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Supplementary Information for

Biotic colonization of subtropical East Asian caves through time

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Supplementary Text

Materials and Methods

Phylogenetic analysis and molecular dating

We selected 28 plant, animal, and fungal clades that are well represented in subtropical East Asian caves and epigean habitats and that have sufficient molecular data. The 28 clades include 1437 sampled species, of which 189 are endemic cave-dwelling species. Among these, we assessed two clades of ferns (seven endemic cave-dwelling species; 185 species in the utilized phylogenies; representing 33-36% of the total number of species recognized), 10 clades of angiosperms (41 spp; 893 spp; 18-80%), four clades of arachnids (93 spp; 135 spp; 54-100%), two clades of reptiles (2 spp; 27 spp; 81-82%), one clade of amphibians (2 spp; 41 spp; 69%), four clades of fishes (24 spp; 88 spp; 33-71%), and five clades of fungi (20 spp; 68 spp; 60-100%). These selected taxa consist of organisms with a wide variety of phylogenetic backgrounds and ecologies. We think that our sampling is representative of the subtropical East Asia cave biota as a whole. We collected phylogenetic data using DNA sequences from GenBank and estimated divergence times. GenBank accession numbers are listed in *SI Appendix*, Table S7. Phylogenetic analyses and molecular dating details for each clade are listed below:

***Polystichum* (Dryopteridaceae, Polypodiales, Ferns)**

Four plastid DNA regions (*rbcL*: 1349 bp, *psbA-trnH*: 673 bp, *rps4-trnS*: 1190 bp, *trnL-F*: 1250 bp) were used to construct a dated phylogeny for *Polystichum*. Following the results of Testo and Sundue (1), we used two secondary calibration points: 39.34 Ma (95% HPD: 37.78–41.38) for the stem group age of *Polystichum* and 104.82 Ma (95% HPD: 89.97–111.29) for the root age. Our divergence time estimate suggests a crown group age of 39.82 Ma (95% HPD: 36.56–43.23) for *Polystichum*, which coincides with a previous time estimate (39.25 Ma; 95% HPD: 35.61–42.66) (2).

***Hymenasplenium* (Aspleniaceae, Polypodiales, Ferns)**

We re-analyzed the dataset of Xu et al. (3) to construct a dated phylogeny for *Hymenasplenium* based on four plastid DNA regions (*atpB*: 1278 bp, *rbcL*: 1383 bp, *rps4-trnS*: 1147 bp, *trnL-F*: 1084 bp). Given that there are no reliable *Hymenasplenium* fossils, we used a secondary calibration point, using a single age estimated in a broad study of ferns (4): 57.7 Ma for the stem age of *Hymenasplenium*. The 95% HPD of this age was set based on Rothfels et al. (5).

Lysimachieae (Primulaceae, Ericales, Angiosperms)

One nuclear (ITS: 715 bp) and ten plastid (*matK*: 810 bp, *rbcL*: 877 bp, *rps16*: 1037 bp, *atpB-rbcL*: 1212 bp, *atpF-atpH:* 652 bp, *rpl20-rps12*: 915 bp, *rpl32-trnL*: 1307 bp, *trnH-psbA*: 1906 bp, *trnL-F*: 1152 bp, *trnS-trnG*: 1138 bp) DNA regions were used to construct a dated phylogeny for Lysimachieae. *Lysimachia* sp., fossil seeds from the latest part of the Middle Miocene (12–16 Ma) of Jutland, Denmark (6), are close to extant *L. vulgaris*, *L. terrestris*, and *L. thyrsiflora* based on seed-coat surface and outer layer and columnar cells in the outer seed-coat layer (7). We followed Yan et al. (8) and gave a lower bound of 12 Ma for the crown group age of the *L. vulgaris-L. terrestris* clade. We also used two secondary calibration points, using ages estimated in a broad study of the family Primulaceae (9), 28.47 Ma (95% HPD: 23.03–37.67) for the split between the core *Lysimachia* and *Anagallis* and 37.9 Ma (95% HPD: 26.4–49.4) for the stem group age of Lysimachieae. Our divergence time estimate suggests a crown group age of 31.47 Ma (95% HPD: 24.98–37.36) for Lysimachieae, which coincides with the time estimate of Yan et al. (8) (31.45 Ma; 95% HPD: 24.85–38.32).

***Mitreola* (Loganiaceae, Gentianales, Angiosperms)**

Four plastid (*matK*: 775 bp, *rbcL*: 591 bp, *petB-petD*: 1029 bp, *psbA-trnH*: 663 bp) and two nuclear (ITS: 763 bp and ETS: 432 bp) DNA regions were used to construct a dated phylogeny for *Mitreola*. We used two secondary calibration points, using ages estimated in a broad study of the family Loganiaceae (10): 17.35 Ma (95% HPD: 9.3–26.87) for the stem age of *Mitreola* and 23.12 Ma (95% HPD: 12.99–34.89) for the root age.

***Primulina* (Gesneriaceae, Lamiales, Angiosperms)**

Nine plastid (*ndhA*-intron: 922 bp, *ycf1*-1: 543 bp, *ycf1*-2: 801 bp, *atpB-rbcL*: 1239 bp, *ndhH-rps15-ycf1*: 991 bp, *rpl32-trnL*: 1205 bp, *rpoB-trnC*: 977 bp, *trnC-petN*: 841 bp, *trnL-F*: 1030 bp) and nine nuclear (ITS: 1001 bp, 7FR: 1038 bp, 13FR: 894 bp, 97FR: 760 bp, 117FR: 694 bp, 155FR: 960 bp, 166 FR: 1733 bp, 248FR: 1004 bp, and 383FR: 682 bp) DNA regions were used to construct a dated phylogeny for *Primulina*. We used two secondary calibration points, using ages estimated in a broad study of the family Gesneriaceae (11): 12.57 Ma (95% HPD: 10.33–15.56) for the crown age of *Primulina* and 15.89 Ma (95% HPD: 12.77–19.17) for the stem group age of *Primulina*.

***Petrocodon* (Gesneriaceae, Lamiales, Angiosperms)**

Plastid (*trnL-F*: 955 bp) and nuclear (ITS: 912 bp) DNA regions were used to construct a dated phylogeny for *Petrocodon*. We used two secondary calibration points, using ages estimated in a broad study of the family Gesneriaceae (11): 11.7 Ma (95% HPD: 8.9–14.76) for the crown age of *Petrocodon* and 15.89 Ma (95% HPD: 12.77–19.17) for the stem group age of *Petrocodon*.

***Petrocosmea* (Gesneriaceae, Lamiales, Angiosperms)**

One nuclear (ITS: 885 bp) and four plastid (*matK*: 1661 bp, *rps16*: 845 bp, *trnL-F*: 919 bp, *trnT-L*: 739 bp) DNA regions were used to construct a dated phylogeny for *Petrocosmea*. We used

two secondary calibration points, using ages estimated in a broad study of the family Gesneriaceae (11): 10.72 Ma (95% HPD: 8.31–13.22) for the stem group age of *Petrocosmea* and 17.02 Ma (95% HPD: 14.12–20.74) for the root age.

***Hemiboea* (Gesneriaceae, Lamiales, Angiosperms)**

We re-analyzed the dataset of Li et al. (12) to construct a dated phylogeny for *Hemiboea* based on one nuclear (ITS: 888 bp) and four plastid (*matK*: 1220 bp, *rbcL*: 723 bp, *rpS16* intron: 954 bp, *atpB-rbcL*: 927 bp) DNA regions. We used two secondary calibration points, using ages estimated in a broad study of the family Gesneriaceae (11): 15.31 Ma (95% HPD: 12.15–18.87) for the stem group age of *Hemiboea* and 25.98 Ma (95% HPD: 22.15–31) for the root age.

***Lysionotus* (Gesneriaceae, Lamiales, Angiosperms)**

One nuclear (ITS: 1232 bp) and nine plastid (*matK*: 1455 bp, *ndhF*: 2105 bp, *rbcL*: 1440 bp, *rpS16*: 1070 bp, *atpB-rbcL*: 1575 bp, *rpL20-rpS12*: 962 bp, *trnE-trnT*: 945 bp, *trnL-trnF*: 1356 bp, *trnT-trnL*: 795 bp) DNA regions were used to construct a dated phylogeny for *Lysionotus*. We used two secondary calibration points, using ages estimated in a broad study of the family Gesneriaceae (11): 14.97 Ma (95% HPD: 11.78–18.45) for the stem group age of *Lysionotus* and 25.98 Ma (95% HPD: 22.15–31) for the root age.

***Paraboea* (Gesneriaceae, Lamiales, Angiosperms)**

Plastid (*trnL-F*: 945 bp) and nuclear (ITS: 1058 bp) DNA regions were used to construct a dated phylogeny for *Paraboea*. We used two secondary calibration points, using ages estimated in a broad study of the family Gesneriaceae (11): 25. 6 Ma (95% HPD: 21.43–30.39) for the stem group age of *Paraboea* and 29 Ma (95% HPD: 24.88–34.65) for the root age.

120 ***Elatostema* (Urticaceae, Rosales, Angiosperms)**

121 We re-analyzed the dataset of Tseng et al. (13) to generate a dated phylogeny for *Elatostema*.
122 The dataset contains one nuclear (ITS: 1115 bp) and two plastid (*psbM-trnD*: 669 bp, *trnH-psbA*:
123 501 bp) DNA regions. We used two secondary calibration points, using ages estimated in a broad
124 study of Urticaceae (14): 29.6 Ma (95% HPD: 21.1–38.4) for the crown age of core *Elatostema*
125 and 53.3 Ma (95% HPD: 41.5–66.0) for the root age.

126

127 **Asian *Begonia* clade (Begoniaceae, Cucurbitales, Angiosperms)**

128 One nuclear (ITS: 1035 bp) and six plastid (*ndhA*: 1557bp, *ndhF-rpl32*: 2038 bp, *psbM-trnD*:
129 1036bp, *psbM-ycf6*: 1230 bp, *trnC-ycf6*: 1136 bp, *trnL-rpl32*: 1754 bp) DNA regions were used
130 to construct a dated phylogeny for the Asian *Begonia* clade. We used two secondary calibration
131 points, using ages estimated in a broad study of all families of Cucurbitales and Fagales (15):
132 16.1 Ma (95% HPD: 9.1–22.5) for the split between Clade 11 and Clade 49 and 13.0 Ma (95%
133 HPD: 7.7–18.9) for the split between Clade 50 and Clade 51. Our divergence time estimate
134 suggests a crown group age of 15.55 Ma (95% HPD: 10.85–20.49) for the Asian *Begonia* clade,
135 which coincides with a previous time estimate (14.1 Ma; 95% HPD: 9.45–18.71) proposed by
136 Chung et al. (16).

137

138 **Telemidae (Telemidae, Araneae, Arachnids)**

139 Two nuclear DNA regions (H3: 351 bp, Wnt: 376 bp) were used to construct a dated phylogeny
140 for Telemidae. Following Shao and Li (17), we selected two fossil calibration points: (i)
141 *Eoplectreurys gertschi* from the Jurassic of China (18) was used to give a lower bound of 170
142 Ma for the crown group age of the Synspermiata clade; and (ii) *Microsegestria poinari* from the
143 Lower Cretaceous found in Lebanese amber (135–125 Ma) (19) was used to give a lower bound
144 of 125 Ma for the crown age of Dysderoidea. We also used a secondary calibration point, using

145 an age estimated in the study of Shao and Li (17): 237 Ma (95% HPD: 195–283) for the split
146 between the core Synspermiata and Filistatidae.
147
148 ***Nesticella*** **(Nesticidae, Araneae, Arachnids)**
149 We re-analyzed the dataset of Ballarin and Li (20) to construct a dated phylogeny for *Nesticella*.
150 The dataset contains two mitochondrial (16S rRNA: 595 bp, *COI*: 796 bp) and four nuclear (18S
151 rRNA: 1832 bp, 28S rRNA: 2132 bp, Actin5c: 823 bp, H3: 340 bp) DNA regions. We used two
152 fossil calibration points. Fossils of Nesticidae are frequently found in Baltic amber (37–40 Ma);
153 for example, species belonging to the extinct genus *Eopopino* Petrunkevitch, 1942,
154 *Balticonesticus* Wunderlich, 1986, and *Heteronesticus* Wunderlich, 1986 (21). The fossils share
155 general morphological similarities in the palpal structures with several extant European and
156 Asian genera and differ from the Asian genus *Hamus* in the structures of their palps and general
157 shape (20). Thus, we gave a lower bound of 37 Ma for the stem of the core Nesticidae. Another
158 relatively common genus of spiders found in Baltic amber (37–40 Ma) is *Pimoa* (21). These
159 fossils have been used previously in time-calibration studies of Orbiculariae spiders (22) and
160 Nesticidae spiders (20). Thus, we gave a lower bound of 37 Ma for the stem age of *Pimoa*. We
161 used two paleogeographic events as calibration points: the age of the formation of the Yangtze
162 River and its gorge (1.8–1.6 Ma) (23) and the estimated opening age of the East China Sea and
163 Sea of Japan (23–15 Ma) (24,25), which were used to constrain the split of the two different
164 *Nesticella mogera* populations, north and south of the river, and the endemic Japanese species
165 *Speleoticus uenoi* and its congeners in China (*Speleoticus navicellatus* and *Speleoticus* sp.),
166 respectively. We also set 107 Ma (95% HPD: 52–165) for the age of the most recent common
167 ancestor of Nesticidae, Linyphiidae, and Pimoidae, following Garrison et al. (26). Our
168 divergence time estimate suggests a crown group age of 34.46 Ma (95% HPD: 26.06–48.7) for

169 *Nesticella*, which coincides with the estimate of Ballarin and Li (28.3 Ma; 95% HPD: 21.4–35.5)
170 (20).
171
172 ***Troglocoelotes* (Agelenidae, Araneae, Arachnids)**
173 Four mitochondrial (12S rRNA: 317 bp, 16S rRNA: 382 bp, *Cox1*:1182 bp, *Nad1*: 523 bp) and
174 four nuclear (18S rRNA: 1640 bp, 28S rRNA: 1777 bp, H3: 297 bp, Wnt: 339 bp) DNA regions
175 were used to construct a dated-phylogeny for *Troglocoelotes*. We used two secondary calibration
176 points, taking ages estimated in the broad study of the order Araneida (27): 46.25 Ma (95% HPD:
177 41.59–51.10) for the stem age of the *Troglocoelotes*, and 52.45 Ma (95% HPD: 46.84–57.9) for
178 the root age.
179
180 ***Notiocoelotes* (Agelenidae, Araneae, Arachnids)**
181 Four mitochondrial (12S rRNA: 317 bp, 16S rRNA: 382 bp, *Cox1*:1182 bp, *Nad1*: 523 bp) and
182 four nuclear (18S rRNA: 1640 bp, 28S rRNA: 1777 bp, H3: 297 bp, Wnt: 339 bp) DNA regions
183 were used to construct a dated-phylogeny for *Notiocoelotes*. We used a secondary calibration
184 point, taking ages estimated in the broad study of the order Araneida (27): 52.45 Ma (95% HPD:
185 46.84–57.9) for the stem group age of *Notiocoelotes*.
186
187 ***Protobothrops* (Viperidae, Squamata, Reptiles)**
188 Four mitochondrial (12S rRNA: 1148 bp, 16S rRNA: 526 bp, *Cytb*: 1106 bp, *ND4*: 751 bp) and
189 two nuclear (ETS: 432 bp, ITS: 763 bp) DNA regions were used to construct a dated phylogeny
190 for *Protobothrops*. We used two secondary calibration points, using ages estimated in a broad
191 study of the family Viperidae (28): 24.86 Ma (95% HPD: 20.49–29.43) for the stem group age of
192 *Protobothrops* and 27.87 Ma (95% HPD: 23.5–32.46) for the root age.
193

***Elaphe* (Colubridae, Squamata, Reptiles)**

One nuclear (C-mos: 567 bp) and five mitochondrial (12S rRNA: 870 bp, 16S rRNA: 581 bp, *Cytb*: 1157 bp, *ND2*: 987 bp, *ND4*: 889 bp) DNA regions were used to construct a dated phylogeny for *Elaphe*. We used two secondary calibration points, using ages estimated in a broad study of the family Colubridae (28): 35.61 Ma (95% HPD: 29.52–41.58) for the stem age of *Elaphe* and 31.77 Ma (95% HPD: 24.19–38.51) for the split age of *Oreocryptophis* and *Archelaphe*.

***Odorrana* (Ranidae, Anura, Amphibians)**

One nuclear (C-mos: 567 bp) and eight mitochondrial (12S rRNA: 2463 bp, 16S rRNA: 2033 bp, *COI*: 1554 bp, *Cytb*: 1149 bp, *ND2*: 1066 bp, *ND3*: 467 bp, *RAG1*: 1506 bp, *Tyr*: 606 bp) DNA regions were used to construct a dated phylogeny for *Odorrana*. We used two secondary calibration points, using ages estimated in a broad study of the family Ranidae (28): 38.2 Ma (95% HPD: 33.56–42.88) for the stem group age of *Odorrana* and 34.18 Ma (95% HPD: 29.61–38.94) for the split age of *Rana* and *Pseudorana*.

***Bibarba* (Cobitidae, Cypriniformes, Fishes)**

One mitochondrial gene (*Cytb*: 1141 bp) was used to construct a dated phylogeny for *Bibarba*. We used two secondary calibration points, using ages estimated in a broad study of the subfamily Cobitinae (29): 30.07 Ma (95% HPD: 25.55–34.69) for the crown age of the northern clade and 42.11 Ma (95% HPD: 36.35–47.86) for the crown age of subfamily Cobitinae.

***Oreonectes* (Nemacheilidae, Cypriniformes, Fishes)**

Two mitochondrial genes (*COI*: 1095 bp, *Cytb*: 1151 bp) were used to construct a dated phylogeny for *Oreonectes*. Following Chen et al. (30), we selected two fossil calibration points:

(i) the oldest fossil of *Plesiomyxocyprinus arratiae* close to *Myxocyprinus asiaticus* from the Middle Eocene (38–40 Ma) was used to give a lower bound of 38 Ma for the stem age of *Myxocyprinus*; and (ii) a fossil of *Cobitis* from the Middle Miocene (13.8–15.9 Ma) was used to give a lower bound of 13.8 Ma for the stem age of *Cobitis*. The crown age of the family Nemacheilinae was constrained to 36.05 Ma (95% HPD: 23.00–51.09) (30).

***Triplophysa* (Nemacheilidae, Cypriniformes, Fishes)**

Two mitochondrial genes (*COI*: 1137 bp, *Cytb*: 1140 bp) were used to construct a dated phylogeny for *Triplophysa*. Following Chen et al. (30), we selected two fossil calibration points: (i) the oldest fossil of *Plesiomyxocyprinus arratiae* close to *Myxocyprinus asiaticus* from the Middle Eocene (38–40 Ma) was used to give a lower bound of 38 Ma for the stem age of *Myxocyprinus*; and (ii) a fossil of *Cobitis* from the Middle Miocene (13.8–15.9 Ma) was used to give a lower bound of 13.8 Ma for the stem age of *Cobitis*. The root age was set to 36.05 Ma (95% HPD: 23.00–51.09) (30).

***Sinocyclocheilus* (Cyprinidae, Cypriniformes, Fishes)**

We re-analyzed the dataset of Wen et al. (31) to construct a dated phylogeny for *Sinocyclocheilus* based on mitochondrial genome sequence data (33388 bp). Based on Wen et al. (31), we used two secondary calibration points, 35.39 Ma (95% HPD: 30.52–40.36) for the stem group age of *Sinocyclocheilus* and 71.66 Ma (95% HPD: 61.76–81.76) for the root age.

***Wardomycopsis* (Microascaceae, Microascales, Fungi)**

Four nuclear DNA regions (ITS: 576 bp, LSU: 810 bp, TEF: 899 bp, TUB: 487 bp) were used to construct a dated phylogeny for *Wardomycopsis*. We used two secondary calibration points, using ages estimated in a broad study of the Ascomycota (32): 88.91 Ma for the stem group age

of *Wardomycopsis*, and 76.57 Ma for the root age. Following Rothfels et al. (5), we assigned the 95% HPD for these two ages.

***Microascus* (Microascaceae, Microascales, Fungi)**

Four nuclear DNA regions (ITS: 593 bp, LSU: 811 bp, TEF: 895 bp, TUB: 502 bp) were used to construct a dated phylogeny for *Microascus*. We used three secondary calibration points, using ages estimated in a broad study of Ascomycota (32): 67.14 Ma for the stem group age of *Microascus*, 76.57 Ma for the most recent common ancestor of *Microascus*, *Scopulariopsis*, and *Pseudoscopulariopsis*, and 88.91 Ma for the root age. Following Rothfels et al. (5), we assigned the 95% HPD for these three ages.

***Gamszarea* (Cordycipitaceae, Hypocreales, Fungi)**

Six nuclear DNA regions (ITS: 649 bp, LSU: 891 bp, RPB2: 1016 bp, SSU: 1044 bp, TEF: 1035 bp, TUB 338 bp) were used to construct a dated phylogeny for *Gamszarea*. We used two secondary calibration points, using ages estimated in a broad study of Ascomycota (32): 72.25 Ma for the most recent common ancestor of *Lecanicillium*, *Beauveria*, and *Cordyceps*, and 134.28 Ma for the root age. Following Rothfels et al. (5), we assigned the 95% HPD for these two ages.

***Simplicillium* (Cordycipitaceae, Hypocreales, Fungi)**

Five nuclear DNA regions (ITS: 691 bp, LSU: 829 bp, RPB2: 978 bp, SSU: 1025 bp, TEF: 923 bp) were used to construct a dated phylogeny for *Simplicillium*. We used two secondary calibration points, using ages estimated in a broad study of Ascomycota (32): 72.25 Ma for the most recent common ancestor of *Akanthomyces*, *Beauveria*, and *Cordyceps*, and 134.28 Ma for the root age. Following Rothfels et al. (5), we assigned the 95% HPD for these two ages.

***Paracremonium* (Nectriaceae, Hypocreales, Fungi)**

Five nuclear DNA regions (ITS: 607 bp, LSU: 860 bp, RPB2: 865 bp, TEF: 578 bp, TUB: 344 bp) were used to construct a dated phylogeny for *Paracremonium*. We used a secondary calibration point, using ages estimated in a broad study of Ascomycota (32): 82.23 Ma for the stem group age of *Paracremonium*. Following Rothfels et al. (5), we assigned the 95% HPD for this age.

Habitat, geographic range, and vegetation type

Habitat, geographic range, and vegetation type were mainly obtained from the following sources:

African Plant Database (http://africanplantdatabase.ch)

AmphibiaChina (https://www.amphibiachina.org)

CABRI (http://www.cabri.org)

Catalogue of Life China (http://sp2000.org.cn)

FishBase (www.fishbase.org)

Flora of China (http://www.efloras.org)

Flora of North America (http://floranorthamerica.org)

Global Biodiversity Information Facility (http://www.gbif.org)

Hardy Fern Library (https://hardyfernlibrary.com)

KewScience-Plants of the World Online (http://plantsoftheworldonline.org)

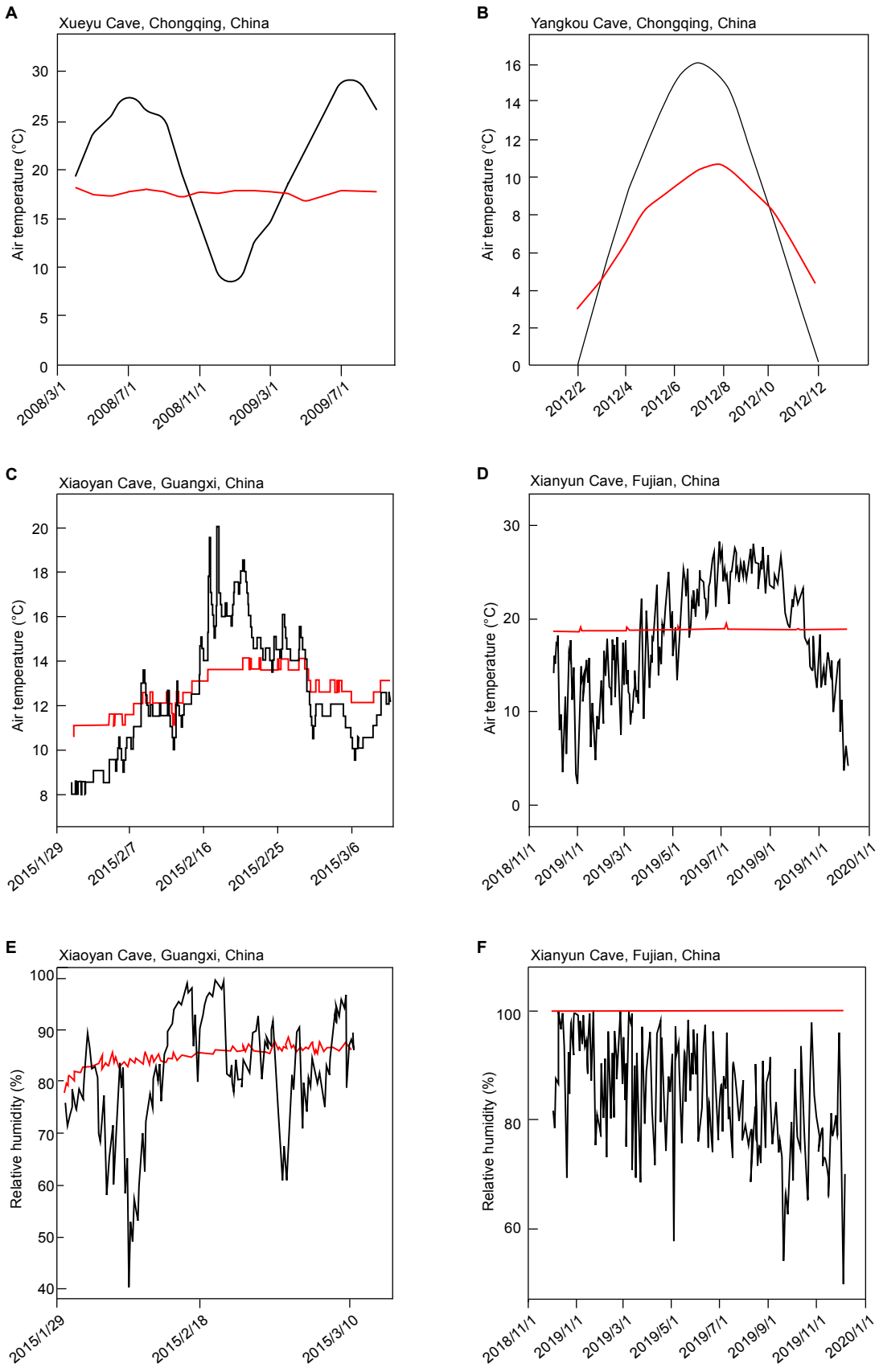
Tropicos.org. Missouri Botanical Garden (http://www.tropicos.org)

SEINet (https://swbiodiversity.org)

The Reptile Database (https://reptile-database.reptarium.cz)

World Spider Catalog (https://wsc.nmbe.ch)

293 **Fig. S1.**



294

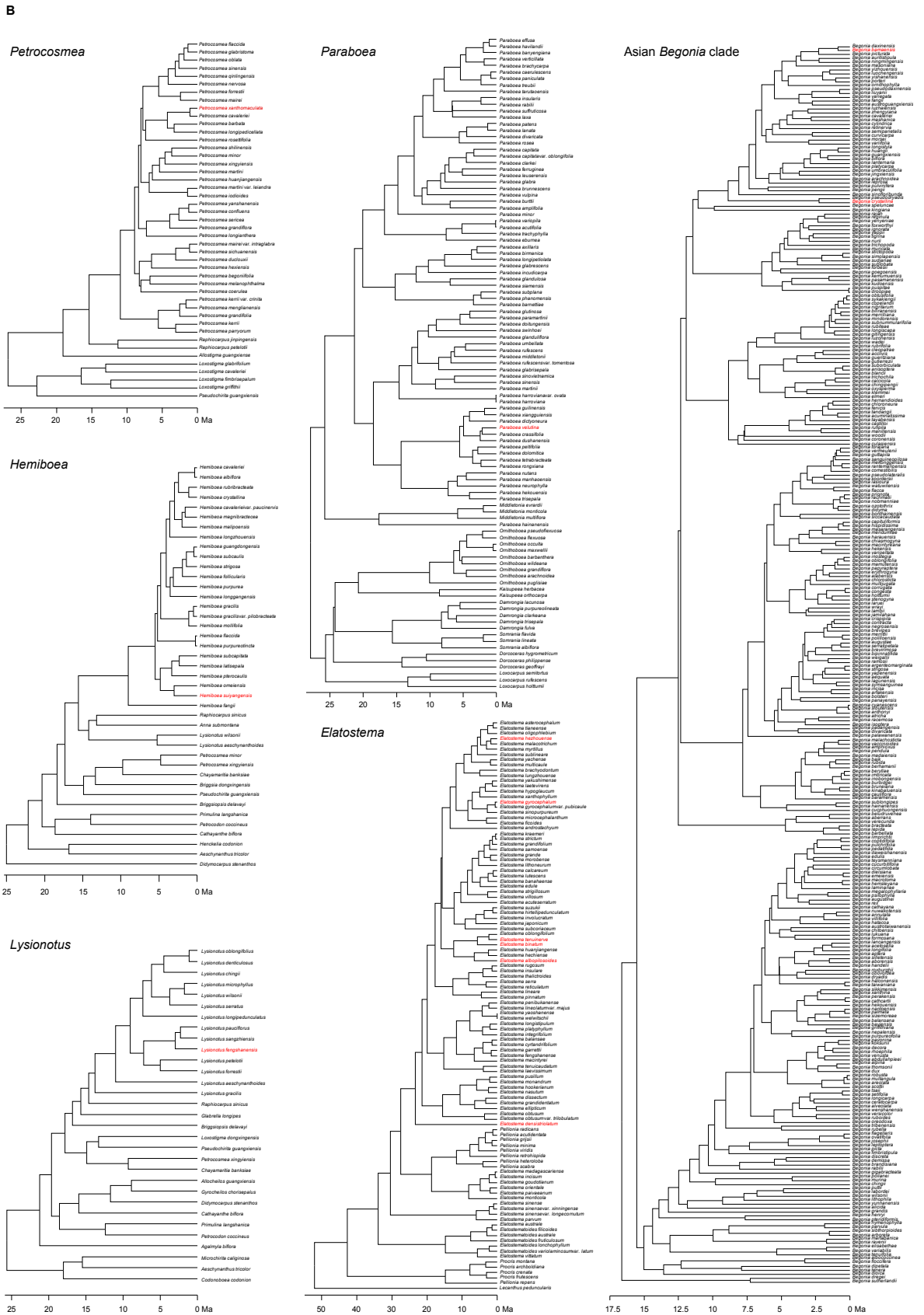
Fig. S1. Temperature and/or relative humidity variation yearly inside (red) and outside (black) subtropical East Asian caves. (*A–D*) Temperature variations. (*A*) Xueyu cave, Chongqing, China, modified from Pu et al. (33). (*B*) Yangkou cave, Chongqing, China, modified from Li et al. (34). (*C*) Xiaoyan cave, Guangxi, China, modified from Guo et al. (35). (*D*) Xianyun Cave, Fujian, China, modified from Yang et al. (36). (*E–F*) Relative humidity variation. (*E*) Xiaoyan cave, Guangxi, China, modified from Guo et al. (35). (*F*) Xianyun cave, Fujian, China, modified from Yang et al. (36).

Fig. S2A.

A


Polystichum
Hymenasplenium
Lysimachieae
Primulina
Mitreola
Petrocodon

304 **Fig. S2B.**



305

Fig. S2C.

c

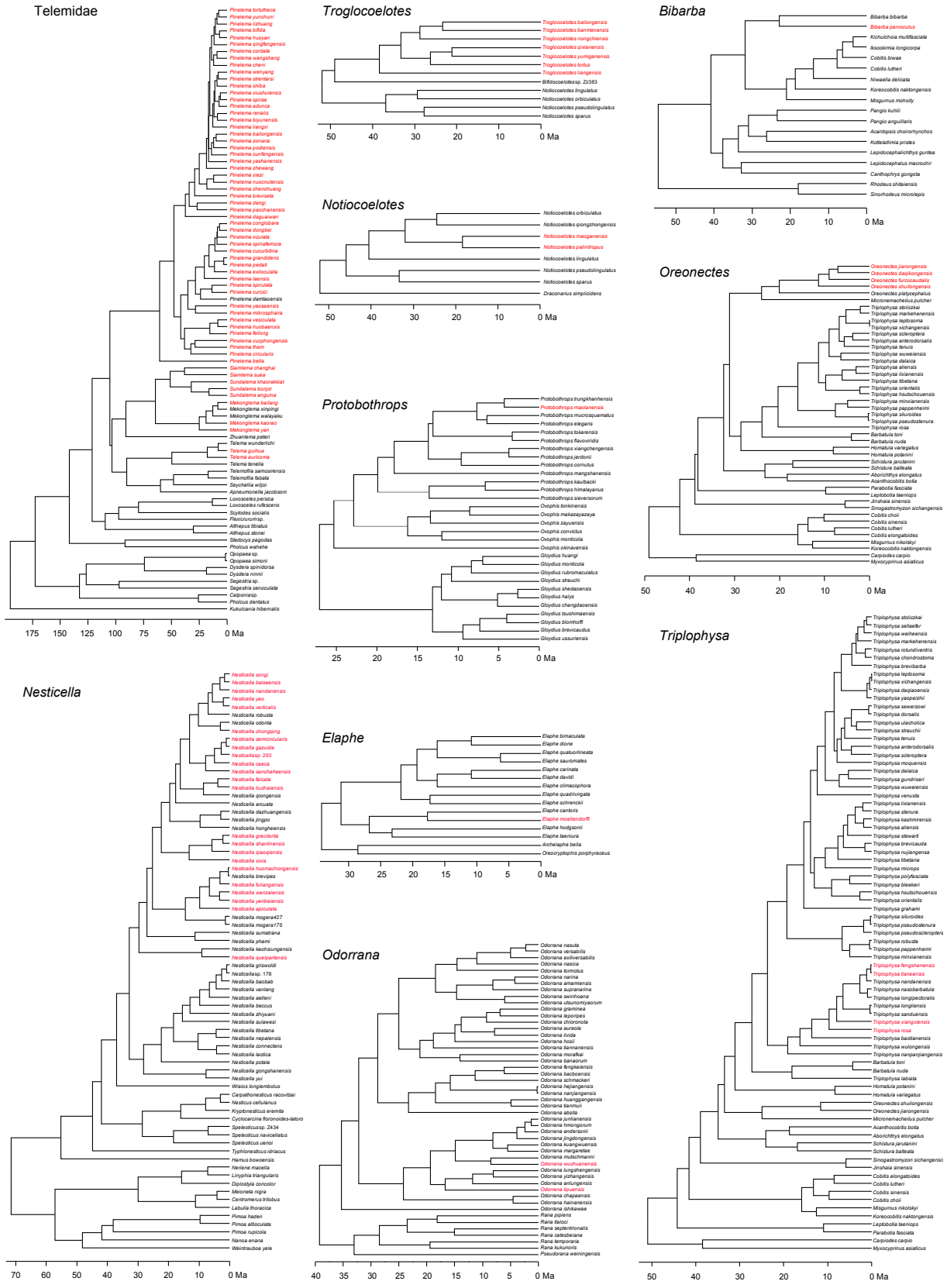

Telemidae
Troglocoelotes
Bibarba
Notiocoelotes
Oreonectes
Protobothrops
Triplophysa
Nesticella
Elaphe
Odorrana

Fig. S2D.

