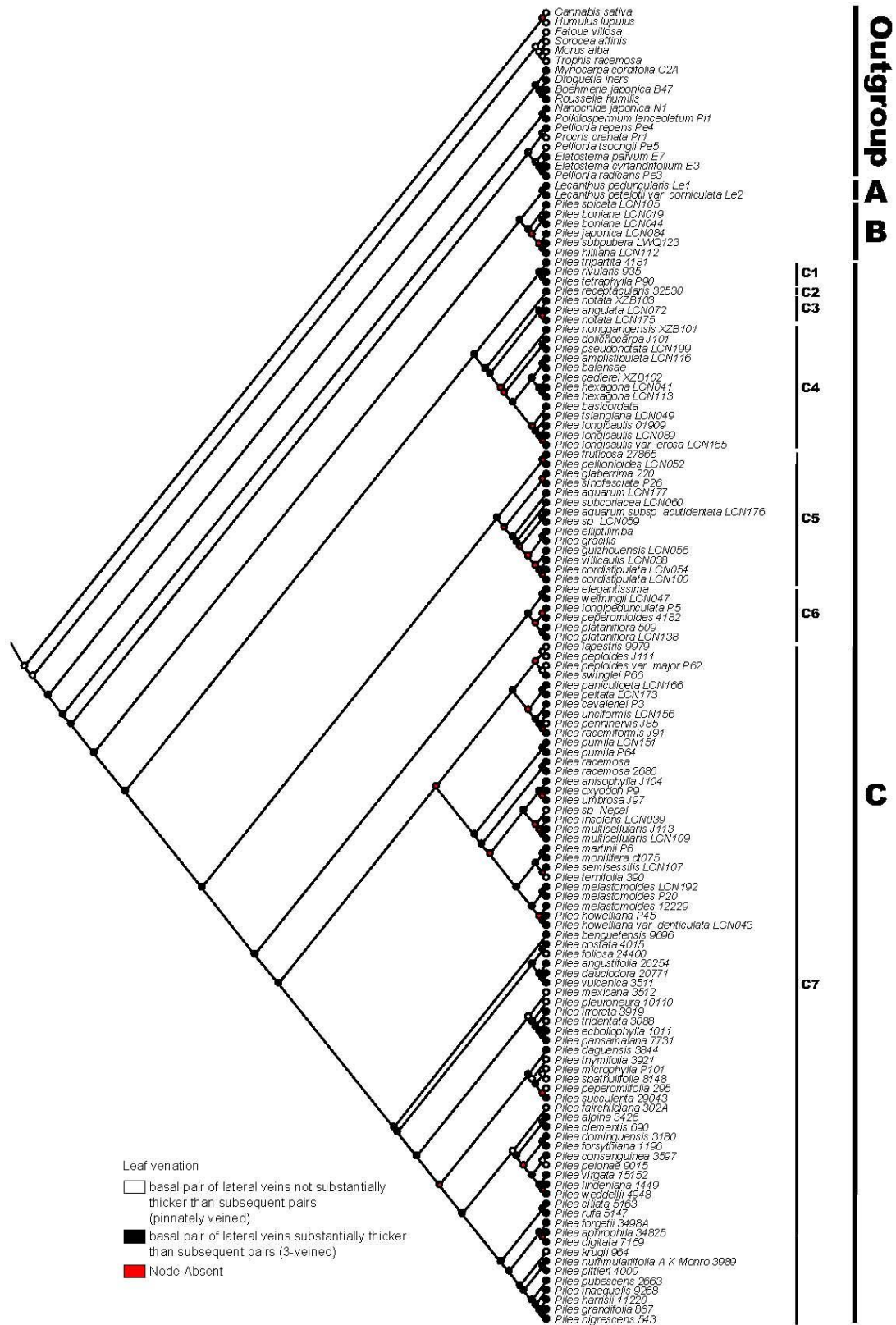
C1
C2
C3
C4
C5
C6
C7

Leaf margin (excluding apex)
 ○ entire
 ● not entire
 ● Node Absent

816

817 Fig. S8. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of leaf
 818 margin (excluding apex).

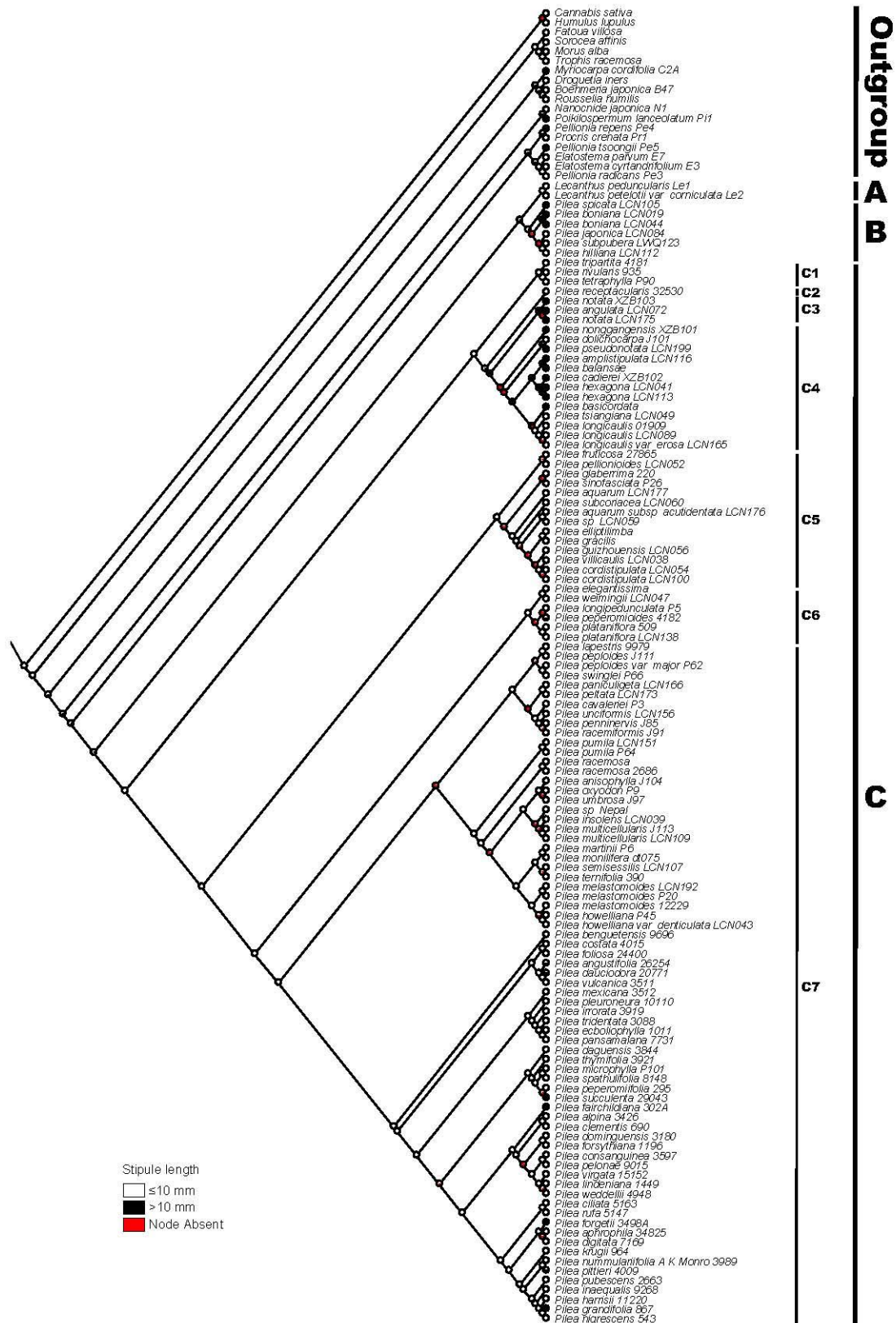
819



820

821 Fig. S9. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of leaf
822 venation.

823

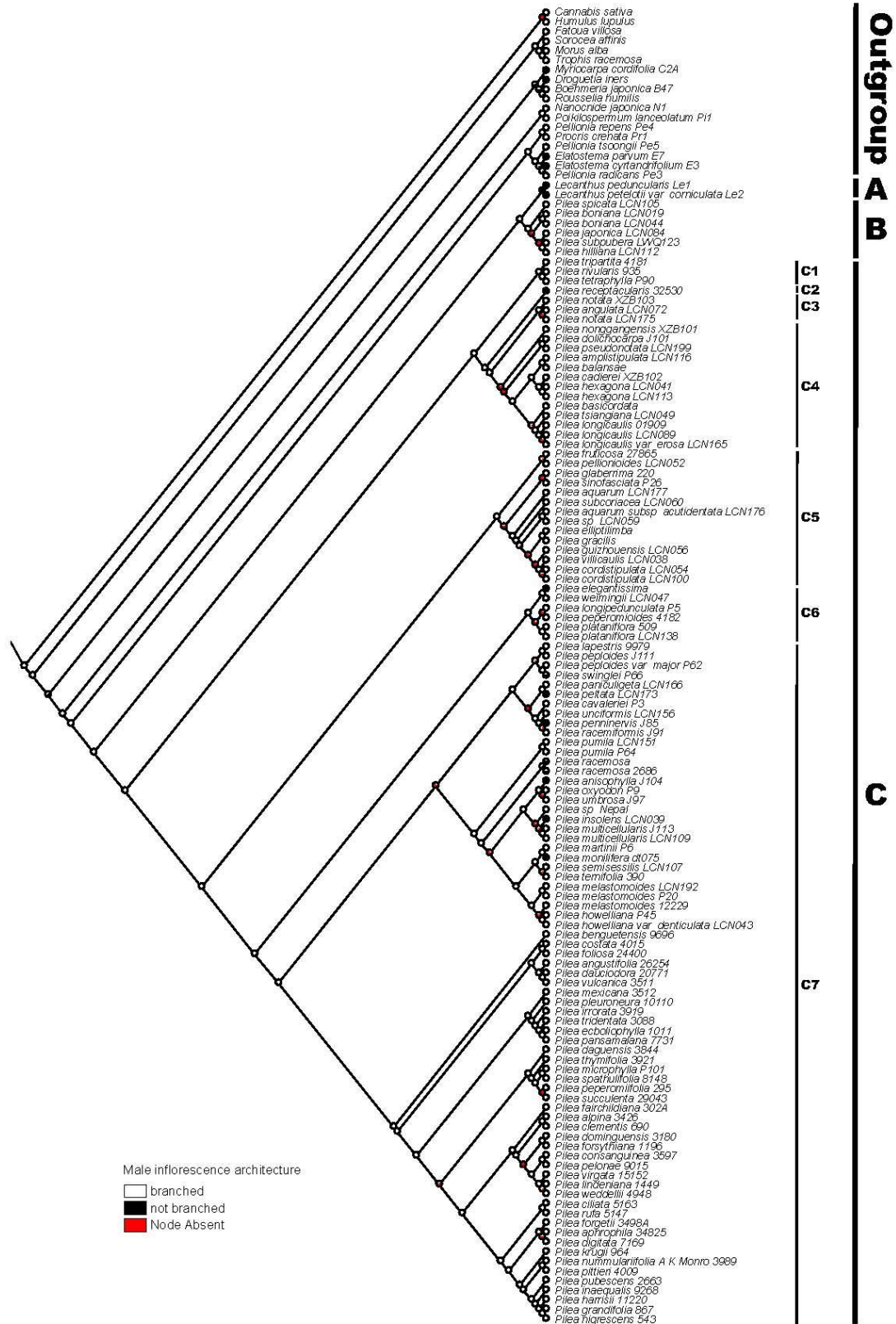


824

825 Fig. S10. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of stipule

826 length.