D

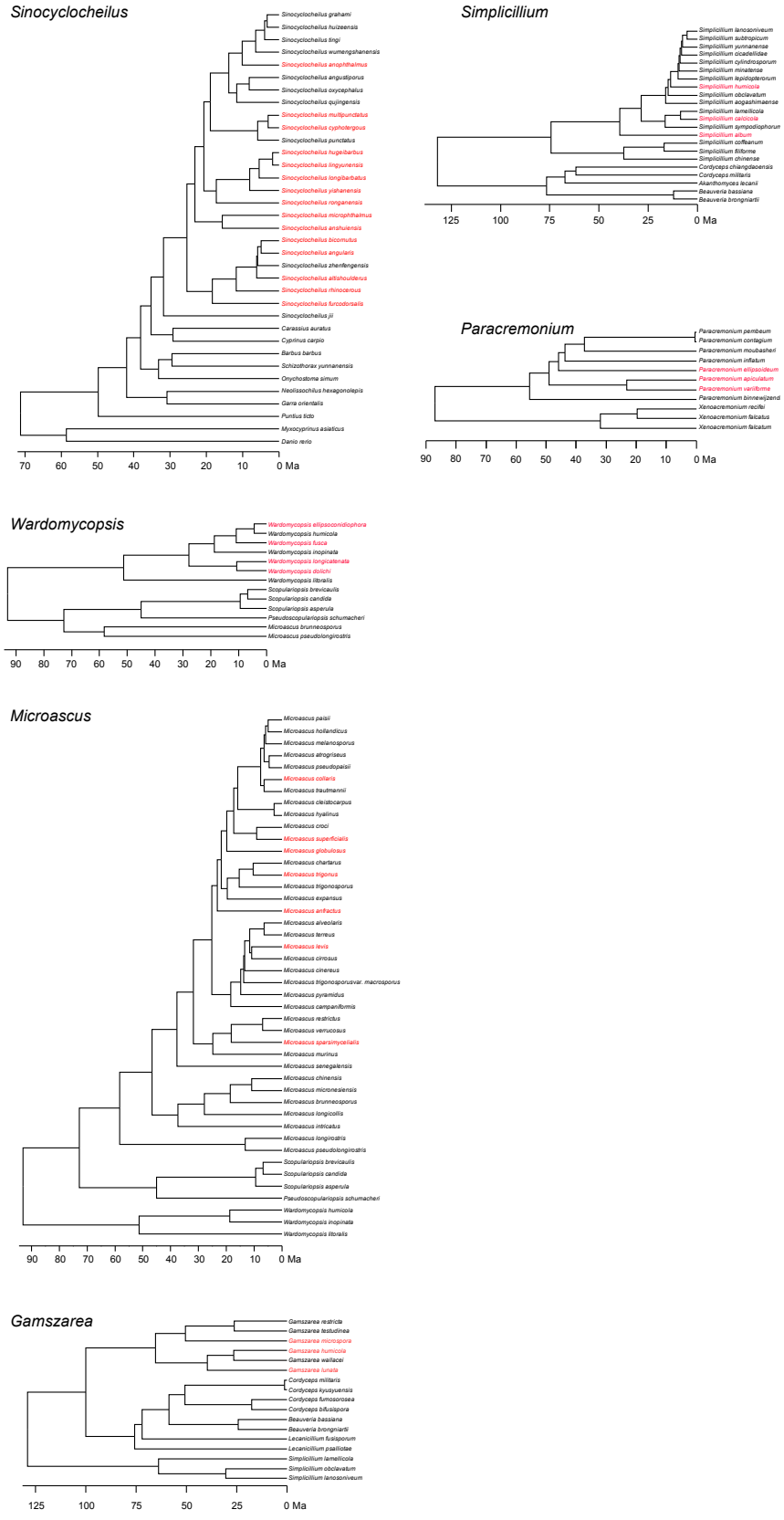

Sinocyclocheilus
Sinocyclocheilus grahami
Sinocyclocheilus huizeensis
Sinocyclocheilus tingi
Sinocyclocheilus wumengshanensis
Sinocyclocheilus anophthalmus
Sinocyclocheilus angustiporus
Sinocyclocheilus oxycephalus
Sinocyclocheilus qujingensis
Sinocyclocheilus multipunctatus
Sinocyclocheilus cyphotergous
Sinocyclocheilus punctatus
Sinocyclocheilus hugeibarbus
Sinocyclocheilus lingyunensis
Sinocyclocheilus longibarbatus
Sinocyclocheilus yishanensis
Sinocyclocheilus rongjiangensis
Sinocyclocheilus microphthalmus
Sinocyclocheilus anshuiensis
Sinocyclocheilus bicornutus
Sinocyclocheilus angularis
Sinocyclocheilus zhenfengensis
Sinocyclocheilus altishoulderus
Sinocyclocheilus rhinocerous
Sinocyclocheilus furcodorsalis
Sinocyclocheilus jii
Carassius auratus
Cyprinus carpio
Barbus barbus
Schizothorax yunnanensis
Onychostoma simum
Neolissochilus hexagonolepis
Garra orientalis
Puntius ticto
Myxocyprinus asiaticus
Danio rerio
70 60 50 40 30 20 10 0 Ma
Simplicillium
Simplicillium lanosoniveum
Simplicillium subtropicum
Simplicillium yunnanense
Simplicillium cicatellidae
Simplicillium cylindrosporum
Simplicillium minatense
Simplicillium lepidopterorum
Simplicillium humicola
Simplicillium obclavatum
Simplicillium aogashimaense
Simplicillium lamellicola
Simplicillium carbicola
Simplicillium sympodiophorum
Simplicillium album
Simplicillium coffeanum
Simplicillium filiforme
Simplicillium chinense
Cordyceps chiangdaoensis
Cordyceps militaris
Akanthomyces lecanii
Beauveria bassiana
Beauveria brongniartii
125 100 75 50 25 0 Ma
Paracremonium
Paracremonium pembeum
Paracremonium contagium
Paracremonium moubasheri
Paracremonium inflatum
Paracremonium ellipsoideum
Paracremonium apiculatum
Paracremonium variiforme
Paracremonium binnewijzend
Xenoacremonium recifei
Xenoacremonium falcatus
Xenoacremonium falcatum
90 80 70 60 50 40 30 20 10 0 Ma
Wardomycopsis
Wardomycopsis ellipsoconidiophora
Wardomycopsis humicola
Wardomycopsis fusca
Wardomycopsis inopinata
Wardomycopsis longicatenata
Wardomycopsis dolichi
Wardomycopsis littoralis
Scopulariopsis brevicaulis
Scopulariopsis candida
Scopulariopsis asperula
Pseudoscopulariopsis schumacheri
Microascus brunneosporus
Microascus pseudolongirostris
90 80 70 60 50 40 30 20 10 0 Ma
Microascus
Microascus paisii
Microascus hollandicus
Microascus melanosporus
Microascus atrogriseus
Microascus pseudopaisii
Microascus collaris
Microascus trautmannii
Microascus cleistocarpus
Microascus hyalinus
Microascus croci
Microascus superficialis
Microascus globulosus
Microascus chartarus
Microascus trigonus
Microascus trigonosporus
Microascus expansus
Microascus anfractus
Microascus alveolaris
Microascus terreus
Microascus levis
Microascus cirrosus
Microascus cinereus
Microascus trigonosporusvar. macrosporus
Microascus pyramidus
Microascus campaniformis
Microascus restrictus
Microascus verrucosus
Microascus sparsimycelialis
Microascus murinus
Microascus senegalensis
Microascus chinensis
Microascus microneiensis
Microascus brunneosporus
Microascus longicollis
Microascus intricatus
Microascus longirostris
Microascus pseudolongirostris
Scopulariopsis brevicaulis
Scopulariopsis candida
Scopulariopsis asperula
Pseudoscopulariopsis schumacheri
Wardomycopsis humicola
Wardomycopsis inopinata
Wardomycopsis littoralis
90 80 70 60 50 40 30 20 10 0 Ma
Gamszarea
Gamszarea restricta
Gamszarea testudinea
Gamszarea microspora
Gamszarea humicola
Gamszarea wallacei
Gamszarea lunata
Cordyceps militaris
Cordyceps kyusyuensis
Cordyceps fumosorosea
Cordyceps bifusispora
Beauveria bassiana
Beauveria brongniartii
Lecanicillium fusisporum
Lecanicillium psalliotae
Simplicillium lamellicola
Simplicillium obclavatum
Simplicillium lanosoniveum
125 100 75 50 25 0 Ma

Fig. S2. Timetrees for the 28 clades investigated. (*A*) Chronograms for *Polystichum*, *Hymenasplenium*, Lysimachieae, *Mitreola*, *Primulina*, and *Petrocodon*. (*B*) Chronograms for *Petrocosmea, Hemiboea*, *Lysionotus*, *Paraboea*, *Elatostema*, and the Asian *Begonia* clade. (*C*) Chronograms for Telemidae, *Nesticella*, *Troglocoelotes*, *Notiocoelotes*, *Protobothrops*, *Elaphe*, *Odorrana*, *Bibarba*, *Oreonectes*, and *Triplophysa*. (*D*) Chronograms for *Sinocyclocheilus*, *Wardomycopsis*, *Microascus*, *Gamszarea*, *Simplicillium*, and *Paracremonium*. Endemic cave-dwelling species are printed in red, and other sampled species are in black. See *SI Appendix*, Table S4 for more details.

Fig. S3A.

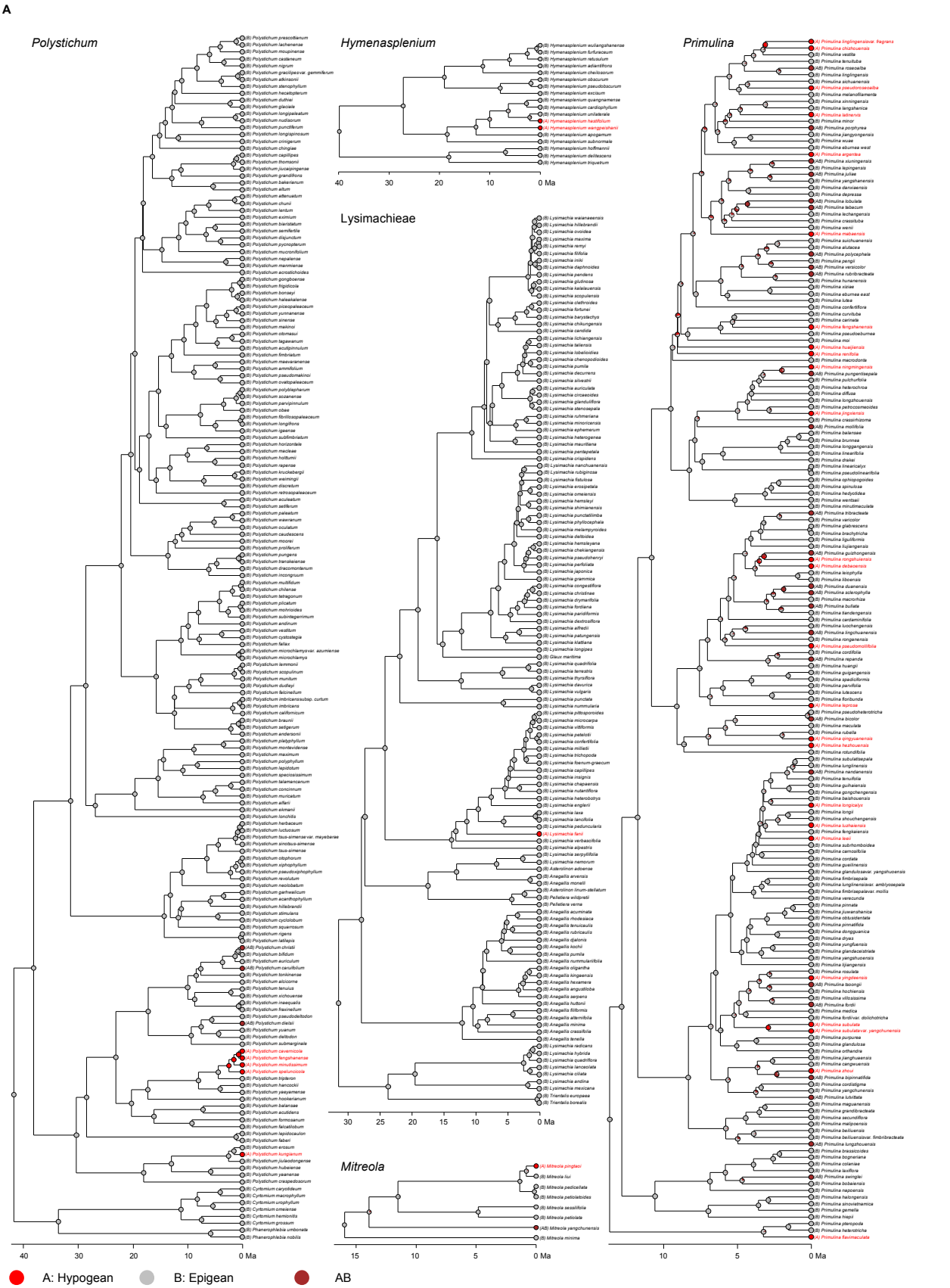

A
Polystichum
Hymenasplenium
Lysimachieae
Primulina
Mitreola
40
30
20
10
0 Ma
30
25
20
15
10
5
0 Ma
15
10
5
0 Ma
10
5
0 Ma
A: Hypogean
B: Epigean
AB

Fig. S3B.

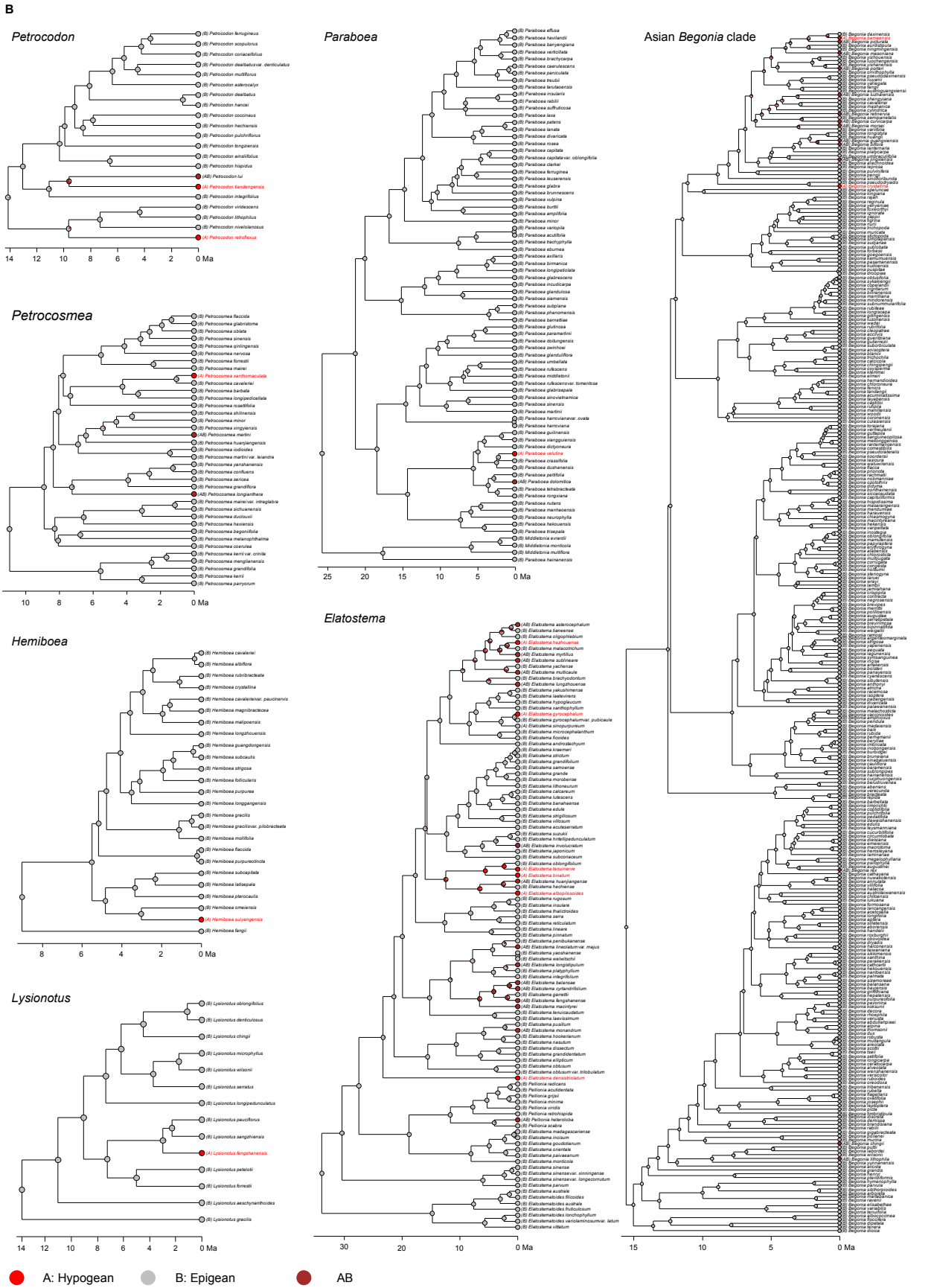

B
Petrocodon
Petrocosmea
Hemiboea
Lysionotus
Paraboea
Elatostema
Asian Begonia clade
14 12 10 8 6 4 2 0 Ma
10 8 6 4 2 0 Ma
8 6 4 2 0 Ma
14 12 10 8 6 4 2 0 Ma
25 20 15 10 5 0 Ma
30 20 10 0 Ma
15 10 5 0 Ma
A: Hypogean
B: Epigean
AB

Fig. S3C.

c

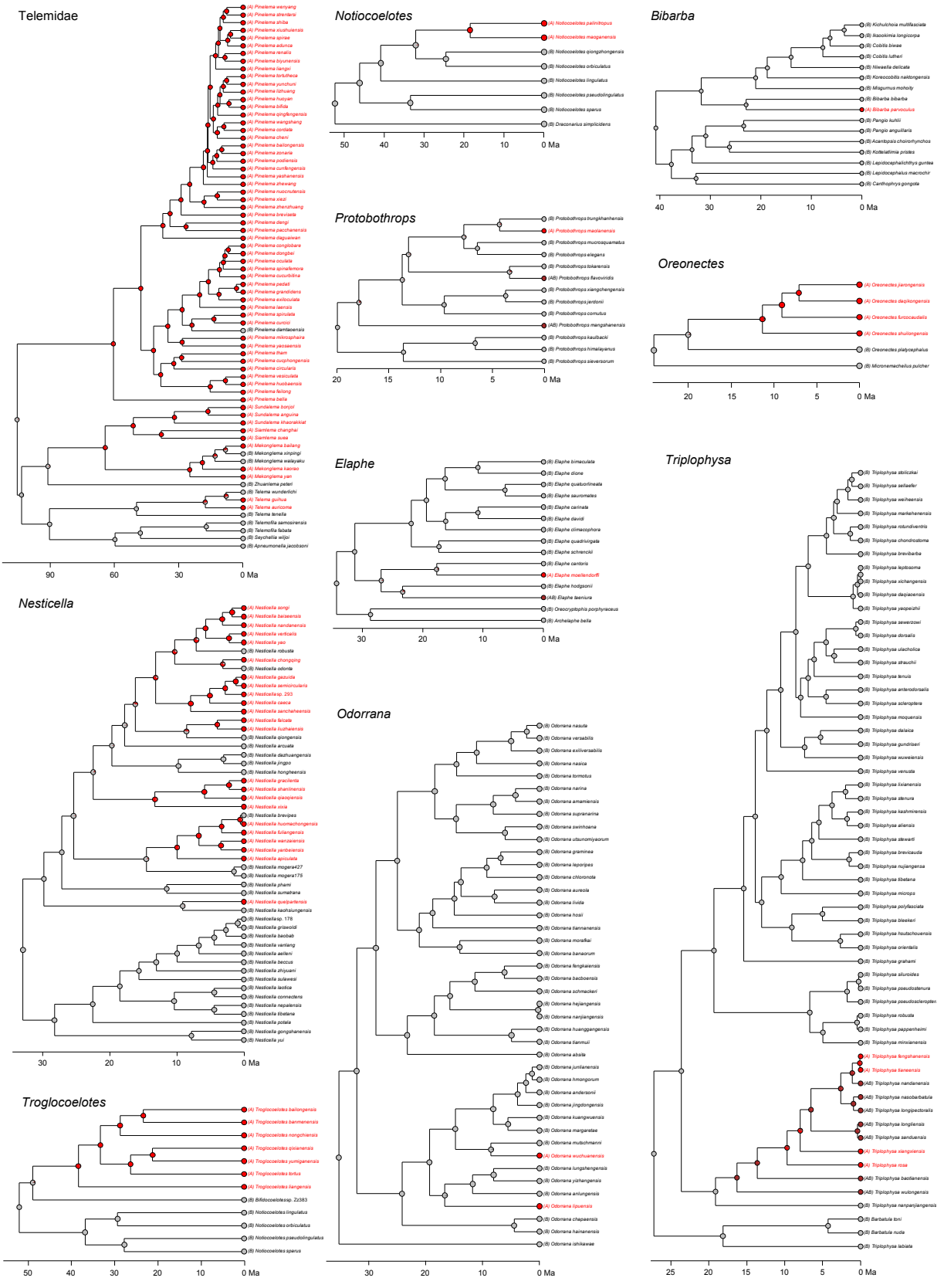
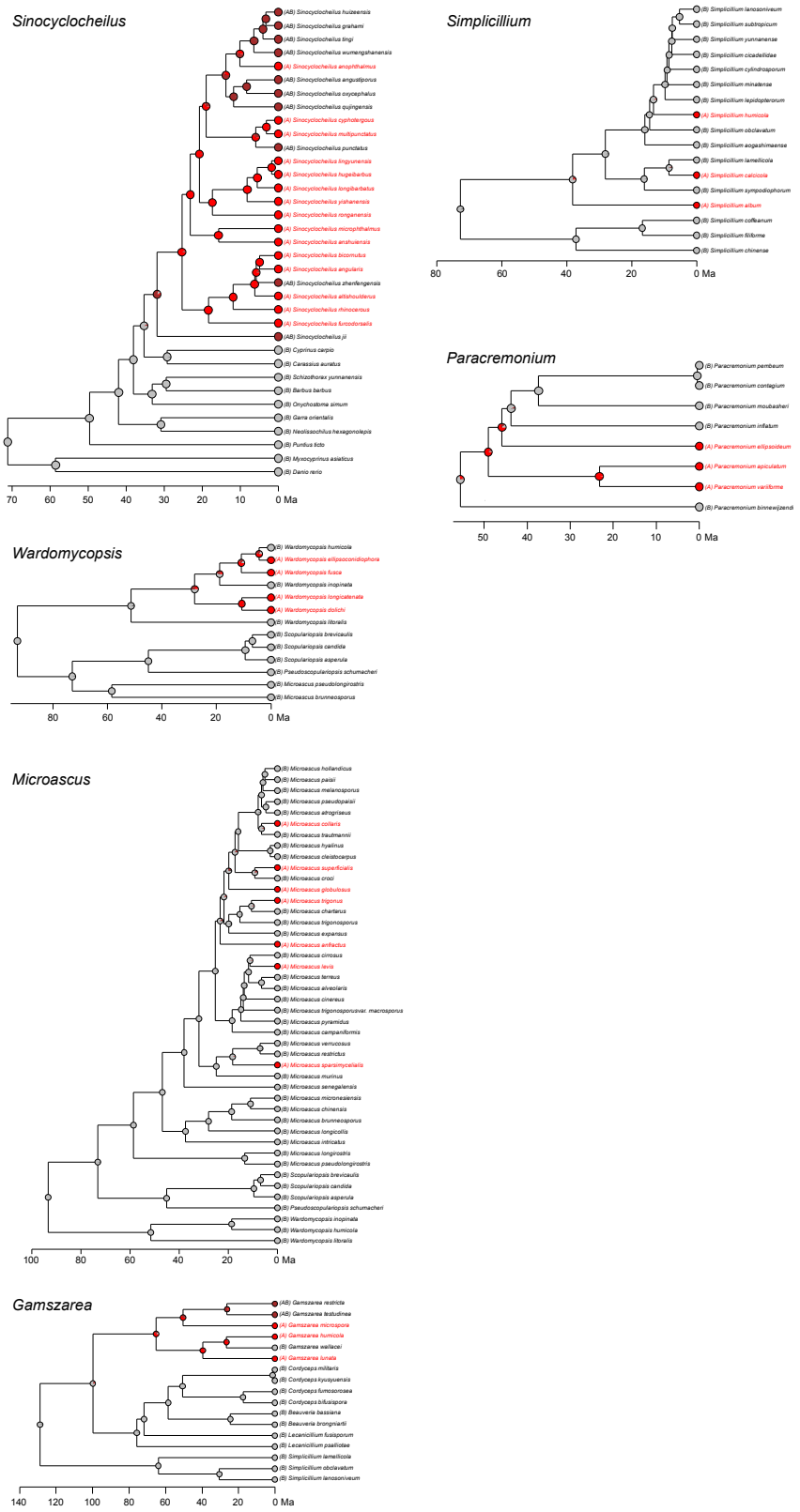

Telemidae
Notiocoelotes
Bibarba
Protobothrops
Oreonectes
Elaphe
Triplophysa
Nesticella
Odorrana
Troglocoelotes
A: Hypogean
B: Epigean
AB

Fig. S3D.

D



A: Hypogean B: Epigean AB

Fig. S3. Ancestral habitat reconstructions of the 28 clades investigated. (*A*) Ancestral habitat reconstructions for *Polystichum*, *Hymenasplenium*, Lysimachieae, *Mitreola*, and *Primulina*. (*B*) Ancestral habitat reconstructions for *Petrocodon*, *Petrocosmea*, *Hemiboea*, *Lysionotus*, *Paraboea*, *Elatostema*, and the Asian *Begonia* clade. (*C*) Ancestral habitat reconstructions for Telemidae, *Nesticella*, *Troglocoelotes*, *Notiocoelotes*, *Protobothrops*, *Elaphe*, *Odorrana*, *Bibarba*, *Oreonectes*, and *Triplophysa*. (*D*) Ancestral habitat reconstructions for *Sinocyclocheilus*, *Wardomycopsis*, *Microascus*, *Gamszarea*, *Simplicillium*, and *Paracremonium*. See Materials and Methods for further details. Pie charts on each node show marginal probabilities for each alternative ancestral habitat derived from the Bayesian binary Markov chain Monte Carlo (BBM) method in RASP. Endemic cave-dwelling species are shown in red, and other sampled species are in black.

Fig. S4.

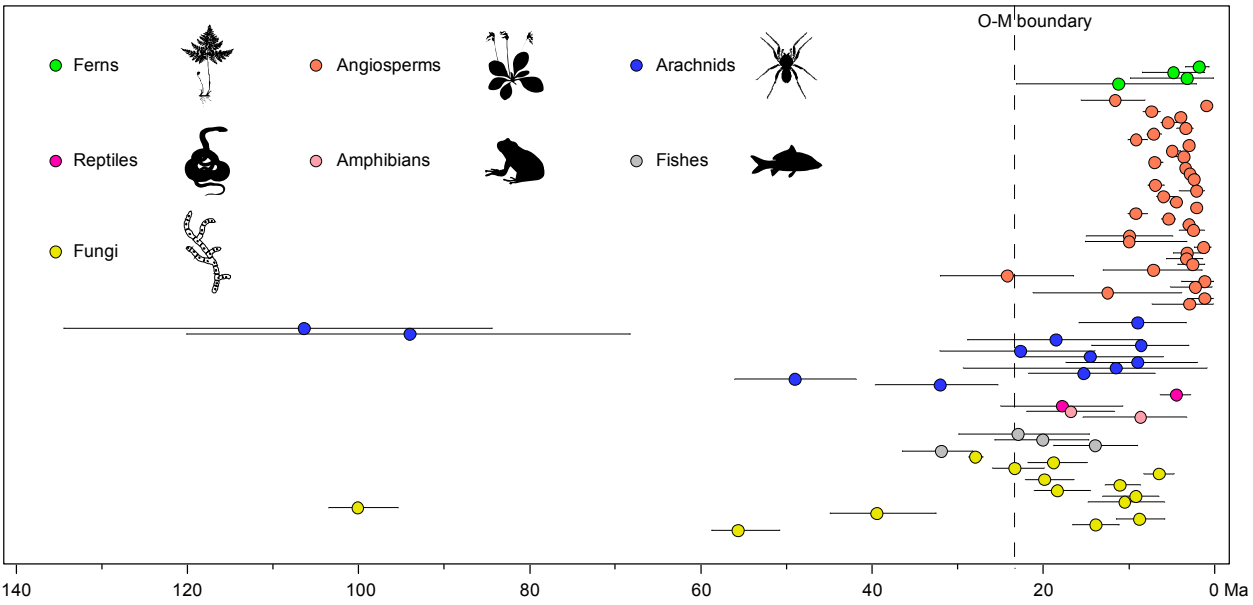
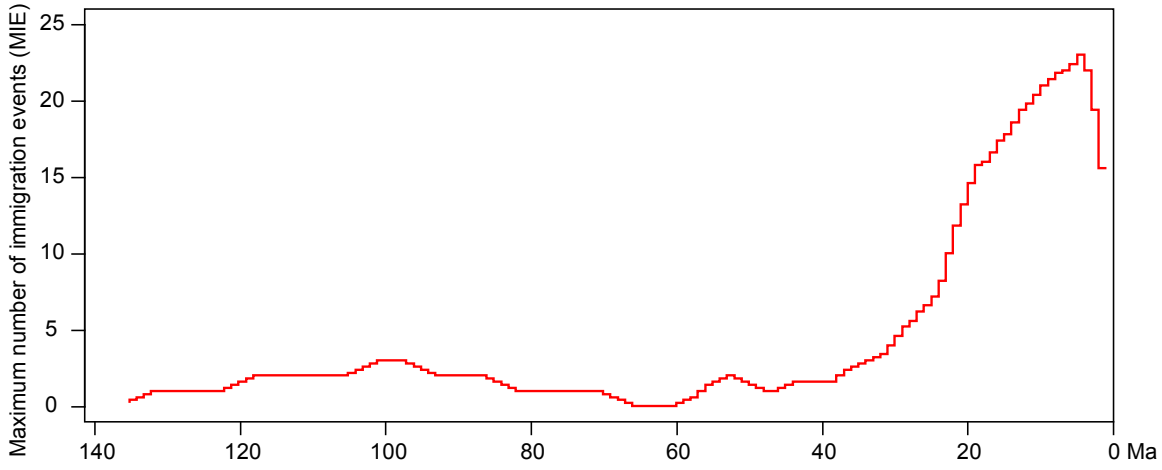


Fig. S4. Ages of origination of endemic cave-dwelling species/lineages derived from molecular dating (averages and 95% credible intervals). The vertical dashed line indicates the Oligocene-Miocene (O-M) boundary. For details, see *SI Appendix*, Table S4 and Fig. S2.

342 **Fig. S5.**



343

344 **Fig. S5. MIE for biotic colonization of subtropical East Asian caves.**

Fig. S6.

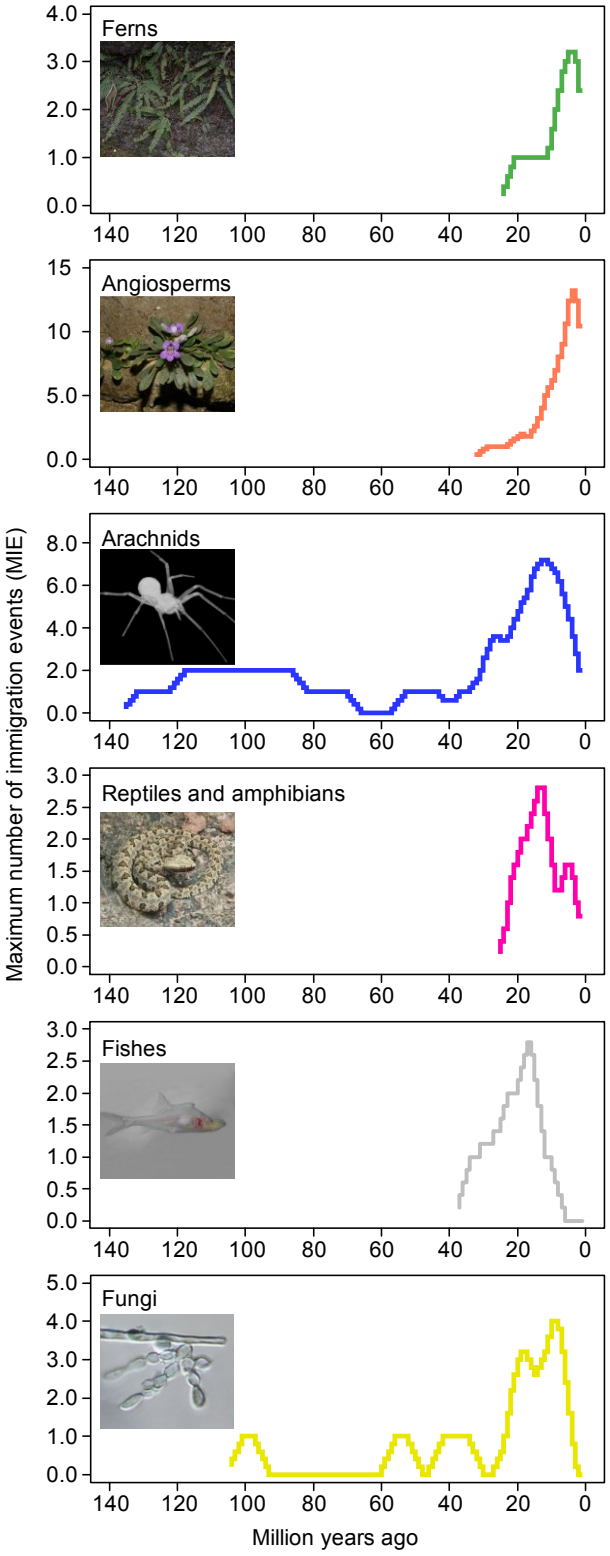


Fig. S6. MIEs for different clades of organisms for biotic adaptation to subtropical East Asian caves.

Fig. S7A.

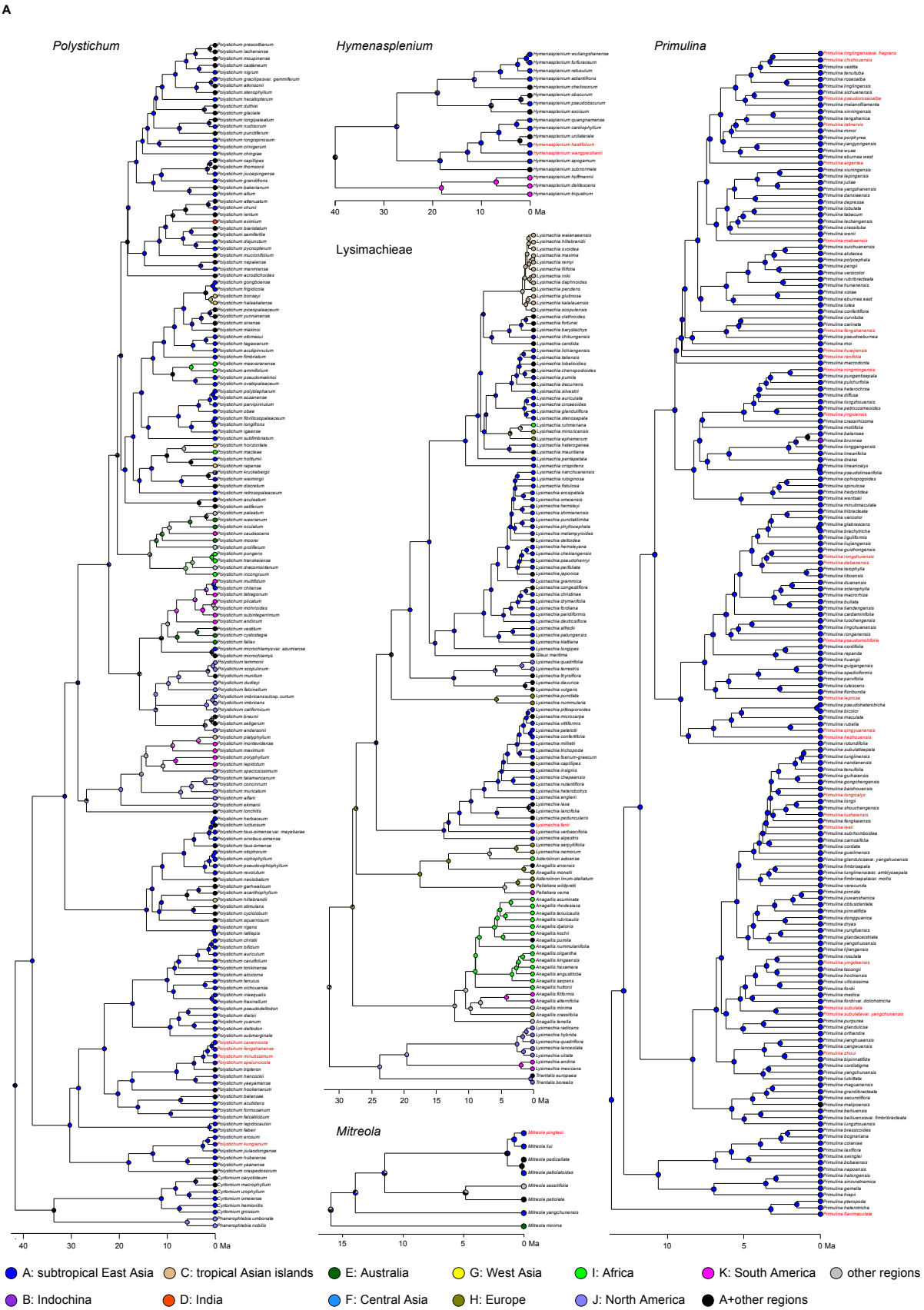

A
Polystichum
Hymenasplenium
Lysimachieae
Primulina
Mitreola
40
30
20
10
0 Ma
30
25
20
15
10
5
0 Ma
15
10
5
0 Ma
10
5
0 Ma
A: subtropical East Asia
B: Indochina
C: tropical Asian islands
D: India
E: Australia
F: Central Asia
G: West Asia
H: Europe
I: Africa
J: North America
K: South America
A+other regions
other regions

Fig. S7B.

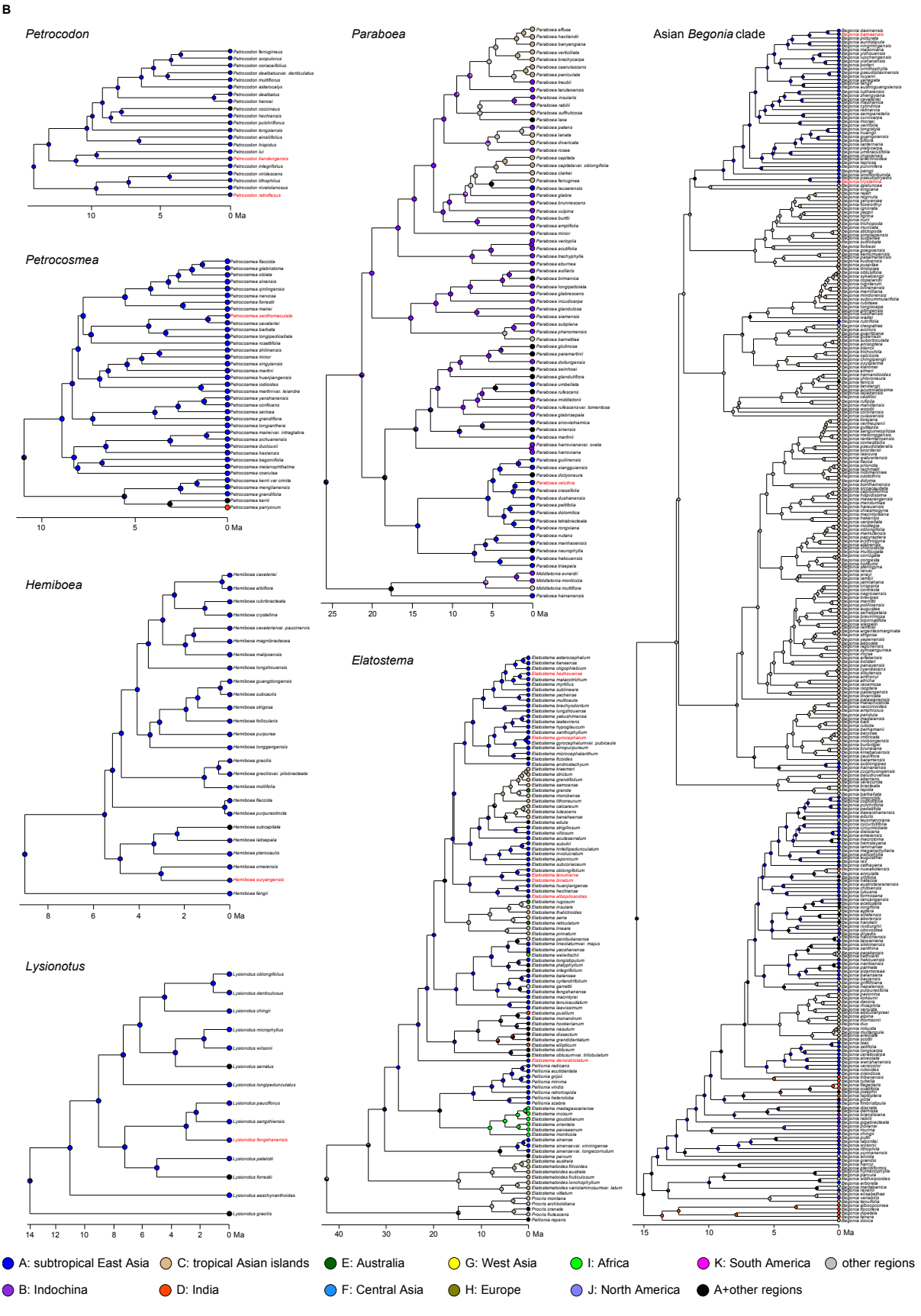

B
Petrocodon
Paraboea
Asian Begonia clade
Petrocosmea
Hemiboea
Elatostema
Lysionotus
A: subtropical East Asia
B: Indochina
C: tropical Asian islands
D: India
E: Australia
F: Central Asia
G: West Asia
H: Europe
I: Africa
J: North America
K: South America
A+other regions
other regions

Fig. S7C.

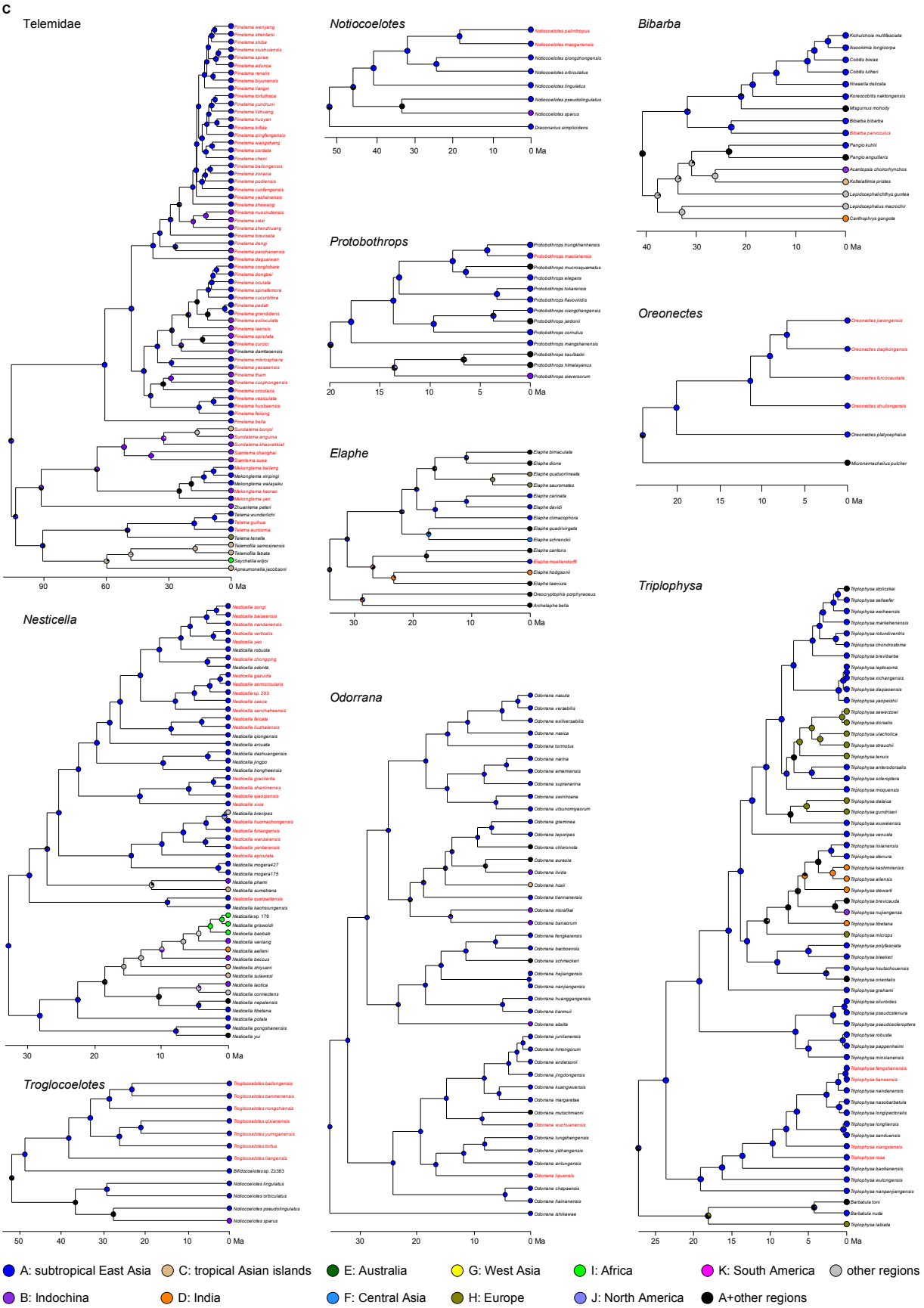

c
Telemidae
Notiocoelotes
Bibarba
Protobothrops
Oreonectes
Elaphe
Triplophysa
Nesticella
Troglocoelotes
Odorrana
A: subtropical East Asia
B: Indochina
C: tropical Asian islands
D: India
E: Australia
F: Central Asia
G: West Asia
H: Europe
I: Africa
J: North America
K: South America
other regions
A+other regions

Fig. S7D.