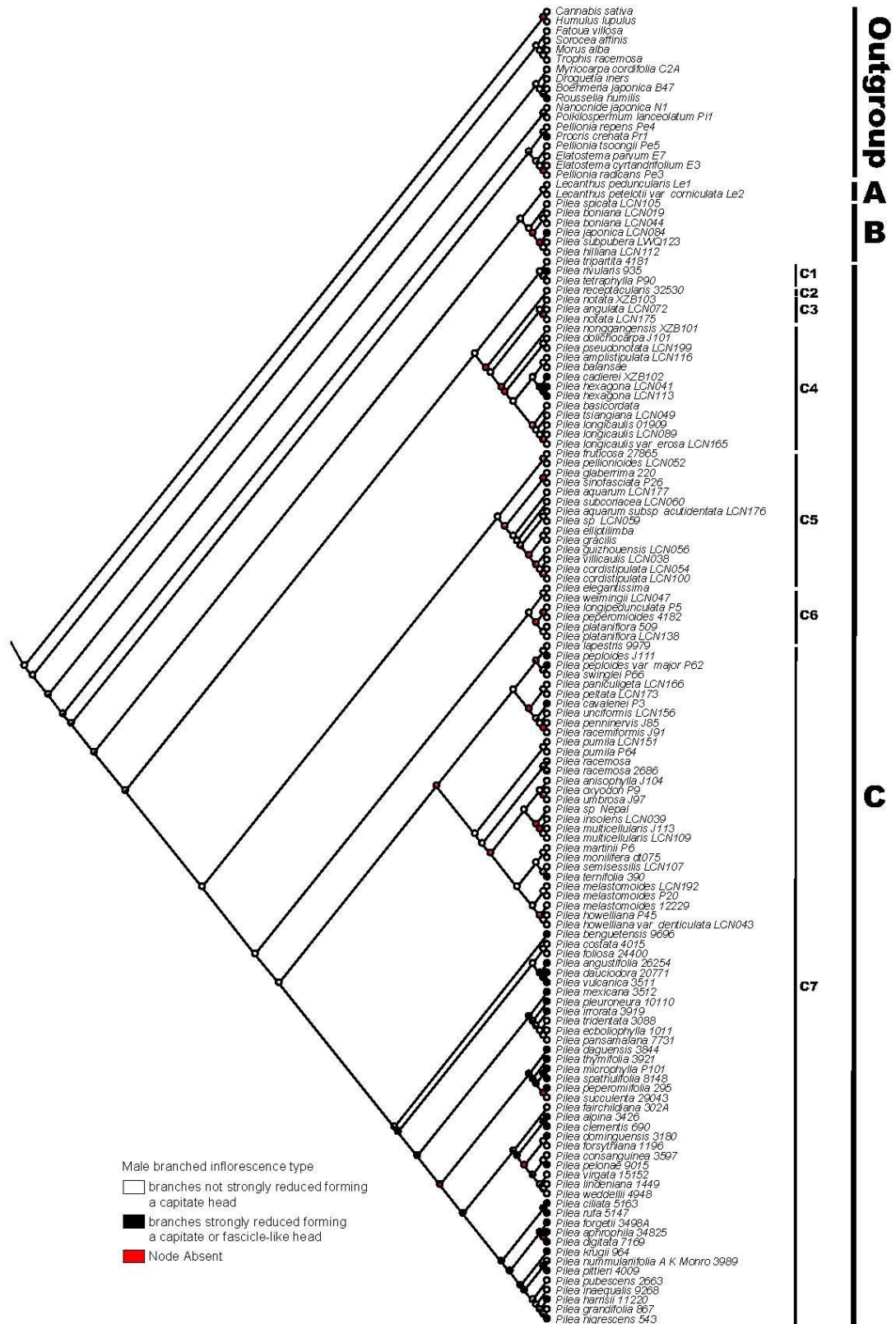
827



828

829 Fig. S11. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of male
 830 inflorescence architecture.

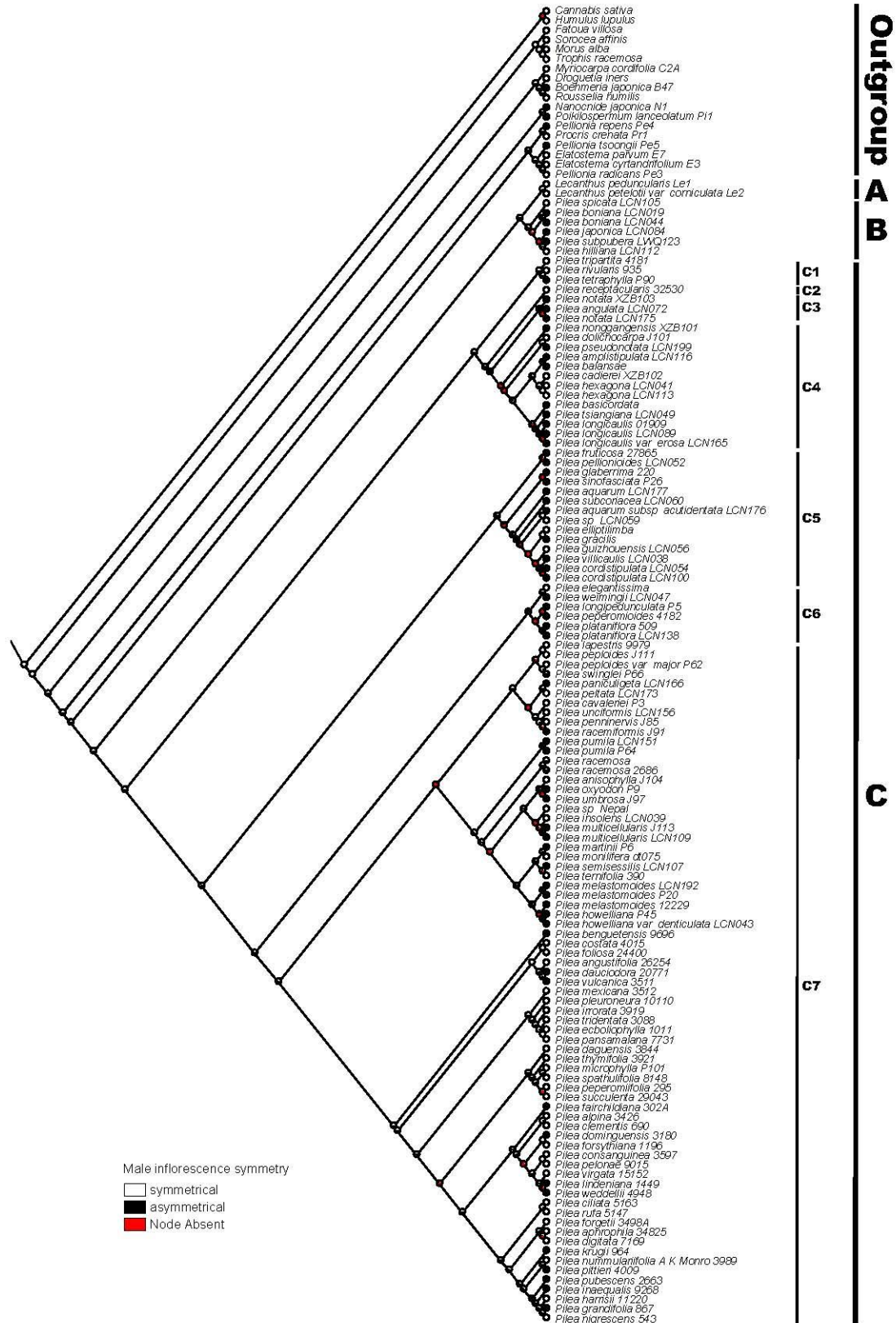
831



832

833 Fig. S12. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of male
 834 branched inflorescence type.

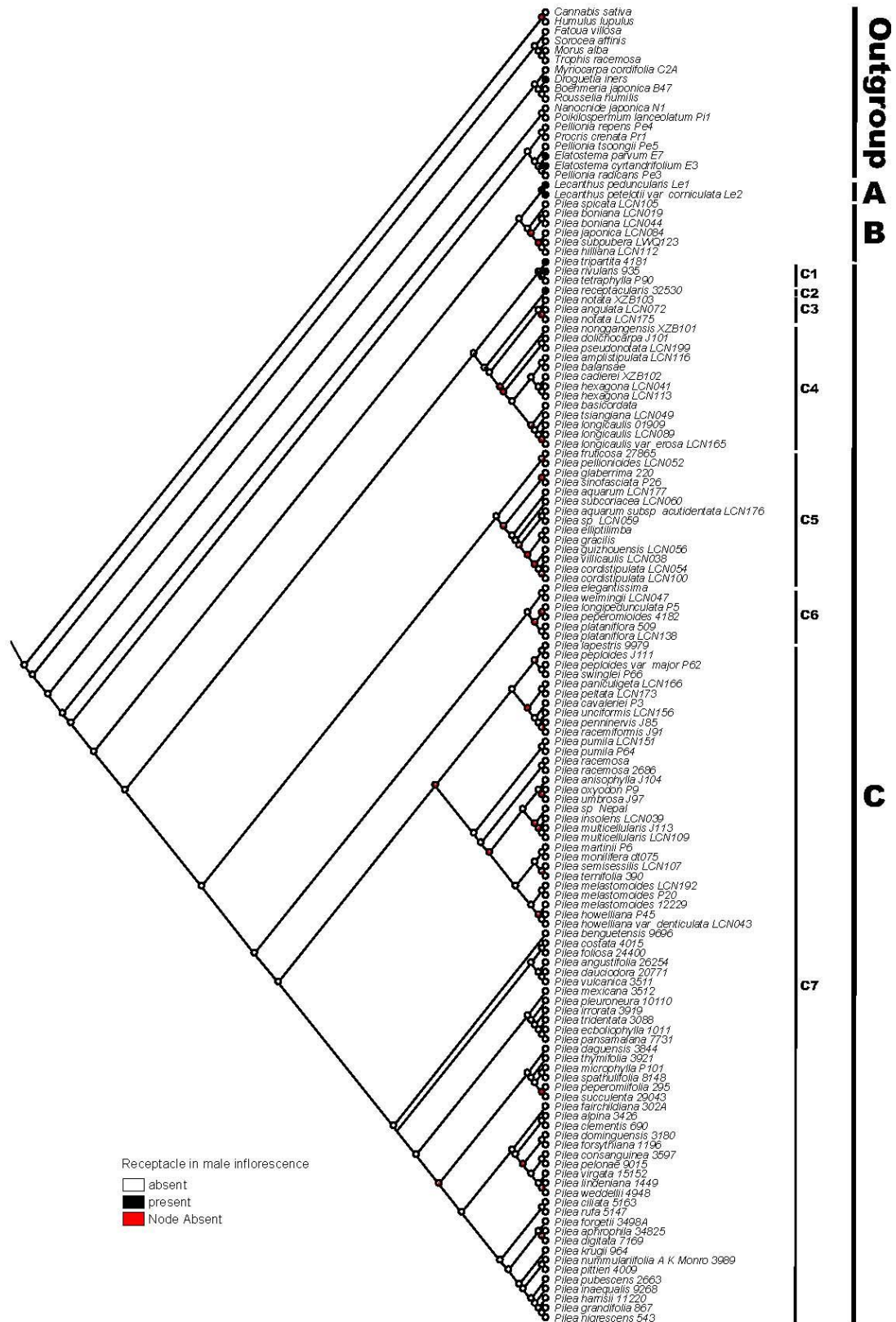
835



836

837 Fig. S13. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of male
 838 inflorescence symmetry.