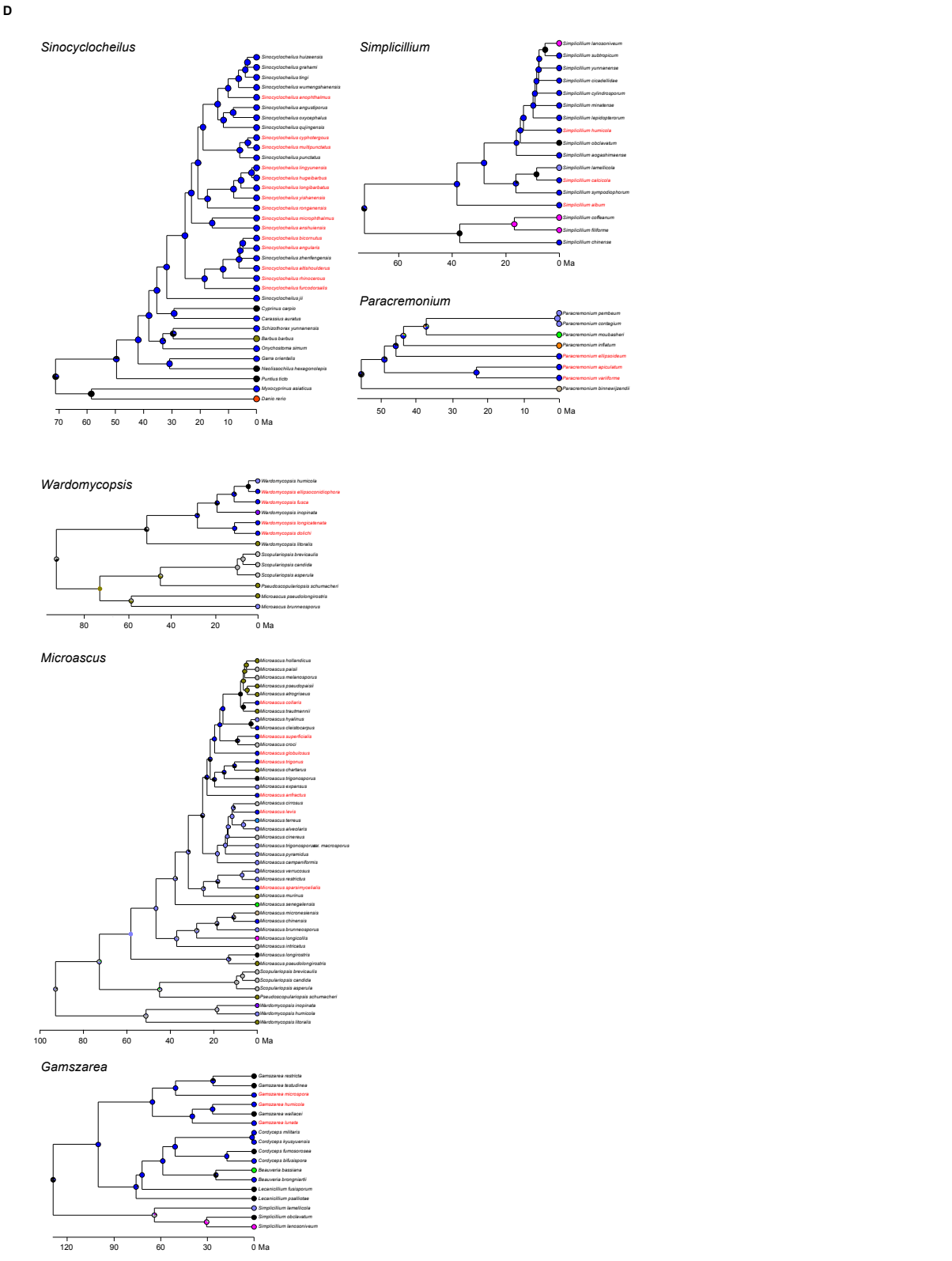

D
Sinocyclocheilus
Sinocyclocheilus huizeensis
Sinocyclocheilus grahami
Sinocyclocheilus tingi
Sinocyclocheilus wumengshanensis
Sinocyclocheilus anophthalmus
Sinocyclocheilus angustiporus
Sinocyclocheilus oxycephalus
Sinocyclocheilus qujingensis
Sinocyclocheilus cyphotergous
Sinocyclocheilus multipunctatus
Sinocyclocheilus punctatus
Sinocyclocheilus lingyunensis
Sinocyclocheilus hugeibarbus
Sinocyclocheilus longibarbatus
Sinocyclocheilus yishanensis
Sinocyclocheilus rongjiangensis
Sinocyclocheilus microphthalmus
Sinocyclocheilus anshuiensis
Sinocyclocheilus bicornutus
Sinocyclocheilus angularis
Sinocyclocheilus zhenfengensis
Sinocyclocheilus altishoulderus
Sinocyclocheilus rhinocerous
Sinocyclocheilus furcodorsalis
Sinocyclocheilus sp.
Cyprinus carpio
Carassius auratus
Schizothorax yunnanensis
Barbus barbus
Onychostoma simum
Gara orientalis
Neolissochilus hexagonolepis
Puntius ticto
Mylocyprinus asiaticus
Danio rerio
70 60 50 40 30 20 10 0 Ma
Simplicillium
Simplicillium lanosoniveum
Simplicillium subtropicum
Simplicillium yunnanense
Simplicillium cicadellidae
Simplicillium cylindrosporum
Simplicillium minatense
Simplicillium lepidopterorum
Simplicillium humicola
Simplicillium obclavatum
Simplicillium aogashimaense
Simplicillium lamellicola
Simplicillium calcicola
Simplicillium sympodiophorum
Simplicillium album
Simplicillium coffeanum
Simplicillium filiforme
Simplicillium chinense
60 40 20 0 Ma
Paracremonium
Paracremonium pembeum
Paracremonium contagium
Paracremonium moubasheri
Paracremonium inflatum
Paracremonium ellipsoideum
Paracremonium apiculatum
Paracremonium variiforme
Paracremonium binneveljandii
50 40 30 20 10 0 Ma
Wardomycopsis
Wardomycopsis humicola
Wardomycopsis ellipsoconidiophora
Wardomycopsis fusca
Wardomycopsis inopinata
Wardomycopsis longicatenata
Wardomycopsis dolichi
Wardomycopsis litoralis
Scopulariopsis brevicaulis
Scopulariopsis candida
Scopulariopsis asperula
Pseudoscopulariopsis schumacheri
Microascus pseudolongirostris
Microascus brunneosporus
80 60 40 20 0 Ma
Microascus
Microascus hollandicus
Microascus parisii
Microascus melanosporus
Microascus pseudoparisii
Microascus atrogriseus
Microascus coffaria
Microascus trautmannii
Microascus hyalinus
Microascus cirrosus
Microascus globulosus
Microascus trigonus
Microascus chartarus
Microascus trigonosporus
Microascus expansus
Microascus anfractus
Microascus cirrosus
Microascus laxus
Microascus terreus
Microascus alveolaris
Microascus cinereus
Microascus trigonosporus var. macrosporus
Microascus pyramidus
Microascus campaniformis
Microascus verrucosus
Microascus restrictus
Microascus sparsimycoidalis
Microascus murinus
Microascus senegalensis
Microascus microneisensis
Microascus chinensis
Microascus brunneosporus
Microascus longicollis
Microascus intricatus
Microascus longirostris
Microascus pseudolongirostris
Scopulariopsis brevicaulis
Scopulariopsis candida
Scopulariopsis asperula
Pseudoscopulariopsis schumacheri
Wardomycopsis inopinata
Wardomycopsis humicola
Wardomycopsis litoralis
100 80 60 40 20 0 Ma
Gamszarea
Gamszarea restricta
Gamszarea testudinea
Gamszarea microspora
Gamszarea humicola
Gamszarea wallacei
Gamszarea lunata
Cordyceps militaris
Cordyceps kyusyuensis
Cordyceps fumosorosea
Cordyceps bifusispora
Beauveria bassiana
Beauveria brongniartii
Lecanicillium fusisporum
Lecanicillium psalliotae
Simplicillium lamellicola
Simplicillium obclavatum
Simplicillium lanosoniveum
120 90 60 30 0 Ma
A: subtropical East Asia
C: tropical Asian islands
E: Australia
G: West Asia
I: Africa
K: South America
other regions
B: Indochina
D: India
F: Central Asia
H: Europe
J: North America
A+other regions

Fig. S7. Ancestral range reconstructions of the 28 clades investigated. (*A*) Ancestral range reconstructions for *Polystichum*, *Hymenasplenium*, Lysimachieae, *Mitreola*, and *Primulina*. (*B*) Ancestral range reconstructions for *Petrocodon*, *Petrocosmea*, *Hemiboea*, *Lysionotus*, *Paraboea*, *Elatostema*, and Asian *Begonia* clade. (*C*) Ancestral range reconstructions for Telemidae, *Nesticella*, *Troglocoelotes*, *Notiocoelotes*, *Protobothrops*, *Elaphe*, *Odorrana*, *Bibarba*, *Oreonectes*, and *Triplophysa*. (*D*) Ancestral range reconstructions for *Sinocyclocheilus*, *Wardomycopsis*, *Microascus*, *Gamszarea*, *Simplicillium*, and *Paracremonium*. See Materials and Methods for further details. Pie charts on each node show the relative probabilities of alternative ancestral areas derived from the Dispersal-Extinction-Cladogenesis (DEC) method in BioGeoBEARS. Endemic cave-dwelling species are shown in red, and other sampled species are in black.

Fig. S8A.

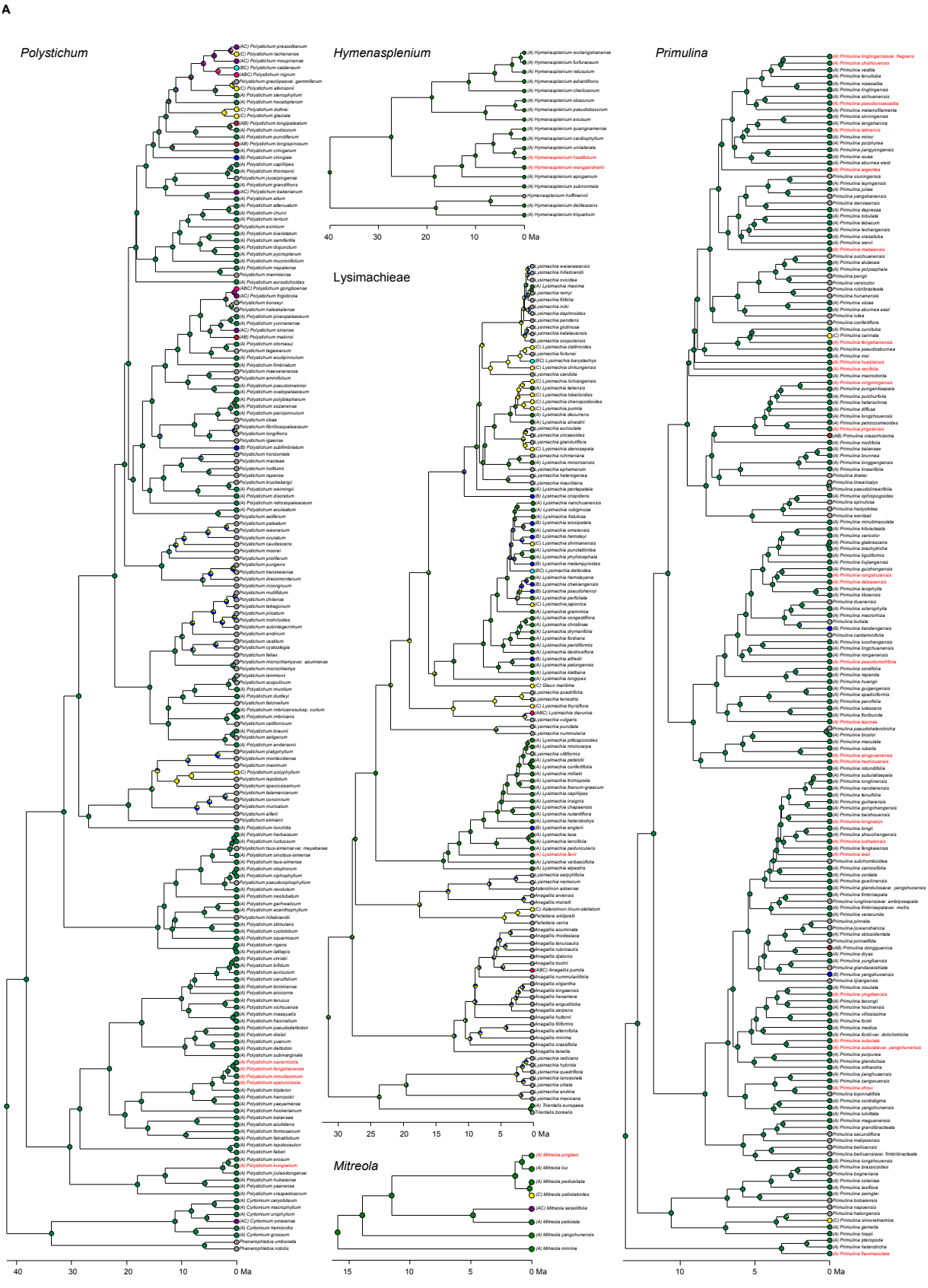
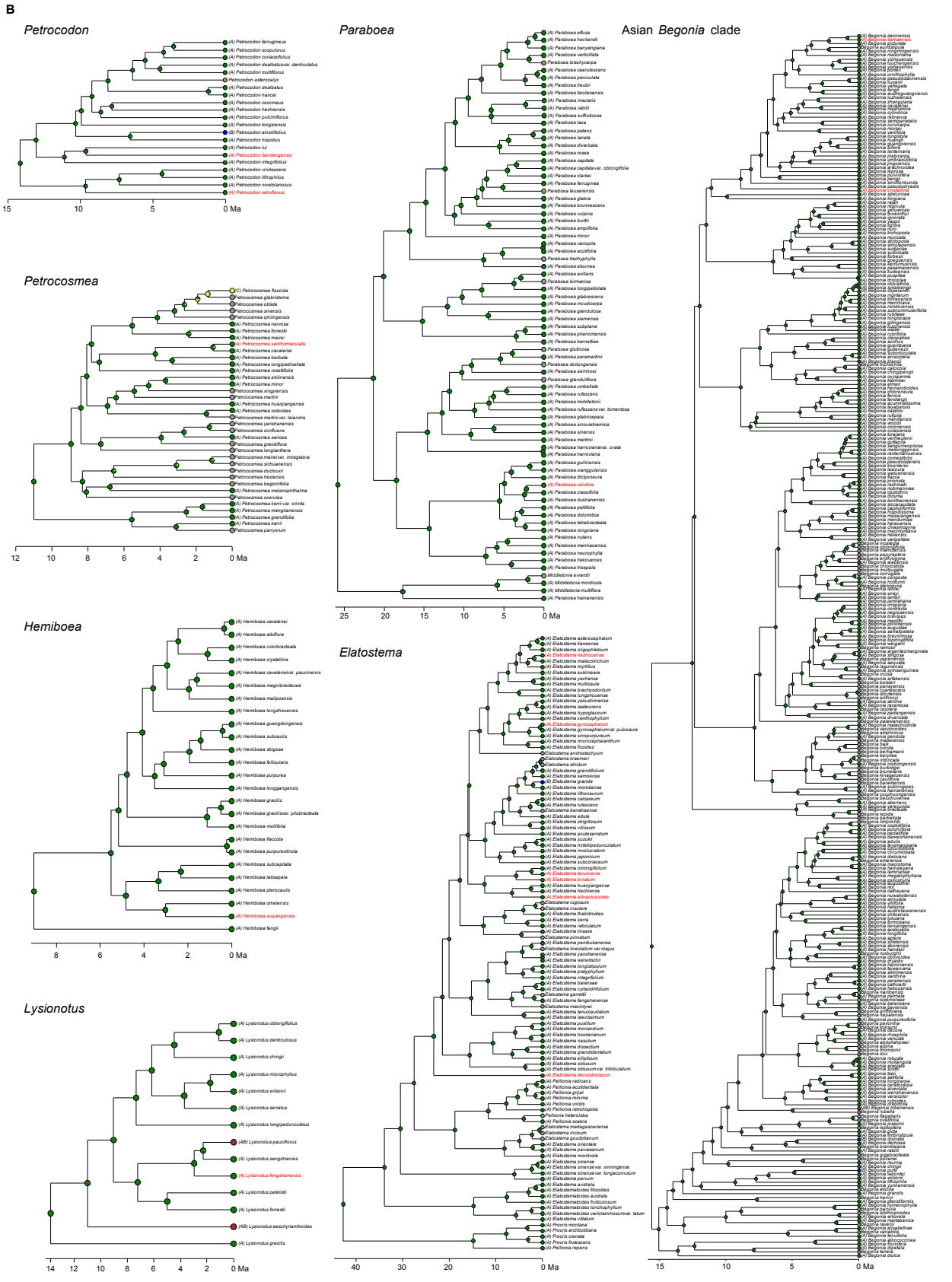
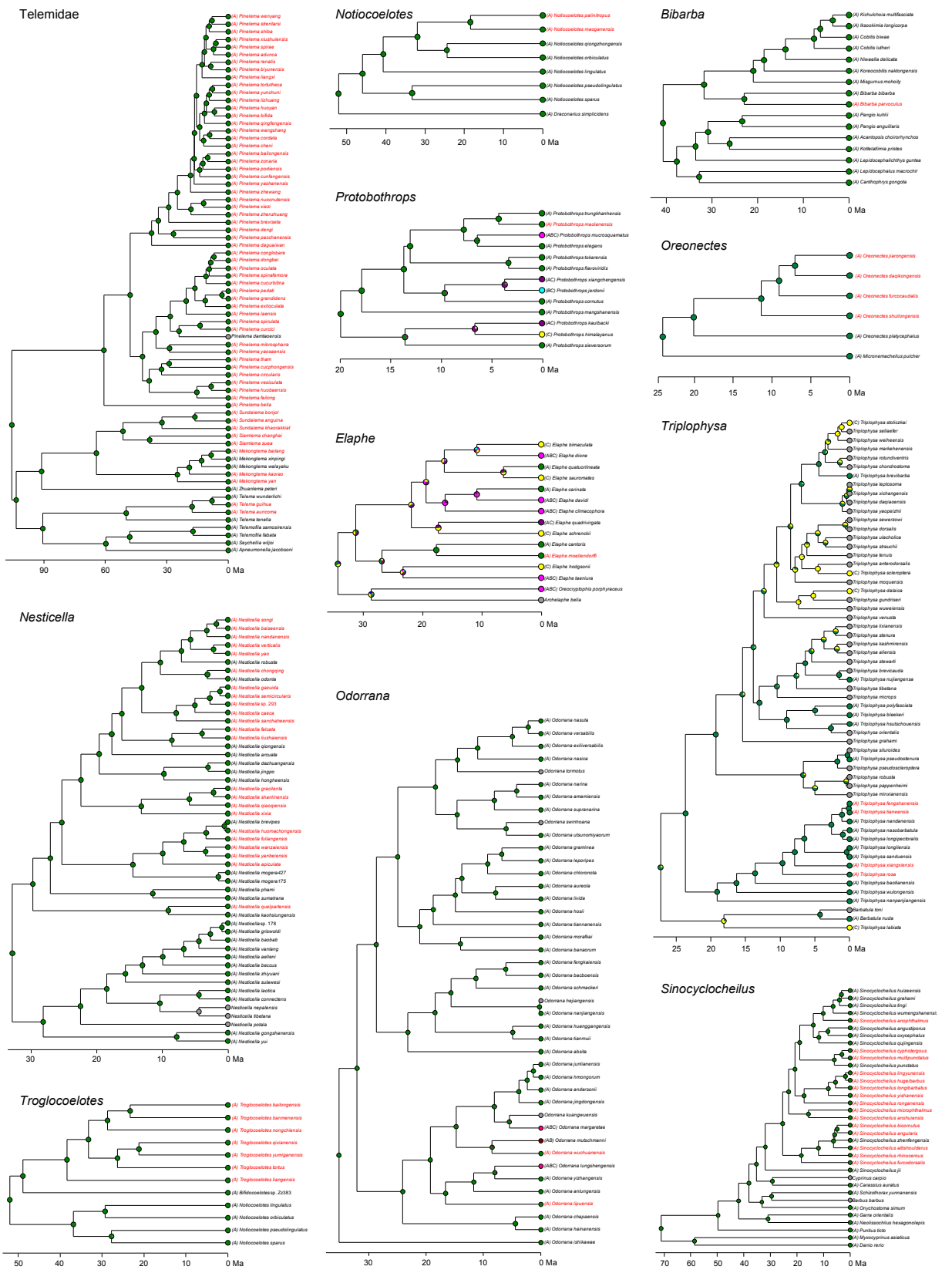

A
Polystichum
Hymenasplenium
Lysimachieae
Mitreola
Primulina
40
30
20
10
0 Ma
30
25
20
15
10
5
0 Ma
15
10
5
0 Ma
10
5
0 Ma
A: Forest
B: Mountain shrub
C: Meadow
AB
AC
BC
ABC
Unknow

Fig. S8B.


B
Petrocodon
Paraboea
Asian Begonia clade
Petrocosmea
Hemiboea
Elatostema
Lysionotus
A: Forest
B: Mountain shrub
C: Meadow
AB
AC
BC
ABC
Unknow

372 **Fig. S8C.**

c



373 A: Forest B: Mountain shrub C: Meadow AB AC BC ABC Unknow

Fig. S8. Reconstruction of ancestral vegetation types for 23 clades. (*A*) Reconstructions of ancestral vegetation types for *Polystichum*, *Hymenasplenium*, Lysimachieae, *Mitreola*, and *Primulina*. (*B*) Reconstructions of ancestral vegetation types for *Petrocodon*, *Petrocosmea*, *Hemiboea*, *Lysionotus*, *Paraboea*, *Elatostema*, and the Asian *Begonia* clade. (*C*) Reconstructions of ancestral vegetation types for Telemidae, *Nesticella*, *Troglocoelotes*, *Notiocoelotes*, *Protobothrops*, *Elaphe*, *Odorrana*, *Bibarba*, *Oreonectes*, *Triplophysa*, and *Sinocyclocheilus*. See Materials and Methods for further details. Pie charts on each node show marginal probabilities for each alternative ancestral vegetation type derived from the Bayesian binary Markov chain Monte Carlo (BBM) method in RASP. Endemic cave-dwelling species are printed in red, and other sampled species are in black.

Fig. S9.

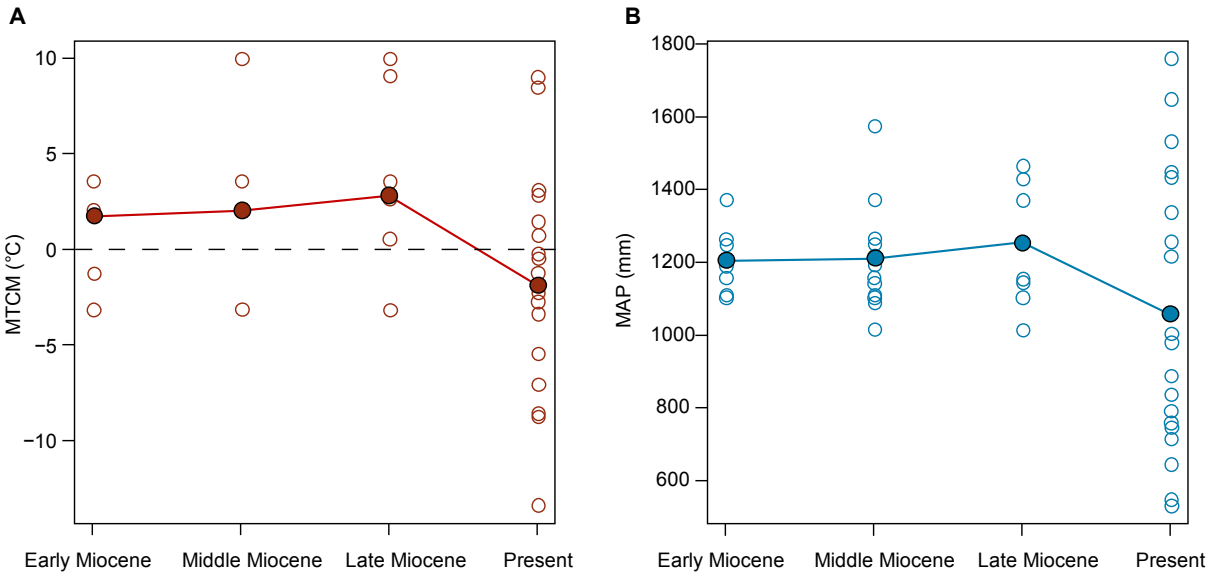


Fig. S9. Reconstructed paleo-temperature (°C) and paleo-precipitation (mm) in subtropical East Asia. (*A*) The Minimum Temperature of the Coldest Month (MTCM). The dashed line indicates the non-freezing boundary (≥ 0 °C). (*B*) The Mean Annual Precipitation (MAP). Black dots represent the mean value, whereas the open circles show the raw data (see details in *SI Appendix*, Table S6).

391 **Table S1. Summary of the caves that were dated in southern China**

Period	Location	Method	Reference
Carboniferous to Early Cretaceous	Leshan, Sichuan	Fossil	(37)
Middle to Late Triassic	Guilin, Guangxi	Sediment	(38)
Yanshan Period	Hunan	Sediment	(39)
Before the Early Cenozoic	Bama, Guangxi	Sediment	(40)
Eocene to Early Oligocene	Lunan, Yunnan	Sediment	(41)

392 **Table S2. Sampling information for the selected 28 clades analyzed in this study**

Family	Genus/clade	Total species	Sampled species (%)	Sampled cave species (endemic)	Reference
Dryopteridaceae	*Polystichum*	500	163 (33)	8 (5)	(42)
Aspleniaceae	*Hymenasplenium*	50	18 (36)	2 (2)	(3)
Primulaceae	Lysimachieae	250	126 (50)	1 (1)	(8)
Loganiaceae	*Mitreola*	14	8 (50)	2 (1)	(43)
Gesneriaceae	*Primulina*	227	181 (80)	51 (25)	(44)
Gesneriaceae	*Petrocodon*	33	21 (64)	3 (2)	(45)
Gesneriaceae	*Petrocosmea*	50	37 (74)	3 (1)	(46)
Gesneriaceae	*Hemiboea*	34	25 (74)	1 (1)	(47)
Gesneriaceae	*Lysionotus*	25	14 (56)	1 (1)	(48)
Gesneriaceae	*Paraboea*	130	76 (58)	2 (1)	(49)
Urticaceae	*Elatostema*	500	88 (18)	22 (6)	(13)
Begoniaceae	Asian *Begonia* clade	968	317 (33)	15 (2)	(50)
Telemidae	Telemidae	85	73 (86)	61 (61)	(51)
Nesticidae	*Nesticella*	72	48 (66)	23 (23)	(20)
Agelenidae	*Troglocoelotes*	7	7 (100)	7 (7)	(52)
Agelenidae	*Notiocoelotes*	13	7 (54)	2 (2)	(53)
Viperidae	*Protobothrops*	17	14 (82)	3 (1)	(54)
Colubridae	*Elaphe*	16	13 (81)	2 (1)	(54)
Ranidae	*Odorrana*	59	41 (69)	2 (2)	(55)
Cobitidae	*Bibarba*	3	2 (67)	1 (1)	(56)
Nemacheilidae	*Oreonectes*	7	5 (71)	4 (4)	(57)
Nemacheilidae	*Triplophysa*	140	56 (40)	11 (4)	(58)
Cyprinidae	*Sinocyclocheilus*	76	25 (33)	25 (15)	(31)
Microascaceae	*Wardomycopsis*	8	7 (88)	4 (4)	(59)
Microascaceae	*Microascus*	37	28 (76)	7 (7)	(59)
Cordycipitaceae	*Gamszarea*	10	6 (60)	5 (3)	(59)
Cordycipitaceae	*Simplicillium*	19	19 (100)	3 (3)	(59)
Nectriaceae	*Paracremonium*	8	8 (100)	3 (3)	(59)

393 **Table S3. Endemic cave-dwelling species sampled in this study**

Species	Clade of life	Distribution within caves	Justification for inference of cave endemism
Polystichum cavernicola	Fern	-	*Polystichum cavernicola* was reported by He and Zhang (60); this species is only found in a karst cave.
Polystichum fengshanense	Fern	Entrance & twilight zones	Zhang and He (61) first described *Polystichum fengshanense*; it occurs in wet, weathered soil on cave walls, on growing stalagmites, and in limestone fissures inside caves. Monro et al. (62) further confirmed that this species is only known from caves based on their field expeditions.
Polystichum kungianum	Fern	Entrance zone	Based on He and Zhang (63), *Polystichum kungianum* only occurs on shady moist limestone walls at the edge of a small northeast-facing, downward-sloping karst cave.
Polystichum minutissimum	Fern	Entrance zone	Zhang and He (64) first described *Polystichum minutissimum*; it is only found on dripping limestone walls and stalactites, *ca.* 10 m from the entrance inside a karst cave. Monro et al. (62) further confirmed that this species is cave-endemic based on their field expeditions.
Polystichum speluncicola	Fern	-	Based on Zhang and He (65), *Polystichum speluncicola* is only known from the wall of an inactive stalagmite inside a karst cave, *ca.* 20 m from the cave entrance.
Hymenasplenium hastifolium	Fern	Entrance zone	Based on Xu et al. (66), *Hymenasplenium hastifolium* only grows on limestone walls/floor at a cave entrance in the subtropical evergreen broadleaved forest on a karst mountain.
Hymenasplenium wangpeishanii	Fern	-	Based on Xu et al. (67), *Hymenasplenium wangpeishanii* is only known from a limestone cave with humid and shady conditions.
Lysimachia fanii	Angiosperm	Entrance zone	Based on Huang et al. (68), *Lysimachia fanii* is only found in a limestone cave.
Mitreola pingtaoi	Angiosperm	Entrance & twilight zones	Fang et al. (69) first described *Mitreola pingtaoi*, which is only found in a limestone cave. Monro et al. (62) further confirmed that this species is cave-endemic based on their field expeditions.
Primulina linglingensis var. *fragrans*	Angiosperm	Entrance zone	Based on Ge et al. (70), *Primulina linglingensis* var. *fragrans* only occurs on a shaded and damp rocky tufa surface of a limestone cliff in a large cave, close to the entrance.
Primulina chizhouensis	Angiosperm	Entrance zone	Based on Hong et al. (71), *Primulina chizhouensis* is only known from rocky crevices on moist shady cliffs at the entrance of a limestone cave.
Primulina pseudoroseoalba	Angiosperm	Entrance zone	Based on Li et al. (72), *Primulina pseudoroseoalba* is only known from rocky crevices at the entrance of a limestone cave.
Primulina latinervis	Angiosperm	Entrance zone	Based on Wang (73), *Primulina latinervis* is only found on damp rocks of cave entrances.
Primulina argentea	Angiosperm	Entrance zone	Based on Hong et al. (74), *Primulina argentea* is only known from a karst cave.
Primulina mabaensis	Angiosperm	-	Based on Chung et al. (75), *Primulina mabaensis* is only known from a karst cave.

Primulina fengshanensis	Angiosperm	Entrance zone	Wen et al. (76) first described this species; it is only found on a moist rock surface in a large limestone cave. Monro et al. (62) further confirmed that this species is cave-endemic based on their field expeditions.
Primulina huaijiensis	Angiosperm	-	Based on Feng et al. (77), *Primulina huaijiensis* is only known from a limestone karst cave.
Primulina renifolia	Angiosperm	Entrance & twilight zones	Fang and Qin (78) first described this species; it is only known from a limestone cave. Monro et al. (62) further confirmed that this species is cave-endemic based on their field expeditions.
Primulina ningmingensis	Angiosperm	Entrance zone	Based on Wu et al. (79), *Primulina ningmingensisis* is only known from the entrance of a limestone cave.
Primulina jingxiensis	Angiosperm	-	Xu et al. (80) first described this species; it only occurs on a moist limestone rock face in a karst cave. Wei et al. (81) further confirmed that this species is cave-endemic based on their field expeditions.
Primulina rongshuiensis	Angiosperm	Entrance zone	Based on Huang et al. (82), *Primulina rongshuiensis* is only known from the entrance zone of a karst cave.
Primulina debaoensis	Angiosperm	Entrance zone	Jiang and Li (83) first described this species; it is found in a large limestone cave. Monro et al. (62) confirmed that this species is only known from caves based on their field expeditions.
Primulina pseudomollifolia	Angiosperm	Entrance zone	Based on Xu et al. (84), *Primulina pseudomollifolia* is only found on moist limestone rock faces at the entrance to karst caves.
Primulina leprosa	Angiosperm	Entrance zone	Based on Xu et al. (85), *Primulina leprosa* only grows on moist rock faces at the entrance of a karst cave.
Primulina qingyuanensis	Angiosperm	-	Based on Ning et al. (86), *Primulina qingyuanensis* is only found on moist rock faces in a karst cave.
Primulina hezhouensis	Angiosperm	Entrance zone	Wu et al. (87) first described this species; it only occurs on a moist rock face at the entrance of a karst cave. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Primulina longicalyx	Angiosperm	-	Based on Li and Wang (88), *Primulina longicalyx* is only found sparsely on the soft limestone stalactites at the far end of the famous cave in the Seven-star Park.
Primulina luzhaiensis	Angiosperm	-	Based on Huang et al. (89), *Primulina luzhaiensis* is only known from a karst cave.
Primulina leeii	Angiosperm	-	Based on Wen et al. (90), *Primulina leeii* is only distributed on the wall of a limestone cave.
Primulina yingdeensis	Angiosperm	-	Based on Ning et al. (91), *Primulina yingdeensis* is only found on the limestone rock surface in a karst cave.
Primulina subulata	Angiosperm	-	Wang (92) first described this species; it is only found in a limestone cave. Wei et al. (81) confirmed that this species is cave-endemic based on their field expeditions.
Primulina subulate var. *yangchunensis*	Angiosperm	-	Wang (93) first described *Primulina subulate* var. *yangchunensis*, which is only found in a limestone cave. Wei et al. (81) confirmed that this species is cave-endemic based on

			their field expeditions.
Primulina zhoui	Angiosperm	Entrance zone	Xin et al. (94) described *Primulina zhoui* and found that this species is restricted to the entrance to karst caves.
Primulina flavimaculata	Angiosperm	-	Based on Wei et al. (81), *Primulina flavimaculata* is only found on the wall of a large limestone cave.
Petrocodon tiandengensis	Angiosperm	-	Based on Liu et al. (95), *Petrocodon tiandengensis* is only found on the moist rock face in a limestone cave.
Petrocodon retroflexus	Angiosperm	-	Based on Guo et al. (96), *Petrocodon retroflexus* is restricted to rock faces of a single shaded limestone cave.
Petrocosmea xanthomaculata	Angiosperm	Entrance zone	Gou et al. (97) reported *Petrocosmea xanthomaculata* and found that it is restricted to a limestone cave.
Hemiboea suiyangensis	Angiosperm	-	Li et al. (98) reported *Hemiboea suiyangensis* and found that it is only known from a limestone cave.
Lysionotus fengshanensis	Angiosperm	Entrance zone	Nong et al. (99) first described this species; it only grows at the entrance of a karst cave. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Paraboea velutina	Angiosperm	Entrance zone	Wang (100) first described this species; it is only found on rock faces of a limestone cave. Wei et al. (81) and Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Elatostema hezhouense	Angiosperm	Entrance zone	Wei et al. (81) first described this species and considered it to be endemic to caves. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Elatostema gyrocephalum	Angiosperm	Entrance zone	Wang and Wei (101) first described this species; it is only found in a karst cave. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Elatostema tenuinerve	Angiosperm	Entrance zone	Wei and Wang (102) first described this species; it is only found on the wall of a limestone cave. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Elatostema binatum	Angiosperm	Entrance zone	Wang and Wei (101) first described *Elatostema binatum*; it is restricted to a limestone cave. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Elatostema albopilosoides	Angiosperm	Entrance zone	Lin and Duan (103) reported *Elatostema albopilosoides*, which is only known from a large limestone cave.
Elatostema densistriolatum	Angiosperm	Entrance zone	Wu et al. (104) first described *Elatostema densistriolatum*; it is only found in a limestone cave. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.
Begonia bamaensis	Angiosperm	Entrance zone	Liu et al. (105) first described this species; it only occurs on semi-shady rocky cliffs at the entrance of limestone caves. Monro et al. (62) confirmed that this species is cave-endemic based on their field expeditions.

Begonia crystallina	Angiosperm	-	Shui and Chen (106) reported this new species; it is only known from a limestone cave.
Pinelema tortutheca	Arachnid	Dark zone	Based on Lin and Li (107), *Pinelema tortutheca* is only known from caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema yunchuni	Arachnid	-	Based on Zhao et al. (108), *Pinelema yunchuni* is only known from caves.
Pinelema lizhuang	Arachnid	-	Based on Zhao et al. (108), *Pinelema lizhuang* is only known from caves.
Pinelema bifida	Arachnid	Dark zone	Based on Lin and Li (107), *Pinelema bifida* only occurs in caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema huoyan	Arachnid	Dark zone	Based on Zhao et al. (108), *Pinelema huoyan* lacks eyes and is only known from caves.
Pinelema qingfengensis	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema qingfengensis*, with reduced eyes, is only known from caves.
Pinelema cordata	Arachnid	-	Based on Wang and Li (109), *Pinelema cordata* is only known from caves.
Pinelema wangshang	Arachnid	-	Based on Zhao et al. (108), *Pinelema wangshang* is only known from caves.
Pinelema cheni	Arachnid	-	Based on Zhao et al. (108), *Pinelema cheni* is only known from caves.
Pinelema wenyang	Arachnid	-	Based on Zhao et al. (108), *Pinelema wenyang* is only known from caves.
Pinelema strentarsi	Arachnid	Dark zone	Based on Lin and Li (107), *Pinelema strentarsi* only occurs in caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema shiba	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema shiba*, with six vestigial eyes, is only known from caves.
Pinelema xiushuiensis	Arachnid	Dark zone	Based on Wang and Li (109), *Pinelema xiushuiensis*, which lacks eyes, is only known from caves.
Pinelema spirae	Arachnid	Dark zone	Based on Lin and Li (107), *Pinelema spirae* only occurs in caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema adunca	Arachnid	-	Based on Wang and Li (109), *Pinelema adunca* is only known from caves.
Pinelema renalis	Arachnid	-	Based on Zhao et al. (51), *Pinelema renalis* only occurs in caves.
Pinelema biyunensis	Arachnid	-	Based on Wang and Li (109), *Pinelema biyunensis* is only known from caves.
Pinelema liangxi	Arachnid	Dark zone	Based on Chen and Zhu (110), *Pinelema liangxi* lacks eyes and only occurs in caves.
Pinelema bailongensis	Arachnid	-	Based on Zhao et al. (108), *Pinelema bailongensis* is only known from caves.
Pinelema zonaria	Arachnid	-	Based on Zhao et al. (51), *Pinelema zonaria* is only known from caves.
Pinelema podiensis	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema podiensis* has reduced eyes and only occurs in caves.
Pinelema cunfengensis	Arachnid	-	Based on Song et al. (111), *Pinelema cunfengensis* is only known from caves.
Pinelema yashanensis	Arachnid	-	Based on Zhao et al. (51), *Pinelema yashanensis* is only known from caves.
Pinelema zhewang	Arachnid	Dark zone	Based on Chen and Zhu (110), *Pinelema zhewang*, with no eyes, only occurs in complete darkness in the constant temperature zone of caves.