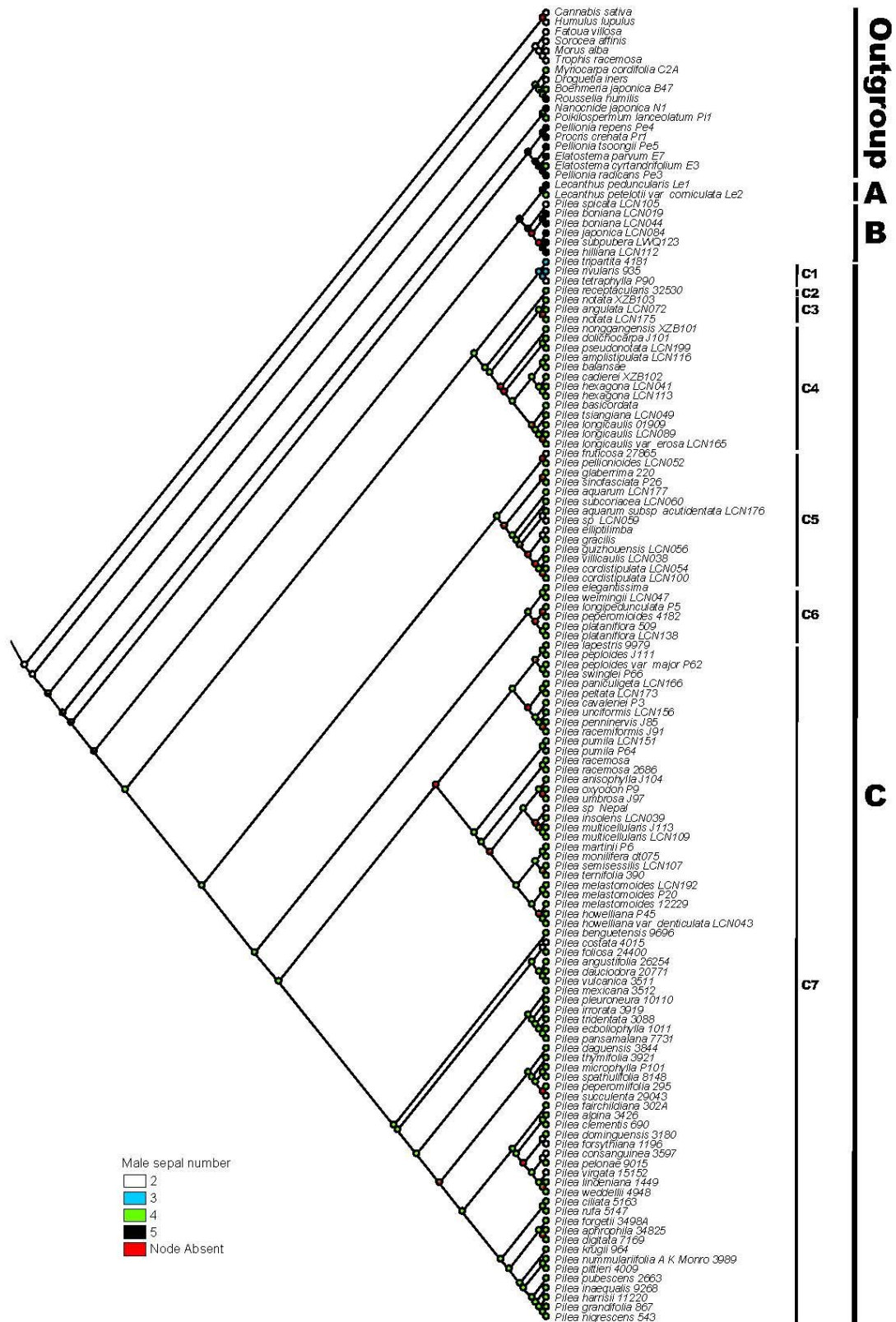
839



840

841 Fig. S14. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of
 842 receptacle in male inflorescence.

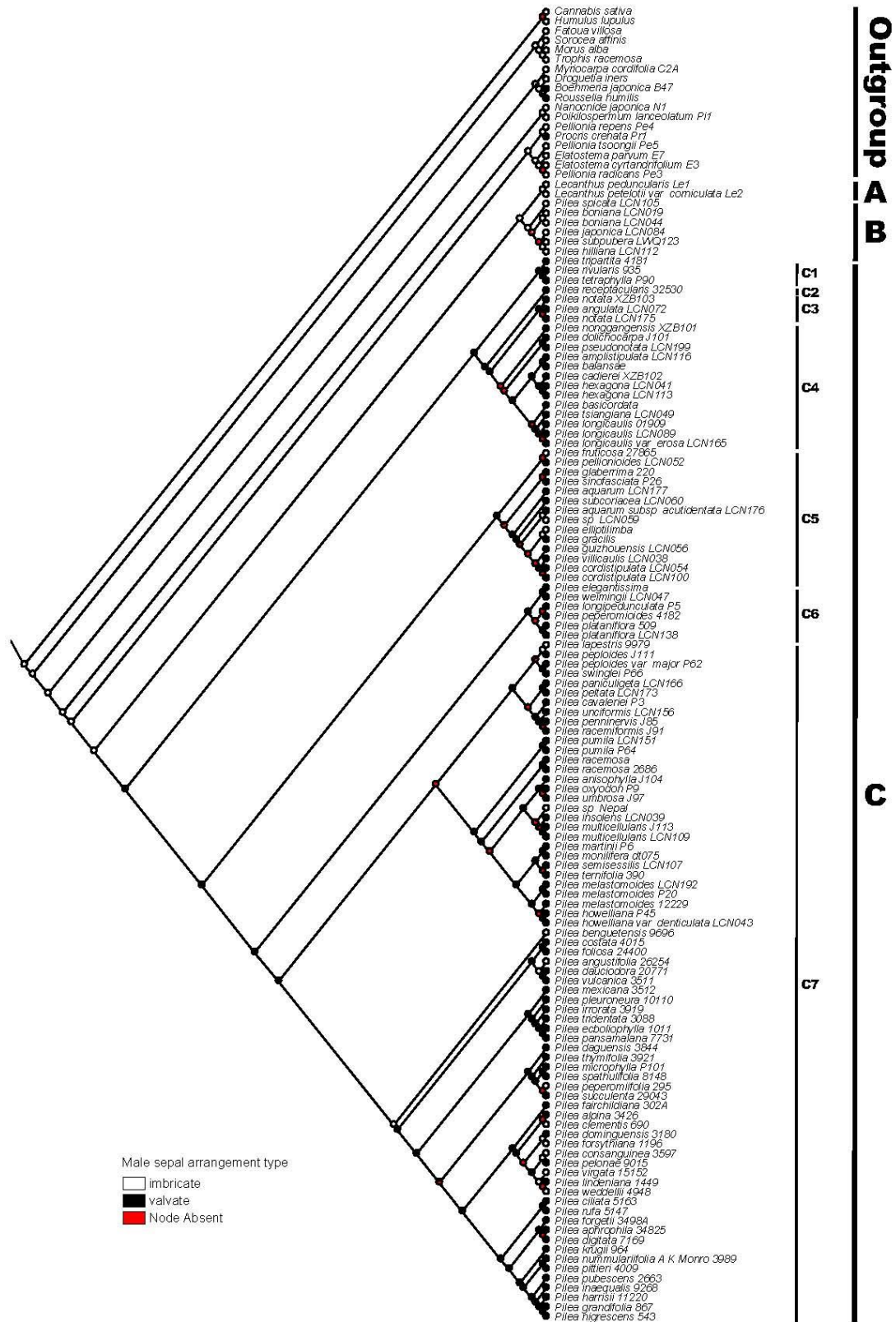
843



844

845 Fig. S15. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of male
846 sepal number.

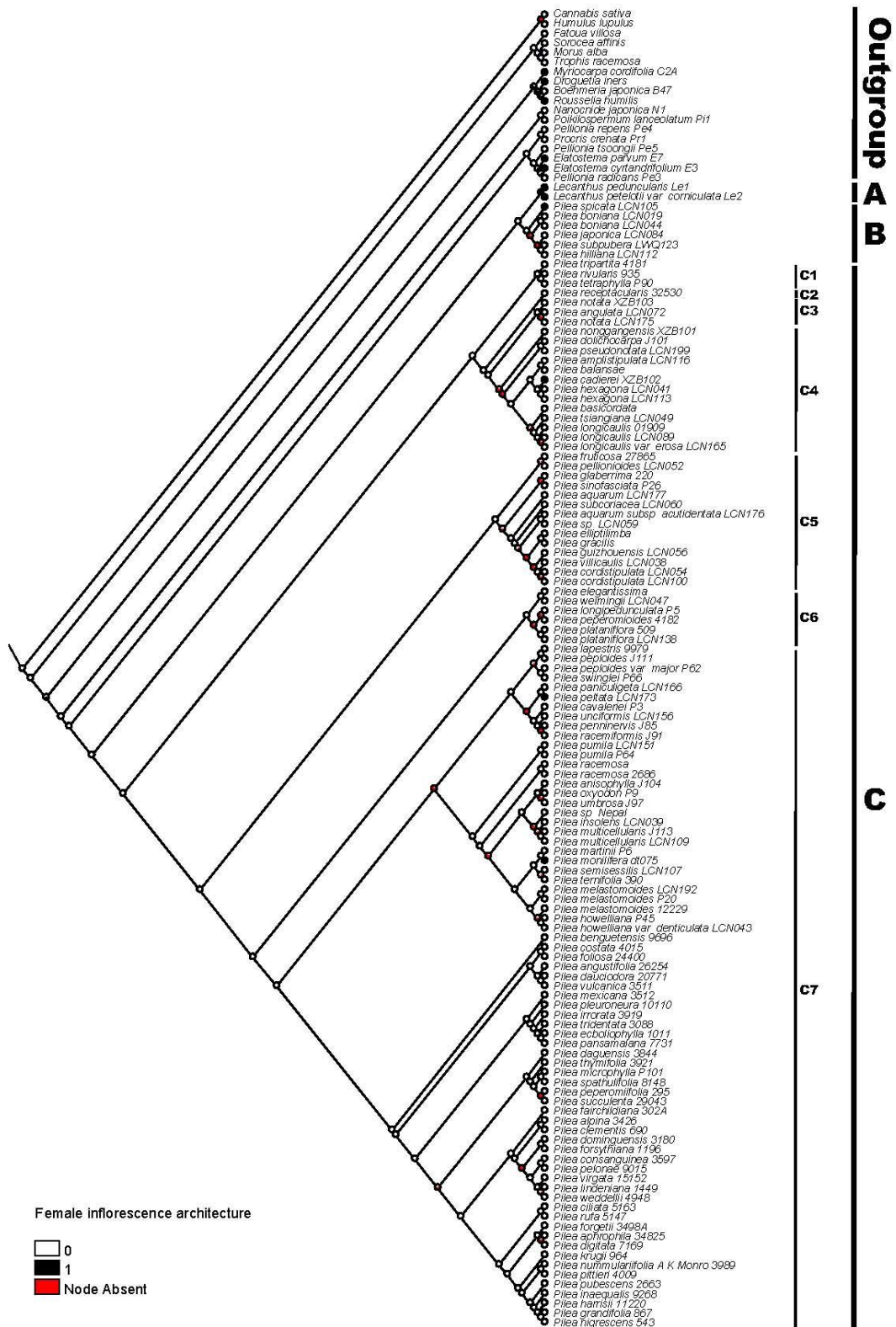
847



848

849 Fig. S16. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of male
850 sepal arrangement type.

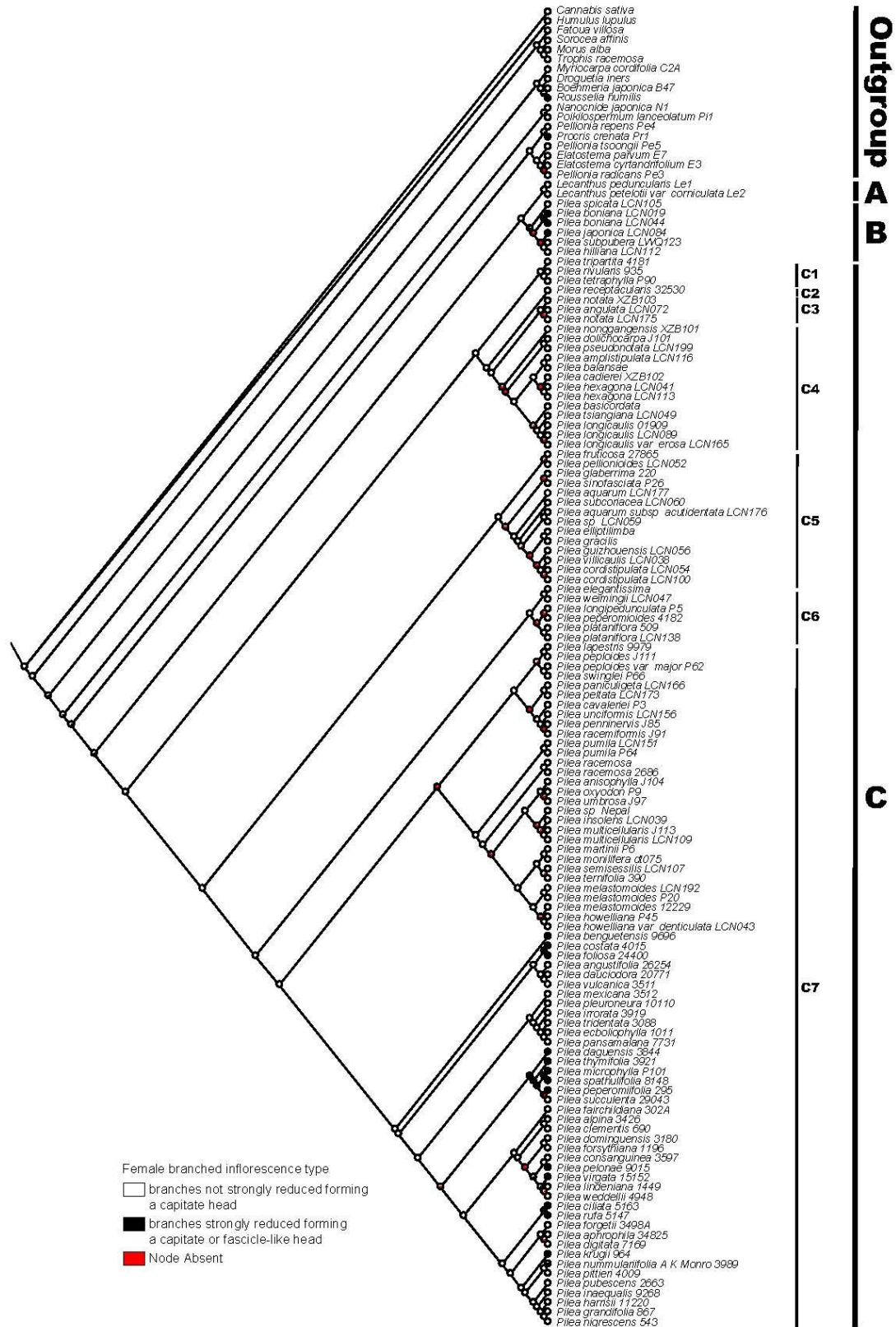
851



852

853 Fig. S17. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of female
854 inflorescence architecture.

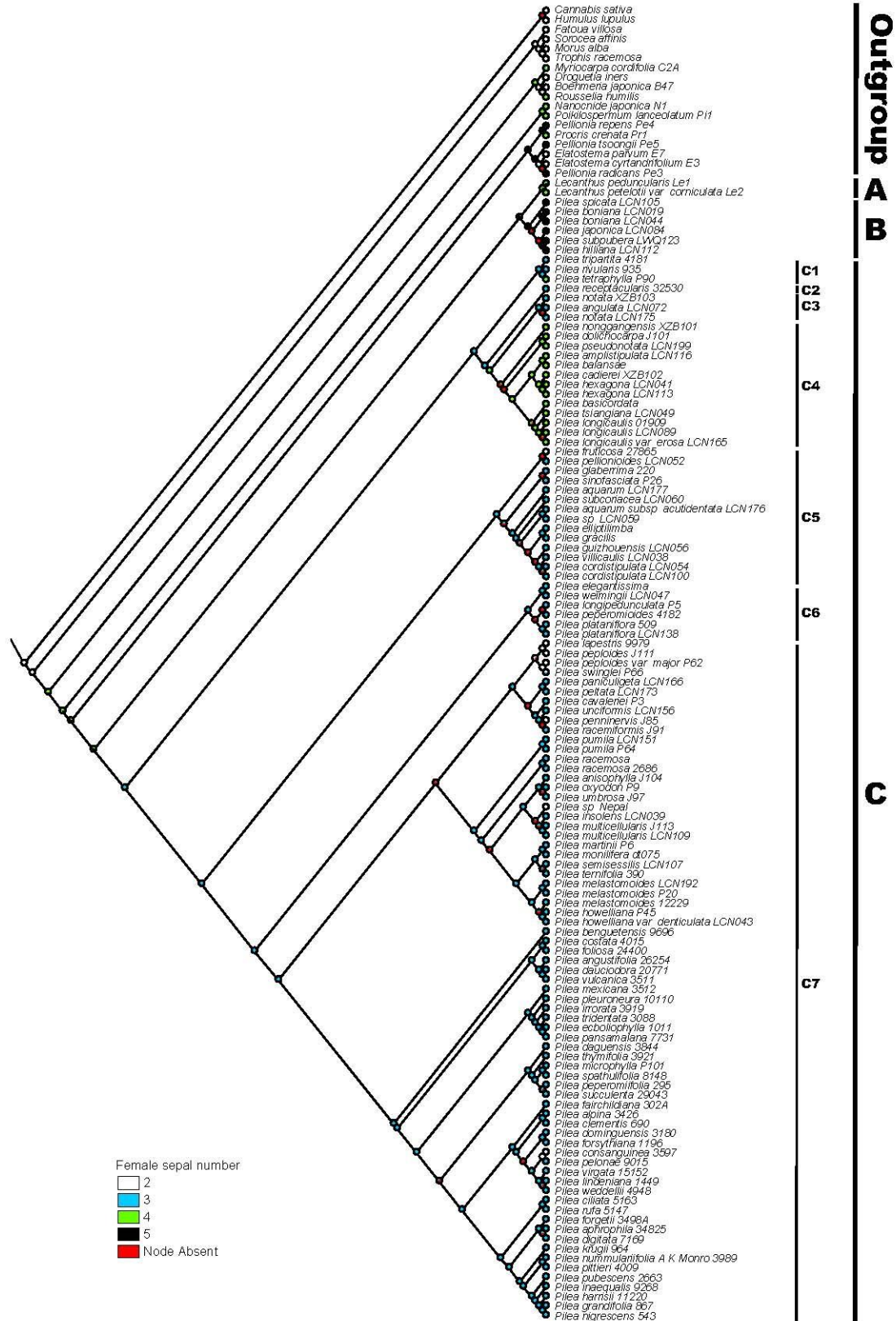
855



856

857 Fig. S18. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of female
 858 branched inflorescence type.

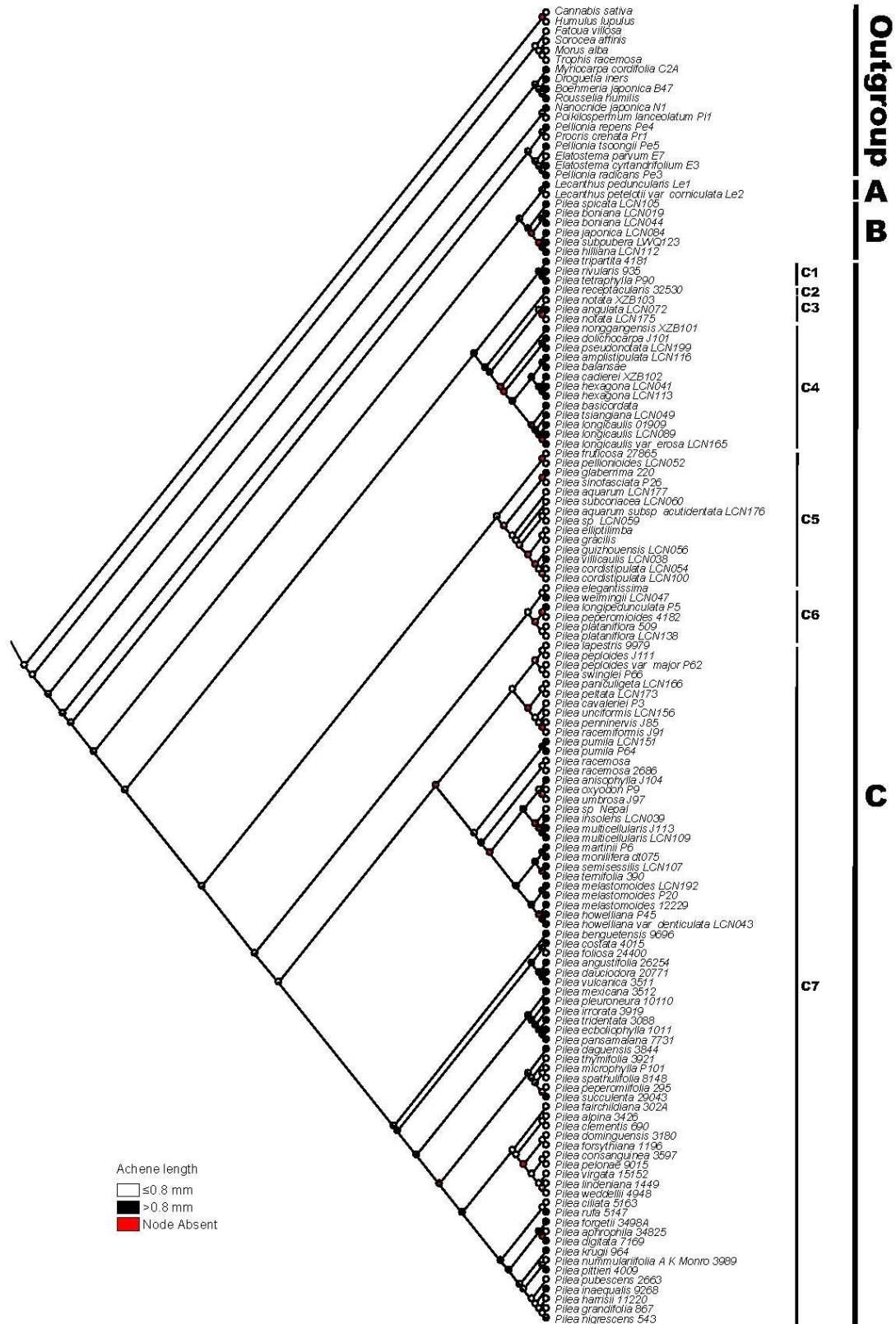
859



860

861 Fig. S19. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of female
 862 sepal number.