Pinelema xiezi	Arachnid	-	Based on Zhao et al. (51), *Pinelema xiezi* is only known from caves.
Pinelema nuocnutensis	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema nuocnutensis*, with vestigial eyes, only occurs in caves.
Pinelema zhenzhuang	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema zhenzhuang* has no eyes and only occurs in caves.
Pinelema breviseta	Arachnid	-	Based on Tong and Li (112), *Pinelema breviseta* is only known from caves.
Pinelema dengi	Arachnid	-	Based on Tong and Li (112), *Pinelema dengi* is only known from caves.
Pinelema pacchanensis	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema pacchanensis* has no eyes and only occurs in caves.
Pinelema daguaiwan	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema daguaiwan* has no eyes and only occurs in caves.
Pinelema conglobare	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema conglobare* is only known from caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema dongbei	Arachnid	Dark zone	Based on Chen and Zhu (110), *Pinelema dongbei* has no eyes; it only occurs in complete darkness in the constant temperature zone of caves.
Pinelema oculata	Arachnid	-	Based on Zhao et al. (51), *Pinelema oculata* is only known from caves.
Pinelema spinafemora	Arachnid	Dark zone	Based on Lin and Li (107), *Pinelema spinafemora* is only known from caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema cucurbitina	Arachnid	-	Based on Wang and Li (109), *Pinelema cucurbitina* is only known from caves.
Pinelema grandidens	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema grandidens*, without eyes, only occurs in caves.
Pinelema pedati	Arachnid	Dark zone	Based on Lin and Li (107), *Pinelema pedati* is only known from caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema exiloculata	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema exiloculata* only occurs in caves; it has vestigial eyes.
Pinelema laensis	Arachnid	-	Based on Zhao et al. (51), *Pinelema laensis* is only known from caves.
Pinelema spirulata	Arachnid	-	Based on Zhao et al. (51), *Pinelema spirulata* only occurs in caves.
Pinelema curcici	Arachnid	-	Based on Wang and Li (109), *Pinelema curcici* is only known from caves.
Pinelema yaosaensis	Arachnid	-	Based on Wang and Li (109), *Pinelema yaosaensis* only occurs in caves.
Pinelema mikrosphaira	Arachnid	-	Based on Wang and Li (109), *Pinelema mikrosphaira* is only known from caves.
Pinelema vesiculata	Arachnid	Dark zone	Based on Lin and Li (107), *Pinelema vesiculata* is only known from caves; it has typical troglobiotic characters, i.e., no eyes, pale somatic coloration, and no pigment pattern.
Pinelema huobaensis	Arachnid	Dark zone	Based on Wang and Li (109), *Pinelema huobaensis*, which lacks eyes, only occurs in caves.
Pinelema feilong	Arachnid	Dark zone	Based on Chen and Zhu (110), *Pinelema feilong*, which lacks eyes, only occurs in complete darkness in the constant temperature zone of caves.
Pinelema cucphongensis	Arachnid	-	Based on Zhao et al. (51), *Pinelema cucphongensis* is only known from caves.

Pinelema tham	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema tham* is only known from caves and has six vestigial eyes.
Pinelema bella	Arachnid	-	Based on Tong and Li (112), *Pinelema bella* only occurs in caves.
Pinelema circularis	Arachnid	Dark zone	Based on Zhao et al. (51), *Pinelema circularis* only occurs in caves; it has no eyes.
Siamlema changhai	Arachnid	Dark zone	Based on Zhao et al. (51), *Siamlema changhai* is only known from caves; it has no eyes.
Siamlema suea	Arachnid	-	Based on Zhao et al. (51), *Siamlema suea* only occurs in caves.
Sundalema anguina	Arachnid	-	Based on Zhao et al. (51), *Sundalema anguina* is only known from caves.
Sundalema bonjol	Arachnid	Dark zone	Based on Zhao et al. (51), *Sundalema bonjol* is only known from caves; it has vestigial eyes.
Sundalema khaorakkiat	Arachnid	Dark zone	Based on Zhao et al. (51), *Sundalema khaorakkiat* only occurs in caves; it has vestigial eyes.
Mekonglema bailang	Arachnid	Dark zone	Based on Zhao et al. (51), *Mekonglema bailang* is only known from caves; it has four vestigial eyes.
Mekonglema kaorao	Arachnid	Dark zone	Based on Zhao et al. (51), *Mekonglema kaorao* only occurs in caves; it has six vestigial eyes.
Mekonglema yan	Arachnid	Dark zone	Based on Zhao et al. (51), *Mekonglema yan* is only known from caves; it has four vestigial eyes.
Telema auricoma	Arachnid	-	Based on Zhao et al. (51), *Telema auricoma* only occurs in caves.
Telema guihua	Arachnid	Dark zone	Based on Zhao et al. (51), *Telema guihua* is only known from caves; it has no eyes and no pigment pattern.
Nesticella songi	Arachnid	-	Based on Ballarin and Li (20), *Nesticella songi* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella baiseensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella baiseensis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella nandanensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella nandanensis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella yao	Arachnid	-	Based on Ballarin and Li (20), *Nesticella yao* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella verticalis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella verticalis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella chongqing	Arachnid	-	Based on Ballarin and Li (20), *Nesticella chongqing* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella semicircularis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella semicircularis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella gazuida	Arachnid	Dark zone	Based on Ballarin and Li (20), *Nesticella gazuida* is found exclusively in the deep part of caves.

Nesticella sp. 293	Arachnid	Dark zone	Based on Ballarin and Li (20), *Nesticella* sp. 293 is found exclusively in the deep part of caves.
Nesticella caeca	Arachnid	Dark zone	Based on Ballarin and Li (20), *Nesticella caeca* is strongly bound to the subterranean habitat and found exclusively in the deep part of caves.
Nesticella sanchaheensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella sanchaheensis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella falcata	Arachnid	-	Based on Ballarin and Li (20), *Nesticella falcata* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella liuzhaiensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella liuzhaiensis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella gracilenta	Arachnid	-	Based on Ballarin and Li (20), *Nesticella gracilenta* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella shanlinensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella shanlinensis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella qiaoqiensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella qiaoqiensis* is restricted to caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella xixia	Arachnid	-	Based on Ballarin and Li (20), *Nesticella xixia* is found only in caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella huomachongensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella huomachongensis* is found only in caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella fuliangensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella fuliangensis* is found only in caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella wanzaiensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella wanzaiensis* is found only in caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella yanbeiensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella yanbeiensis* is found only in caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella apiculata	Arachnid	-	Based on Ballarin and Li (20), *Nesticella apiculate* is found only in caves or cave-like microhabitats with high humidity and a stable temperature.
Nesticella quelpartensis	Arachnid	-	Based on Ballarin and Li (20), *Nesticella quelpartensis* is found only in caves or cave-like microhabitats with high humidity and a stable temperature.
Troglocoelotes bailongensis	Arachnid	Dark zone	Based on Li et al. (52), *Troglocoelotes bailongensis* is only known from the deep zone of moist and dark caves and has reduced eyes and pale body coloration.
Troglocoelotes banmenensis	Arachnid	Dark zone	Based on Li et al. (52), *Troglocoelotes banmenensis* is only known from the deep zone of moist and dark caves and has reduced eyes and pale body coloration.
Troglocoelotes liangensis	Arachnid	Dark zone	Based on Li et al. (52), *Troglocoelotes liangensis* is only known from the deep zone of moist and dark caves and has reduced eyes and pale body coloration.
Troglocoelotes nongchiensis	Arachnid	Dark zone	Based on Li et al. (52), *Troglocoelotes nongchiensis* only occurs in the deep zone of moist and dark caves and has reduced eyes and pale body coloration.

Troglocoelotes qixianensis	Arachnid	Dark zone	Based on Li et al. (52), *Troglocoelotes qixianensis* is only known from the deep zone of moist and dark caves and has reduced eyes and pale body coloration.
Troglocoelotes tortus	Arachnid	Dark zone	Based on Li et al. (52), *Troglocoelotes tortus* is only known from the deep zone of moist and dark caves and has reduced eyes and pale body coloration.
Troglocoelotes yumiganensis	Arachnid	Dark zone	Based on Li et al. (52), *Troglocoelotes yumiganensis* only occurs in the deep zone of moist and dark caves and has reduced eyes and pale body coloration.
Notiocoelotes maoganensis	Arachnid	-	Based on Zhang et al. (53), *Notiocoelotes maoganensis* only occurs in caves.
Notiocoelotes palinitropus	Arachnid	-	Based on Wang et al. (113), *Notiocoelotes palinitropus* is only known from caves.
Protobothrops maolanensis	Rreptile	Entrance & twilight & dark zone	Based on Yang et al. (114), *Protobothrops maolanensis* is only known from caves.
Elaphe moellendorffi	Reptile	Entrance & twilight & dark zone	Based on Zhao et al. (115), *Elaphe moellendorffi* is only known from caves.
Odorrana lipuensis	Amphibian	Dark zone	Based on Mo et al. (116), *Odorrana lipuensis* only occurs in caves.
Odorrana wuchuanensis	Amphibian	Dark zone	Based on Mo et al. (116), *Odorrana wuchuanensis* only occurs in dark caves.
Bibarba parvoculu	Fish	Dark zone	Based on Wu et al. (117), *Bibarba parvoculu* is only known from caves; it has reduced eyes and a white and semitransparent body.
Oreonectes jiarongensis	Fish	Dark zone	Based on Liu et al. (118), *Oreonectes jiarongensis* was inferred as endemic to caves; it lacks eyes and pigment throughout its body.
Oreonectes daqikongensis	Fish	Dark zone	Based on Deng et al. (119), *Oreonectes daqikongensis* only occurs in caves; it has completely degraded eyes and a white and transparent body.
Oreonectes furcocaudalis	Fish	Dark zone	Based on Romero et al. (120), *Oreonectes furcocaudalis* only occurs in caves.
Oreonectes shuilongensis	Fish	-	Based on Deng et al. (121), *Oreonectes shuilongensis* is only known from caves.
Triplophysa fengshanensis	Fish	Dark zone	Based on Lan et al. (122), *Triplophysa fengshanensis* is only known from caves; it has completely degraded eyes and a white body.
Triplophysa tianeensis	Fish	Dark zone	Based on Romero et al. (120), *Triplophysa tianeensis* was inferred to be a troglobite based on morphological characters and field observations.
Triplophysa xiangxiensis	Fish	Dark zone	Based on Romero et al. (120), *Triplophysa xiangxiensis* was inferred to be a troglobite based on morphological characters and field observations.
Triplophysa rosa	Fish	Dark zone	Based on Romero et al. (120), *Triplophysa rosa* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus anophthalmus	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus anophthalmus* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus multipunctatus	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus multipunctatus* was inferred to be a troglobite based on morphological characters and field observations.

Sinocyclocheilus cyphotergous	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus cyphotergous* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus hugeibarbus	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus hugeibarbus* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus lingyunensis	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus lingyunensis* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus longibarbatus	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus longibarbatus* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus yishanensis	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus yishanensis* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus ronganensis	Fish	Dark zone	Based on Luo et al. (123), *Sinocyclocheilus ronganensis* is only known from an underground river flowing through caves.
Sinocyclocheilus microphthalmus	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus microphthalmus* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus anshuiensis	Fish	Dark zone	Based on Gan et al. (124), *Sinocyclocheilus anshuiensis* was inferred as endemic to caves and has characteristics such as completely degraded eyes.
Sinocyclocheilus angularis	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus angularis* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus bicornutus	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus bicornutus* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus altishoulderus	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus altishoulderus* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus rhinocerous	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus rhinocerous* was inferred to be a troglobite based on morphological characters and field observations.
Sinocyclocheilus furcodorsalis	Fish	Dark zone	Based on Romero et al. (120), *Sinocyclocheilus furcodorsalis* was inferred to be a troglobite based on morphological characters and field observations.
Wardomycopsis dolichi	Fungi	-	Based on Zhang et al. (59), *Wardomycopsis dolichi* is only known from the E'gu cave.
Wardomycopsis ellipsoconidiophora	Fungi	-	Based on Zhang et al. (59), *Wardomycopsis ellipsoconidiophora* is only known from the Sanshan cave.
Wardomycopsis fusca	Fungi	-	Based on Zhang et al. (59), *Wardomycopsis fusca* only occurs in the Luotian cave.
Wardomycopsis longicatenata	Fungi	-	Based on Zhang et al. (59), *Wardomycopsis longicatenata* only occurs in a karst cave.
Microascus collaris	Fungi	-	Based on Zhang et al. (59), *Microascus collaris* is only known from the Sanshan cave.
Microascus superficialis	Fungi	-	Based on Zhang et al. (59), *Microascus superficialis* is only known from the Sanshan cave.
Microascus anfractus	Fungi	-	Based on Zhang et al. (125), *Microascus anfractus* only occurs in a karst cave.
Microascus globulosus	Fungi	-	Based on Zhang et al. (125), *Microascus globulosus* only occurs in a karst cave.

Microascus levis	Fungi	-	Based on Zhang et al. (59), *Microascus levis* is only known from the Luotian cave.
Microascus sparsimycelialis	Fungi	-	Based on Zhang et al. (59), *Microascus sparsimycelialis* is only known from the Sanshan cave.
Microascus trigonus	Fungi	-	Based on Zhang et al. (59), *Microascus trigonus* only occurs in caves.
Gamszarea humicola	Fungi	-	Based on Zhang et al. (59), *Gamszarea humicola* is only known from the E'gu cave.
Gamszarea lunata	Fungi	-	Based on Zhang et al. (59), *Gamszarea lunata* only occurs in the E'gu cave.
Gamszarea microspora	Fungi	-	Based on Zhang et al. (59), *Gamszarea microspore* is only known from the Tianliang cave.
Simplicillium album	Fungi	-	Based on Zhang et al. (59), *Simplicillium album* only occurs in the Sanshan cave.
Simplicillium calcicola	Fungi	-	Based on Zhang et al. (125), *Simplicillium calcicola* only occurs in a karst cave.
Simplicillium humicola	Fungi	-	Based on Zhang et al. (59), *Simplicillium humicola* is only known from the E'gu cave.
Paracremonium apiculatum	Fungi	-	Based on Zhang et al. (59), *Paracremonium apiculatum* is only known from the Sanjiao cave.
Paracremonium ellipsoideum	Fungi	-	Based on Zhang et al. (59), *Paracremonium ellipsoideum* only occurs in the Sanjiao cave.
Paracremonium variiforme	Fungi	-	Based on Zhang et al. (125), *Paracremonium variiforme* is only known from a karst cave.

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Table S4. Inferred stem-node age, ancestral vegetation type and source area of 75 lineages/species endemic to subtropical East Asian caves

Endemic cave lineages/species	Stem-node age (Ma)			Ancestral vegetation type	Source area
	Median	95% credibility interval			
		Lower	Upper		
Polystichum kungianum	1.67	0.53	3.24	Forest	East Asia
Polystichum speluncicola-Polystichum cavernicola	4.69	1.03	8.31	Forest	East Asia
Hymenasplenium hastifolium	3.09	0.04	9.71	Forest	East Asia
Hymenasplenium wangpeishanii	11.11	2.01	23.03	Forest	East Asia
Lysimachia fanii	11.5	8.05	15.46	Forest	East Asia
Mitreola pingtaoi	0.81	0.3	1.41	Forest	East Asia
Primulina argentea	7.24	6.21	8.26	Forest	East Asia
Primulina debaoensis-Primulina rongshuiensis clade	3.82	3.2	4.51	Forest	East Asia
Primulina fengshanensis	5.34	4.03	6.17	Forest	East Asia
Primulina flavimaculata	3.25	2.39	4.29	Forest	East Asia
Primulina hezhouensis	6.99	6.12	7.76	Forest	East Asia
Primulina huaijiensis	9.05	7.71	10.01	Forest	East Asia
Primulina jingxiensis	2.85	2.31	3.51	Forest	East Asia
Primulina latinervis	4.83	3.88	5.52	Forest	East Asia
Primulina leeii	3.47	2.89	4.86	Forest	East Asia
Primulina leprosa	6.88	5.97	7.46	Forest	East Asia
Primulina linglingensis var. *fragrans-Primulina chizhouensis* clade	3.28	2.73	3.83	Forest	East Asia
Primulina longicalyx	2.76	2.04	3.34	Forest	East Asia
Primulina luzhaiensis	2.26	1.81	2.73	Forest	East Asia
Primulina mabaensis	6.81	5.8	7.66	Forest	East Asia
Primulina ningmingensis	1.99	1.06	4.04	Forest	East Asia
Primulina pseudomollifolia	5.86	4.46	6.67	Forest	East Asia
Primulina pseudoroseoalba	4.33	3.66	5.11	Forest	East Asia
Primulina qingyuanensis	1.97	1.61	2.48	Forest	East Asia
Primulina renifolia	9.09	7.73	10.04	Forest	East Asia
Primulina subulata-Primulina subulata var. *yangchunensis* clade	5.24	4.45	6.12	Forest	East Asia
Primulina yingdeensis	2.85	2.32	3.57	Forest	East Asia
Primulina zhoui	2.34	1.03	4.03	Forest	East Asia
Petrocodon retroflexus	9.82	4.76	14.88	Forest	East Asia
Petrocodon tiandengensis	9.87	3.13	15	Forest	East Asia
Petrocosmea xanthomaculata	1.16	0.3	2.21	Forest	East Asia
Hemiboea suiyangensis	3.09	1.53	4.67	Forest	East Asia
Lysionotus fengshanensis	3.15	1.26	5.53	Forest	East Asia
Paraboea velutina	2.43	1.02	4.16	Forest	East Asia

Elatostema albopilosoides	7.02	1.34	12.92	Forest	East Asia
Elatostema densistriolatum	24.1	16.4	31.92	Forest	East Asia
Elatostema gyrocephalum	1.02	0.01	3.71	Forest	East Asia
Elatostema hezhouense	2.12	0.15	5.04	Forest	East Asia
Elatostema tenuinerve-Elatostema binatum	12.38	3.72	21.15	Forest	East Asia
Begonia bamaensis	1.03	0	3.02	Forest	East Asia
Begonia crystallina	2.8	0	7.23	Forest	East Asia
Mekonglema bailang	8.86	3.18	15.69	Forest	East Asia
Pinelema tortutheca-Pinelema bella clade	106.35	84.37	134.46	Forest	East Asia
Siamlema changhai-Mekonglema yan clade	93.99	68.25	120.11	Forest	East Asia
Telema auricoma	18.41	8.33	28.78	Forest	East Asia
Telema guihua	8.46	2.94	14.23	Forest	East Asia
Nesticella gracilenta-Nesticella xixia clade	22.58	13.87	32.02	Forest	East Asia
Nesticella huomachongensis-Nesticella apiculata clade	14.4	5.84	22.39	Forest	East Asia
Nesticella liuzhaiensis-Nesticella falcata clade	8.86	1.9	17.3	Forest	East Asia
Nesticella quelpartensis	11.41	0.76	29.29	Forest	East Asia
Nesticella songi-Nesticella sanchaheensis clade	15.19	6.81	21.65	Forest	East Asia
Troglocoelotes bailongensis-Troglocoelotes liangensis clade	48.94	41.8	55.98	Forest	East Asia
Notiocoelotes palinitropus-Notiocoelotes maoganensis clade	31.96	25.21	39.57	Forest	East Asia
Protobothrops maolanensis	4.33	2.71	6.27	Forest	East Asia
Elaphe moellendorffi	17.7	10.64	24.88	Forest	East Asia
Odorrana lipuensis	16.68	11.59	21.84	Forest	East Asia
Odorrana wuchuanensis	8.53	3.14	15.3	Forest	East Asia
Bibarba parvoculu	22.85	14.56	29.78	Unknown	East Asia
Oreonectes jiarongensis-Oreonectes shuilongensis clade	19.95	14.63	25.59	Unknown	East Asia
Triplophysa tianeensis-Triplophysa rosa clade	13.84	8.92	18.66	Unknown	East Asia
Sinocyclocheilus furcodorsalis-Sinocyclocheilus cyphotergous clade	31.82	28.17	36.36	Unknown	East Asia
Wardomycopsis dolichi-Wardomycopsis longicatenata clade	27.84	27.3	28	Unknown	East Asia
Wardomycopsis ellipsoconidiophora-Wardomycopsis fusca clade	18.69	14.79	21.71	Unknown	East Asia
Microascus anfractus	23.24	19.82	25.84	Unknown	East Asia
Microascus collaris	6.37	4.58	8.18	Unknown	East Asia
Microascus globulosus	19.76	16.28	22.05	Unknown	East Asia
Microascus levis	10.95	8.51	12.67	Unknown	East Asia

Microascus sparsimycelialis	18.25	14.4	20.94	Unknown	East Asia
Microascus superficialis	9.09	6.41	12.96	Unknown	North America
Microascus trigonus	10.39	5.71	14.69	Unknown	East Asia
Gamszarea microspora-Gamszarea lunata clade	100.08	95.35	103.45	Unknown	East Asia
Simplicillium album	39.36	32.43	44.83	Unknown	East Asia
Simplicillium calcicola	8.66	5.74	11.37	Unknown	East Asia
Simplicillium humicola	13.77	11.03	16.44	Unknown	East Asia
Paracremonium variiforme-Paracremonium ellipsoideum clade	55.59	50.73	58.66	Unknown	East Asia

Note: Inferred events and ancestral states were summarized based on the result of historical habitat, range, and vegetation reconstruction analyses.

Table S5. Summary of paleoaltimetry estimates for the Tibet-Himalaya-Hengduan region (THH) and the Yunnan-Guizhou Plateau (YGP)

Region	Locality	Age (Ma)	Paleolevation (m)	Modern elevation (m)	Method	Reference
THH	Kailas*	26-21	2700-3200	5103	Geochemistry, geochronology	(126)
THH	Mount Everest*	17-16	5100-5400	8800	Isotope	(127)
THH	Heihuling*	51-28	4562-5759	5200	Isotope	(128)
THH	Nima*	26-23.5	1000-1000	4600	Fossil	(129)
THH	Qiabulin*	21-19	1400-3200	4020	Fossil	(130)
THH	Lunpola*	30-25	2300	4700	Fossil	(131)
THH	Markam*	34.7-33.4	3590-3900	3910	Fossil	(132)
YGP	Liming*	56-33.9	2350-2950	2700	Isotope	(133)
YGP	Western Yunnan Plateau*	19.6-16.2	560	2300	Sediment	(134)
THH	Zanda	5.3-2.6	3536-4176	3990	Fossil	(135)
THH	Namling	15	5540-5540	4450	Fossil	(136)
THH	Thakkhola	11-10.5	3800-5900	3000-4200	Isotope	(137)
THH	Gyirong	7	1307-3153	4200	Isotope	(138)
YGP	Eryuan	5.3-2.6	2050-3450	2300	Isotope	(133)
YGP	Lanping	11.6-5.3	2600-3750	2700	Isotope	(133)
YGP	Lincang	11.6-5.3	214	1600	Fossils	(139)
YGP	Luhe	11.6-5.3	200-1800	1900	Isotope	(133)
YGP	Western Yunnan Plateau	16.2-11	860-950	2300	Sediment	(134)
YGP	Western Yunnan Plateau	11-5.3	800	2300	Sediment	(134)
YGP	Western Yunnan Plateau	5.3-1.6	2600-2725	2300	Sediment	(134)
YGP	Xianfeng	11.6-5.3	1936	2200	Fossil	(139)
YGP	Xiaolongtan	11.6-5.3	530	1050	Fossil	(139)
YGP	Yanyuan	5.3-1	1300-3500	2300	Isotope	(133)

Note: * Localities that contributed to the estimate of paleoelevations of the THH and YGP region in the Oligocene-Early Miocene.

403 **Table S6. The climate parameters of nineteen fossil sites in subtropical China**

					MTCM (℃)				MAP (mm)				
No.	Site	Location (°N, °E)	Dating method	Fossil type	Early Miocene	Mid-Miocene	Late Miocene	Present	Early Miocene	Mid-Miocene	Late Miocene	Present	Reference
1	Fuyang, Anhui	33°21', 115°28'	Biostratigraphy	Pollen	-1.2			-3.3	1191			835	(140,141)
2	Tianchang, Anhui	32°31', 119°04'	Biostratigraphy	Pollen	3.6	2.1		-1.2	1248	1248		1001	(141–143)
3	Mindongnan, Fujian	24°14', 117°54'	Biostratigraphy	Pollen		10	10	9.0		1369	1369	1256	(141,144)
4	Duan, Guangxi	23°58', 107°49'	Biostratigraphy	Pollen	3.6	3.6		8.5	1263	1263		1531	(141,145)
5	Huanghua, Hebei	38°22', 117°21'	Biostratigraphy	Pollen			3.6	-8.6			1012	530	(141,146)
6	Sihong, Jiangsu	33°30', 118°24'	Biostratigraphy	Pollen	2.1			-2.7	1193			789	(141,147)
7	Yancheng, Jiangsu	33°22', 120°07'	Biostratigraphy	Pollen	3.6	3.6	3.6	-2.2	1103	1103	1103	978	(141,148)
8	Guangchang, Jiangxi	27°13', 116°19'	Biostratigraphy	Pollen	3.6	3.6		1.5	1371	1217		1758	(141,149)
9	Liaocheng, Shandong	36°27', 115°58'	Biostratigraphy	Pollen		3.6		-7.0		1014		547	(141,150)
10	Shanwang, Shandong	36°33', 118°44'	Biostratigraphy	Pollen		3.6		-8.5		1248		758	(141,151)
11	Jiyang, Shandong	36°58', 117°12'	Biostratigraphy	Pollen	-3.1	-3.1	-3.1	-7.0	1156	1156	1152	713	(141,152)
12	Lantian, Shannxi	34°11', 109°15'	Biostratigraphy, paleomagnetism	Pollen	2.1	2.1		-5.4	1109	1109		643	(141,153)
13	Songpan, Sichuan	32°38', 103°36'	Biostratigraphy	Pollen		-3.1	-3.1	-13.3		1143	1143	745	(141,154)
14	Kaiyuan, Yunnan	23°48', 103°12'	Biostratigraphy	Pollen			0.6	3.1			1427	1215	(141,155)
15	Xianfeng, Yunnan	25°25', 102°51'	Biostratigraphy	Leaf			2.7	0.8			1368	887	(141,156)
16	Xiaolongtan, Yunnan	23°30', 103°18'	Biostratigraphy, paleomagnetism	Leaf			9.1	2.9			1464	1336	(141,157)
17	Ninghai, Zhejiang	29°18', 121°25'	Biostratigraphy	Pollen		-3.1		-0.2		1576		1433	(141,158)
18	Xianju, Zhejiang	28°51', 120°44'	Biostratigraphy	Pollen		2.1		-0.2		1087		1648	(141,158)
19	Tiantai, Zhejiang	29°36', 120°49'	Biostratigraphy	Pollen	2.1	2.1		-0.4	1193	1193		1447	(141,159)

404 Note: Minimum temperature of the coldest month (MTCM) and mean annual precipitation (MAP) are presented. The present values of these nineteen sites are calculated from WorldClim2 (160) at 30' resolution.

405 **Table S7. Species and GenBank accession numbers used in this study**

406 ***Polystichum* (Dryopteridaceae)**

Species	*rbcL*	*psbA-trnH*	*rps4-trnS*	*trnL-F*
Polystichum acanthophyllum	KU244712	KU244785	KU662030	KU662019
Polystichum acrostichoides	MG215050	KP402515	MK214694	-
Polystichum aculeatum	KX768041	-	KX768072	KX768064
Polystichum acutidens	KT831872	-	-	-
Polystichum acutipinnulum	KU244732	-	KU244900	KU244987
Polystichum alcicorne	KU244723	KU244796	KU244883	KU244970
Polystichum alfarii	AF537236	-	-	EF177271
Polystichum altum	MK174897	-	-	-
Polystichum ammifolium	KU244753	KU244839	KU244926	KU245013
Polystichum andersonii	KX768033	JN189401	KX768074	JX476098
Polystichum andinum	MK174898	-	MK214696	MK035852
Polystichum atkinsonii	-	KU244770	KU244860	KU244945
Polystichum attenuatum	KU244725	KU244801	KU244888	KU244975
Polystichum auriculum	KU244758	KU244844	KU244931	KU245020
Polystichum bakerianum	-	KU244806	KU244893	KU244980
Polystichum balansae	KT831873	-	-	-
Polystichum biaristatum	-	KU244802	KU244889	KU244976
Polystichum bifidum	KU244757	KU244843	KU244930	KU245019
Polystichum bonseyi	EF177341	-	KX768075	KX768063
Polystichum braunii	KX768035	KX068888	KX768077	KX768061
Polystichum californicum	MK776793	KU244830	KU244918	MK776826
Polystichum capillipes	-	KU662003	KU662028	KU662017
Polystichum caruifolium	KU244724	KU244797	KU244884	KU244971
Polystichum castaneum	KU244730	KU244811	KU244898	KU244985
Polystichum caudescens	MK174899	-	MK214697	MK035862
Polystichum chilense	MK174900	-	MK214698	MK035855
Polystichum chingiae	KU244720	KU244793	KU244880	KU244967
Polystichum christii	AY545486	-	DQ151862	DQ150399
Polystichum chunii	-	KU244781	KU244870	KU244955
Polystichum concinnum	MK174901	-	MK214700	MK035861
Polystichum craspedosorum	AB575189	KY014815	KU244935	KU245024
Polystichum crinigerum	KU244722	KU244795	KU244882	KU244969
Polystichum cyclolobum	MH159212	KU244767	KU244857	MH101449
Polystichum cystostegia	AF208392	-	AY164630	-
Polystichum deltodon	KU244703	KU244803	KU244862	KU244977
Polystichum dielsii	KU244709	KU244782	KU244871	KU244956
Polystichum discretum	KX768056	KU244780	-	KU244954

Polystichum disjunctum	MK174902	-	MK214701	-
Polystichum dracomontanum	AF537240	-	KX768085	EF177290
Polystichum dudleyi	MK776800	-	KX768086	MK776837
Polystichum duthiei	-	KU244809	KU244896	KU244983
Polystichum ekmanii	AF537242	-	-	EF177272
Polystichum erosum	KU244763	KU244850	KU244937	KU245026
Polystichum eximium	AB575191	AB575810	-	-
Polystichum falcatilobum	-	KU244771	KU244861	KU244946
Polystichum falcinellum	KX768055	-	KX768087	-
Polystichum fallax	AY163865	-	AY164625	-
Polystichum fibrillosopaleaceum	AB575192	AB575811	-	-
Polystichum fimbriatum	-	KU244769	KU244859	KU244944
Polystichum formosanum	AB575194	AB575812	-	-
Polystichum fraxinellum	-	-	-	KU500173
Polystichum frigidicola	KU244729	KU244808	KU244895	KU244982
Polystichum garhwalicum	MH179982	-	MH175169	_MH179983
Polystichum glaciale	KY241391	KU244829	KU244917	KU245004
Polystichum gongboense	KX768044	-	-	-
Polystichum gracilipes var. *gemmiferum*	AB575195	AB575813	-	-
Polystichum grandifrons	KU244719	KU244792	KU244879	KU244966
Polystichum haleakalense	KX768046	-	KX768088	EF177278
Polystichum hancockii	AB575197	AB575815	KX768070	-
Polystichum hecatopterum	-	KU244854	KU244939	KU245030
Polystichum herbaceum	MH159214	KU244818	MH175177	KU244993
Polystichum hillebrandii	EF463217	-	MH175173	EF177279
Polystichum holttumii	KX768059	-	KX768090	-
Polystichum hookerianum	LC496696	KU244820	KU244908	KU244995
Polystichum horizontale	KX768050	-	KX768091	-
Polystichum hubeiense	-	KU244852	-	KU245029
Polystichum igaense	AB575199	AB575817	-	-
Polystichum imbricans	KU244746	KU244831	KU244919	KU245006
Polystichum imbricans subsp. *curtum*	MK776797	-	-	MK776843
Polystichum incongruum	KU244748	KU244835	KU244921	KU245009
Polystichum jiucaipingense	KU244702	KU244766	KU244856	KU244941
Polystichum jiulaodongense	-	KU244851	KU244938	KU245027
Polystichum kruckebergii	MG215036	-	-	-
Polystichum kungianum	KU244764	-	-	KU245028
Polystichum lachenense	KU244743	KU244827	KU662031	KU662020
Polystichum latilepis	KU244735	KU244816	KU244904	KU244991
Polystichum lemmonii	MG215073	-	KX768093	-
Polystichum lentum	AF537246	-	AY164637	EF177293

Polystichum lepidocaulon	KY806706	AB575820	-	MH029286
Polystichum lepidotum	KF020338	-	KF020415	KF020367
Polystichum lonchitis	MG215277	-	MK214705	MK035863
Polystichum longifrons	AB575204	AB575821	-	-
Polystichum longipaleatum	-	-	MK214706	KU244951
Polystichum longispinosum	KU244706	KU244777	KU244867	-
Polystichum luctuosum	KU244750	KU244836	KU244923	KU245011
Polystichum macleae	AF537249	-	KX768094	EF177294
Polystichum maevaranense	KU244747	KU244833	-	KU245008
Polystichum makinoi	AB575205	AB575822	DQ202462	DQ202431
Polystichum manmiense	KU244717	KU244790	KU244877	KU244964
Polystichum maximum	KF020318	-	KF020416	KF020368
Polystichum microchlamys	KX856980	-	KX856982	KX856981
Polystichum microchlamys var. *azumiense*	AB575207	-	-	-
Polystichum mohrioides	MK174904	-	MK214708	MK035847
Polystichum montevidense	EF177326	-	MK214710	EF177282
Polystichum moorei	-	-	AY164628	KU245033
Polystichum moupinense	KU244731	KU244812	KU244899	KU244986
Polystichum mucronifolium	KU244715	KU244788	KU244887	KU244962
Polystichum multifidum	MK174908	-	MK214711	MK035856
Polystichum munitum	MK776811	JN189399	MK214713	MK776850
Polystichum muricatum	AF537251	-	KF020404	EF177275
Polystichum neolobatum	AB575208	-	MH175167	-
Polystichum nepalense	KU244713	KU662009	KU662034	KU244960
Polystichum nigrum	KU244728	KU244807	KX768098	KU244981
Polystichum nudisorum	-	KU662001	KU662026	KU662015
Polystichum obae	AB575209	AB575824	-	-
Polystichum oculatum	-	-	AY164633	JX476120
Polystichum otomasui	AB575211	AB575826	-	-
Polystichum otophorum	KU244711	KU244784	-	KU244958
Polystichum ovatopaleaceum	AB575212	AB575827	-	-
Polystichum paleatum	KY099848	KY099979	-	-
Polystichum parvipinnulum	KU244739	KU244822	KU244910	KU244997
Polystichum piceopaleaceum	LC496700	AB575829	-	-
Polystichum platyphyllum	MK174910	-	MK214714	EF177285
Polystichum plicatum	MK174911	-	MK214717	MK035853
Polystichum polyblepharum	AB575215	KU244798	KU244885	KU244972
Polystichum polyphyllum	KF020342	-	KF020418	KF020374
Polystichum prescottianum	KU662014	KU662007	KU662032	KU662021
Polystichum proliferum	AF208393	KU662010	AY164627	KU245031
Polystichum pseudodeltodon	-	KU662002	KU662027	KU662016

Polystichum pseudomakinoi	AB575217	AB575832	KX768100	-
Polystichum pseudoxiphophyllum	-	KU244768	KU244858	KU244943
Polystichum punctiferum	MK174914	-	MK214718	-
Polystichum pungens	-	-	KX768101	-
Polystichum pycnopterum	KU244714	KU244787	KU244874	KU244961
Polystichum rapense	-	-	KX768102	-
Polystichum retrosopaleaceum	KY806707	AB575833	-	LC331598
Polystichum revolutum	MH159217	KU244779	KX768103	KU244953
Polystichum rigens	KU244736	KU244817	MH175176	KU244992
Polystichum scopulinum	MG215298	-	KX768104	-
Polystichum semifertile	KU244718	KU244791	KU244878	KU244965
Polystichum setiferum	AF537254	KU244799	AY164638	KU244973
Polystichum setigerum	KX768038	-	-	-
Polystichum sinense	KU244751	KU244842	KU244928	KU245017
Polystichum sinotsus-simense	KU244733	KU244813	KU244901	KU244988
Polystichum sozanense	-	KU244823	KU244911	KU244998
Polystichum speciosissimum	-	-	KF020397	DQ514517
Polystichum squarrosum	-	-	MH175170	MH101422
Polystichum stenophyllum	MK174915	KU244805	KU662033	KU244979
Polystichum stimulans	MH159213	-	MH175172	-
Polystichum subfimbriatum	KU244721	KU244794	KU244881	KU244968
Polystichum subintegerrimum	MK174917	-	MK214723	MK035858
Polystichum submarginale	KU244707	KU244778	KU244868	KU244952
Polystichum tagawanum	AB575221	AB575836	-	-
Polystichum talamancanum	EF177335	-	KF020402	EF177305
Polystichum tenuius	KU244705	KU244775	KU244865	KU245022
Polystichum tetragonum	MK174918	-	MK214724	MK035854
Polystichum thomsonii	KU244744	KU244789	KU244876	KU245003
Polystichum tonkinense	KU244760	KU244847	KU244933	KU245023
Polystichum transkeiense	AF537257	-	KX768107	EF177297
Polystichum tripteron	KY014835	KX068900	MK214726	-
Polystichum tsus-simense	MH179977	KU244815	MH175182	KU244990
Polystichum tsus-simense var. *mayebarae*	AB575224	AB575839	-	-
Polystichum vestitum	AF208395	-	AY164635	AY300046
Polystichum wawranum	-	-	AY164636	KU245032
Polystichum weimingii	KU253818	KU244821	KU244909	KU244996
Polystichum xiphophyllum	KU244701	KU244765	KU244855	KU244940
Polystichum yaanense	KU244762	KU244849	KU244936	KU245025
Polystichum yaeyamense	AB575225	AB575840	-	-
Polystichum yuanum	KU244737	KU244819	KU244907	KU244994
Polystichum yunnanense	-	-	KX768109	-