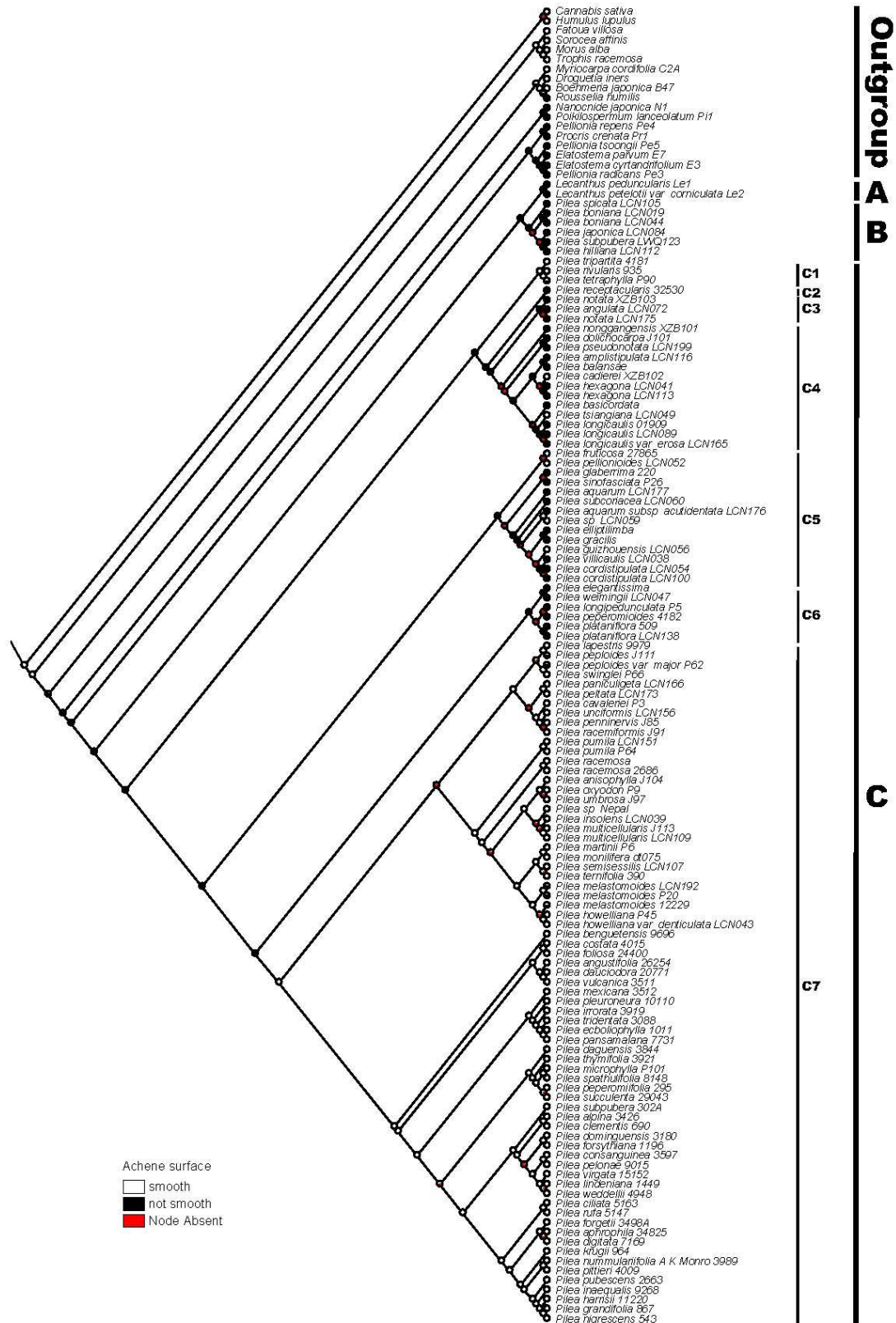
863



864

865 Fig. S20. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of
 866 achene length.

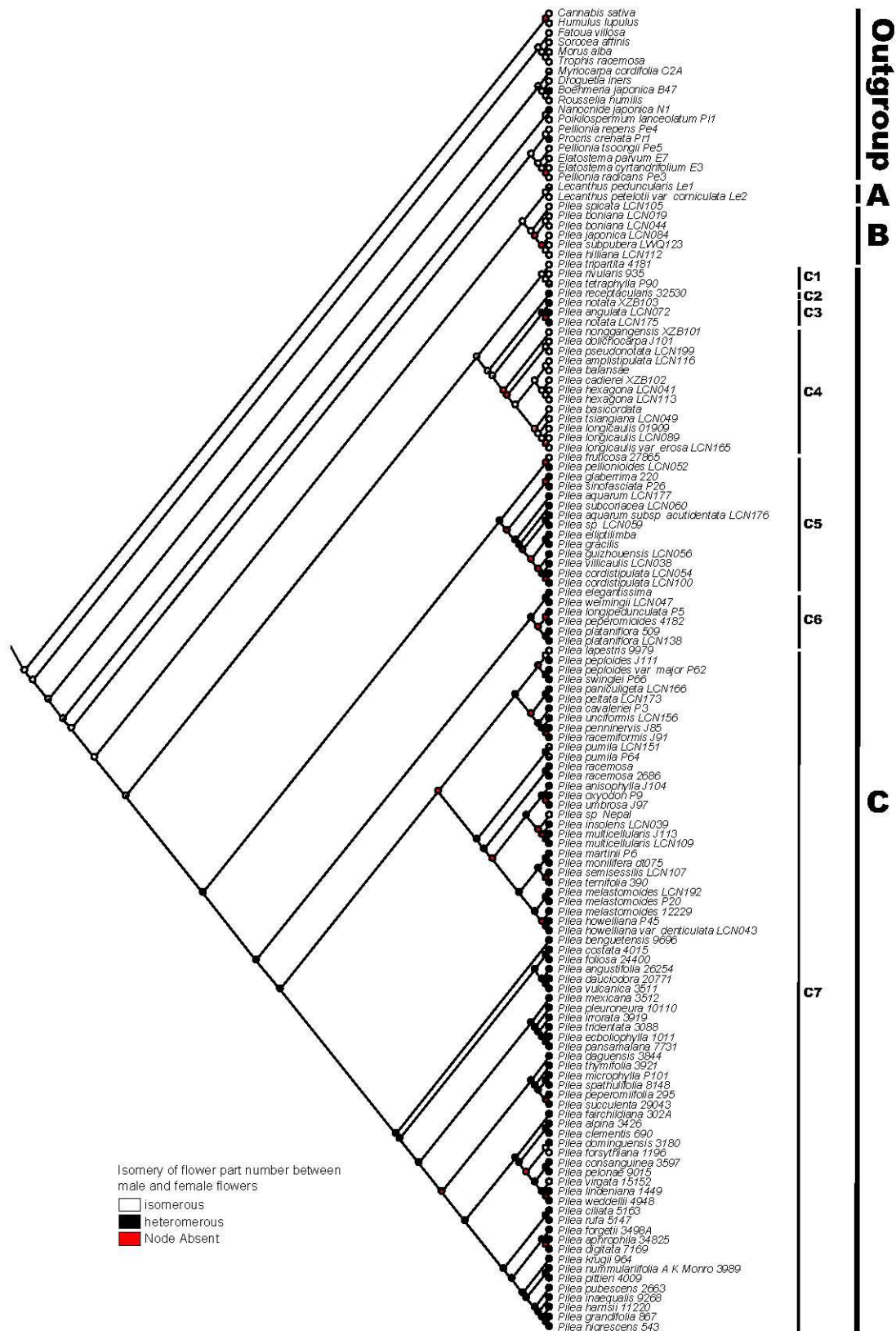
867



868

869 Fig. S21. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of
 870 achene surface.

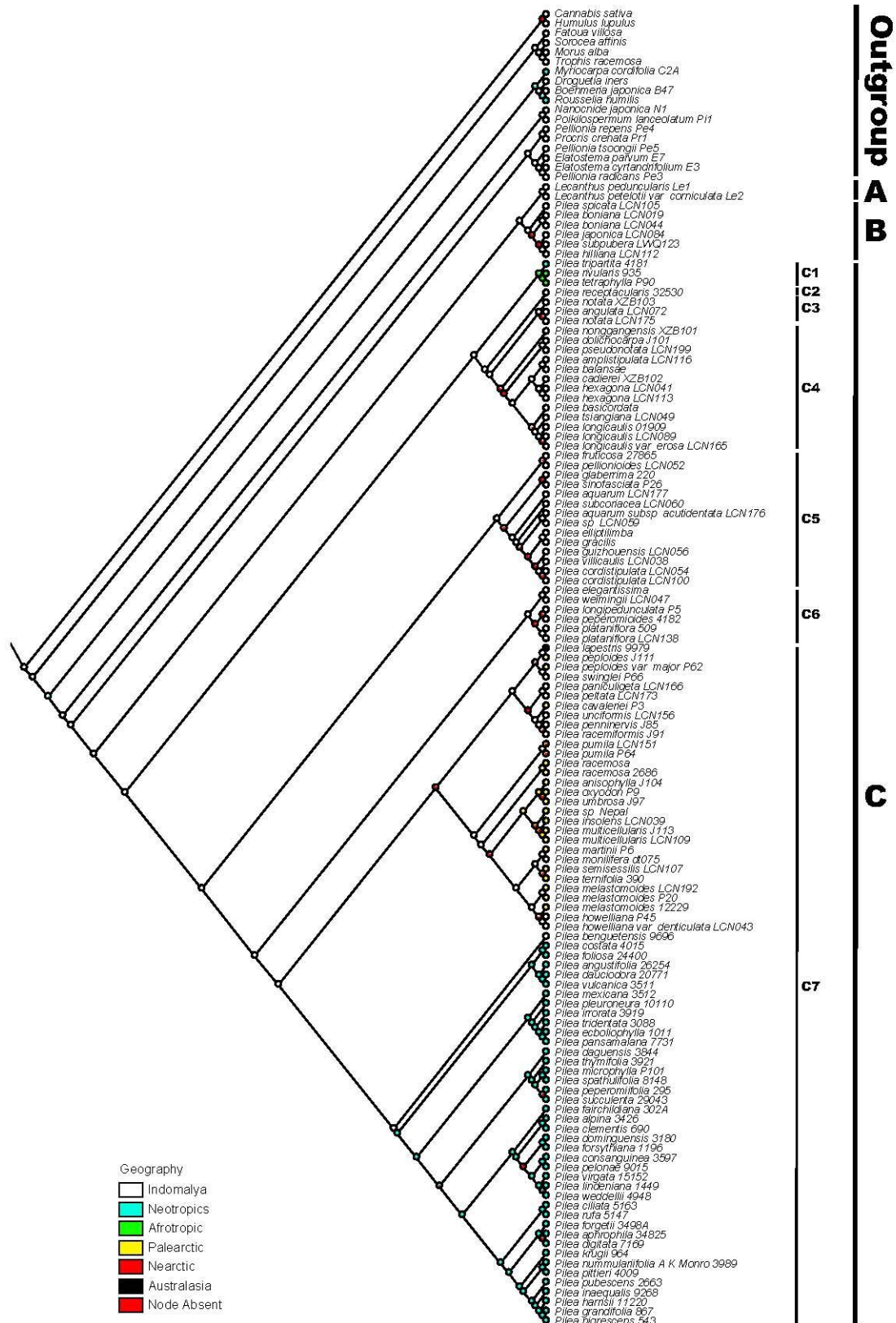
871



872

873 Fig. S22. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of
 874 isomery of flower part number between male and female flowers.

875



876

877 Fig. S23. Ancestral state reconstruction for *Pilea* based on Maximum likelihood analysis of
 878 geography.

879

880

881 **Appendix A. Supplementary material**

882 Supplementary Text 1. Species names and GenBank accession numbers of DNA sequences
883 used in this study

884 Voucher information for samples of which sequences are newly generated is given using the
885 following format: Taxon name, collection locality, collector and collector number (herbarium
886 for voucher specimen), GenBank accession numbers for ITS, *trnL-trnF*, *rbcL*, respectively.
887 Samples downloaded from NCBI only remain Taxon name, collection locality, GenBank
888 accession numbers as stated above. Herbaria: IBK = Guangxi Institute of Botany; K = Royal
889 Botanic Garden, Kew; KUN = Kunming Institute of Botany, Chinese Academy of Sciences;
890 SING = Singapore Botanic Gardens. (NA = not available, * newly generated sequences).