Polystichum cavernicola	-	-	JF713056	-
Polystichum minutissimum	-	-	JF827028	-
Polystichum fengshanense	-	-	JF827030	-
Polystichum speluncicola	-	-	-	GQ244334
Polystichum cavernicola	-	-	-	JF713056
Polystichum fengshanense	-	-	-	JF827029
Polystichum minutissimum	-	-	-	JF827028
Arachniodes denticulata	JN189533	JN189425	JN189207	JN189102
Arachniodes standishii	EF540722	AB575713	EF540709	EF540700
Cyrtogonellum inaequalis	AY694812	-	-	AY736351
Cyrtogonellum xichouense	DQ054515	-	DQ202441	EU106595
Cyrtomidictyum faberi	EF463124	-	EF540710	EF540697
Cyrtomium caryotideum	KU244741	KU244825	KU244913	KU245000
Cyrtomium grossum	AY694805	-	-	AY736341
Cyrtomium hemionitis	AY694802	-	-	AY736338
Cyrtomium macrophyllum	KU244740	KU244824	KU244912	KU244999
Cyrtomium omeiense	KU244742	KU244826	KU244914	KU245001
Cyrtomium urophyllum	AY545492	-	DQ202448	AY736333
Dryopteris bissetiana	JN189587	JN189479	JN189261	AY268796
Dryopteris chinensis	JX535859	JN189433	JN189215	JN189110
Dryopteris scottii	DQ508775	JN189444	JN189226	DQ514498
Phanerophlebia nobilis	JN189569	JN189459	JN189242	-
Phanerophlebia umbonata	AF537233	-	-	DQ514513

407 ***Hymenasplenium* (Aspleniaceae)**

Species	*atpB*	*rbcL*	*trnL-F*	*rps4-trnS*
Hymenasplenium adiantifrons	-	-	MH065560	MH065323
Hymenasplenium apogamum	MH065518	MH065437	MH065604	MH065376
Hymenasplenium cardiophyllum	MH065454	MH065387	MH065534	MH065306
Hymenasplenium cheilosorum	MH065492	MH065421	MH065575	MH065362
Hymenasplenium delitescens	MH065522	MH065443	MH065609	MH065338
Hymenasplenium excisum	MH065450	MH065383	MH065531	MH065344
Hymenasplenium filipes	MH065481	MH065409	MH065557	MH065320
Hymenasplenium hastifolium	MH065469	MH065398	MH065547	MH065313
Hymenasplenium hoffmannii	MH065521	MH065442	MH065608	MH065337
Hymenasplenium hondoense	-	AB014705	-	-
Hymenasplenium laetum	KM114105	AB014707	-	-
Hymenasplenium latidens	-	-	MH065566	-
Hymenasplenium murakami-hatanakae	EF452020	EF452140	-	-
Hymenasplenium obliquissimum	MH065485	MH065413	MH065569	MH065356
Hymenasplenium obscurum	MH065447	MH065380	MH065530	MH065342
Hymenasplenium pseudobscurum	-	-	MH065565	-
Hymenasplenium retusulum	MH065446	MH065379	MH065529	MH065304
Hymenasplenium riparium	-	AB014708	-	-
Hymenasplenium subnormale	MH065527	-	MH065613	-
Hymenasplenium triquetrum	MH065523	MH065444	MH065610	MH065339
Hymenasplenium unilaterale	-	AF240652	AF525232	-
Hymenasplenium wildii	-	KP774927	KP851919	KP851877
Hymenasplenium wuliangshanense	MH065478	MH065407	MH065554	MH065318
Hymenasplenium quangnamense	-	LC427111	-	-
Hymenasplenium wangpeishanii	MK826311	MK826814	MK827841	-
Asplenium aegaeum	-	AY300103	AY300050	AY549774
Asplenium cuspidatum	-	AY300111	AY300058	AY549760
Asplenium dielfalcatum	-	AY549738	AY549841	AY549787
Asplenium flabellifolium	-	AY300115	AY300062	AY549779
Asplenium normale	-	KP774926	KP851904	KP835419
Asplenium polyodon	-	KP774900	KP835397	KP835433
Asplenium trichomanes	-	AY549743	AY549846	AY549792
Asplenium varians	-	AY300147	AY300094	AY549802
Asplenium wrightii	-	AY549730	AY549833	AY549766
Asplenium yunnanense	-	AY300149	AY300096	AY549803
Hemidictyum marginatum	-	KT329397	KT329423	KT329410
Gymnocarpium oyamense	-	AB574995	AF515248	JN168095
Gymnocarpium jessoense	-	AB574994	-	JN168094
Cystopteris reevesiana	-	EF452149	-	-

Species	ITS	*matK*	*ndhF*	*rbcL*	*rpl16*	*rps16*	*atpF-atpH*	*atpB-rbcL*	*rpl20-rps12*	*rpl32-trnL*	*trnH-psbA*	*trnL-F*	*trnS-trnG*
Anagallis acuminata	MG877747	MG950415	-	MG950521	-	MG951049	MG950730	MG950628	MG950837	MG950942	MG951155	MG951263	MG951370
Anagallis alternifolia	MG877748	MG950416	-	MG950522	-	MG951050	MG950731	MG950629	MG950838	MG950943	MG951156	MG951264	MG951371
Anagallis angustiloba	AY855134	-	AY856419	-	EU150393	EU150413	-	-	-	-	-	AY855110	-
Anagallis arvensis	MG877749	MG950417	-	MG950523	-	MG951051	MG950732	MG950630	MG950839	MG950944	MG951157	MG951265	MG951372
Anagallis crassifolia	AY855136	-	AY856421	-	EU150401	EU150421	-	-	-	-	-	AY855106	-
Anagallis djalonis	AY855137	-	AY856422	-	EU150390	EU150410	-	-	-	-	-	AY855107	-
Anagallis filiformis	MG877750	-	-	-	-	-	MG950733	-	-	-	-	MG951266	-
Anagallis hexamera	MG877751	-	-	-	-	-	MG950734	-	-	-	MG951158	MG951267	-
Anagallis huttonii	AY855140	-	AY856425	-	EU150392	EU150412	-	-	-	-	-	AY855117	-
Anagallis kingaensis	AY855141	-	AY856426	-	EU150395	EU150415	-	-	-	-	-	AY855111	-
Anagallis kochii	AY855142	-	AY856427	-	EU150389	EU150409	-	-	-	-	-	AY855108	-
Anagallis minima	AY855143	-	AY856428	-	EU150400	EU150420	-	-	-	-	-	AY855120	-
Anagallis monelli	MG877752	MG950418	-	MG950524	-	MG951052	MG950735	MG950631	MG950840	MG950945	MG951159	MG951268	MG951373
Anagallis nummulariifolia	AY855145	-	AY856429	-	EU150391	EU150411	-	-	-	-	-	AY855105	-
Anagallis oligantha	AY855146	-	AY856430	-	EU150396	EU150416	-	-	-	-	-	AY855114	-
Anagallis pumila	MG877753	MG950419	-	MG950525	-	MG951053	MG950736	MG950632	MG950841	MG950946	MG951160	MG951269	MG951374
Anagallis rhodesiaca	AY855148	-	AY856432	-	EU150386	EU150406	-	-	-	-	-	AY855104	-
Anagallis rubricaulis	EU150424	-	EU169017	-	EU150387	EU150407	-	-	-	-	-	EU150425	-
Anagallis serpens	AY855149	-	AY856433	-	EU150397	EU150417	-	-	-	-	-	AY855113	-
Anagallis tenella	AY855150	-	AY856434	-	EU150402	EU150422	-	-	-	-	-	AY855116	-
Anagallis tenuicaulis	AY855151	-	AY856435	-	EU150388	EU150408	-	-	-	-	-	AY855103	-
Asterolinon adoënse	MG877755	MG950421	-	MG950527	-	MG951055	MG950738	MG950634	-	MG950948	MG951162	MG951271	MG951376
Asterolinon linum-stellatum	MG877756	MG950422	-	MG950528	-	MG951056	MG950739	MG950635	MG950843	MG950949	MG951163	MG951272	MG951377
Glaux maritima	MG877758	MG950424	-	MG950530	-	MG951058	MG950741	MG950637	MG950845	MG950951	MG951165	MG951274	MG951379
Lysimachia alfredii	MG877759	MG950425	-	MG950531	-	MG951059	MG950742	MG950638	MG950846	MG950952	MG951166	MG951275	MG951380
Lysimachia alpestris	MG877760	MG950426	-	MG950532	-	MG951060	MG950743	MG950639	MG950847	MG950953	MG951167	MG951276	MG951381
Lysimachia andina	MG877761	MG950427	-	MG950533	-	MG951061	MG950744	MG950640	MG950848	MG950954	MG951168	MG951277	MG951382
Lysimachia auriculata	MG877762	MG950428	-	MG950534	-	MG951062	MG950745	MG950641	MG950849	MG950955	MG951169	MG951278	MG951383
Lysimachia barystachys	MG877763	MG950429	-	MG950535	-	MG951063	MG950746	MG950642	MG950850	MG950956	MG951170	MG951279	MG951384
Lysimachia baviensis	MG877790	MG950456	-	MG950562	-	MG951090	MG950773	MG950668	MG950877	MG950983	MG951197	MG951306	MG951410
Lysimachia candida	MG877764	MG950430	-	MG950536	-	MG951064	MG950747	MG950643	MG950851	MG950957	MG951171	MG951280	MG951385
Lysimachia capillipes	MG877765	MG950431	-	MG950537	-	MG951065	MG950748	MG950644	MG950852	MG950958	MG951172	MG951281	MG951386
Lysimachia chapaensis	MG877766	MG950432	-	MG950538	-	MG951066	MG950749	MG950645	MG950853	MG950959	MG951173	MG951282	MG951387
Lysimachia chekiangensis	MG877767	MG950433	-	MG950539	-	MG951067	MG950750	MG950646	MG950854	MG950960	MG951174	MG951283	MG951388
Lysimachia chenopodioides	MG877768	MG950434	-	MG950540	-	MG951068	MG950751	MG950647	MG950855	MG950961	MG951175	MG951284	MG951389
Lysimachia chikungensis	MG877769	MG950435	-	MG950541	-	MG951069	MG950752	MG950648	MG950856	MG950962	MG951176	MG951285	MG951390
Lysimachia christinae	MG877770	MG950436	-	MG950542	-	MG951070	MG950753	MG950649	MG950857	MG950963	MG951177	MG951286	MG951391
Lysimachia ciliata	MG877771	MG950437	-	MG950543	-	MG951071	MG950754	MG950650	MG950858	MG950964	MG951178	MG951287	MG951392
Lysimachia circaeoides	MG877772	MG950438	-	MG950544	-	MG951072	MG950755	MG950651	MG950859	MG950965	MG951179	MG951288	MG951393
Lysimachia clethroides	MG877773	MG950439	-	MG950545	-	MG951073	MG950756	MG950652	MG950860	MG950966	MG951180	MG951289	MG951394
Lysimachia confertifolia	MG877774	MG950440	-	MG950546	-	MG951074	MG950757	-	MG950861	MG950967	MG951181	MG951290	-
Lysimachia congestiflora	MG877775	MG950441	-	MG950547	-	MG951075	MG950758	MG950653	MG950862	MG950968	MG951182	MG951291	MG951395
Lysimachia crispidens	MG877776	MG950442	-	MG950548	-	MG951076	MG950759	MG950654	MG950863	MG950969	MG951183	MG951292	MG951396

Lysimachia daphnoides	GQ258035	-	-	-	GQ257893	GQ257940	-	-	GQ257916	-	GQ257963	-	GQ257987
Lysimachia davurica	MG877777	MG950443	-	MG950549	-	MG951077	MG950760	MG950655	MG950864	MG950970	MG951184	MG951293	MG951397
Lysimachia decurrens	MG877778	MG950444	-	MG950550	-	MG951078	MG950761	MG950656	MG950865	MG950971	MG951185	MG951294	MG951398
Lysimachia deltoidea	MG877779	MG950445	-	MG950551	-	MG951079	MG950762	MG950657	MG950866	MG950972	MG951186	MG951295	MG951399
Lysimachia dextrosiflora	MG877780	MG950446	-	MG950552	-	MG951080	MG950763	MG950658	MG950867	MG950973	MG951187	MG951296	MG951400
Lysimachia drymarifolia	MG877781	MG950447	-	MG950553	-	MG951081	MG950764	MG950659	MG950868	MG950974	MG951188	MG951297	MG951401
Lysimachia englerii	MG877782	MG950448	-	MG950554	-	MG951082	MG950765	MG950660	MG950869	MG950975	MG951189	MG951298	MG951402
Lysimachia ephemerum	MG877783	MG950449	-	MG950555	-	MG951083	MG950766	MG950661	MG950870	MG950976	MG951190	MG951299	MG951403
Lysimachia erosipetala	MG877784	MG950450	-	MG950556	-	MG951084	MG950767	MG950662	MG950871	MG950977	MG951191	MG951300	MG951404
Lysimachia fanii	MK516276	-	-	-	-	-	MK516269	-	-	MK516271	-	MK516273	MK516274
Lysimachia filifolia	MG877785	MG950451	-	MG950557	-	MG951085	MG950768	MG950663	MG950872	MG950978	MG951192	MG951301	MG951405
Lysimachia fistulosa	MG877786	MG950452	-	MG950558	-	MG951086	MG950769	MG950664	MG950873	MG950979	MG951193	MG951302	MG951406
Lysimachia foenum-graecum	MG877787	MG950453	-	MG950559	-	MG951087	MG950770	MG950665	MG950874	MG950980	MG951194	MG951303	MG951407
Lysimachia fordiana	MG877788	MG950454	-	MG950560	-	MG951088	MG950771	MG950666	MG950875	MG950981	MG951195	MG951304	MG951408
Lysimachia fortunei	MG877789	MG950455	-	MG950561	-	MG951089	MG950772	MG950667	MG950876	MG950982	MG951196	MG951305	MG951409
Lysimachia glanduliflora	MG877791	MG950457	-	MG950563	-	MG951091	MG950774	MG950669	MG950878	MG950984	MG951198	MG951307	MG951411
Lysimachia glutinosa	MG877792	MG950458	-	MG950564	-	MG951092	MG950775	MG950670	MG950879	MG950985	MG951199	MG951308	MG951412
Lysimachia grammica	MG877793	MG950459	-	MG950565	-	MG951093	MG950776	MG950671	MG950880	MG950986	MG951200	MG951309	MG951413
Lysimachia hemsleyana	MG877794	MG950460	-	MG950566	-	MG951094	MG950777	MG950672	MG950881	MG950987	MG951201	-	-
Lysimachia hemsleyi	MG877795	MG950461	-	MG950567	-	MG951095	MG950778	MG950673	MG950882	MG950988	MG951202	MG951310	MG951414
Lysimachia heterobotrys	MG877796	MG950462	-	MG950568	-	MG951096	MG950779	MG950674	MG950883	MG950989	MG951203	MG951311	MG951415
Lysimachia heterogenea	MG877797	MG950463	-	MG950569	-	MG951097	MG950780	MG950675	MG950884	MG950990	MG951204	MG951312	MG951416
Lysimachia hillebrandii	MG877798	MG950464	-	MG950570	-	MG951098	MG950781	-	MG950885	MG950991	MG951205	MG951313	MG951417
Lysimachia hybrida	MG877799	MG950465	-	MG950571	-	MG951099	MG950782	MG950676	MG950886	MG950992	MG951206	MG951314	MG951418
Lysimachia iniki	MG877800	MG950466	-	MG950572	-	MG951100	MG950783	MG950677	MG950887	MG950993	MG951207	MG951315	MG951419
Lysimachia insignis	MG877801	MG950467	-	MG950573	-	MG951101	MG950784	MG950678	MG950888	MG950994	MG951208	MG951316	MG951420
Lysimachia japonica	MG877802	MG950468	-	MG950574	-	MG951102	MG950785	MG950679	MG950889	MG950995	MG951209	MG951317	MG951421
Lysimachia kalalauensis	GQ258044	-	-	-	GQ257902	GQ257950	-	-	GQ257925	-	GQ257972	-	GQ257998
Lysimachia klattiana	MG877803	MG950469	-	MG950575	-	MG951103	MG950786	MG950680	MG950890	MG950996	MG951210	MG951318	MG951422
Lysimachia lanceolata	MG877804	MG950470	-	MG950576	-	MG951104	MG950787	MG950681	MG950891	MG950997	MG951211	MG951319	MG951423
Lysimachia lancifolia	MG877805	MG950471	-	MG950577	-	MG951105	MG950788	MG950682	MG950892	MG950998	MG951212	MG951320	MG951424
Lysimachia laxa	MG877806	MG950472	-	MG950578	-	MG951106	MG950789	MG950683	MG950893	MG950999	MG951213	MG951321	MG951425
Lysimachia lichiangensis	MG877807	MG950473	-	MG950579	-	MG951107	MG950790	MG950684	MG950894	MG951000	MG951214	MG951322	MG951426
Lysimachia lobelioidies	MG877808	MG950474	-	MG950580	-	MG951108	MG950791	MG950685	MG950895	MG951001	MG951215	MG951323	MG951427
Lysimachia longipes	MG877809	MG950475	-	MG950581	-	MG951109	MG950792	MG950686	MG950896	MG951002	MG951216	MG951324	MG951428
Lysimachia mauritiana	MG877810	MG950476	-	MG950582	-	MG951110	MG950793	MG950687	MG950897	MG951003	MG951217	MG951325	MG951429
Lysimachia maxima	GQ258047	-	-	-	GQ257906	GQ257953	-	-	GQ257929	-	GQ257976	-	GQ258002
Lysimachia melampyroides	MG877811	MG950477	-	MG950583	-	MG951111	MG950794	MG950688	MG950898	MG951004	MG951218	MG951326	MG951430
Lysimachia menoricensis	MG877812	MG950478	-	MG950584	-	MG951112	MG950795	MG950689	MG950899	MG951005	MG951219	MG951327	MG951431
Lysimachia mexicana	-	-	-	-	-	-	-	-	-	-	MG951220	-	-
Lysimachia microcarpa	MG877813	MG950479	-	MG950585	-	MG951113	MG950796	MG950690	MG950900	MG951006	MG951221	MG951328	MG951432
Lysimachia millietii	MG877814	MG950480	-	MG950586	-	MG951114	MG950797	MG950691	MG950901	MG951007	MG951222	MG951329	MG951433
Lysimachia nanchuanensis	MG877815	MG950481	-	MG950587	-	MG951115	MG950798	MG950692	MG950902	MG951008	MG951223	MG951330	MG951434
Lysimachia nemorum	MG877816	MG950482	-	MG950588	-	MG951116	MG950799	MG950693	MG950903	MG951009	MG951224	MG951331	MG951435
Lysimachia nummularia	MG877817	MG950483	-	MG950589	-	MG951117	MG950800	MG950694	MG950904	MG951010	MG951225	MG951332	MG951436
Lysimachia nutantiflora	MG877818	MG950484	-	MG950590	-	MG951118	MG950801	MG950695	MG950905	MG951011	MG951226	MG951333	MG951437

Lysimachia omeiensis	MG877819	MG950485	-	MG950591	-	MG951119	MG950802	MG950696	MG950906	MG951012	MG951227	MG951334	MG951438
Lysimachia ovoidea	-	-	-	-	GQ257907	GQ257954	-	-	GQ257930	-	GQ257977	-	GQ258003
Lysimachia paridiformis	MG877820	MG950486	-	MG950592	-	MG951120	MG950803	MG950697	MG950907	MG951013	MG951228	MG951335	MG951439
Lysimachia patungensis	MG877821	MG950487	-	MG950593	-	MG951121	MG950804	MG950698	MG950908	MG951014	MG951229	MG951336	MG951440
Lysimachia peduncularis	MG877822	MG950488	-	MG950594	-	MG951122	MG950805	MG950699	MG950909	MG951015	MG951230	MG951337	-
Lysimachia pendens	GQ258048	-	-	-	-	-	-	-	GQ257931	-	-	-	GQ258004
Lysimachia pentapetala	MG877823	MG950489	-	MG950595	-	MG951123	MG950806	MG950700	MG950910	MG951016	MG951231	MG951338	MG951441
Lysimachia perfoliata	MG877824	MG950490	-	MG950596	-	MG951124	MG950807	MG950701	MG950911	MG951017	MG951232	MG951339	MG951442
Lysimachia petelotii	MG877825	MG950491	-	MG950597	-	MG951125	MG950808	MG950702	MG950912	MG951018	MG951233	MG951340	MG951443
Lysimachia phyllocephala	MG877826	MG950492	-	MG950598	-	MG951126	MG950809	MG950703	MG950913	MG951019	MG951234	MG951341	MG951444
Lysimachia pittosporoides	MG877827	MG950493	-	MG950599	-	MG951127	MG950810	MG950704	MG950914	MG951020	MG951235	MG951342	MG951445
Lysimachia pseudohenryi	MG877828	MG950494	-	MG950600	-	MG951128	MG950811	MG950705	MG950915	MG951021	MG951236	MG951343	MG951446
Lysimachia pumila	MG877829	MG950495	-	MG950601	-	MG951129	MG950812	MG950706	MG950916	MG951022	MG951237	MG951344	MG951447
Lysimachia punctata	MG877830	MG950496	-	MG950602	-	MG951130	MG950813	MG950707	MG950917	MG951023	MG951238	MG951345	MG951448
Lysimachia punctatilimba	MG877831	MG950497	-	MG950603	-	MG951131	MG950814	MG950708	MG950918	MG951024	MG951239	MG951346	MG951449
Lysimachia quadriflora	MG877832	MG950498	-	MG950604	-	MG951132	-	-	MG950919	MG951025	-	MG951347	-
Lysimachia quadrifolia	MG877833	MG950499	-	MG950605	-	MG951133	MG950815	MG950709	MG950920	MG951026	MG951240	MG951348	MG951450
Lysimachia radicans	MG877834	-	-	MG950606	-	-	-	-	-	MG951027	MG951241	-	-
Lysimachia remyi	MG877835	MG950500	-	MG950607	-	MG951134	MG950816	MG950710	MG950921	MG951028	MG951242	MG951349	MG951451
Lysimachia rubiginosa	MG877836	MG950501	-	MG950608	-	MG951135	MG950817	MG950711	MG950922	MG951029	MG951243	MG951350	MG951452
Lysimachia ruhmeriana	MG877837	MG950502	-	MG950609	-	MG951136	MG950818	MG950712	MG950923	MG951030	MG951244	MG951351	MG951453
Lysimachia scopulensis	GQ258054	-	-	-	GQ257913	GQ257960	-	-	GQ257937	-	GQ257983	-	GQ258010
Lysimachia serpyllifolia	MG877838	MG950503	-	MG950610	-	MG951137	MG950819	MG950713	MG950924	MG951031	MG951245	MG951352	MG951454
Lysimachia shimianensis	MG877839	MG950504	-	MG950611	-	MG951138	MG950820	MG950714	MG950925	MG951032	MG951246	MG951353	MG951455
Lysimachia silvestrii	MG877840	MG950505	-	MG950612	-	MG951139	MG950821	MG950715	MG950926	MG951033	MG951247	MG951354	MG951456
Lysimachia stenosepala	MG877841	MG950506	-	MG950613	-	MG951140	MG950822	MG950716	MG950927	MG951034	MG951248	MG951355	MG951457
Lysimachia taliensis	MG877842	MG950507	-	MG950614	-	MG951141	MG950823	MG950717	MG950928	MG951035	MG951249	MG951356	MG951458
Lysimachia terrestris	MG877843	MG950508	-	MG950615	-	MG951142	MG950824	MG950718	MG950929	MG951036	MG951250	MG951357	MG951459
Lysimachia thyrsiflora	MG877844	MG950509	-	MG950616	-	MG951143	MG950825	MG950719	MG950930	MG951037	MG951251	MG951358	MG951460
Lysimachia trichopoda	MG877845	MG950510	-	MG950617	-	MG951144	MG950826	MG950720	MG950931	MG951038	MG951252	MG951359	MG951461
Lysimachia verbascifolia	MG877846	MG950511	-	MG950618	-	MG951145	MG950827	MG950721	MG950932	MG951039	MG951253	MG951360	MG951462
Lysimachia vittiformis	MG877847	MG950512	-	MG950619	-	MG951146	MG950828	MG950722	MG950933	MG951040	MG951254	MG951361	MG951463
Lysimachia vulgaris	MG877848	MG950513	-	MG950620	-	MG951147	MG950829	-	MG950934	MG951041	MG951255	MG951362	MG951464
Lysimachia waianaeensis	GQ258056	-	-	-	GQ257915	GQ257962	-	-	GQ257939	-	GQ257986	-	GQ258012
Pelletiera verna	MG877851	MG950516	-	MG950623	-	MG951150	MG950832	MG950725	MG950937	MG951044	MG951258	MG951365	MG951467
Pelletiera wildpretii	MG877852	MG950517	-	MG950624	-	MG951151	MG950833	MG950726	MG950938	MG951045	MG951259	MG951366	MG951468
Trientalis borealis	MG877854	MG950519	-	MG950626	-	MG951153	MG950835	MG950728	MG950940	MG951047	MG951261	MG951368	MG951470
Trientalis europaea	MG877855	MG950520	-	MG950627	-	MG951154	MG950836	MG950729	MG950941	MG951048	MG951262	MG951369	MG951471
Myrsine faberi	MG877849	MG950514	-	MG950621	-	MG951148	MG950830	MG950723	MG950935	MG951042	MG951256	MG951363	MG951465
Ra neriifo	MG877853	MG950518	-	MG950625	-	MG951152	MG950834	MG950727	MG950939	MG951046	MG951260	MG951367	MG951469
Myrsine semiserrata	MG877850	MG950515	-	MG950622	-	MG951149	MG950831	MG950724	MG950936	MG951043	MG951257	MG951364	MG951466
Ardisia verbascifolia	MG877754	MG950420	-	MG950526	-	MG951054	MG950737	MG950633	MG950842	MG950947	MG951161	MG951270	MG951375
Embelia ribes	MG877757	MG950423	-	MG950529	-	MG951057	MG950740	MG950636	MG950844	MG950950	MG951164	MG951273	MG951378

409 ***Mitreola* (Loganiaceae)**

Species	ITS	ETS	*matk*	*rbcL*	*petB-petD*	*psbA-trnH*
Mitreola petiolata	MK524298	JX029177	JQ588153	JQ592401	JX046123	-
Mitreola petiolatoides	MF100716	-	-	MF100724	-	MF100721
Mitreola pedicellata	MF100718	-	-	MF100726	-	MF100719
Mitreola pingtaoi	MF100717	-	-	MF100725	-	MF100722
Mitreola minima	-	JX029168	-	-	JX046121	-
Mitreola sessilifolia	-	JX029176	KJ772948	MH549923	-	-
Mitreola yangchunensis	-	-	NC050923	NC050923	NC050923	NC050923
Geniostoma antherotrichum	-	JX029189	-	-	JX046135	-
Geniostoma rupestre	DQ499096	JX029192	KU564579	KU564803	JX046133	-
Logania serpyllifolia	-	JX029170	-	-	JX046139	-
Logania vaginalis	-	-	KJ815653	Z68826	KJ511473	-
Logania albiflora	DQ358879	JX029172	AJ388273	-	KJ511468	-

Species	ITS	7FR	13FR	97FR	117FR	155FR	166FR	248FR	383FR	*trnL-F*	*rpl32-trnL*	*atpB-rbcL*	*rpoB-trnC*	*trnC-petN*	*ndhA*-intron	*ndhH-rps15-ycf1*	*ycf1-1*	*ycf1-2*
Primulina alutacea	KY394847	KY395245	KY395440	KY395639	KY395839	KY396040	KY395048	-	-	KY393441	KY393642	KY393843	KY394044	KY394245	KY394446	KY394647	-	-
Primulina argentea	KY394848	KY395246	KY395441	KY395640	KY395840	KY396041	KY395049	-	-	KY393442	KY393643	KY393844	KY394045	KY394246	KY394447	KY394648	-	-
Primulina baishouensis	KY394849	KY395247	KY395442	KY395641	KY395841	KY396042	KY395050	-	-	KY393443	KY393644	KY393845	KY394046	KY394247	KY394448	KY394649	-	-
Primulina balansae	MK747141	-	-	MK746845	MK764483	MK746597	MK746937	MK746387	MK746669	MK746274	MK746710	MK779217	MK775054	MK746815	MK746972	MK747238	MK747067	MK765984
Primulina beiliuensis	KY394850	KY395248	KY395443	KY395642	KY395842	KY396043	KY395051	-	-	KY393444	KY393645	KY393846	KY394047	KY394248	KY394449	KY394650	-	-
Primulina beiliuensis var. *fimbribracteata*	KY394851	KY395249	KY395444	KY395643	KY395843	KY396044	KY395052	-	-	KY393445	KY393646	KY393847	KY394048	KY394249	KY394450	KY394651	-	-
Primulina bicolor	KY394852	KY395250	KY395445	KY395644	KY395844	KY396045	KY395053	-	-	KY393446	KY393647	KY393848	KY394049	KY394250	KY394451	KY394652	-	-
Primulina bipinnatifida	KY394853	KY395251	KY395446	KY395645	KY395845	KY396046	KY395054	-	-	KY393447	KY393648	KY393849	KY394050	KY394251	KY394452	KY394653	-	-
Primulina bobaiensis	KY394854	KY395252	KY395447	KY395646	KY395846	KY396047	KY395055	-	-	KY393448	KY393649	KY393850	KY394051	KY394252	KY394453	KY394654	-	-
Primulina bogneriana	MK747166	-	-	MK746846	MK764460	MK746576	MK746916	MK746371	MK746642	MK746225	MK746707	MK779218	MK775055	MK746831	MK746979	MK747237	MK747038	MK765932
Primulina brachytricha	KY394856	KY395254	KY395449	KY395648	KY395848	KY396049	KY395057	-	-	KY393450	KY393651	KY393852	KY394053	KY394254	KY394455	KY394656	-	-
Primulina brassicoides	MK747165	-	-	MK746847	MK764466	MK746578	MK746915	MK746373	MK746638	MK746226	MK746706	MK779219	MK775056	MK746833	MK746978	MK747236	MK747036	MK765931
Primulina brunnea	MK747142	-	-	MK746848	MK764482	MK746596	MK746938	MK746386	MK746651	MK746275	MK746712	MK779220	MK775057	MK746814	MK746981	MK747234	MK747068	MK765985
Primulina bullata	KY394857	KY395255	KY395450	KY395649	KY395849	KY396050	KY395058	-	-	KY393451	KY393652	KY393853	KY394054	KY394255	KY394456	KY394657	-	-
Primulina cangwuensis	MK747103	-	-	MK746849	MK764471	MK746582	MK746935	MK746384	MK746696	MK746289	MK746713	MK779221	MK775058	MK746773	MK746982	MK747233	MK747078	MK765974
Primulina cardaminifolia	MK747131	-	-	MK746850	MK764485	MK746608	MK746946	MK746396	MK746664	MK746255	MK746714	MK779222	MK775059	MK746806	MK746983	MK747232	MK747092	MK765951
Primulina carinata	KY394858	KY395256	KY395451	KY395650	KY395850	KY396051	KY395059	-	-	KY393452	KY393653	KY393854	KY394055	KY394256	KY394457	KY394658	-	-
Primulina carnosifolia	MK747124	-	-	MK746851	MK764474	MK746588	MK746953	MK746419	MK746693	MK746268	MK746715	MK779223	MK775060	MK746783	MK746984	MK747231	MK747086	MK765976
Primulina chizhouensis	KY394860	KY395258	KY395453	KY395652	KY395852	KY396053	KY395061	-	-	KY393454	KY393655	KY393856	KY394057	KY394258	KY394459	KY394660	-	-
Primulina colaniae	MK747167	-	-	MK746852	MK764461	MK746577	-	MK746374	MK746641	MK746224	MK746708	MK779224	MK775061	MK746832	MK746980	-	MK747037	MK765933
Primulina confertiflora	MK747101	-	-	MK746853	MK764503	MK746617	MK746954	MK746410	MK746667	MK746253	MK746716	MK779225	MK775062	MK746802	MK746985	-	MK747057	MK765966
Primulina cordata	KY394862	KY395260	KY395455	KY395654	KY395854	KY396055	KY395063	-	-	KY393456	KY393657	KY393858	KY394059	KY394260	KY394461	KY394662	-	-
Primulina cordifolia	KY394863	KY395261	KY395456	KY395655	KY395855	KY396056	KY395064	-	-	KY393457	KY393658	KY393859	KY394060	KY394261	KY394462	KY394663	-	-
Primulina cordistigma	MK747118	-	-	MK746854	MK764469	MK746581	MK746931	MK746424	MK746690	MK746251	MK746718	MK779226	MK775063	MK746801	MK746986	-	MK747077	MK765981
Primulina crassirhizoma	KY394864	KY395262	KY395457	KY395656	KY395856	KY396057	KY395065	-	-	KY393458	KY393659	KY393860	KY394061	KY394262	KY394463	KY394664	-	-
Primulina crassituba	MK747147	-	-	MK746855	-	MK746580	-	MK746375	MK746644	MK746230	MK746704	MK779227	-	MK746830	MK746976	MK747227	MK747033	MK765935
Primulina curvituba	MK747137	-	-	MK746856	MK764512	MK746622	-	MK746391	MK746676	MK746242	MK746734	MK779228	MK775064	MK746813	-	MK747226	MK747066	MK765963
Primulina danxiaensis	KY394867	KY395265	KY395459	KY395657	KY395859	KY396058	KY395066	-	-	KY393460	KY393660	KY393861	KY394064	KY394264	KY394466	KY394665	-	-
Primulina debaoensis	MK747130	KY395266	KY395460	MK746857	MK764459	KY396061	MK746911	MK746369	MK746645	MK746228	MK746711	KY393864	KY394065	KY394266	KY394467	KY394668	MK747032	MK765928
Primulina depressa	KY394869	KY395267	KY395461	KY395661	KY395861	KY396062	KY395069	-	-	KY393463	KY393664	KY393865	KY394066	KY394267	KY394468	KY394669	-	-
Primulina diffusa	KY394871	KY395269	KY395463	KY395663	KY395863	KY396064	KY395071	-	-	KY393465	KY393666	KY393867	KY394068	KY394269	KY394470	KY394671	-	-
Primulina dongguanica	KY394872	KY395270	KY395464	KY395664	KY395864	KY396065	KY395072	-	-	KY393466	KY393667	KY393868	KY394069	KY394270	KY394471	KY394672	-	-
Primulina drakei	MK747164	KY395271	KY395465	MK746858	MK764465	MK746575	MK746914	MK746366	MK746646	KY393467	KY393668	KY393869	KY394070	MK746829	MK746973	KY394673	MK747034	MK765934
Primulina dryas	KY394875	KY395273	KY395467	KY395667	KY395867	KY396068	KY395075	-	-	KY393469	KY393670	KY393871	KY394072	KY394273	KY394474	KY394675	-	-
Primulina duanensis	KY394877	KY395275	KY395469	KY395669	KY395869	KY396070	KY395077	-	-	KY393471	KY393672	KY393873	KY394074	KY394275	KY394476	KY394677	-	-
Primulina eburnea east	KY394878	KY395276	KY395470	KY395670	KY395870	KY396071	KY395078	-	-	KY393472	KY393673	KY393874	KY394075	KY394276	KY394477	KY394678	-	-
Primulina eburnea west	KY394879	KY395277	KY395471	KY395671	KY395871	KY396072	KY395079	-	-	KY393474	KY393674	KY393875	KY394076	KY394277	KY394478	KY394679	-	-
Primulina fengkaiensis	KY394881	KY395279	KY395473	KY395673	KY395873	KY396074	KY395081	-	-	KY393475	KY393676	KY393877	KY394078	KY394279	KY394480	KY394681	-	-
Primulina fengshanensis	KY394882	KY395280	KY395474	KY395674	KY395874	KY396075	KY395082	-	-	KY393476	KY393677	KY393878	KY394079	KY394280	KY394481	KY394682	-	-
Primulina fimbrisepala	KY394883	KY395281	KY395475	MK746859	KY395875	KY396076	MK746908	MK746361	MK746637	KY393477	KY393678	KY393879	MK775067	MK746789	MK746965	MK747222	MK747044	MK765953
Primulina fimbrisepala var. *mollis*	KY394884	KY395282	KY395476	KY395676	KY395876	KY396077	KY395084	-	-	KY393478	KY393679	KY393880	KY394081	KY394282	KY394483	KY394684	-	-
Primulina flavimaculata	KY394885	KY395283	KY395477	KY395677	KY395877	KY396078	KY395085	-	-	KY393479	KY393680	KY393881	KY394082	KY394283	KY394484	KY394685	-	-
Primulina floribunda	KY394886	KY395284	KY395478	KY395678	KY395878	KY396079	KY395086	-	-	KY393480	KY393681	KY393882	KY394083	KY394284	KY394485	KY394686	-	-