891 Ingroup:

892 *Achudemia javanica*_LWQ123, Indonesia, Robinson H.C. and Kloss C.B. 1914 (SING),
893 MT516339*, MT523094*, MT523050*. *Lecanthus peduncularis*_Le1, China, KF137871,
894 KF138350, KF138186. *Lecanthus petelotii* var *corniculate*_Le2, China, KF137873,
895 KF138352, KF138188. *Pilea alpina* 3426, Santo Domingo, DQ175543, DQ179309, NA.
896 *Pilea amplistipulata*_LCN116, China, Shui Y.M. et al.14319 (KUN), MT516340*,
897 MT523095*, MT523051*. *Pilea angulata*_LCN072, China, Fu L.F. et al. FL0234 (IBK),
898 MT516341*, MT523096*, MT523052*. *Pilea angustifolia*_26254, Costa Rica, DQ175556,
899 DQ179289, NA. *Pilea anisophylla*_J104, China, Wen F. WF182817-10 (IBK), MT516342*,
900 MT523097*, MT523053*. *Pilea aphrophila*_34825, Colombia, DQ175589, DQ179323, NA.
901 *Pilea aquarum*_LCN177, China, Wei Y.G. Wei097 (IBK), MT516343*, MT523098*,
902 MT523054*. *Pilea aquarum* subsp. *acutidentata*_LCN176, China, Wen F. WFLSH111207
903 (IBK), MT516344*, MT523099*, MT523055*. *Pilea balansae*, Vietnam, Huang S.L.
904 HSL118-1 (IBK), MT516345*, MT523100*, NA. *Pilea basicordata*, China, DQ175614,
905 DQ179361, NA. *Pilea benguetensis*_9696, Phillipines, DQ175554, DQ179337, NA. *Pilea*
906 *boniana*_LCN019, China, Fu L.F. FLF180412-01, (IBK), MT516346*, MT523101*,
907 MT523056*. *Pilea boniana*_LCN044, China, Qin et al. 3193 (KUN), MT516347*,
908 MT523102*, MT523057*. *Pilea cadierei*_XZB102, China, Xin Z.B. XZB102 (IBK),
909 MT516348*, MT523103*, MT523058*. *Pilea cavaleriei*_P3, China, KF137895, KF138380,
910 KF138214. *Pilea ciliate*_5163, Jamaica, DQ175538, DQ179300, NA. *Pilea clementis*_690,

911 Cuba, DQ175550, DQ179310, NA. *Pilea consanguinea*_3597, Santo Domingo, DQ175539,
912 DQ179312, NA. *Pilea cordistipulata*_LCN054, China, Monro et al. AM6727 (IBK),
913 MT516349*, MT523104*, MT523059*. *Pilea cordistipulata*_LCN100, China, Huang S.L.
914 HSL140 (IBK), MT516350*, MT523105*, MT523060*. *Pilea costata*_4015, Peru, DQ175595,
915 DQ179290, NA. *Pilea daguensis*_3844, Mexico, DQ175567, DQ179332, NA. *Pilea*
916 *dauciodora*_20771, Mexico, DQ175562, DQ176857, NA. *Pilea digitate*_7169, Panama,
917 DQ175559, DQ179326, NA. *Pilea dolichocarpa*_J101, China, Monro A.K. AM6399 (IBK),
918 MT516351*, MT523106*, MT523061*. *Pilea dominguensis*_3180, Santo Domingo,
919 DQ175541, DQ179313, NA. *Pilea ecboliophylla*_1011, Mexico, DQ175531, DQ179292, NA.
920 *Pilea elegantissima*_P39, China, MH357923, MH358303, MH358124. *Pilea elliptilimba*,
921 China, Huang S.L. HSL113 (IBK), MT516352*, MT523107*, NA. *Pilea foliosa*_24400, Peru,
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924 Borneo, DQ175604, DQ179353, NA. *Pilea glaberrima*_220, Nepal, DQ175600, DQ179352,
925 NA. *Pilea gracilis*, China, Wei Y.G. Wei039 (IBK), MT516353*, MT523108*, NA. *Pilea*
926 *grandifolia* 867, Jamaica, DQ175551, DQ179303, NA. *Pilea guizhouensis*_LCN056, China,
927 Monro et al. AM6715 (IBK), MT516354*, MT523109*, MT523062*. *Pilea harrisii* 11220,
928 Jamaica, DQ175537, DQ179302, NA. *Pilea hexagona*_LCN041, China, Shui Y.M. YN004
929 (KUN), MT516355*, MT523110*, MT523063*. *Pilea hexagona*_LCN113, China,
930 Sino-Vietnamese expedition 775 (KUN), MT516356*, MT523111*, MT523064*. *Pilea*
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932 *howelliana* P45, China, MH357926, MH358306, MH358127. *Pilea howelliana* var.
933 *denticulata*_LCN043, China, Wang Y.Z. 4678 (KUN), MT516358*, MT523113*, MT523066*.
934 *Pilea inaequalis* 9268, Trinidad, DQ175552, DQ179304, NA. *Pilea insolens*_LCN039, China,
935 FLPH Tibet Expedition 12-1838 (IBK), MT516359*, MT523114*, MT523067*. *Pilea irrorata*
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937 HSL012 (IBK), MT516360*, MT523115*, MT523068*. *Pilea krugii* 964, Puerto Rico,
938 DQ175581, DQ179315, NA. *Pilea lapestris* 9979, Indonesia, DQ175598, DQ179341, NA.
939 *Pilea lindeniana* 1449, Cuba, DQ175547, DQ179314, NA. *Pilea longicaulis* 01909, China,
940 DQ175611, DQ179363, NA. *Pilea longicaulis* var. *erosa*_LCN165, China, Monro A.K.

941 AM6809 (IBK), MT516361*, MT523116*, NA. *Pilea longicaulis*_LCN089, China, Huang
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944 KF138217. *Pilea melastomoides*_12229, Indonesia, DQ175596, DQ179345, NA. *Pilea*
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950 WF180817-08 (IBK), MT516364*, MT523119*, MT523071*. *Pilea multicellularis*_LCN109,
951 China, Tibet Expedition 12-1247 (IBK), MT516365*, MT523120*, MT523072*. *Pilea*
952 *nigrescens*_543, Jamaica, DQ175582, DQ179301, NA. *Pilea nonggangensis*_XZB101, China,
953 Huang S.L. HSL149 (IBK), MT516366*, MT523121*, MT523073*. *Pilea notata*_LCN175,
954 China, Wen F. WFLSH120925 (IBK), MT516367*, MT523122*, MT523074*. *Pilea*
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958 AM6818 (IBK), MT516369*, MT523124*, MT523076*. *Pilea pansamalana* 7731, Mexico,
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971 MT523082*. *Pilea pubescens*_2663, Belize, DQ175558, DQ179325, NA. *Pilea pumila*_P64,
972 China, MH357932, MH358309, MH358133. *Pilea pumila*_LCN151, China, Huang S.L.
973 2104H (IBK), MT516376*, MT523131*, MT523083*. *Pilea racemiformis*_J91, China, Wen F.
974 WF150423-33 (IBK), MT516377*, MT523132*, MT523084*. *Pilea racemosa*, China,
975 DQ175602, DQ179347, NA. *Pilea racemose*_2686, China, DQ175602, DQ179347, NA.
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977 Tanzania, DQ175606, DQ179358, NA. *Pilea rufa*_5147, Jamaica, DQ175578, DQ179299,
978 NA. *Pilea semisessilis*_LCN107, China, Zhou Z.K. et al. EXLS-0272 (KUN), MT516378*,
979 MT523133*, MT523085*. *Pilea sinofasciata*_P26, China, KF137905, KF138389, KF138224.
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994 (KUN), MT516385*, MT523140*, MT523092*. *Pilea virgata*_15152, Jamaica, DQ175548,
995 DQ179329, NA. *Pilea vulcanica*_3511, Panama, DQ175563, DQ179284, NA. *Pilea*
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997 R.D. LRD001 (IBK), MT516386*, MT523141*, MT523093*. *Pilea fairchildiana*_302A,
998 Dominica, JN252482, JN252481, NA.
999 Outgroup:
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1001 China, MH357863, NA, MH358052. *Droguetia iners*_Dr1, China, KF137844, KF138318,
1002 KF138154. *Elatostema cyrtandrifolium*_E3, China, KF137848, KF138322, KF138158.
1003 *Elatostema parvum*_E7, China, KF137852, KF138326, KF138162. *Fatoua villosa*_F1, China,
1004 KF137858, KF138331, KF138168 . *Humulus lupulus*_D3848, China, MH357893, NA,
1005 MH358086. *Morus alba*, HM747164, HM747180, L01933. *Myriocarpa cordifolia*_C2A,
1006 Panama, KF137877, KF138357, KF138193. *Nanocnide japonica*_N1, China, KF137879,
1007 KF138359, KF138194. *Pellionia radicans*_Pe3, China, KF137891, KF138375, KF138210.
1008 *Pellionia repens*_Pe4, China, KF137892, KF138376, KF138211. *Pellionia tsoongii*_Pe5,
1009 China, KF137893, KF138377, KF138212. *Procris crenata*_Pr1, China, KF137922,
1010 KF138407, KF138242. *Sorocea affinis*, HM747179, HM747195, GQ981880. *Trophis*
1011 *racemosa*, HM747178, HM747194, GQ981908. *Poikilospermum lanceolatum*_Pi1, China,
1012 KF137912, KF138396, KF138231. *Rousselia humilis*, Dominica, KM586474, KM586646,
1013 KM586560.
1014