Primulina fordii	MK747129	-	-	MK746860	MK764473	MK746589	MK746928	MK746379	MK746691	MK746288	MK746727	MK779232	MK775068	MK746770	MK746989	MK747221	MK747083	MK765979
Primulina fordii var. *dolichotricha*	MK747125	-	-	MK746861	MK764470	MK746592	MK746930	MK746378	MK746688	MK746247	MK746728	MK779233	MK775069	MK746775	MK746990	MK747220	MK747085	MK765980
Primulina gemella	MK747146	-	-	MK746862	MK764495	-	MK746910	MK746393	MK746685	MK746254	MK746729	MK779234	MK775070	MK746784	MK746991	MK747219	MK747040	MK765990
Primulina glabrescens	MK747132	-	-	MK746863	MK764492	MK746598	-	MK746388	MK746672	MK746278	MK746730	MK779235	MK775071	MK746797	MK746992	MK747218	MK747091	MK765949
Primulina glandaceistriata	MK747114	-	-	MK746864	-	MK746587	MK746960	MK746383	MK746657	MK746256	MK746731	MK779236	MK775072	MK746777	MK746993	MK747217	MK747076	MK765977
Primulina glandulosa	KY394887	KY395285	KY395479	KY395679	KY395879	KY396080	KY395087	-	-	KY393481	KY393682	KY393883	KY394084	KY394285	KY394486	KY394687	-	-
Primulina glandulosa var. *yangshuoensis*	KY394888	KY395286	KY395480	KY395680	KY395880	KY396081	KY395088	-	-	KY393482	KY393683	KY393884	KY394085	KY394286	KY394487	KY394688	-	-
Primulina gongchengensis	KY394889	KY395287	KY395481	KY395681	KY395881	KY396082	KY395089	-	-	KY393483	KY393684	KY393885	KY394086	KY394287	KY394488	KY394689	-	-
Primulina grandibracteata	MK747121	-	-	MK746865	MK764484	MK746605	MK746922	MK746415	MK746659	MK746266	MK746732	MK779237	MK775073	MK746778	MK746994	MK747216	MK747096	MK765982
Primulina gueilinensis	KY394967	KY395288	KY395559	KY395758	KY395882	KY396083	KY395090	-	-	KY393561	KY393685	KY393886	KY394087	KY394288	KY394566	KY394690	-	-
Primulina guigangensis	KY394892	-	KY395484	KY395684	KY395884	KY396085	KY395092	-	-	KY393486	KY393687	KY393888	KY394089	KY394290	KY394491	KY394692	-	-
Primulina guihaiensis	KY394893	KY395290	KY395485	KY395685	KY395885	KY396086	KY395093	-	-	KY393487	KY393688	KY393889	KY394090	KY394291	KY394492	KY394693	-	-
Primulina guizhongensis	KY394894	-	KY395486	KY395686	KY395886	KY396087	KY395094	-	-	KY393488	KY393689	KY393890	KY394091	KY394292	KY394493	KY394694	-	-
Primulina halongensis	MK747145	KY395291	KY395487	MK746866	KY395887	MK746628	MK746920	MK746394	MK746686	MK746259	KY393690	MK779238	MK775074	MK746785	MK746995	MK747215	MK747041	MK765991
Primulina hedyotidea	KY394897	KY395293	KY395489	KY395688	KY395889	KY396090	KY395097	-	-	KY393491	KY393692	KY393893	KY394094	KY394295	KY394496	KY394697	-	-
Primulina heterochroa	KY394898	KY395294	KY395490	KY395689	KY395890	KY396091	KY395098	-	-	KY393492	KY393693	KY393894	KY394095	KY394296	KY394497	KY394698	-	-
Primulina heterotricha	KY394899	KY395295	KY395491	KY395690	KY395891	KY396092	KY395099	-	-	KY393493	KY393694	KY393895	KY394096	KY394297	KY394498	KY394699	-	-
Primulina hezhouensis	MK747143	-	-	MK746867	MK764494	MK746601	MK746925	MK746411	MK746658	MK746258	MK746736	MK779239	MK775075	MK746811	MK746996	MK747214	-	MK765952
Primulina hiepii	MK747144	-	-	MK746868	MK764463	MK746574	MK746918	MK746370	MK746640	MK746223	MK746705	MK779240	MK775076	MK746800	MK746971	MK747213	MK747042	MK765930
Primulina hochiensis	KY394900	KY395296	KY395492	KY395691	KY395892	KY396093	KY395100	-	-	KY393494	KY393695	KY393896	KY394097	KY394298	KY394499	KY394700	-	-
Primulina huaijiensis	KY394901	KY395297	KY395493	KY395692	KY395893	KY396094	KY395101	-	-	KY393495	KY393696	KY393897	KY394098	KY394299	KY394500	KY394701	-	-
Primulina huangii	MK747138	-	-	MK746869	MK764467	MK746567	MK746912	MK746367	MK746647	MK746231	MK746703	MK779241	MK775077	MK746818	MK746975	MK747212	MK747035	MK765927
Primulina hunanensis	MK747152	-	-	MK746870	MK764505	MK746611	MK746959	MK746408	MK746656	MK746270	MK746738	MK779242	MK775078	MK746826	MK746998	MK747211	MK747094	MK765960
Primulina jianghuaensis	MK747102	-	-	MK746871	MK764472	MK746583	MK746934	MK746377	MK746648	MK746271	MK746739	MK779243	MK775079	MK746774	MK746999	MK747210	MK747079	MK765975
Primulina jiangyongensis	KY394902	KY395298	KY395494	KY395693	KY395894	KY396095	KY395102	-	-	KY393496	KY393697	KY393898	KY394099	KY394300	KY394501	-	-	-
Primulina jingxiensis	KY394903	KY395299	KY395495	KY395694	KY395895	KY396096	KY395103	-	-	KY393497	KY393698	KY393899	KY394100	KY394301	KY394502	KY394702	-	-
Primulina jiuwanshanica	MK747116	-	-	MK746872	MK764478	MK746585	MK746932	MK746422	MK746694	MK746260	MK746733	MK779244	MK775080	MK746803	MK747000	MK747209	MK747071	MK765969
Primulina juliae	KY394905	KY395302	KY395496	MK746873	KY395898	KY396098	KY395105	MK746399	MK746649	KY393500	KY393701	KY393900	KY394103	MK746795	KY394503	KY394705	MK747059	MK765941
Primulina langshanica	KY394907	KY395303	KY395499	KY395698	KY395899	KY396100	KY395107	-	-	KY393501	KY393702	KY393903	KY394104	KY394305	KY394506	KY394706	-	-
Primulina latinervis	KY394908	KY395304	KY395500	KY395699	KY395900	KY396101	KY395108	-	-	KY393502	KY393703	KY393904	KY394105	KY394306	KY394507	KY394707	-	-
Primulina laxiflora	KY394909	KY395305	KY395501	KY395700	KY395901	KY396102	KY395109	-	-	KY393503	KY393704	KY393905	KY394106	KY394307	KY394508	KY394708	-	-
Primulina lechangensis	KY394910	KY395306	KY395502	KY395701	KY395902	KY396103	KY395110	-	-	KY393504	KY393705	KY393906	KY394107	KY394308	KY394509	KY394709	-	-
Primulina leeii	KY394911	KY395307	KY395503	KY395702	KY395903	KY396104	KY395111	-	-	KY393505	KY393706	KY393907	KY394108	KY394309	KY394510	KY394710	-	-
Primulina leiophylla	KY394912	KY395308	KY395504	KY395703	KY395904	KY396105	KY395112	-	-	KY393506	KY393707	KY393908	KY394109	KY394310	KY394511	KY394711	-	-
Primulina lepingensis	KY394913	KY395309	KY395505	KY395704	KY395905	KY396106	KY395113	-	-	KY393507	KY393708	KY393909	KY394110	KY394311	KY394512	KY394712	-	-
Primulina leprosa	KY394914	KY395310	KY395506	KY395705	KY395906	KY396107	KY395114	-	-	KY393508	KY393709	KY393910	KY394111	KY394312	KY394513	KY394713	-	-
Primulina liboensis	KY394917	KY395311	KY395509	KY395708	KY395909	KY396110	KY395117	-	-	KY393511	KY393712	KY393913	KY394114	KY394315	KY394516	KY394716	-	-
Primulina liguliformis	KY394918	KY395312	KY395510	KY395709	KY395910	KY396111	KY395118	-	-	KY393512	KY393713	KY393914	KY394115	KY394316	KY394517	KY394717	-	-
Primulina lijiangensis	KY394919	KY395313	KY395511	KY395710	KY395911	KY396112	KY395119	-	-	KY393513	KY393714	KY393915	KY394116	KY394317	KY394518	KY394718	-	-
Primulina linearicalyx	KY394920	KY395314	KY395512	KY395711	KY395912	KY396113	KY395120	-	-	KY393514	KY393715	KY393916	KY394117	KY394318	KY394519	KY394719	-	-
Primulina linearifolia	KY394921	KY395315	KY395513	KY395712	KY395913	KY396114	KY395121	-	-	KY393515	KY393716	KY393917	KY394118	KY394319	KY394520	KY394720	-	-
Primulina lingchuanensis	KY394922	KY395316	KY395514	KY395713	KY395914	KY396115	-	-	-	KY393516	KY393717	KY393918	KY394119	KY394320	KY394521	KY394721	-	-
Primulina linglingensis	KY394923	KY395317	KY395515	KY395714	KY395915	KY396116	KY395122	-	-	KY393517	KY393718	KY393919	KY394120	KY394321	KY394522	KY394722	-	-
Primulina linglingensis var. *fragrans*	MK747157	-	-	MK746874	MK764506	-	MK746950	MK746413	MK746670	MK746285	MK746742	MK779246	MK775082	MK746807	MK747003	MK747207	MK747051	MK765943
Primulina liujiangensis	KY394924	KY395318	KY395516	KY395715	KY395916	KY396117	KY395123	-	-	KY393518	KY393719	KY393920	KY394121	KY394322	KY394523	KY394723	-	-

Primulina lobulata	KY394925	KY395319	KY395517	KY395716	KY395917	KY396118	KY395124	-	-	KY393519	KY393720	KY393921	KY394122	KY394323	KY394524	KY394724	-	-
Primulina longgangensis	KY394926	KY395320	KY395518	KY395717	KY395918	KY396119	KY395125	-	-	KY393520	KY393721	KY393922	KY394123	KY394324	KY394525	KY394725	-	-
Primulina longicalyx	KY394927	KY395321	KY395519	KY395718	KY395919	KY396120	KY395126	-	-	KY393521	KY393722	KY393923	KY394124	KY394325	KY394526	KY394726	-	-
Primulina longii	KY394928	KY395322	KY395520	KY395719	KY395920	KY396121	KY395127	-	-	KY393522	KY393723	KY393924	KY394125	KY394326	KY394527	KY394727	-	-
Primulina longzhouensis	MK747139	-	-	MK746876	MK764480	MK746594	MK746940	MK746385	MK746665	MK746262	MK746744	MK779248	MK775084	MK746828	MK747005	MK747205	MK747043	MK765936
Primulina lunglinensis	KY394930	KY395324	KY395522	MK746877	KY395922	KY396123	KY395129	-	-	KY393524	KY393725	KY393926	KY394127	KY394328	KY394529	KY394729	-	-
Primulina lunglinensis var. *amblyosepala*	MK747105	-	-	KY395721	MK764451	MK746570	MK746926	MK746381	MK746695	-	MK746745	MK779249	MK775085	MK746782	MK747006	MK747203	MK747075	MK765973
Primulina lungzhouensis	KY394931	KY395325	KY395523	KY395722	KY395923	KY396124	KY395130	-	-	KY393525	KY393726	KY393927	KY394128	KY394329	KY394530	KY394730	-	-
Primulina luochengensis	KY394932	KY395326	KY395524	KY395723	KY395924	KY396125	KY395131	-	-	KY393526	KY393727	KY393928	KY394129	KY394330	KY394531	KY394731	-	-
Primulina lutea	KY394934	KY395328	KY395526	KY395725	KY395926	KY396127	KY395133	-	-	KY393528	KY393729	KY393930	KY394131	KY394332	KY394533	KY394733	-	-
Primulina lutescens	MK747135	-	-	MK746878	MK764487	MK746607	MK746943	MK746397	MK746673	MK746263	MK746751	MK779250	MK775086	MK746798	MK747012	MK747202	MK747087	MK765989
Primulina lutvittata	KY394935	KY395329	KY395527	KY395726	KY395927	KY396128	KY395134	-	-	KY393529	KY393730	KY393931	KY394132	KY394333	KY394534	KY394734	-	-
Primulina luzhaiensis	KY394936	KY395330	KY395528	KY395727	KY395928	KY396129	KY395135	-	-	KY393530	KY393731	KY393932	KY394133	KY394334	KY394535	KY394735	-	-
Primulina mabaensis	KY394937	KY395331	KY395529	KY395728	KY395929	KY396130	KY395136	-	-	KY393531	KY393732	KY393933	KY394134	KY394335	KY394536	KY394736	-	-
Primulina macrodonta	KY394938	KY395332	KY395530	KY395729	KY395930	KY396131	KY395137	-	-	KY393532	KY393733	KY393934	KY394135	KY394336	KY394537	KY394737	-	-
Primulina macrorhiza	KY394939	KY395333	KY395531	KY395730	KY395931	KY396132	KY395138	-	-	KY393533	KY393734	KY393935	KY394136	KY394337	KY394538	KY394738	-	-
Primulina maculata	MK747126	-	-	MK746879	MK764491	MK746610	-	MK746420	MK746682	MK746243	MK746746	MK779251	MK775087	MK746810	MK747007	MK747200	MK747097	MK765946
Primulina maguanensis	MK747127	-	-	MK746880	-	MK746603	MK746924	-	MK746653	MK746267	MK746747	MK779252	MK775088	MK746779	MK747008	MK747199	MK747072	MK765971
Primulina malipoensis	MK747123	-	-	MK746881	MK764489	MK746606	MK746923	MK746414	MK746650	MK746240	MK746769	MK779253	MK775089	MK746794	MK747030	MK747198	MK747070	MK765968
Primulina medica	KY394940	KY395334	KY395532	KY395731	KY395932	KY396133	KY395139	-	-	KY393534	KY393735	KY393936	KY394137	KY394338	KY394539	KY394739	-	-
Primulina melanofilamenta	MK747158	-	-	MK746882	MK764507	MK746626	MK746948	MK746405	MK746678	MK746277	MK746748	MK779254	MK775090	MK746825	MK747009	MK747197	MK747055	MK765939
Primulina minor	MK747160	-	-	MK746883	MK764509	MK746623	-	MK746427	MK746652	MK746290	MK746749	MK779255	MK775091	MK746790	MK747010	MK747196	MK747058	MK765987
Primulina minutimaculata	KY394941	KY395335	KY395533	KY395732	KY395933	KY396134	KY395140	-	-	KY393535	KY393736	KY393937	KY394138	KY394339	KY394540	KY394740	-	-
Primulina moi	KY394942	KY395336	KY395534	KY395733	KY395934	KY396135	KY395141	-	-	KY393536	KY393737	KY393938	KY394139	KY394340	KY394541	KY394741	-	-
Primulina mollifolia	KY394944	KY395337	KY395536	KY395735	KY395936	KY396136	KY395143	-	-	KY393538	KY393739	KY393940	KY394141	KY394342	KY394543	KY394743	-	-
Primulina nandanensis	KY394947	KY395340	KY395539	KY395738	KY395939	KY396139	KY395146	-	-	KY393541	KY393742	KY393943	KY394144	KY394345	KY394546	KY394746	-	-
Primulina napoensis	MK747168	KY395341	KY395540	MK746884	MK764462	MK746579	MK746917	MK746372	MK746643	MK746227	MK746709	MK779256	MK775092	MK746834	MK746977	MK747195	MK747039	MK765929
Primulina ningmingensis	KY394949	KY395342	KY395541	KY395740	KY395941	KY396141	KY395148	-	-	KY393543	KY393744	KY393945	KY394146	KY394347	KY394548	KY394748	-	-
Primulina obtusidentata	KY394950	KY395343	KY395542	KY395741	KY395942	KY396142	KY395149	-	-	KY393544	KY393745	KY393946	KY394147	KY394348	KY394549	KY394749	-	-
Primulina ophiopogoides	KY394951	KY395344	KY395543	KY395742	KY395943	KY396143	KY395150	-	-	KY393545	KY393746	KY393947	KY394148	KY394349	KY394550	KY394750	-	-
Primulina orthandra	MK747128	-	-	MK746885	MK764475	MK746593	MK746936	MK746382	MK746692	MK746286	MK746750	MK779257	MK775093	MK746799	MK747011	MK747194	MK747080	MK765983
Primulina parvifolia	KY394952	KY395345	KY395544	KY395743	KY395944	KY396144	KY395151	-	-	KY393546	KY393747	KY393948	KY394149	KY394350	KY394551	KY394751	-	-
Primulina pengii	MK747154	-	-	MK746886	MK764504	MK746615	MK746919	MK746407	MK746681	MK746250	MK746752	MK779258	MK775094	MK746821	MK747013	MK747193	MK747060	MK765925
Primulina petrocosmeoides	KY394953	KY395346	KY395545	KY395744	KY395945	KY396145	KY395152	-	-	KY393547	KY393748	KY393949	KY394150	KY394351	KY394552	KY394752	-	-
Primulina pinnata	MK747115	-	-	MK746887	MK764477	MK746586	MK746933	MK746423	MK746689	MK746249	MK746753	MK779259	MK775095	MK746781	MK747014	MK747190	MK747069	MK765972
Primulina pinnatifida	KY394954	KY395347	KY395546	KY395745	KY395946	KY396146	KY395153	-	-	KY393548	KY393749	KY393950	KY394151	KY394352	KY394553	KY394753	-	-
Primulina polycephala	KY394956	KY395349	KY395548	KY395747	KY395948	KY396148	KY395155	-	-	KY393550	KY393751	KY393952	KY394153	KY394354	KY394555	KY394755	-	-
Primulina porphyrea	KY394957	KY395350	KY395549	KY395748	KY395949	KY396149	KY395156	-	-	KY393551	KY393752	KY393953	KY394154	KY394355	KY394556	KY394756	-	-
Primulina pseudoeburnea	KY394958	KY395351	KY395550	KY395749	KY395950	KY396150	KY395157	-	-	KY393552	KY393753	KY393954	KY394155	KY394356	KY394557	KY394757	-	-
Primulina pseudoheterotricha	MK747117	-	-	MK746888	MK764493	MK746600	-	MK746395	MK746674	MK746291	MK746755	MK779260	MK775096	-	MK747016	MK747189	-	MK765947
Primulina pseudolinearifolia	MK747140	-	-	MK746889	MK764481	MK746595	MK746939	MK746380	MK746677	-	MK746756	MK779261	MK775097	-	MK747017	MK747188	MK747065	MK765962
Primulina pseudomollifolia	MK747134	-	-	MK746890	MK764488	MK746602	-	MK746389	MK746680	MK746244	MK746757	MK779262	MK775098	MK746816	MK747018	MK747187	MK747093	MK765950
Primulina pseudoroseoalba	KY394959	KY395352	KY395551	KY395750	KY395951	KY396151	KY395158	-	-	KY393553	KY393754	KY393955	KY394156	KY394357	KY394558	KY394758	-	-
Primulina pteropoda	KY394960	KY395353	KY395552	KY395751	KY395952	KY396152	KY395159	-	-	KY393554	KY393755	KY393956	KY394157	KY394358	KY394559	KY394759	-	-
Primulina pulchurfolia	KY394961	KY395354	KY395553	KY395752	KY395953	KY396153	KY395160	-	-	KY393555	KY393756	KY393957	KY394158	KY394359	KY394560	KY394760	-	-

Primulina pungentisepala	KY394962	KY395355	KY395554	KY395753	KY395954	KY396154	KY395161	-	-	KY393556	KY393757	KY393958	KY394159	KY394360	KY394561	KY394761	-	-
Primulina purpurea	KY394963	KY395356	KY395555	KY395754	KY395955	KY396155	KY395162	-	-	KY393557	KY393758	KY393959	KY394160	KY394361	KY394562	KY394762	-	-
Primulina qingyuanensis	KY394965	KY395358	KY395557	KY395756	KY395957	KY396157	KY395164	-	-	KY393559	KY393760	KY393961	KY394162	KY394363	KY394564	KY394764	-	-
Primulina renifolia	KY394966	KY395359	KY395558	KY395757	KY395958	KY396158	KY395165	-	-	KY393560	KY393761	KY393962	KY394163	KY394364	KY394565	KY394765	-	-
Primulina repanda	KY394968	KY395361	KY395560	KY395759	KY395960	KY396160	KY395167	-	-	KY393562	KY393763	KY393964	KY394165	KY394366	KY394567	KY394767	-	-
Primulina ronganensis	KY394970	KY395363	KY395562	KY395761	KY395962	KY396162	KY395169	-	-	KY393564	KY393765	KY393966	KY394167	KY394368	KY394569	KY394769	-	-
Primulina rongshuiensis	KY394971	KY395364	KY395563	KY395762	KY395963	KY396163	KY395170	-	-	KY393565	KY393766	KY393967	KY394168	KY394369	KY394570	KY394770	-	-
Primulina roseoalba	KY394972	KY395365	KY395564	KY395763	KY395964	KY396164	KY395171	-	-	KY393566	KY393767	KY393968	KY394169	KY394370	KY394571	KY394771	-	-
Primulina rosulata	MH343970	MH342849	MH342975	MH343096	MH343223	-	-	MH343603	MH343857	MH344611	MH344675	MH342727	MH344235	MH344358	MH344109	MH344863	-	-
Primulina rotundifolia	KY394975	KY395368	KY395567	KY395766	KY395967	KY396167	KY395174	-	-	KY393569	KY393770	KY393971	KY394172	KY394373	KY394574	KY394774	-	-
Primulina rubella	KY394976	KY395369	KY395568	KY395767	KY395968	KY396168	KY395175	-	-	KY393570	KY393771	KY393972	KY394173	KY394374	KY394575	KY394775	-	-
Primulina rubribracteata	KY394977	KY395370	KY395569	KY395768	KY395969	KY396169	KY395176	-	-	KY393571	KY393772	KY393973	KY394174	KY394375	KY394576	KY394776	-	-
Primulina sclerophylla	KY394979	KY395372	KY395571	KY395770	KY395971	KY396171	KY395178	-	-	KY393573	KY393774	KY393975	KY394176	KY394377	KY394578	KY394778	-	-
Primulina secundiflora	MK747119	-	-	MK746891	MK764510	MK746604	MK746921	-	MK746675	-	MK746758	MK779263	MK775099	MK746780	MK747019	MK747186	MK747074	MK765970
Primulina shouchengensis	KY394980	KY395373	KY395572	KY395771	KY395972	KY396172	KY395179	-	-	KY393574	KY393775	KY393976	KY394177	KY394378	KY394579	KY394779	-	-
Primulina sichuanensis	MK747162	-	-	MK746892	MK764500	MK746624	MK746949	MK746404	MK746662	MK746264	MK746759	MK779264	MK775100	MK746822	MK747020	MK747185	MK747053	MK765986
Primulina sinovietnamica	KY394981	KY395374	KY395573	KY395772	KY395973	KY396173	KY395180	-	-	KY393575	KY393776	KY393977	KY394178	KY394379	KY394580	KY394780	-	-
Primulina spadiciformis	MK747136	-	-	MK746897	MK764490	MK746609	MK746944	MK746392	MK746679	MK746283	MK746760	MK779269	MK775105	MK746819	MK747021	MK747180	-	MK765948
Primulina spinulosa	KY395017	KY395409	KY395608	KY395808	KY396009	KY396207	KY395214	-	-	KY393576	KY393812	KY394013	KY394214	KY394415	KY394616	KY394816	-	-
Primulina subrhomboidea	KY395018	KY395410	KY395609	KY395809	KY396010	KY396208	KY395215	-	-	KY393577	KY393813	KY394014	KY394215	KY394416	KY394617	KY394817	-	-
Primulina subulata	KY395020	KY395412	KY395611	KY395811	KY396012	KY396210	KY395217	-	-	KY393579	KY393815	KY394016	KY394217	KY394418	KY394619	KY394819	-	-
Primulina subulata var. *yangchunensis*	MK747120	-	-	MK746898	MK764479	MK746590	MK746945	-	MK746654	MK746276	MK746767	MK779270	MK775106	MK746771	MK747028	MK747179	MK747081	MK765978
Primulina subulatisepala	MK747122	-	-	MK746899	MK764468	MK746591	MK746929	MK746421	MK746687	MK746246	MK746761	MK779271	MK775107	MK746776	MK747022	MK747178	MK747073	MK765967
Primulina suichuanensis	MK747153	-	-	MK746900	MK764513	MK746614	MK746927	MK746409	MK746661	MK746261	MK746762	MK779272	-	MK746824	MK747023	MK747177	MK747062	MK765961
Primulina swinglei	KY395022	KY395414	KY395613	KY395813	KY396014	KY396212	KY395219	-	-	KY393581	KY393817	KY394018	KY394219	KY394420	KY394621	KY394821	-	-
Primulina tabacum	KY395023	KY395415	KY395614	KY395814	KY396015	KY396213	KY395220	-	-	KY393582	KY393818	KY394019	KY394220	KY394421	KY394622	KY394822	-	-
Primulina tenuifolia	KY395024	KY395416	KY395615	KY395815	KY396016	KY396214	KY395221	-	-	KY393583	KY393819	KY394020	KY394221	KY394422	KY394623	KY394823	-	-
Primulina tenuituba	KY395025	KY395417	KY395616	KY395816	KY396017	KY396215	KY395222	-	-	KY393584	KY393820	KY394021	KY394222	KY394423	KY394624	KY394824	-	-
Primulina tiandengensis	KY395027	KY395419	KY395618	KY395818	KY396019	KY396217	KY395224	-	-	KY393586	KY393822	KY394023	KY394224	KY394425	KY394626	KY394826	-	-
Primulina tribracteata	KY395019	KY395411	KY395619	KY395810	KY396020	KY396209	KY395216	-	-	KY393578	KY393814	KY394024	KY394225	KY394417	KY394618	KY394827	-	-
Primulina tsoongii	KY395029	KY395421	KY395620	KY395820	KY396021	KY396219	KY395226	-	-	KY393588	KY393824	KY394025	KY394226	KY394427	KY394628	KY394828	-	-
Primulina varicolor	KY395030	KY395422	KY395621	KY395821	KY396022	KY396220	KY395227	-	-	KY393589	KY393825	KY394026	KY394227	KY394428	KY394629	KY394829	-	-
Primulina verecunda	KY395031	KY395423	KY395622	KY395822	KY396023	KY396221	KY395228	-	-	KY393590	KY393826	KY394027	KY394228	KY394429	KY394630	KY394830	-	-
Primulina versicolor	MK747155	-	-	MK746901	MK764514	MK746613	-	MK746406	MK746655	MK746252	MK746763	MK779273	MK775108	MK746820	MK747024	MK747176	MK747061	MK765964
Primulina vestita	MK747156	-	-	MK746902	MK764511	-	MK746941	MK746400	MK746666	MK746282	MK746764	MK779274	MK775109	MK746809	MK747025	MK747175	MK747052	MK765942
Primulina villosissima	KY395032	KY395424	KY395623	KY395823	KY396024	KY396222	KY395229	-	-	KY393591	KY393827	KY394028	KY394229	KY394430	KY394631	KY394831	-	-
Primulina wenii	MK747148	-	-	MK746903	MK764508	MK746629	MK746958	MK746398	MK746684	MK746284	MK746765	MK779275	MK775110	MK746817	MK747026	MK747174	MK747054	MK765938
Primulina wentsaii	KY395033	KY395425	KY395624	KY395824	KY396025	KY396223	KY395230	-	-	KY393592	KY393828	KY394029	KY394230	KY394431	KY394632	KY394832	-	-
Primulina wuae	MK747159	-	-	MK746904	MK764515	MK746618	MK746947	MK746403	MK746663	MK746265	MK746766	MK779276	MK775111	MK746808	MK747027	MK747173	MK747095	MK765937
Primulina xinningensis	KY395035	KY395427	KY395626	KY395826	KY396027	KY396225	KY395232	-	-	KY393594	KY393830	KY394031	KY394232	KY394433	KY394634	KY394834	-	-
Primulina xiuningensis	MK747150	-	-	MK746905	MK764497	MK746612	MK746957	MK746401	-	MK746241	MK746740	MK779277	MK775112	MK746804	MK747001	MK747172	MK747063	MK765940
Primulina xiziae	KY395038	KY395430	KY395629	KY395829	KY396030	-	KY395235	-	-	KY393597	KY393833	KY394034	KY394235	KY394436	KY394637	KY394837	-	-
Primulina yangchunensis	KY395039	KY395431	KY395630	KY395830	KY396031	-	KY395236	-	-	KY393598	KY393834	KY394035	KY394236	KY394437	KY394638	KY394838	-	-
Primulina yangshanensis	KY395040	KY395432	KY395631	KY395831	KY396032	-	KY395237	-	-	KY393599	KY393835	KY394036	KY394237	KY394438	KY394639	KY394839	-	-
Primulina yangshuoensis	KY395042	KY395434	KY395633	KY395833	KY396034	-	KY395239	-	-	KY393601	KY393837	KY394038	KY394239	KY394440	KY394641	KY394841	-	-
Primulina yingdeensis	KY395043	KY395435	KY395634	KY395834	KY396035	-	KY395240	-	-	KY393602	KY393838	KY394039	KY394240	KY394441	KY394642	KY394842	-	-

Primulina yungfuensis	KY395045	KY395437	KY395636	KY395836	KY396037	-	KY395242	-	-	KY393604	KY393840	KY394041	KY394242	KY394443	KY394644	KY394844	-	-
Primulina zhoui	MK747104	-	-	MK746906	MK764464	MK746569	MK746913	MK746368	MK746639	MK746222	MK746700	MK779278	MK775113	-	MK746962	MK747171	MK747031	MK765926
Anna ophiorrhizoides	MK747107	-	-	MK746837	MK764454	-	-	MK746360	MK746632	MK746233	MK746720	MK779209	MK775047	MK746787	MK746964	MK747240	MK747045	MK765954
Briggsiopsis delavayi	MK747106	-	-	MK746838	MK764453	MK746571	MK746907	MK746359	MK746631	MK746235	MK746725	MK779210	MK775048	MK746788	MK746963	MK747235	MK747046	MK765955
Deinostigma poilanei	MK747169	-	-	MK746839	MK764517	MK746630	-	MK746426	MK746699	MK746273	MK746754	MK779211	MK775049	MK746836	MK747015	MK747224	MK747100	MK765924
Loxostigma kurzii	MK747109	-	-	MK746840	MK764456	MK746573	-	MK746363	MK746634	MK746234	MK746722	MK779212	-	MK746786	MK746967	MK747204	MK747049	MK765958
Lysionotus pauciflorus	MK747108	-	-	MK746841	MK764455	-	-	MK746362	MK746633	MK746232	MK746721	MK779213	MK775050	MK746791	MK746966	MK747201	MK747050	MK765959
Petrocosmea flaccida	MK747110	-	-	MK746842	MK764457	-	-	MK746364	MK746635	MK746237	MK746724	MK779214	MK775051	MK746792	MK746968	MK747192	MK747047	MK765956
Petrocosmea sinensis	MK747111	-	-	MK746843	MK764458	-	MK746909	MK746365	MK746636	MK746238	MK746723	MK779215	MK775052	MK746793	MK746969	MK747191	MK747048	MK765957
Petrocodon dealbatus	KY394845	KY395243	KY395438	KY395637	KY395837	KY396038	KY395046	-	-	KY393439	KY393640	KY393841	KY394042	KY394243	KY394444	KY394645	-	-
Petrocodon hancei	KY394846	KY395244	KY395439	KY395638	KY395838	KY396039	KY395047	-	-	KY393440	KY393641	KY393842	KY394043	KY394244	KY394445	KY394646	-	-

411 ***Petrocodon* (Gesneriaceae)**

Species	ITS	*trnL-F*
Petrocodon ainsliifolius	KF202291	KF202298
Petrocodon asterocalyx	KC904954	KC904957
Petrocodon coccineus	KF202292	KF202299
Petrocodon coriaceifolius	HQ633040	HQ632943
Petrocodon dealbatus	KY394845	KY393439
Petrocodon dealbatus var. *denticulatus*	JF697578	-
Petrocodon ferrugineus	HQ633043	HQ632946
Petrocodon hancei	KY394846	KY393440
Petrocodon hechiensis	KR337018	KR476563
Petrocodon hispidus	KF202293	KF202300
Petrocodon integrifolius	HQ633037	HQ632940
Petrocodon lithophilus	KF202296	KF202303
Petrocodon lui	HQ633035	HQ632938
Petrocodon multiflorus	KJ475411	KM232660
Petrocodon nivelolanosus	JF697576	JF697588
Petrocodon pulchriflorus	KX579058	KX579059
Petrocodon retroflexus	KX579060	KX579061
Petrocodon scopulorus	GU350637	GU350669
Petrocodon tiandengensis	JX506960	JX506850
Petrocodon tongziensis	MF872617	MF872618
Petrocodon viridescens	KF202297	KF202304
Anna ophiorrhizoides	MK747107	MK746233
Briggsiopsis delavayi	MK747106	MK746235
Deinostigma poilanei	MK747169	MK746273
Loxostigma kurzii	MK747109	MK746234
Lysionotus pauciflorus	MK747108	MK746232
Petrocosmea flaccida	MK747110	MK746237
Petrocosmea sinensis	MK747111	MK746238
Primulina danxiaensis	KY394867	KY393460
Primulina dryas	KY394875	KY393469
Primulina purpurea	KY394963	KY393557

412 ***Petrocosmea* (Gesneriaceae)**

Species	ITS	*matK*	*rpS16*	*trnL-F*	*trnT-L*
Petrocosmea barbata	KR006475	KR006438	KR006491	KR006351	KR006424
Petrocosmea begoniifolia	KR006482	JX142175	KR006494	JX142178	KR006431
Petrocosmea cavaleriei	KR006476	KR006440	KR006487	KR006372	KR006420
Petrocosmea coerulea	KR006483	KR006457	KR006492	KR006355	KR006427
Petrocosmea confluens	KR006466	-	-	-	-
Petrocosmea duclouxii	KR006478	KR006458	KR006498	KR006360	KR006433
Petrocosmea flaccida	KR006471	KR006443	KR006517	KR006363	KR006414
Petrocosmea forrestii	KR006464	KR006445	KR006520	KR006365	KR006416
Petrocosmea grandiflora	KR006467	KR006454	KR006504	KR006373	KR006437
Petrocosmea grandifolia	-	-	KR006507	-	-
Petrocosmea hexiensis	KR006469	KR006461	KR006497	KR006359	JX142182
Petrocosmea huanjiangensis	KR006484	KR006448	KR006503	KR006367	KR006435
Petrocosmea iodioides	JN092440	JN092542	KR006513	JN092473	JN092506
Petrocosmea kerrii	JN092441	JN092543	KR006509	GU350668	JN092507
Petrocosmea longianthera	-	JN092530	KR006514	JN092461	JN092481
Petrocosmea longipedicellata	KR006474	KR006439	KR006490	KR006352	KR006422
Petrocosmea mairei	KR006465	KR006447	KR006519	KR006366	KR006418
Petrocosmea martini	JN092442	JN092544	-	JN092475	JN092508
Petrocosmea melanophthalma	KR006481	KR006449	KR006493	KR006356	KR006436
Petrocosmea menglianensis	JN092444	JN092546	KR006506	JN092477	JN092510
Petrocosmea minor	KU985106	JN092547	KR006515	FJ501502	JN092507
Petrocosmea nervosa	FJ501335	JN092548	KR006523	FJ501504	JN092511
Petrocosmea oblata	KR337021	JN092549	KR006518	AJ492299	JN092512
Petrocosmea parryorum	KR006463	KR006453	KR006508	KR006354	KR006426
Petrocosmea qinlingensis	KR006470	KR006446	KR006521	KR006364	KR006419
Petrocosmea rosettifolia	KR006473	KR006455	KR006510	KR006369	KR006428
Petrocosmea sericea	JN092438	JN092540	KR006500	GU350692	JN092513
Petrocosmea shilinensis	KR006486	KR006450	KR006511	KR006370	KR006434
Petrocosmea sichuanensis	KR006480	KR006459	KR006496	KR006358	KR006429
Petrocosmea sinensis	GU350660	JN092550	KR006522	FJ501503	JN092500
Petrocosmea xanthomaculata	KR006477	KR006441	KR006488	KR006374	KR006421
Petrocosmea xingyiensis	KR006485	KR006451	KR006502	KR006368	KR006432
Petrocosmea yanshanensis	JN092429	JN092531	KR006499	JN092462	JN092495
Petrocosmea martini var. *leiandra*	JN092443	JN092545	KR006512	-	JN092509
Petrocosmea glabristoma	KR006468	KR006444	KR006516	KR006362	KR006417
Petrocosmea kerrii var. *crinita*	KR006462	KR006452	KR006505	KR006353	KR006425
Petrocosmea mairei var. *intraglabra*	KR006479	KR006460	KR006495	KR006357	KR006430
Allostigma guangxiense	HQ632977	-	-	HQ632880	-

Loxostigma cavaleriei	FJ501339	-	-	FJ501509	-
Loxostigma fimbrisepalum	KU985104	-	-	FJ501507	-
Loxostigma glabrifolium	HQ633006	-	-	HQ632910	-
Loxostigma griffithii	FJ501338	OK322633	OK322470	FJ501508	-
Pseudochirita guangxiensis	HQ633003	OK322645	OK322484	HQ632908	-
Raphiocarpus begoniifolius	OK322561	OK322646	OK322485	-	OK322669
Raphiocarpus jinpingensis	OK322562	OK322647	OK322486	-	-
Raphiocarpus longipedunculatus	OK322563	-	-	-	OK322670
Raphiocarpus macrosiphon	HQ632978	-	-	HQ632881	-
Raphiocarpus petelotii	HQ632974	JN092552	KR006525	FJ501517	JN092515

413 ***Hemiboea* (Gesneriaceae)**

Species	ITS	*matK*	*rbcL*	*rpS16*	*atpB-rbcL*
Hemiboea albiflora	MN334629	MN367403	MN367386	MN367331	MN328737
Hemiboea cavaleriei	-	MN367405	MN367382	MN367333	MN328738
Hemiboea cavalerier var. *paucinervis*	MN334630	-	-	MN367334	-
Hemiboea crystallina	MN334631	MN367406	MN367387	MN367335	MN328739
Hemiboea fangii	MN334633	MN367408	MN367372	MN367337	MN328741
Hemiboea flaccida	MN334634	MN367409	MN367381	MN367338	MN328742
Hemiboea follicularis	-	MN367410	-	MN367339	MN328743
Hemiboea gracilis	MN334635	MN367411	MN367375	MN367340	MN328744
Hemiboea gracilis var. *pilobracteata*	-	MN367412	-	MN367341	-
Hemiboea latisepala	MN334636	MN367413	-	MN367342	MN328745
Hemiboea longgangensis	MN334637	MN367414	MN367376	MN367343	MN328746
Hemiboea longzhouensis	MN334638	MN367415	MN367371	MN367344	MN328747
Hemiboea magnibracteata	MN328762	MN367402	MN367384	MN367330	-
Hemiboea malipoensis	MN334639	MN367416	MN367383	MN367345	-
Hemiboea mollifolia	MN334640	MN367417	MN367373	MN367346	MN328748
Hemiboea omeiensis	MN334641	MN367418	-	MN367347	MN328749
Hemiboea pterocaulis	MN334642	MN367419	MN367389	MN367348	MN328750
Hemiboea purpurea	MN334644	MN367421	MN367378	MN367350	MN328751
Hemiboea purpureotincta	MN334645	MN367422	MN367374	MN367351	MN328752
Hemiboea rubribracteata	MN334646	MN367423	MN367385	MN367352	-
Hemiboea strigosa	MN334647	MN367424	-	MN367353	-
Hemiboea subcapitata	MN334648	MN367425	MN367391	MN367354	MN328753
Hemiboea guangdongensis	MF625025	MN367436	MN367398	MN367366	MN328760
Hemiboea subacaulis	MN334658	MN367437	MN367380	MN367367	MN328761
Hemiboea suiyangensis	MN334659	MN367438	MN367377	MN367368	-
Anna submontana	FJ501362	MN367401	MN367399	MN367370	FJ501422
Petrocosmea minor	KU985106			KR006515	
Codonoboea codonion	JF912565	-	-	-	-
Loxostigma dongxingensis	HQ632975	-	-	-	-
Aeschynanthus tricolor	EU919958	-	-	-	-
Briggsiopsis delavayi	GU350647	-	KX527344	-	-
Cathayanthe biflora	HQ632996	-	-	-	-
Chayamaritia banksiae	KP325426	-	-	-	-
Didymocarpus stenanthos	KR337008	OK322625	OK322598	OK322460	FJ501403
Lysionotus aeschynanthoides	OK322554	OK322634	OK322608	OK322472	OK322496
Lysionotus wilsonii	OK322560	OK322640	OK322615	OK322478	OK322503
Petrocodon coccineus	KF202292	KX526642	KX527265	-	-
Petrocosmea xingyiensis	KR006485	KR006451	-	KR006502	-

Primulina langshanica	KF498109	KJ137915	-	-	KF497997
Pseudochirita guangxiensis	HQ633003	OK322645	KX527259	OK322484	-
Raphiocarpus sinicus	HQ632973	-	-	-	-

414 ***Lysionotus* (Gesneriaceae)**

Species	ITS	*matK*	*ndhF*	*rbcL*	*rpS16*	*atpB-rbcL*	*rpL20-rpS12*	*trnE-trnT*	*trnL-trnF*	*trnT-trnL*
Lysionotus aeschynanthoides	OK322554	OK322634	OK322441	OK322608	OK322472	OK322496	OK322580	OK322531	-	-
Lysionotus chingii	AB547216	OK322635	OK322442	OK322609	OK322473	OK322497	OK322581	OK322532	FJ501498	-
Lysionotus denticulosus	AB547217	OK322636	-	OK322610	OK322474	OK322498	OK322582	OK322533	KM232652	-
Lysionotus fengshanensis	OK322555	KJ137896	KX657870	KX657870	-	OK322499	-	-	-	-
Lysionotus forrestii	-	-	-	-	-	-	-	-	FJ501495	-
Lysionotus gracilis	OK322556	-	OK322443	OK322611	OK322475	-	OK322583	OK322534	-	-
Lysionotus longipedunculatus	OK322557	OK322637	OK322444	OK322612	OK322476	OK322500	OK322584	OK322535	-	OK322661
Lysionotus microphyllus	MN334660	MN367439	OK322445	MN367400	MN367369	MN328762	MT184603	MT184686	-	-
Lysionotus oblongifolius	AB498571	-	-	-	-	-	-	-	-	-
Lysionotus pauciflorus	AB514442	-	-	-	-	-	-	-	-	-
Lysionotus petelotii	AB498587	-	OK322446	-	-	-	OK322585	OK322536	FJ501496	-
Lysionotus sangzhiensis	KJ475423	-	-	-	-	-	-	-	KM232653	-
Lysionotus serratus	OK322558	OK322638	OK322447	OK322613	MT184629	OK322501	MT184605	MT184688	-	OK322662
Lysionotus wilsonii	OK322560	OK322640	OK322449	OK322615	OK322478	OK322503	OK322587	OK322538	-	-
Aeschynanthus tricolor	EU919958	-	-	-	-	-	-	-	-	-
Agalmyla biflora	FJ501361	-	-	-	-	FJ501421	-	-	FJ501541	-
Allocheilos guangxiensis	-	-	-	KX527337	-	-	-	-	HQ632897	-
Briggsiopsis delavayi	GU350647	-	-	KX527344	-	-	-	-	HQ632879	-
Cathayanthe biflora	HQ632996	-	-	-	-	-	-	-	HQ632899	-
Chayamaritia banksiae	KP325426	-	-	-	-	-	-	-	KP325433	-
Codonoboea codonion	JF912565	-	-	-	-	-	-	-	JF912538	-
Didymocarpus stenanthos	KR337008	OK322625	OK322429	OK322598	OK322460	FJ501403	OK322566	OK322515	FJ501512	-
Glabrella longipes	AF055053	OK322626	OK322430	OK322599	OK322461	FJ501423	OK322567	OK322516	FJ501545	OK322648
Gyrocheilos chorisepalus	KR337014	-	-	-	-	-	-	-	KR476558	-
Loxostigma dongxingensis	HQ632975	-	-	-	-	-	-	-	HQ632878	-

Microchirita caliginosa	FJ501325	-	-	-	-	FJ501391	-	-	FJ501488	-
Petrocodon coccineus	KF202292	KX526642	-	KX527265	-	-	-	-	KF202299	-
Petrocosmea xingyiensis	KR006485	KR006451	-	-	KR006502	-	-	-	KR006368	KR006432
Primulina langshanica	KF498109	KJ137915	-	-	-	KF497997	-	MF472119	KF498232	-
Pseudochirita guangxiensis	HQ633003	OK322645	-	KX527259	OK322484	-	-	OK322546	HQ632908	-
Raphiocarpus sinicus	HQ632973	-	-	-	-	-	-	-	HQ632877	-

415 ***Paraboea* (Gesneriaceae)**

Species	ITS	*trnL-F*
Paraboea acutifolia	KU203969	-
Paraboea amplifolia	JN934754	JN934712
Paraboea axillaris	KU203848	KU203943
Paraboea banyengiana	JN934755	JN934713
Paraboea barnettiae	KU203847	KU203942
Paraboea birmanica	KU203849	KU203944
Paraboea brachycarpa	KU203870	KU203965
Paraboea brunnescens	KU203859	KU203954
Paraboea burttii	KU203858	KU203953
Paraboea caerulescens	KU203871	KU203966
Paraboea capitata	FJ501315	AJ492298
Paraboea clarkei	JN934757	JN934715
Paraboea crassifolia	KU203970	KU204042
Paraboea dictyoneura	KJ475415	FJ501463
Paraboea divaricata	KU203865	KU203960
Paraboea doitungensis	KU203846	KU203941
Paraboea dushanensis	MF358698	MF358714
Paraboea eburnea	KU203869	KU203964
Paraboea effusa	JN934760	JN934718
Paraboea ferruginea	KU203862	-
Paraboea glabra	JN934761	JN934719
Paraboea glabrescens	KU203852	KU203947
Paraboea glabrisepala	JN934762	JN934720
Paraboea glanduliflora	JN934763	JN934721
Paraboea glandulosa	JN934784	JN934742
Paraboea glutinosa	JN934764	JN934722
Paraboea guilinensis	MF358701	MF358717
Paraboea hainanensis	MF315101	MF315107
Paraboea harroviana	JN934765	JN934723
Paraboea havilandii	JN934766	JN934724
Paraboea hekouensis	KU203843	KU203938
Paraboea incudicarpa	JN934767	JN934725
Paraboea insularis	KU203857	KU203952
Paraboea lanata	-	FJ501467
Paraboea laxa	-	FJ501466
Paraboea leuserensis	KU203863	KU203958
Paraboea longipetiolata	KU203851	KU203946
Paraboea manhaoensis	KU203842	KU203937
Paraboea martinii	MF358702	MF358718

Paraboea middletonii	KU203845	KU203940
Paraboea minor	KU203860	KU203955
Paraboea neurophylla	JN934769	JN934727
Paraboea nutans	MF358703	MF358719
Paraboea paniculata	JN934770	JN934728
Paraboea paramartinii	JN934771	JN934729
Paraboea patens	KU203864	KU203959
Paraboea peltifolia	-	MF358720
Paraboea phanomensis	KU203855	KU203950
Paraboea rabilii	KU203856	KU203951
Paraboea rongxiana	KJ475416	KM232659
Paraboea rosea	KU203866	KU203961
Paraboea rufescens	JN934772	JN934730
Paraboea siamensis	KU203853	KU203948
Paraboea sinensis	MF358704	FJ501473
Paraboea sinovietnamica	MF358706	MF358729
Paraboea subplana	KU203854	KU203949
Paraboea suffruticosa	JN934774	JN934732
Paraboea swinhoei	JN934775	JN934733
Paraboea tarutaoensis	JN934776	JN934734
Paraboea tetrabracteata	MF358707	MF358723
Paraboea trachyphylla	JN934777	JN934735
Paraboea treubii	KU203872	KU203967
Paraboea trisepala	JN934778	JN934736
Paraboea umbellata	MF358708	MF358730
Paraboea variopila	KU203868	KU203963
Paraboea velutina	MF358709	MF358724
Paraboea verticillata	JN934781	JN934739
Paraboea vulpina	JN934782	JN934740
Paraboea xiangguiensis	MF358711	MF358726
Paraboea evrardii	KU203790	KU203885
Paraboea monticola	KU203789	KU203884
Paraboea multiflora	KU203791	KU203886
Paraboea harroviana var. *ovata*	JN934765	JN934723
Paraboea capitata var. *oblongifolia*	KU203861	KU203956
Paraboea rufescens var. *tomentosa*	KU203971	KU204043
Paraboea dolomitica	MT379851	MT379849
Damrongia clarkeana	KU203806	KU203901
Damrongia fulva	KU203799	KU203894
Damrongia lacunosa	KU203801	KU203896
Damrongia purpureolineata	-	KU203893

Damrongia trisepala	KU203803	KU203899
Dorcoceras geoffrayi	KU203781	-
Dorcoceras hygrometrica	KU203783	KU203878
Dorcoceras philippense	KU203788	KU203883
Kaisupeea herbacea	KU203830	FJ501459
Kaisupeea orthocarpa	KU203834	KU203928
Loxocarpus holttumii	KU203821	KU203916
Loxocarpus rufescens	KU203822	KU203917
Loxocarpus semitorta	KU203823	KU203918
Middletonia evrardii	KU203790	KU203885
Middletonia monticola	-	KU203884
Middletonia multiflora	KU203791	KU203886
Ornithoboea arachnoidea	JN934751	JN934709
Ornithoboea barbanthera	KU203839	KU203934
Ornithoboea flexuosa	KU203836	KU203931
Ornithoboea grandiflora	-	KY580773
Ornithoboea maxwellii	KY580825	KY580775
Ornithoboea occulta	KU203838	KU203933
Ornithoboea pseudoflexuosa	KY580829	KU204040
Ornithoboea puglisiae	KU203840	KU203935
Ornithoboea wildeana	JN934752	JN934710
Somrania albiflora	KU203792	KU203887
Somrania flavida	KU203794	KU203889
Somrania lineata	-	KU203888

416 ***Elatostema*** **(Urticaceae)**

Species	ITS	*trnH-psbA*	*psbM-trnD*
Elatostema acuteserratum	KP858860	KP858600	KP858673
Elatostema albopilosoides	KP858885	KP858577	KP858722
Elatostema androstachyum	KP858871	KP858575	KP858711
Elatostema asterocephalum	KP858878	KP858533	KP858712
Elatostematoides australe	KP858790	KP858612	KP858732
Elatostema balansae	KP858847	KP858559	KP858696
Elatostema banahaense	KP858815	KP858592	KP858662
Elatostema binatum	KP858895	KP858518	KP858726
Elatostema brachyodontum	KP858888	KP858557	KP858708
Elatostema calcareum	KP858817	KP858589	KP858650
Elatostema cyrtandrifolium	KP858844	KP858558	KP858700
Elatostema densistriolatum	KF137850	-	-
Elatostema dissectum	KP858832	KP858607	KP858740
Elatostema edule	KP858818	KP858591	KP858664
Elatostema ellipticum	-	KP858641	KP858774
Elatostema fengshanense	KP858848	KP858530	KP858694
Elatostema ficoides	KP858870	KP858522	KP858703
Elatostematoides fruticulosum	KP858788	KP858610	KP858733
Elatostema garrettii	KP858849	KP858535	KP858698
Elatostema goudotianum	KP858798	KP858629	KP858749
Elatostema grande	KP858821	KP858598	-
Elatostema grandidentatum	KP858833	KP858608	KP858737
Elatostema grandifolium	-	KP858595	KP858659
Elatostema gyrocephalum	KP858886	KP858570	KP858727
Elatostema gyrocephalum var. *pubicaule*	KP858887	KP858578	KP858728
Elatostema hechiense	KP858875	KP858537	KP858729
Elatostema hezhouense	KP858881	KP858538	KP858705
Elatostema hirtellipedunculatum	KP858863	KP858568	KP858671
Elatostema hookerianum	KP858904	KP858605	KP858735
Elatostema huanjiangense	-	-	KP858730
Elatostema hypoglaucum	KP858891	KP858516	KP858718
Elatostema incisum	KP858799	KP858630	KP858750
Elatostema insulare	KP858839	KP858554	KP858681
Elatostema integrifolium	KP858852	KP858549	KP858676
Elatostema involucratum	KP858866	KP858574	KP858672
Elatostema japonicum	KP858867	KP858566	KP858715
Elatostema kraemeri	KP858824	KP858596	KP858657
Elatostema laetevirens	KP858893	KP858524	KP858683
Elatostema laevissimum	KP858861	KP858562	KP858687

Elatostema lineare	KP858835	KP858546	KP858713
Elatostema lineolatum var. *majus*	KP858855	KP858551	KP858689
Elatostema lithoneurum	KP858827	KP858588	KP858653
Elatostematoides lonchophyllum	KP858793	KP858512	KP858761
Elatostema longistipulum	KP858856	KP858552	KP858679
Elatostema lungzhouense	KP858868	KP858565	KP858716
Elatostema lutescens	KP858816	KP858585	KP858651
Elatostema macintyrei	KP858850	KP858560	KP858695
Elatostema madagascariense	KP858800	KP858631	KP858752
Elatostema malacotrichum	KP858876	KP858544	KP858710
Elatostema microcephalanthum	KP858874	KP858579	KP858706
Elatostema monandrum	KP858905	KP858606	KP858734
Elatostema monticola	KP858803	KP858628	KP858690
Elatostema morobense	KP858820	KP858593	KP858661
Elatostema multicaule	KP858884	KP858520	KP858685
Elatostema myrtillus	KP858880	KP858523	KP858704
Elatostema nasutum	KP858902	KP858603	KP858741
Elatostema oblongifolium	KP858897	KP858545	KP858724
Elatostema obtusum	KP858901	KP858513	KP858739
Elatostema oligophlebium	KP858877	KP858548	KP858721
Elatostema orientale	KP858802	KP858627	KP858753
Elatostema paivaeanum	KP858804	KP858625	KP858754
Elatostema parvum	KP858794	KP858620	KP858744
Elatostema penibukanense	KP858854	KP858542	KP858693
Elatostema platyphyllum	KP858858	KP858540	KP858678
Elatostema pusillum	KP858906	KP858602	KP858736
Elatostema reticulatum	KP858834	KP858555	KP858714
Elatostema rugosum	-	KP858640	KP858773
Elatostema samoense	KP858826	KP858594	KP858660
Elatostema serra	KP858837	KP858534	KP858720
Elatostema sinense	KP858797	KP858619	KP858747
Elatostema sinense var. *longicornutum*	KP858795	KP858622	KP858745
Elatostema sinense var. *xinningense*	KP858796	KP858621	KP858746
Elatostema sinopurpureum	KP858869	KP858532	KP858686
Elatostema pinnatum	KP858836	KP858521	KP858719
Elatostema strictum	KP858825	KP858597	KP858658
Elatostema strigillosum	KP858813	KP858583	KP858667
Elatostema subcoriaceum	KP858894	KP858539	KP858646
Elatostema sublineare	KP858882	KP858514	KP858682
Elatostema suzukii	KP858864	KP858525	KP858666
Elatostema tenuicaudatum	KP858862	KP858528	KP858688
Elatostema tenuinerve	KP858896	KP858572	KP858717

Elatostema thalictroides	KP858838	KP858536	KP858680
Elatostema tianeense	KP858879	KP858569	KP858647
Elatostema obtusum var. *trilobulatum*	KP858900	KP858515	KP858738
Elatostematoides variolaminosum var. *latum*	KP858791	-	KP858762
Elatostema villosum	KP858812	KP858582	KP858668
Elatostematoides filicoides	KP858789	KP858611	KP858731
Elatostema vittatum	KP858792	KP858609	KP858763
Elatostema welwitschii	KP858840	KP858543	KP858692
Elatostema xanthophyllum	KP858890	KP858571	KP858702
Elatostema yachense	KP858883	KP858519	KP858684
Elatostema yakushimense	KP858892	KP858517	KP858670
Elatostema yaoshanense	KP858903	KP858604	KP858742
Pellionia acutidentata	KP858777	KP858638	KP858759
Pellionia grijsii	KC420491	KP858635	KC420504
Pellionia heteroloba	KP858806	KP858634	KP858756
Pellionia minima	KP858809	KP858636	KP858757
Pellionia radicans	KP858810	KP858637	KP858758
Pellionia repens	KU161129	KU161130	KU161131
Pellionia retrohispida	KP858808	KP858639	KP858760
Pellionia scabra	KC420492	KP858624	KC420503
Pellionia viridis	KP858805	KP858633	KP858748
Procris archboldiana	KP858785	KP858614	KP858769
Procris crenata	KP858782	KP858616	KP858766
Procris frutescens	KP858781	KP858618	KP858764
Procris montana	KP858786	KP858613	KP858768
Boehmeria macrophylla	KF137810	-	KM895312
Debregeasia orientalis	KP858779	KP858508	KP858772
Lecanthus peduncularis	KP858787	KP858511	KP858645
Leucosyke quadrinervia	KF137875	-	-
Nanocnide japonica	KP858907	KP858505	KP858642
Poikilospermum acuminatum	KP858908	KP858510	KP858644

Species	ITS	*ndhA*	*ndhF-rpl32*	*psbM-trnD*	*psbM-ycf6*	*trnC-ycf6*	*trnL-rpl32*
Begonia alicida	KF636419	JF756388	JF756472	-	-	-	JF756556
Begonia acclivis	MG954100	MG953902	MG953837	MG953889	MG953878	MG953863	MG953850
Begonia acuminatissima	KR186965	KR186445	KR186532	KR186619	KR186879	KR186792	KR186706
Begonia anisoptera	JX656720	KR186448	KR186535	KR186622	KR186882	KR186795	KR186709
Begonia biliranensis	KR186967	KR186449	KR186536	KR186623	KR186883	KR186796	KR186710
Begonia blancii	KR186968	KR186450	KR186537	KR186624	KR186884	KR186797	KR186711
Begonia calcicola	JX656708	KR186452	KR186539	KR186626	KR186886	KR186799	KR186713
Begonia castilloi	KR186969	KR186454	KR186541	KR186628	KR186888	KR186801	KR186715
Begonia chingipengii	KR186970	KR186455	KR186542	KR186629	KR186889	KR186802	KR186716
Begonia chloroneura	KC626071	JF756394	KR186543	KR186630	KR186890	KR186803	JF756562
Begonia cleopatrae	KR186972	JF756390	KR186544	KR186631	KR186891	KR186804	JF756558
Begonia copelandii	LC021530	-	-	-	-	-	-
Begonia coronensis	JX656715	-	-	-	-	-	-
Begonia culasiensis	-	KR186459	KR186545	KR186632	KR186892	KR186805	KR186719
Begonia elmeri	JX656714	KR186462	KR186549	KR186636	KR186896	KR186809	KR186722
Begonia fenicis	KR186977	KR186465	KR186551	KR186638	KR186899	KR186811	KR186724
Begonia gitingensis	KR186979	KR186470	KR186557	KR186644	KR186904	KR186817	KR186730
Begonia gueritziana	KR186980	KM378666	KR186559	KR186645	KR186905	KR186819	KM378702
Begonia gutierrezii	KR186982	MG953900	MG953835	KR186647	MG953874	KR186820	-
Begonia hernandioides	JX656707	KR186475	KR186561	KR186648	KR186909	KR186821	KR186734
Begonia klemmei	JX656709	KR186480	KR186567	KR186654	KR186914	KR186827	KR186740
Begonia longiscapa	KR186986	KR186482	KR186570	KR186656	KR186916	KR186830	KR186743
Begonia luzonensis	KR186988	KR186484	KR186571	KR186659	KR186918	KR186831	KR186744
Begonia manillensis	KR186990	KR186486	KR186573	KR186660	KR186920	KR186833	KR186746
Begonia merrilliana	-	KR186488	KR186575	KR186662	KR186922	KR186835	KR186748
Begonia mindorensis	MG954099	KR186489	KR186577	MG953897	MG953877	MG953871	KR186750
Begonia nigritarum	KR186999	KR186492	KR186581	KR186671	KR186933	KR186844	KR186752
Begonia obtusifolia	KR186993	KR186501	KR186588	KR186675	KR186935	KR186848	KR186761

Begonia oxysperma	KR186994	KR186502	KR186589	KR186676	KR186936	KR186850	KR186762
Begonia rubiteae	-	KR186505	KR186592	KR186679	KR186939	KR186852	KR186765
Begonia rubrifolia	JX656711	-	-	-	-	-	-
Begonia rufipila	KF636482	KR186506	KR186593	KR186680	KR186940	KR186853	KR186766
Begonia subnummularifolia	KF636487	KR186516	KR186603	KR186690	KR186950	KR186863	KR186776
Begonia suborbiculata	HQ729069	KR186517	KR186604	KR186691	KR186951	KR186864	KR186777
Begonia sykakiengii	-	KR186519	KR186606	KR186693	KR186953	KR186866	KR186780
Begonia tandangii	AB828324	-	-	-	-	-	-
Begonia tayabensis	JX656718	KR186525	KR186612	KR186699	KR186959	KR186872	KR186785
Begonia trichochila	KR187010	KR186527	KR186614	KR186701	KR186961	KR186874	KR186787
Begonia wadei	KF636490	KR186528	KR186615	KR186702	KR186962	KR186875	KR186788
Begonia woodii	-	KR186529	KR186617	KR186703	KR186964	KR186876	KR186790
Begonia aberrans	MG993367	-	-	-	-	-	-
Begonia barbellata	-	MH207052	MH207462	-	-	-	MH207878
Begonia beludruvenea	-	-	MH207465	-	-	-	MH207881
Begonia bracteata	MG993355	KP712991	KP713110	-	-	-	KP713323
Begonia lepida	MG993361	JF756400	JF756484	-	-	-	JF756568
Begonia verecunda	MG993376	JF756399	JF756483	-	-	-	JF756567
Begonia arachnoidea	KF636420	-	-	-	-	-	-
Begonia auritistipula	KF636422	-	-	-	-	-	-
Begonia austroguangxiensis	KF636423	-	-	-	-	-	-
Begonia bamaensis	KF636424	-	-	-	-	-	-
Begonia biflora	JF975960	-	-	-	-	-	-
Begonia crystallina	JF975966	-	-	-	-	-	-
Begonia curvicarpa	MK541055	MK548077	-	-	-	-	-
Begonia cylindrica	JF975970	-	-	-	-	-	-
Begonia daxinensis	-	KT599090	-	-	-	-	-
Begonia fangii	KR704285	KT599080	-	-	-	-	-
Begonia guangxiensis	JF975990	MK548116	-	-	-	-	-
Begonia huangii	JF976001	-	-	-	-	-	-

Begonia jingxiensis	KF636448	KT599068	-	-	-	-	-
Begonia lanternaria	JF976005	-	-	-	-	-	-
Begonia leprosa	JF976010	KT599063	-	-	-	-	MH235433
Begonia liuyanii	JF975985	KT599076	-	-	-	-	-
Begonia longistyla	KF636460	-	-	-	-	-	-
Begonia luochengensis	MK541083	KT599057	-	-	-	-	-
Begonia luzhaiensis	MK541050	MK548071	-	-	-	MG063420	-
Begonia masoniana	JF976020	JF756372	JF756456	KR186661	KR186921	KR186834	JF756540
Begonia morsei	AF485130	JF756373	JF756457	-	-	-	JF756541
Begonia ningmingensis	MK541062	MK548086	-	KR186674	KR186934	KR186847	KR186760
Begonia ornithophylla	JF976032	-	-	-	-	-	-
Begonia pengii	KF636475	-	-	-	-	-	-
Begonia picturata	-	KT599050	-	-	-	-	-
Begonia platycarpa	JF976033	-	-	-	-	-	-
Begonia porteri	MK541082	MK548104	-	-	-	-	-
Begonia pseudodaxinensis	-	KT599048	-	-	-	-	-
Begonia pseudodryadis	-	-	MH207731	-	-	-	-
Begonia pulvinifera	KF636477	MH207322	MH207735	-	-	-	-
Begonia semiparietalis	KF636483	-	-	-	-	-	-
Begonia sinofloribunda	KF636486	MH207363	MH207778	-	-	-	MH208176
Begonia umbraculifolia	JF976050	KT599044	-	-	-	-	-
Begonia variegata	KF636489	-	-	-	-	-	MH208225
Begonia variifolia	MK541076	MK548099	-	-	-	-	-
Begonia yishanensis	MK541086	MK548111	-	-	-	-	-
Begonia yizhouensis	MK541066	MK548088	-	-	-	-	-
Begonia zhengyiana	JF976062	-	-	-	-	-	-
Begonia alveolata	AY048977	-	-	-	-	-	-
Begonia arboreta	KP710824	-	-	-	-	-	-
Begonia brandisiana	-	JF756379	JF756463	-	-	-	JF756547
Begonia cavaleriei	GU176060	MK548080	-	-	-	-	-
Begonia demissa	HQ729026	JF756384	JF756468	-	-	-	JF756552

Begonia dioica	HQ729038	MH207132	MH207542	-	-	-	MH207955
Begonia discreta	HQ729024	-	-	-	-	-	-
Begonia fimbristipula	KF636439	KT599040	-	-	-	-	-
Begonia flagellaris	HQ729031	MH207149	MH207560	-	-	-	JF756521
Begonia gigabracteata	-	MH207165	MH207577	-	-	-	MH207991
Begonia grandis	MK541077	MK548100	JF756435	-	-	-	JF756519
Begonia josephii	HQ729037	-	-	-	-	-	-
Begonia labordei	KP710825	KF521899	-	-	-	-	-
Begonia leptoptera	HQ729033	-	-	-	-	-	-
Begonia lithophila	KP710823	MH207225	MH207635	-	-	-	MH208049
Begonia mashanica	KF636449	-	-	-	-	-	-
Begonia murina	-	MH207255	MH207667	-	-	-	MH208077
Begonia ovatifolia	HQ729032	-	-	-	-	-	-
Begonia picta	HQ729041	MH207294	MH207708	-	-	-	MH208112
Begonia poilanei	-	MH207305	MH207719	-	-	-	MH208122
Begonia rabilii	HQ729027	JF756383	JF756467	-	-	-	JF756551
Begonia ravenii	HQ729040	-	-	-	-	-	-
Begonia rubella	HQ729043	MH207336	MH207749	-	-	-	MH208148
Begonia ruboides	JF976044	-	-	-	-	-	-
Begonia tribenensis	HQ729045	MH207404	MH207826	-	-	-	MH208217
Begonia wenshanensis	AY048974	-	-	-	-	-	-
Begonia wilsonii	KP710819	MH207423	MH207844	-	-	-	MH208231
Begonia yunnanensis	-	MH207426	MH207847	-	-	-	MH208234
Begonia dipetala	AF469124	KR186460	JF756425	KR186634	KR186894	KR186807	KR186720
Begonia droopiae	-	MH207136	MH207545	-	-	-	MH207959
Begonia forbesii	JX656704	KR186467	-	KR186641	KR186901	KR186814	KR186727
Begonia foxworthyi	JX656702	KR186468	-	KR186642	KR186902	KR186815	KR186728
Begonia goegoensis	AF485138	JF756376	JF756460	-	-	-	JF756544
Begonia ignorata	-	KR186478	-	KR186652	KR186912	KR186825	KR186738
Begonia kemumuensis	-	MH207212	MH207621	-	-	-	MH208035
Begonia kudoensis	-	MH207217	MH207628	-	-	-	MH208042

Begonia muricata	AY753725	JF756378	JF756462	-	-	-	JF756546
Begonia nurii	-	MH207260	MH207672	-	-	-	MH208081
Begonia pasamanensis	HQ729070	MH207285	MH207697	-	-	-	MH208102
Begonia puspitae	-	MH207323	MH207736	-	-	-	MH208134
Begonia rajah	AF485136	MH207327	MH454103	-	-	-	MH208140
Begonia reginula	-	MH207330	MH454104	-	-	-	MH208142
Begonia simolapensis	-	-	MH207777	-	-	-	MH208175
Begonia stictopoda	JX656705	MH207387	MH207806	-	-	-	MH208198
Begonia sublobata	-	KR186515	-	KR186689	KR186949	KR186862	KR186775
Begonia sudjanae	-	JF756377	JF756461	-	-	-	JF756545
Begonia tigrina	JX656703	KR186526	-	KR186700	KR186960	KR186873	KR186786
Begonia trichopoda	-	MH207405	MH207827	-	-	-	MH208218
Begonia yappii	KF636491	-	-	-	-	-	-
Begonia yenyeniae	-	-	MH454102	-	-	-	-
Begonia pteridiformis	-	-	MH207732	-	-	-	MH208132
Begonia elisabethae	-	JF756381	JF756465	-	-	-	JF756549
Begonia martabanica	-	-	-	-	-	-	MH244440
Begonia sibthorpioides	-	MH207359	MH207775	-	-	-	MH208171
Begonia tenuifolia	HQ873478	JF756349	JF756433	-	-	-	JF756517
Begonia variabilis	AY753732	-	-	-	-	-	-
Begonia aequata	AF485147	-	-	-	-	-	-
Begonia alabensis	-	MH207030	MH207441	-	-	-	MH207859
Begonia amphioxus	AF485150	JF756397	MH207449	-	-	-	JF756565
Begonia anthonyi	KF636431	-	-	-	-	-	-
Begonia atricha	HQ729047	MH207047	MH207457	-	-	-	MH207872
Begonia augustae	-	MH207048	MH207458	-	-	-	MH207873
Begonia baik	-	MH207050	-	-	-	-	MH207875
Begonia baramensis	-	-	MH207461	-	-	-	MH207877
Begonia berhamanii	KF636426	-	-	-	-	-	-
Begonia beryllae	-	KM378676	MH207466	-	-	-	KM378712
Begonia bipinnatifida	KF636427	MH207058	MH207470	-	-	-	MH207886

Begonia bolsteri	KF636428	-	-	-	-	-	-
Begonia bonthainensis	MG993354	KP712932	KP713108	KR186625	KR186885	KR186798	KP713327
Begonia brevipes	HQ729048	-	-	-	-	-	-
Begonia brevirimosa	AF485145	JF756414	JF756498	-	-	-	JF756582
Begonia bruneiana	-	MH207071	MH207482	-	-	-	MH207899
Begonia burbidgei	MG993356	MH207080	KM378690	-	-	-	MH207906
Begonia capituliformis	MG993357	JN133309	JN133384	-	-	-	JN133413
Begonia cauliflora	-	MH207027	KM378693	-	-	-	MH207855
Begonia chiasmogyna	HQ729050	JN133310	JN133385	-	-	-	JN133414
Begonia chlorosticta	AF485153	JF756402	JF756486	-	-	-	JF756570
Begonia comestibilis	-	JN133311	JN133386	-	-	-	JN133415
Begonia congesta	-	JN133306	JN133381	-	-	-	JN133410
Begonia contracta	KF636433	-	-	-	-	-	-
Begonia corrugata	-	JF756401	JF756485	-	-	-	JF756569
Begonia crispipila	HQ729051	-	-	-	-	-	-
Begonia cucphuongensis	-	MH207123	MH207534	-	-	-	-
Begonia cyanescens	-	MH207127	MH207537	-	-	-	MH207950
Begonia didyma	-	KP712936	KP713129	-	-	-	KP713226
Begonia divaricata	MG993358	-	-	-	-	-	-
Begonia erythrogyna	KF636438	MH207140	MH207550	-	-	-	MH207964
Begonia flacca	-	JN133312	JN133387	-	-	-	JN133416
Begonia guttapila	-	JF756405	JF756489	-	-	-	JF756573
Begonia hainanensis	KF636443	MH207175	MH207584	-	-	-	MH208001
Begonia harauensis	MG993360	-	-	-	-	-	-
Begonia hekensis	-	JN133313	JN133388	-	-	-	JN133417
Begonia hispidissima	-	JN133314	JN133389	-	-	-	JN133418
Begonia holttumii	-	MH207192	MH207602	-	-	-	MH208016
Begonia imbricata	-	KM378679	KM378697	-	-	-	KM378715
Begonia incisa	AF485148	-	-	-	-	-	-
Begonia inobongensis	-	MH207200	MH207610	-	-	-	MH208024
Begonia inostegia	KF636446	MH207201	MH207611	-	-	-	MH208025

Begonia isoptera	KF636447	MH207205	MH207615	-	-	-	MH208029
Begonia jamilahana	-	MH207209	MH207619	-	-	-	MH208033
Begonia kinabaluensis	KF636450	-	-	-	-	-	-
Begonia koordersii	HQ729052	JF756407	JF756491	-	-	-	JF756575
Begonia lagunensis	KF636453	-	-	-	-	-	-
Begonia lambii	KF636454	-	-	-	-	-	-
Begonia laruei	HQ729058	JF756403	MH235412	KR186655	KR186915	KR186828	MH235417
Begonia lasioura	-	JN133315	JN133390	-	-	-	JN133419
Begonia macintyreana	HQ729054	JN133316	JN133391	-	-	-	JN133420
Begonia madaiensis	KF636462	-	-	-	-	-	-
Begonia malachosticta	AF485156	-	-	-	-	-	-
Begonia mamutensis	-	MH207240	MH207649	-	-	-	KM378707
Begonia masarangensis	-	JF756409	JF756493	-	-	-	JF756577
Begonia mekonggensis	-	JN133308	JN133383	-	-	-	JN133412
Begonia mendumiae	-	JN133317	JN133392	-	-	-	JN133421
Begonia merrittii	KF636464	-	-	-	-	-	-
Begonia multijugata	-	JF756404	JF756488	-	-	-	JF756572
Begonia negrosensis	HQ729055	JF756411	JF756495	-	-	-	JF756579
Begonia nobmanniae	-	JN133318	JN133393	-	-	-	JN133422
Begonia oblongifolia	-	KM378668	KM378688	-	-	-	MH208085
Begonia ozotothrix	MG993362	JN133319	JN133394	-	-	-	JN133423
Begonia padangensis	MG993363	-	-	-	-	-	-
Begonia palawanensis	MG993364	KR186504	KR186591	-	-	-	KR186764
Begonia panayensis	KF636469	-	-	-	-	-	-
Begonia papyraptera	-	MH207278	MH207689	-	-	-	-
Begonia pendula	-	JF756395	JF756479	-	-	-	JF756563
Begonia polilloensis	-	JF756412	JF756496	-	-	-	-
Begonia prionota	-	JN133320	JN133395	-	-	-	JN133424
Begonia pseudolateralis	HQ729053	JF756408	JF756492	-	-	-	JF756576
Begonia racemosa	MG993365	MH207324	MH207738	-	-	-	MH208136
Begonia rachmatii	-	MH207326	MH207739	-	-	-	MH208137

Begonia ramosii	HQ729057	-	-	-	-	-	-
Begonia rantemarioensis	-	JN133321	MH207743	-	-	-	JN133425
Begonia rubida	-	MH207337	MH207750	-	-	-	MH208149
Begonia sanguineopilosa	-	JN133322	JN133397	-	-	-	JN133426
Begonia serratipetala	KF636484	JF756413	JF756497	-	-	-	JF756581
Begonia sibutensis	-	MH207361	-	-	-	-	MH208173
Begonia siccacaudata	MG993368	JF756418	JF756502	-	-	-	JF756586
Begonia stenogyna	-	MH207385	MH207805	-	-	-	MH208197
Begonia sublongipes	-	KF521905	-	-	-	-	-
Begonia torajana	-	JN133332	JN133407	-	-	-	JN133436
Begonia vaccinioides	-	KM378682	KM378700	-	-	-	KM378718
Begonia varipeltata	HQ729056	JF756410	MH207838	-	-	-	MH208226
Begonia vermeulenii	-	JN133333	JN133408	-	-	-	JN133437
Begonia watuwilensis	-	JF756406	JF756490	-	-	-	JF756574
Begonia weigallii	-	JN133334	JN133409	-	-	-	JN133438
Begonia wrayi	MG993378	JF756398	-	-	-	-	JF756566
Begonia abdullahpieei	-	MH207018	MH207427	-	-	-	MH207848
Begonia aborensis	-	MH207019	MH207428	-	-	-	MH207849
Begonia acetosella	AY048976	JF756367	JF756451	-	-	-	JF756535
Begonia alpina	AY753717	-	-	-	-	-	-
Begonia annulata	HQ729060	-	-	-	-	-	-
Begonia aptera	AJ287258	JF756369	JF756453	-	-	-	JF756537
Begonia areolata	-	JF756366	JF756450	-	-	-	JF756534
Begonia augustinei	KF636421	KF521900	-	-	-	-	-
Begonia austrotaiwanensis	AJ491199	-	-	-	-	-	-
Begonia balansana	AF485091	MH207051	MH207460	-	-	-	MH207876
Begonia baviensis	JF975955	MH207054	MH207464	-	-	-	MH207880
Begonia cathayana	AY753719	KT599095	-	-	-	-	-
Begonia cathcartii	-	MH207089	MH207499	-	-	-	MH207915
Begonia ceratocarpa	AY048978	MH207090	MH207500	-	-	-	MH207916
Begonia chitoensis	AJ491202	-	-	-	-	-	-

Begonia circumlobata	KP710815	-	-	-	-	-	-
Begonia coptidifolia	KP751373	-	-	-	-	-	-
Begonia cucurbitifolia	JF975969	-	-	-	-	-	-
Begonia daweishanensis	JF975977	-	-	-	-	-	-
Begonia decora	KF636435	JF756355	JF756439	-	-	-	JF756523
Begonia dielsiana	KP710805	-	-	-	-	-	-
Begonia dryadis	KF636436	-	-	-	-	-	-
Begonia dux	-	MH207137	MH207546	-	-	-	MH207960
Begonia edulis	GU176065	KT599085	-	-	-	-	-
Begonia emeiensis	KP710816	-	-	-	-	-	-
Begonia formosana	AJ491211	-	-	-	-	-	-
Begonia griffithiana	KY088186	MH207172	MH207582	-	-	-	MH207998
Begonia halconensis	AF485106	-	-	-	-	-	-
Begonia handelii	KP710818	KT599070	MH207586	-	-	-	MH208002
Begonia hatacoa	AF485111	JF756354	JF756438	-	-	-	JF756522
Begonia hekouensis	JF976000	-	-	-	-	-	-
Begonia hemsleyana	AB972929	-	KM281864	-	-	-	-
Begonia koksunii	-	MH207214	MH207624	-	-	-	MH208038
Begonia laminariae	KF636455	-	-	-	-	-	-
Begonia lancangensis	AY048984	-	-	-	-	-	-
Begonia limprichtii	-	MH207223	MH207633	-	-	-	MH208047
Begonia longicarpa	AF485109	-	-	-	-	-	-
Begonia longifolia	AF485105	KT599061	JF756452	-	-	-	JF756536
Begonia lukuana	AJ491244	-	-	-	-	-	-
Begonia macrotoma	KP710808	-	KM281863	-	-	-	-
Begonia megalophyllaria	JF976025	-	-	-	-	-	-
Begonia multangula	AY753724	JF756364	JF756448	-	-	-	JF756532
Begonia nantoensis	AJ491246	-	-	-	-	-	-
Begonia nepalensis	AY753726	MH207257	MH207669	-	-	-	MH208078
Begonia nuwakotensis	HQ729061	-	-	-	-	-	-
Begonia obovoidea	-	JF756386	JF756470	-	-	-	JF756554

Begonia oreodoxa	KF636467	-	-	-	-	-	-
Begonia palmata	AF485115	KT599055	JF756444	-	-	-	JF756528
Begonia pavonina	KF636472	JF756356	JF756440	-	-	-	JF756524
Begonia pedatifida	KT989484	MK548114	MH207700	-	-	-	MH208105
Begonia perakensis	-	MH207291	MH207704	-	-	-	MH208108
Begonia psilophylla	JF976040	-	-	-	-	-	-
Begonia pulchrifolia	KP710811	-	-	-	-	-	-
Begonia purpureofolia	JF976041	-	-	-	-	-	-
Begonia rex	AF485096	-	-	-	-	-	-
Begonia rhoephila	-	MH207331	MH207745	-	-	-	MH208143
Begonia robusta	AY753729	JF756363	JF756447	-	-	-	JF756531
Begonia roxburghii	AY753730	JF756371	JF756455	-	-	-	JF756539
Begonia scottii	HQ729063	MH207347	MH207761	-	-	-	MH208160
Begonia setifolia	KP710827	-	-	-	-	-	-
Begonia sikkimensis	KF636485	JF756359	JF756443	-	-	-	JF756527
Begonia silletensis	AY048988	JF756370	JF756454	-	-	-	JF756538
Begonia sizemoreae	-	JF756361	JF756445	-	-	-	JF756529
Begonia taiwaniana	KF636488	-	-	-	-	-	-
Begonia teysmanniana	HQ729068	-	-	-	-	-	-
Begonia thomsonii	-	MH207398	MH207818	-	-	-	MH208210
Begonia tsaii	AY048990	-	-	-	-	-	-
Begonia venusta	-	JF756357	JF756441	-	-	-	JF756525
Begonia versicolor	AF485090	JF756358	JF756442	-	-	-	JF756526
Begonia villifolia	JF976055	-	-	-	-	-	-
Begonia xanthina	AY753733	-	-	-	-	-	-
Begonia albococcinea	-	KR186447	-	KR186621	KR186881	KR186794	KR186708
Begonia chingii	KP710820	KT599093	-	-	-	-	-
Begonia floccifera	-	KR186466	JF756427	KR186640	KR186900	KR186813	JF756511
Begonia henryi	KT989500	-	-	-	-	-	-
Begonia hymenophylla	-	JF756382	JF756466	-	-	-	JF756550
Begonia parvula	KP710821	-	-	-	-	-	-

Begonia tenera	-	MH207394	MH207815	-	-	-	MH208206
Begonia kingiana	KF636451	JF756374	JF756458	KR186653	KR186913	KR186826	JF756542
Begonia speluncae	-	MH207381	MH207799	-	-	-	MH208192
Begonia arfakensis	-	MH207044	MH207454	-	-	-	MH207870
Begonia argenteomarginata	-	JF756417	JF756501	-	-	-	JF756585
Begonia strigosa	-	JF756416	JF756500	-	-	-	JF756584
Begonia symsanguinea	-	JF756415	JF756499	-	-	-	JF756583
Begonia yapenensis	-	MH207425	MH207846	-	-	-	MH208233
Begonia puttii	HQ729025	JF756387	JF756471	-	-	-	JF756555
Begonia retinervia	KF636480	-	-	-	-	-	-
Begonia dregei	AF469125	MH235380	KP713174	KR186635	KR186895	-	KP713309
Begonia sutherlandii	AF485215	JF756337	JF756421	KR186692	KR186952	KR186865.	JF756505

418 **Telemidae (Telemidae)**

Species	*H3*	*Wnt*
Apneumonella jacobsoni	MN706468	-
Mekonglema bailing	MN706518	MN706446
Mekonglema kaorao	MN706452	MN706385
Mekonglema walayaku	MN706456	MN706387
Mekonglema xinpingi	MN706504	MN706432
Mekonglema yan	MN706455	MN706386
Pimeloma cheni	MN706464	MN706395
Pinelema adunca	MN706474	MN706402
Pinelema bailongensis	MN706476	MN706406
Pinelema bella	MN706494	MN706421
Pinelema bifida	MN706470	MN706404
Pinelema biyunensis	MN706497	MN706424
Pinelema breviseta	MN706509	MN706437
Pinelema circularis	MN706477	MN706407
Pinelema conglobare	MN706478	MN706408
Pinelema cordata	MN706475	MN706405
Pinelema cucphongensis	MN706479	MN706409
Pinelema cucurbitina	MN706500	MN706427
Pinelema cunfengensis	MN706465	MN706396
Pinelema curcici	MN706485	MN706414
Pinelema daguaiwan	MN706480	MN706410
Pinelema damtaoensis	MN706515	MN706443
Pinelema dengi	MN706491	MN706417
Pinelema dongbei	MN706481	MN706411
Pinelema exiloculata	MN706482	MN706412
Pinelema feilong	MN706483	MN706413
Pinelema grandidens	MN706487	-
Pinelema huobaensis	MN706489	MN706416
Pinelema huoyan	MN706463	MN706394
Pinelema laensis	MN706513	MN706441
Pinelema liangxi	MN706492	MN706418
Pinelema lizhuang	MN706460	MN706391
Pinelema mikrosphaira	MN706493	MN706420
Pinelema nuocnutensis	MN706473	MN706401
Pinelema oculata	MN706496	MN706423
Pinelema pacchanensis	MN706512	MN706440
Pinelema pedati	MN706499	MN706426
Pinelema podiensis	MN706498	MN706425
Pinelema qingfengensis	MN706501	MN706428
Pinelema renalis	MN706502	MN706429
Pinelema shiba	MN706503	MN706431
Pinelema spinafemora	MN706505	MN706433
Pinelema spirae	MN706506	MN706434

Pinelema spirulata	MN706514	MN706442
Pinelema strentarsi	MN706507	MN706435
Pinelema tham.	MN706486	MN706419
Pinelema tortutheca	MN706511	MN706439
Pinelema vesiculata	MN706516	MN706444
Pinelema wangshang	MN706461	MN706392
Pinelema wenyang	MN706517	MN706445
Pinelema xiezi	MN706471	MN706400
Pinelema xiushuiensis	MN706519	MN706447
Pinelema yaosaensis	MN706495	MN706422
Pinelema yashanensis	MN706520	MN706448
Pinelema yunchuni	MN706462	MN706393
Pinelema zhengzhuang	MN706472	-
Pinelema zhewang	MN706521	MN706449
Pinelema zonaria	MN706508	MN706436
Segestria senoculata	MN706523	MN706450
Segestria sp.	MN706524	MN706451
Seychellia wiljoi	MN706453	MN706383
Siamlema changhai	MN706466	MN706397
Siamlema suea	MN706469	MN706399
Sundalema anguina	MN706459	MN706390
Sundalema bonjol	MN706458	MN706389
Sundalema khaorakkiat	MN706467	MN706398
Telema auricoma	MN706484	MN706403
Telema guihua	MN706488	MN706415
Telema tenella	MN706510	MN706438
Telema wunderlichi	MN706490	-
Telemofila fabata	MN706522	MN706430
Telemofila samosirensis	MN706457	MN706388
Zhuanlema peteri	MN706454	MN706384
Althepus stonei	MH382313	-
Althepus tibiatus	MH382315	-
Dysdera spinidorsa	EU139708	-
Dysdera ninnii	EU139735	-
Kukulcania hibernalis	JX240303	-
Opopaea sp.	KX298922	-
Opopaea simoni	KX298924	-
Calponia sp.	KX298958	-
Loxosceles persica	MF467573	-
Loxosceles rufescens	MH382326	-
Pholcus sp.	MG269166	JX023744
Flexicrurum sp.	MH382317	-
Stedocys pagodas	KY018415	-
Scytodes socialis	KX298918	-

419 ***Nesticella* (Nesticidae)**

Species	16S	18S	28S	*Actin 5c*	*COI*	*H3*
Nesticella aelleni	MG200472	MG200649	MG200754	MG201351	MG201003	MG201180
Nesticella apiculata	MG200363	MG200539	MG200716	MG201247	MG200893	MG201070
Nesticella arcuata	MG200426	MG200621	MG200843	MG201323	MG200975	MG201152
Nesticella baiseensis	MG200392	MG200565	MG200802	MG201271	MG200919	MG201096
Nesticella baobab	MG200470	MG200647	MG200753	MG201349	MG201001	MG201178
Nesticella beccus	MG200455	MG200632	MG200736	MG201334	MG200986	MG201163
Nesticella caeca	MG200414	MG200588	MG200820	MG201294	MG200942	MG201119
Nesticella chongqing	MG200412	MG200586	MG200818	MG201292	MG200940	MG201117
Nesticella connectens	MG200487	MG200662	MG200761	MG201364	MG201016	MG201193
Nesticella dazhuangensis	MG200437	MG200601	MG200848	MG201305	MG200955	MG201132
Nesticella falcata	MG200419	MG200594	MG200838	MG201300	MG200948	MG201125
Nesticella fuliangensis	MG200361	MG200533	MG200704	MG201241	MG200887	MG201064
Nesticella gazuida	MG200418	MG200590	MG200824	MG201296	MG200944	MG201121
Nesticella gongshanensis	MG200505	MG200682	MG200786	MG201384	MG201036	MG201213
Nesticella gracilenta	MG200447	MG200614	MG200831	MG201316	MG200968	MG201145
Nesticella griswoldi	MG200468	MG200645	MG200752	MG201347	MG200999	MG201176
Nesticella hongheensis	MG200429	MG200605	MG200854	MG201309	MG200959	MG201136
Nesticella huomachongensis	MG200356	MG200531	MG200709	MG201239	MG200885	MG201062
Nesticella jingpo	-	MG200607	MG200851	MG201311	MG200961	MG201138
Nesticella kaohsiungensis	MG200435	MG200627	MG200788	MG201329	MG200981	MG201158
Nesticella laotica	MG200486	MG200660	MG200759	MG201362	MG201014	MG201191
Nesticella liuzhaiensis	MG200421	MG200596	MG200840	-	MG200950	MG201127
Nesticella mogera175	MG200382	MG200554	MG200724	MG201262	MG200908	MG201085
Nesticella mogera427	MG200379	MG200550	MG200720	MG201258	MG200904	MG201081
Nesticella nandanensis	MG200396	MG200578	MG200797	MG201284	MG200932	MG201109
Nesticella nepalensis	MG200498	MG200674	MG200767	MG201376	MG201028	MG201205
Nesticella odonta	MG200406	MG200580	MG200812	MG201286	MG200934	MG201111
Nesticella phami	MG200508	MG200629	MG200860	MG201331	MG200983	MG201160

Nesticella potala	MG200479	MG200675	MG200749	MG201377	MG201029	MG201206
Nesticella qiaoqiensis	MG200448	MG200615	MG200832	MG201317	MG200969	MG201146
Nesticella qiongensis	MG200422	MG200593	MG200837	MG201299	MG200947	MG201124
Nesticella quelpartensis	JN816452	JN816673	-	-	JN817085	-
Nesticella sanchaheensis	MG200413	MG200587	MG200819	MG201293	MG200941	MG201118
Nesticella semicircularis	MG200416	MG200591	MG200822	MG201297	MG200945	MG201122
Nesticella shanlinensis	MG200441	MG200608	MG200825	MG201312	MG200962	MG201139
Nesticella songi	MG200385	MG200559	MG200791	MG201265	MG200913	MG201090
Nesticella sp.178	MG200469	MG200646	MG200751	MG201348	MG201000	MG201177
Nesticella sp.293	MG200415	MG200592	MG200821	MG201298	MG200946	MG201123
Nesticella sulawesi	MG200477	MG200658	MG200772	MG201360	MG201012	MG201189
Nesticella sumatrana	MG200453	MG200683	MG200857	MG201385	MG201037	MG201214
Nesticella tibetana	MG200495	MG200656	MG200770	MG201358	MG201010	MG201187
Nesticella vanlang	MG200471	MG200648	MG200748	MG201350	MG201002	MG201179
Nesticella verticalis	MG200402	MG200568	MG200805	MG201274	MG200922	MG201099
Nesticella wanzaiensis	MG200366	MG200536	MG200711	MG201244	MG200890	MG201067
Nesticella xixia	MG200451	MG200618	MG200835	MG201320	MG200972	MG201149
Nesticella yanbeiensis	MG200352	MG200523	MG200700	MG201231	MG200877	MG201054
Nesticella yao	MG200405	MG200574	MG200811	MG201280	MG200928	MG201105
Nesticella yui	MG200500	MG200677	MG200782	MG201379	MG201031	MG201208
Nesticella zhiyuani	MG200481	MG200669	MG200775	MG201371	MG201023	MG201200
Nesticella brevipes	-	KF359244	KF359345	-	KF359043	KF359136
Nesticella robusta	-	-	-	-	KX866957	-
Nesticus cellulanus	MG200513	MG200690	MG200866	MG201392	MG201044	MG201221
Pimoa altioculata	KC849144	KC848947	KC849019	-	KP655054	KC849060
Pimoa haden	GU338640	GU338524	GU338587	-	EF128155	-
Pimoa rupicola	MG200518	MG200697	MG200876	MG201398	MG201051	MG201228
Speleoticus navicellatus	MG200515	MG200692	MG200870	MG201393	MG201046	MG201223
Speleoticus sp.Z434	MG200519	MG200693	MG200874	MG201394	MG201047	MG201224
Speleoticus uenoi	MG200516	MG200694	MG200871	MG201395	MG201048	MG201225
Typhlonesticus idriacus	MG200521	MG200696	MG200867	MG201397	MG201050	MG201227

Weintrauboa yele	GU338641	GU338523	GU338588	-	GU338698	-
Wraios longiembolus	MG200510	MG200685	MG200861	MG201387	MG201041	MG201216
Carpathonesticus racovitzai	MG200514	MG200691	MG200865	-	MG201045	MG201222
Centromerus trilobus	KT003108	GU338468	GU338571	-	GU338656	KT002817
Cyclocarcina floronoides tatoro	MG200520	MG200695	MG200869	MG201396	MG201049	MG201226
Diplostyla concolor	FJ838673	GU338467	GU338585	-	GU338697	FJ838743
Hamus bowoensis	MG200511	MG200688	MG200872	MG201390	MG201042	MG201219
Kryptonesticus eremita	MG200512	MG200689	MG200868	MG201391	MG201043	MG201220
Labulla thoracica	MG200517	MG200698	MG200875	MG201399	MG201052	MG201229
Linyphia triangularis	EU333944	EU003390	-	-	FR775771	AY078702
Meioneta nigra	GU338608	GU338504	GU338577	-	GU338662	-
Nanoa enana	-	JN010184	JN010189	-	JN010203	-
Neriene macella	MG200522	MG200699	MG200873	MG201400	MG201053	MG201230

420 ***Troglocoelotes* (Agelenidae)**

Species	12S	16S	18S	28S	*Cox1*	*H3*	*Nad1*	*Wnt*
Troglocoelotes bailongensis	KY791826	KY791527	KY791226	KY790928	KY778814	KY779071	KY790640	KY779365
Troglocoelotes banmenensis	KY791833	KY791534	KY791233	KY790935	KY778821	KY779078	KY790646	KY779370
Troglocoelotes liangensis	KY791831	KY791532	KY791231	KY790933	KY778819	KY779076	KY790644	KY779368
Troglocoelotes nongchiensis	KY791827	KY791528	KY791227	KY790929	KY778815	KY779072	KY790641	KY779366
Troglocoelotes qixianensis	KY791828	KY791529	KY791228	KY790930	KY778816	KY779073	KY790642	-
Troglocoelotes tortus	KY791834	KY791535	KY791234	KY790936	KY778822	KY779079	KY790647	KY779371
Troglocoelotes yumiganensis	KY791832	KY791533	KY791232	KY790934	KY778820	KY779077	KY790645	KY779369
Notiocoelotes orbiculatus	KY791808	KY791509	KY791208	KY790910	KY778798	KY779053	-	KY779350
Notiocoelotes pseudolingulatus	KY791810	KY791511	KY791210	KY790912	KY778800	KY779055	KY790628	KY779352
Notiocoelotes sparus	KY791811	KY791512	KY791211	KY790913	KY778801	KY779056	KY790629	KY779353
Notiocoelotes lingulatus	KY791807	KY791508	KY791207	KY790909	KY778797	KY779052	-	KY779349
Bifidocoelotes sp.	KY791815	KY791516	KY791215	KY790917	KY778803	KY779060	KY790630	KY779357

421 ***Notiocoelotes* (Agelenidae)**

Species	12S	16S	18S	28S	*Cox1*	*H3*	*Nad1*	*Wnt*
Notiocoelotes maoganensis	KY791812	KY791513	KY791212	KY790914	KU886075	KY779057	-	KY779354
Notiocoelotes palinitropus	KY791809	KY791510	KY791209	KY790911	KY778799	KY779054	KY790627	KY779351
Notiocoelotes orbiculatus	KY791808	KY791509	KY791208	KY790910	KY778798	KY779053	-	KY779350
Notiocoelotes pseudolingulatus	KY791810	KY791511	KY791210	KY790912	KY778800	KY779055	KY790628	KY779352
Notiocoelotes sparus	KY791811	KY791512	KY791211	KY790913	KY778801	KY779056	KY790629	KY779353
Notiocoelotes qiongzhongensis	KY791813	KY791514	KY791213	KY790915	KU886074	KY779058	-	KY779355
Notiocoelotes lingulatus	KY791807	KY791508	KY791207	KY790909	KY778797	KY779052	-	KY779349
Draconarius simplicidens	KY791805	KY791506	KY791205	KY790907	KY778795	KY779050	KY790625	KY779347

422 ***Protobothrops* (Viperidae)**

Species	12S	16S	*Cytb*	*ND4*
Protobothrops cornutus	AY294276	AY294267	AY294272	AY294262
Protobothrops dabieshanensis	NC022473	NC022473	NC022473	NC022473
Protobothrops elegans	AF057201	AF057248	AY223575	U41893
Protobothrops flavoviridis	AY352792	AY352730	AY223574	AY352826
Protobothrops himalayanus	KT220270	KT220289	KT220308	KT220328
Protobothrops jerdonii	AY763180	AY763199	HM567474	EU810020
Protobothrops kaulbacki	DQ666056	DQ666055	DQ666060	DQ666057
Protobothrops mangshanensis	AY352787	AY352726	AY352758	AY352821
Protobothrops maolanensis	JN799405	JN799398	JN799401	JN799409
Protobothrops mucrosquamatus	AY223653	AY223666	AY223577	AY223629
Protobothrops tokarensis	AF057202	AF057249	AY223576	AY223628
Protobothrops trungkhanhensis	KT220284	KT220303	KT220323	KT220343
Protobothrops xiangchengensis	AY763188	AY763207	DQ666061	DQ666058
Protobothrops sieversorum	DQ305414	DQ305437	AY352753	DQ305478
Ovophis monticola	HQ325260	HQ325078	HQ325138	HQ325199
Ovophis makazayazaya	HQ325266	HQ325084	HQ325143	HQ325202
Ovophis convictus	HQ325264	HQ325082	HQ325129	HQ325190
Ovophis okinavensis	AF057199	AF057246	AY223573	U41895
Ovophis tonkinensis	HQ325308	HQ325121	HQ325181	HQ325243
Ovophis zayuensis	HQ325273	HQ325089	HQ325150	HQ325208
Gloydius blomhoffi	AY352780	AY352719	AY352751	AY352814
Gloydius brevicaudus	AY352781	AY352720	AY352752	AY352815
Gloydius halys	KY040526	KY040558	KX063802	KX063775
Gloydius intermedius	KY040524	KY040556	KY040617	KY040638
Gloydius stejnegeri	KY040536	KY040568	KX063817	KX063790
Gloydius cognatus	KY040529	KY040561	KY040619	KY040640
Gloydius liupanensis	EF012814	-	JQ687491	JQ687472
Gloydius qinglinensis	KY040534	KY040566	KY040623	KY040644
Gloydius changdaoensis	KY040521	KY040553	KX063821	KX063794
Gloydius shedaoensis	AF057194	AF057241	AY223566	AY223623
Gloydius huangi	MK227409	MK227412	MK227415	MK227418
Gloydius strauchi	KY040543	KY040575	KY040629	KY040650
Gloydius monticola	KY040550	KY040582	KY040636	JX661243
Gloydius rubromaculatus	KY040548	KY040580	KY040634	KY040655
Gloydius angusticep	KY040540	KY040572	KY040626	KY040647
Gloydius tsushimaensis	JN870186	JN870196	JN870203	JN870211
Gloydius ussuriensis	AF057193	AF057240	AY223565	AY223622

423 ***Elaphe* (Colubridae)**

Species	12S	16S	*Cytb*	*ND4*	*ND2*	*C-mos*
Elaphe bimaculata	AY122767	-	DQ902104	DQ902283	DQ902210	DQ902062
Elaphe cantoris	AY122769	DQ902135	DQ902315	DQ902246		DQ902095
Elaphe carinata	AY122839	HM439983	DQ902133	DQ902284	DQ902211	DQ902063
Elaphe climacophora	AY122772	-	DQ902105	DQ902285	DQ902212	DQ902064
Elaphe davidi	AY122775	-	-	-	-	-
Elaphe dione	AF236673	-	DQ902107	DQ902287	DQ902214	DQ902066
Elaphe hodgsoni	-	-	DQ902136	DQ902318	DQ902247	DQ902096
Elaphe moellendorffi	AY122786	DQ902116	DQ902295	DQ902223		DQ902074
Elaphe quadrivirgata	AY122793	-	DQ902120	DQ902300	DQ902228	DQ902078
Elaphe quatuorlineata	AY122796	AF215267	AY486931	AY487067	AY487028	AY486955
Elaphe sauromates	AY122797	-	-	-	-	-
Elaphe schrenckii	AF236672	-	JQ798790	DQ902302	DQ902233	DQ902082
Elaphe taeniura	AY122807	HM439981	EF076709	EF076708	EF076707	EF076705
Oreocryptophis porphyraceus	NC012770	NC012770	DQ902118	DQ902298	NC012770	DQ902076
Archelaphe bella	-	-	DQ902134	DQ902316	DQ902248	DQ902097

Species	12S	16S	*COI*	*Cytb*	*ND3*	*ND2*	*RAG1*	*Tyr*
Odorrana absita	-	EU861542	-	-	EU861516	EU861568	EF088245	EU076768
Odorrana amamiensis	AB200923	AB200947	-	-	-	-	-	-
Odorrana andersonii	DQ359965	KF185057	JN700826	KR264154	KF771312	-	KR264387	KR264455
Odorrana anlungensis	KF185013	KF185049	-	-	-	-	-	-
Odorrana aureola	-	DQ650568	-	-	DQ650437	DQ650504	-	-
Odorrana bacboensis	-	DQ650569	-	-	-	-	-	-
Odorrana banaorum	-	DQ650586	-	-	DQ650455	DQ650522	-	-
Odorrana chapaensis	DQ204431	KX893901	KR087835	-	EU861527	EU861579	EF088255	EU076778
Odorrana chloronota	DQ283394	DQ283394	-	-	-	-	-	-
Odorrana exiliversabilis	KF185020	KF185056	-	-	-	-	-	-
Odorrana fengkaiensis	KT315354	KT315375	-	-	-	-	-	-
Odorrana geminata	-	EU861546	-	-	EU861520	EU861572	-	-
Odorrana graminea	KF185002	KF185038	-	-	-	-	-	-
Odorrana hainanensis	NC034984	NC034984	NC034984	NC034984	NC034984	NC034984	KU840725	-
Odorrana hejiangensis	KF185016	KF185052	-	-	-	-	-	-
Odorrana hosii	KU840535	MG935960	MG935666	KR264179	DQ650471	DQ650539	KU840732	KU840785
Odorrana huanggangensis	KF185023	KF185059	-	-	-	-	-	-
Odorrana ishikawae	AB511282	AB511282	AB511282	AB511282	AB511282	AB511282	-	-
Odorrana jingdongensis	KF185014	KF185050	KR087840	-	-	-	-	-
Odorrana jingdongensis	-	FJ417120	-	-	FJ417218	FJ417169	EF088258	EU076781
Odorrana junlianensis	KF185022	KF185058	-	-	-	-	-	-
Odorrana kuangwuensis	KF184998	KF185034	-	-	-	-	-	-
Odorrana leporipes	KF185000	KF185036	-	-	-	-	-	-
Odorrana lipuensis	-	KM388699	-	-	-	-	-	-
Odorrana livida	-	DQ650615	-	-	-	-	-	-
Odorrana lungshengensis	KF185018	KF185054	-	-	-	-	-	-
Odorrana margaretae	KT315371	EU861566	KR087843	KU217312	EU861540	EU861592	EF088261	EU076785

Odorrana morafkai	KU840526	DQ650632	-	-	DQ650498	DQ650562	EF088263	EU076787
Odorrana mutschmanni	KU356761	KU356765	-	-	-	-	-	-
Odorrana nanjiangensis	KF185006	KF185042	-	-	-	-	-	-
Odorrana narina	AB511287	AB511287	-	-	-	-	-	-
Odorrana nasica	DQ283345	DQ283345	-	-	-	-	-	-
Odorrana nasuta	KF185017	KF185053	-	-	-	-	-	-
Odorrana schmackeri	KF185011	KF185047	KP732086	KP732086	KP732086	KP732086	-	-
Odorrana supranarina	AB200926	AB200950	-	-	-	-	-	-
Odorrana swinhoana	AB200929	AB200953	-	-	-	-	-	-
Odorrana tianmuii	KF185004	KF185040	-	-	-	-	-	-
Odorrana tiannanensis	EF453736	EF453751	KR087851	-	-	-	-	-
Odorrana tormota	DQ835616	DQ835616	DQ835616	DQ835616	DQ835616	DQ835616	EU076750	EU076766
Odorrana utsunomiyaorum	AB200928	AB200952	-	-	-	-	-	-
Odorrana versabilis	KF185019	KF185055	-	-	-	-	-	-
Odorrana wuchuanensis	KF185007	KF185043	KU680791	KU680791	KU680791	KU680791	-	-
Odorrana yizhangensis	KF185012	KF185048	-	-	-	-	-	-
Rana catesbeianus	NC022696	NC022696	NC022696	NC022696	NC022696	NC022696	AB612037	AB612039
Rana kukunoris	KX269185	KX269185	NC035804	KX269332	NC035804	KX269401	KX269550	KX269778
Rana pipiens	Y10945	X86284	EF525892	KM396244	-	-	-	EU769542
Rana septentrionalis	KX269179	KX269179	EF525899	AY083273	-	AY206487	KX269529	KX269757
Rana temporaria	AB058864	AB058882	KP697915	MF624355	-	AF314018	AY323776	KC800261
Rana tlaloci	AY779234	AY779234	-	KX269323	-	KX269393	KX269540	KX269768
Pseudorana weiningensis	KX269217	DQ359996	-	KX269362	-	KX269432	KX269582	DQ360050

425 ***Bibarba* (Cobitidae)**

Species	*Cytb*
Bibarba bibarba	KT585706
Bibarba parvoculus	KT585698
Acantopsis choirorhynchos	AB242161
Canthophrys gongota	NC031576
Cobitis biwae	NC027663
Cobitis lutheri	NC022717
Iksookimia longicorpa	NC027850
Kichulchoia multifasciata	AP011337
Koreocobitis naktongensis	HM535625
Kottelatlimia pristes	NC031597
Lepidocephalichthys guntea	NC031593
Lepidocephalus macrochir	NC031596
Misgurnus mohoity	KF386025
Niwaella delicata	AP009308
Pangio anguillaris	AB242168
Pangio kuhlii	NC031599
Sinorhodeus microlepis	MH190825
Rhodeus shitaiensis	KF176560

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427 ***Oreonectes* (Nemacheilidae)**

Species	*COI*	*Cytb*
Oreonectes jiarongensis	KU987437	KU987437
Oreonectes platycephalus	DQ105197	DQ105197
Oreonectes shuilongensis	KF640641	KF640641
Oreonectes daqikongensis	KU987436	KU987436
Oreonectes furcocaudalis	NC032384	NC032384
Aborichthys elongatus	NC031582	NC031582
Acanthocobitis botia	NC033958	NC033958
Barbatula nuda	NC022858	NC022858
Barbatula toni	KM405199	KM405199
Carpiodes carpio	-	AY366087
Cobitis choii	-	NC010649
Cobitis elongatoides	-	NC023947
Cobitis lutheri	-	NC022717
Cobitis sinensis	AY526868	AY526868
Homatula potanini	NC025321	NC025321
Homatula variegatus	NC020095	NC020095
Jinshaia sinensis	-	KJ739867
Koreocobitis naktongensis	-	NC015798
Leptobotia taeniops	-	KM386686
Micronemacheilus pulcher	NC031581	NC031581
Misgurnus nikolskyi	-	NC008678
Myxocyprinus asiaticus	-	AP006764
Parabotia fasciata	-	KM393223
Schistura balteata	AB242172	AB242172
Schistura jarutanini	NC031584	NC031584
Sinogastromyzon sichangensis	KF711948	KF711948
Triplophysa aliensis	KT213584	KT213584
Triplophysa anterodorsalis	NC024597	NC024597
Triplophysa dalaica	KT213590	KT213590
Triplophysa hsutschouensis	KT213592	KT213592
Triplophysa leptosoma	KT213593	KT213593
Triplophysa lixianensis	NC030521	NC030521
Triplophysa markehenensis	KT213594	KT213594
Triplophysa minxianensis	KT213596	KT213596
Triplophysa orientalis	NC030505	NC030505
Triplophysa pappenheimi	KY419201	KY419201
Triplophysa pseudostenura	KT213601	KT213601
Triplophysa rosa	NC019587	NC019587
Triplophysa scleroptera	KT213602	KT213602
Triplophysa siluroides	NC024611	NC024611
Triplophysa stoliczkai	NC017890	NC017890
Triplophysa tenuis	KT224363	KT224363
Triplophysa tibetana	KM212178	KM212178
Triplophysa wuweiensis	KT224365	KT224365
Triplophysa xichangensis	KT224366	KT224366

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429 ***Triplophysa*** **(Nemacheilidae)**

Species	*COI*	*Cytb*
Triplophysa aliensis	KT213584	KT213584
Triplophysa anterodorsalis	NC024597	NC024597
Triplophysa baotianensis	-	MK610353
Triplophysa bleekeri	JX135578	JX135578
Triplophysa brevibarba	KY971608	KY971608
Triplophysa brevicauda	KT213588	KT213588
Triplophysa chondrostoma	KT213589	KT213589
Triplophysa dalaica	KT213590	KT213590
Triplophysa daqiaoensis	KU557970	-
Triplophysa dorsalis	KT241024	KT241024
Triplophysa fengshanensis	MK204566	-
Triplophysa grahami	-	MK608125
Triplophysa gundriseri	KX039656	-
Triplophysa hsutschouensis	KT213592	KT213592
Triplophysa kashmirensis	MK804126	-
Triplophysa labiata	KT192057	KT192057
Triplophysa leptosoma	KT213593	KT213593
Triplophysa lixianensis	NC030521	NC030521
Triplophysa longipectoralis	MK204568	-
Triplophysa longliensis	MK204567	MW582825
Triplophysa markehenensis	KT213594	KT213594
Triplophysa microps	KT213595	KT213595
Triplophysa minxianensis	KT213596	KT213596
Triplophysa moquensis	KT213597	KT213597
Triplophysa nandanensis	MK204570	MW582824
Triplophysa nanpanjiangensis	KU558006	-
Triplophysa nasobarbatula	MK204569	MK610357
Triplophysa nujiangensa	KT213598	KT213598
Triplophysa orientalis	NC030505	NC030505
Triplophysa pappenheimi	KY419201	KY419201
Triplophysa polyfasciata	KU558040	KX373848
Triplophysa pseudoscleroptera	KU587513	KU587513
Triplophysa pseudostenura	KT213601	KT213601
Triplophysa robusta	KM396312	KM396312
Triplophysa rosa	NC019587	NC019587
Triplophysa rotundiventris	-	MG725402
Triplophysa sanduensis	MH509738	MW582822
Triplophysa scleroptera	KT213602	KT213602
Triplophysa sellaefer	MN896310	MN896570
Triplophysa sewerzowi	KX039658	-
Triplophysa siluroides	NC024611	NC024611
Triplophysa stenura	NC032692	NC032692
Triplophysa stewarti	KT213605	KT213605
Triplophysa stoliczkai	NC017890	NC017890
Triplophysa strauchii	KP297875	KP297875
Triplophysa tenuis	KT224363	KT224363

Triplophysa tianeensis	MK204571	MW582826
Triplophysa tibetana	KM212178	KM212178
Triplophysa ulacholica	KT259194	KT259194
Triplophysa venusta	KT008666	KT008666
Triplophysa weiheensis	-	KY781400
Triplophysa wulongensis	-	MW582823
Triplophysa wuweiensis	KT224365	KT224365
Triplophysa xiangxiensis	KT751089	KT751089
Triplophysa xichangensis	KT224366	KT224366
Triplophysa yaopeizhii	KU558127	-
Aborichthys elongatus	NC031582	NC031582
Acanthocobitis botia	NC033958	NC033958
Barbatula nuda	NC022858	NC022858
Barbatula toni	KM405199	KM405199
Carpiodes carpio	-	AY366087
Cobitis choii	-	NC010649
Cobitis elongatoides	-	NC023947
Cobitis lutheri	-	NC022717
Cobitis sinensis	AY526868	AY526868
Homatula potanini	NC025321	NC025321
Homatula variegatus	NC020095	NC020095
Jinshaia sinensis	-	KJ739867
Koreocobitis naktongensis	-	NC015798
Leptobotia taeniops	-	KM386686
Micronemacheilus pulcher	NC031581	NC031581
Misgurnus nikolskyi	-	NC008678
Myxocyprinus asiaticus	-	AP006764
Oreonectes jiarongensis	KU987437	KU987437
Oreonectes shuilongensis	-	KF640641
Parabotia fasciata	-	KM393223
Schistura balteata	AB242172	AB242172
Schistura jarutanini	NC031584	NC031584
Sinogastromyzon sichangensis	KF711948	KF711948

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431 ***Sinocyclocheilus* (Cyprinidae)**

Species	Mitogenome
Sinocyclocheilus grahami	GQ148557
Sinocyclocheilus huizeensis	MH982229
Sinocyclocheilus tingi	MG323567
Sinocyclocheilus wumengshanensis	MG021442
Sinocyclocheilus anophthalmus	KF892542
Sinocyclocheilus angustiporus	MZ636515
Sinocyclocheilus oxycephalus	MG686610
Sinocyclocheilus qujingensis	MH937706
Sinocyclocheilus multipunctatus	MG026730
Sinocyclocheilus cyphotergous	MW024377
Sinocyclocheilus punctatus	MT361976
Sinocyclocheilus hugeibarbus	MW014319
Sinocyclocheilus lingyunensis	MW411665
Sinocyclocheilus longibarbatus	MW024371
Sinocyclocheilus yishanensis	MK387704
Sinocyclocheilus ronganensis	KX778473
Sinocyclocheilus microphthalmus	MN145877
Sinocyclocheilus anshuiensis	KR069120
Sinocyclocheilus bicornutus	KX528071
Sinocyclocheilus angularis	MZ636514
Sinocyclocheilus zhenfengensis	MW014317
Sinocyclocheilus altishoulderus	FJ984568
Sinocyclocheilus rhinocerous	KR069119
Sinocyclocheilus furcodorsalis	GU589570
Sinocyclocheilus jii	MF100765
Barbus barbus	AB238965
Carassius auratus	AB111951
Cyprinus carpio	JN105357
Danio rerio	KM244705
Garra orientalis	JX290078
Myxocyprinus asiaticus	AY526869
Neolissochilus hexagonolepis	KU380329
Onychostoma simum	KF021233
Puntius ticto	AB238969
Schizothorax yunnanensis	KR780749

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433 ***Wardomycopsis* (Microascaceae)**

Species	ITS	LSU	TEF	TUB
Wardomycopsis inopinata	LN850955	-	LN851106	LN851160
Wardomycopsis humicola	KU314981	MH870508	LN851103	LN851157
Wardomycopsis fusca	MK329142	MK329047	MK336077	MK336148
Wardomycopsis dolichi	MK329139	MK329044	MK336074	-
Wardomycopsis longicatenata	KU746710	KU746756	KX855255	KU746801
Wardomycopsis litoralis	MK312455	-	LN851107	LN851161
Wardomycopsis ellipsoconidiophora	MK329140	MK329045	MK336075	MK336146
Microascus brunneosporus	LM652390	HG380497	HG380420	LM652605
Microascus pseudolongirostris	-	-	KX924147	-
Scopulariopsis candida	MN653250	MH866411	KX924236	KX924444
Scopulariopsis brevicaulis	MT666173	MK131391	MT420423	MT433465
Scopulariopsis asperula	MH857093	MH867110	MG859987	MG878095
Pseudoscopulariopsis schumacheri	KX923953	AF400874	KX924175	KX924387

Species	ITS	LSU	TEF	TUB
Microascus alveolaris	LM652380	HG380482	HG380405	LM652596
Microascus brunneosporus	LM652390	HG380497	HG380420	LM652605
Microascus campaniformis	LM652391	HG380495	HG380418	LM652606
Microascus chartarus	LM652393	HG380463	HG380386	LM652607
Microascus cinereus	LM652394	HG380347	HG380424	LM652608
Microascus cirrosus	LM652400	HG380429	HG380352	LM652614
Microascus croci	LM652407	LM652508	LM652560	LM652621
Microascus expansus	LM652409	HG380491	HG380414	LM652623
Microascus hyalinus	LM652418	LM652513	LM652564	LM652631
Microascus intricatus	LM652419	HG380496	HG380419	LM652632
Microascus longirostris	LM652421	LM652515	LM652566	LM652634
Microascus trigonosporus var. *macrosporus*	LM652423	LM652517	LM652568	LM652636
Microascus murinus	LM652424	HG380481	HG380404	LM652637
Microascus paisii	LM652434	LM652518	LM652569	LM652647
Microascus pyramidus	LM652439	HG380435	HG380358	LM652652
Microascus restrictus	LM652440	HG380494	HG380417	LM652653
Microascus senegalensis	LM652441	LM652523	LM652574	LM652654
Microascus trigonosporus	LM652444	HG380438	HG380361	LM652656
Microascus verrucosus	LM652446	HG380493	HG380416	LM652658
Microascus collaris	MK329109	MK329012	MK336042	MK336120
Microascus levis	MK329108	MK329015	MK336045	MK336123
Microascus sparsimycelialis	MK329111	MK329016	MK336046	MK336124
Microascus superficialis	MK329113	MK329018	MK336048	MK336126
Microascus trigonus	MK329117	MK329022	MK336052	MK336130
Microascus globulosus	KU746688	KU746734	KX855233	KU746779
Microascus anfractus	KU746686	KU746732	KX855231	KU746777
Microascus atrogriseus	MG516723		MG516730	MG516732
Microascus chinensis	NR_160574			
Microascus cleistocarpus	MH866078	MH877566	KX924076	KX924286
Microascus hollandicus	KX923869		KX924094	KX924304
Microascus longicollis	KX923874		KX924097	KX924309
Microascus melanosporus	MG516722		MG516728	MG516738
Microascus micronesiensis	KX923906		KX924129	KX924341
Microascus pseudolongirostris			KX924147	
Microascus pseudopaisii	KX923924		KX924149	KX924359
Microascus terreus	KX923941	MH870781	KX924165	KX924375
Microascus trautmannii	KX923942		KX924166	KX924376
Scopulariopsis candida	MN653250	MH866411	KX924236	KX924444
Scopulariopsis brevicaulis	MT666173	MK131391	MT420423	MT433465

Scopulariopsis asperula	MH857093	MH867110	MG859987	MG878095
Pseudoscopulariopsis schumacheri	KX923953	AF400874	KX924175	KX924387
Wardomycopsis inopinata	LN850955		LN851106	LN851160
Wardomycopsis humicola	KU314981	MH870508	LN851103	LN851157
Wardomycopsis litoralis	MK312455		LN851107	LN851161

435 ***Gamszarea* (Cordycipitaceae)**

Species	ITS	LSU	RPB2	SSU	TEF	TUB
Gamszarea humicola	MK329092	MK328997	MK335979	MK311230	MK336027	-
Gamszarea lunata	MK329094	MK328999	MK335981	MK311232	MK336029	-
Gamszarea microspora	MK329096	MK329001	MK335983	MK311234	MK336031	-
Gamszarea restricta	LT548279	-	-	-	LT626943	LT989952
Gamszarea testudinea	LT992871	-	-	-	LT992867	LT992869
Gamszarea wallacei	EF641891	AY184967	EF469119	AY184978	EF469073	-
Lecanicillium fusisporum	MW303984	MH871316	KR064302	MK164104	KM283817	-
Lecanicillium psalliotae	MW314051	MH879607	MH879626	MK164121	MH879678	MH287134
Simplicillium lamellicola	MT242290	MT807907	DQ522462	MT807908	MT826785	-
Simplicillium lanosoniveum	MT508802	MT807907	KY807096	-	MT131817	-
Simplicillium obclavatum	MT487854	MH872599	-	AF339567	LC382200	-
Beauveria bassiana	MT764765	MN576824	MN576938	-	-	MN901081
Beauveria brongniartii	MT239444	MN576825	MN576939	MG642881	MN576995	EU604107
Cordyceps fumosorosea	MW137998	MN576817	MN576931	MH879638	MN576987	-
Cordyceps kyusyuensis	AY781661	EF468813	EF468917	EF468960	EF468754	-
Cordyceps bifusispora	MG746394	MH879602	MF416434	MH879650	MH879673	-
Cordyceps militaris	MW314048	-	MN576932	-	MN576988	-

436 ***Simplicillium* (Cordycipitaceae)**

Species	ITS	LSU	RPB2	SSU	TEF
Simplicillium album	MK329133	MK329038	-	-	MK336068
Simplicillium aogashimaense	MT819864	MT156306	-	LC496889	LC496904
Simplicillium calcicola	KU746706	KU746752	-	-	KX855252
Simplicillium cicadellidae	MN006243	-	-	-	MN022263
Simplicillium chinense	KC575116	KX425621	-	KC610806	-
Simplicillium coffeanum	MF066034	MF066032	-	-	-
Simplicillium cylindrosporum	MT320760	LC496876	-	LC496892	LC496906
Simplicillium filiforme	MH979338	MH979399	-	-	-
Simplicillium formicidae	MN006241	-	MN022267	-	-
Simplicillium humicola	MK329136	MK329041	-	-	MK336071
Simplicillium lamellicola	MT807906	MT807907	LN714708	MT807908	MT826785
Simplicillium lanosoniveum	MT508802	MT081956	KY807096	-	MT131817
Simplicillium lepidopterorum	MN006246	-	-	-	MN022265
Simplicillium minatense	MW166341	MT156307	-	LC496893	LC496908
Simplicillium obclavatum	MT102853	MK788174	-	AF339567	LC382200
Simplicillium subtropicum	MW260103	LC496880	-	LC496895	LC496910
Simplicillium sympodiophorum	MH990628	LC496882	-	LC496897	LC496912
Simplicillium yunnanense	-	MN576784	-	-	MN576954
Akanthomyces lecanii	MW165534	MT460247	-	-	-
Beauveria bassiana	MT820333	MN576824	MN576938	-	-
Beauveria brongniartii	MH854861	MN576825	MN576939	-	MN576995
Cordyceps chiangdaoensis	KT261394	MF140732	-	-	KT261403
Cordyceps militaris	MW314048	MN576818	MN576932	-	MN576988

437 ***Paracremonium*** **(Nectriaceae)**

Species	ITS	LSU	RPB2	TEF	TUB
Paracremonium apiculatum	MK329123	MK329028	-	-	MK336136
Paracremonium ellipsoideum	MK329125	MK329030	-	-	MK336138
Paracremonium variiforme	KU746691	KU746737	KY883246	-	KU746783
Paracremonium binnewijzendi	MK828669	MK828236	MN194019	-	MG254816
Paracremonium moubasheri	KX384655	-	-	-	-
Paracremonium inflatum	km231830	-	KM232394	KM231964	KM232101
Paracremonium contagium	KM231830	-	KM232396	KM231966	KM232103
Paracremonium pembeum	KP012598	MT252038	KT936342	-	KU053061
Xenoacremonium falcatus	MW376895	-	-	KM231967	-
Xenoacremonium recifei	MW136145	MH870491	KM232397	KM231968	KU053053

438 **Movie S1. East Asian subtropical zone dynamics.** The estimated location of

439 subtropical climate in East Asia based on reconstructions of temperature and aridity.

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