REFERENCES

Adedeji, O. and Jewoola, O.A. 2008. Importance of leaf epidermal characters in the *Asteraceae* Family. **Notulae Botanicae Horti Agrobotanici Cluj-Napoca** 36(2): 7–16.

Bentham, G. 1873. Notes on the classification, history and geographical distribution of the Compositae. **Journal of the Linnean Society, Botany** 13: 335–577.

Bremer, K. 1994. **Asteraceae: Cladistics and Classification**. Timber Press, Portland, OR.

Bunwong, S. and Chantaranothai, P. 2008. Pollen morphology of the Tribe Vernonieae (Compositae) in Thailand. **The Natural History Journal of Chulalongkorn University** 8(1): 45–55.

Bunwong, S., Robinson, H. and Chantaranothai, P. 2009. Taxonomic notes on *Camchaya* and *Iodocephalus* (Vernonieae: Asteraceae), and a new genus *Iodocephalopsis*. **Proceedings of the Biological Society of Washington** 122: 357–363.

Candolle, A.P. 1836. **Prodromus Systematis Naturalis Regni Vegetabilis**. vol. 5. Treuttle and Würtz, Paris.

Cassini, H. 1819. Sixième mémoire Sur la famille des Synanthérées contenant les caractères des tribus. **Journal de Physique, de Chimie, d'Histoire Naturelle et des Arts** 88: 150–163, 189–204.

Cassini, H. 1828. Vernoniées. In: **Dictionnaire des Sciences Naturelles**. G.L. Cuvier, (Ed.), ed. 2, vol. 57. Le Normant, Paris.

Dematteis, M. and Pire, S.M. 2008. Pollen morphology of some species of *Vernonia s.l.* (Vernonieae, Asteraceae) from Argentina and Paraguay. **Grana** 47(2): 117–129.

Downie, S.R. and Katz-Downie, D.S. 1996. A molecular phylogeny of Apiaceae subfamily Apioideae: evidence from nuclear ribosomal DNA internal transcribed spacer sequences. **American Journal of Botany** 83: 234–251.

Edgar, R.C. 2004. MUSCLE: multiple sequence alignment with high accuracy and high throughput. **Nucleic Acids Research** 32: 1792–1797.

Ekman, E. L. 1914. West Indian Vernoniae. **Arkiv for Botanik** 13: 1-106.

Faust, W.Z. and Jones, S.B. 1973. The systematic value of trichome complements in a North American group of *Vernonia* (Compositae). **Rhodora** 75: 517–528.

Felsenstein, J. 1985. Confidence limits on phylogenies: an approach using the bootstrap. **Evolution** 39: 783–791.

Funk, V.A., Bayer, R.J., Keeley, S., Chan, R., Watson, L., Gemeinholzer, B., Schilling, E., Panero, J.L., Baldwin, B.G., Garcia-Jacas, N., Susanna, A. and Jansen, R.K. 2005. Everywhere but Antarctica: using a supertree to understand the diversity and distribution of the Compositae. **Biologiske Skrifter** 55: 343–374.

Funk, V.A., Susanna, A., Stuessy, T.F., and Robinson, H. 2009. In: **Systematics, Evolution, and Biogeography of Compositae**. V.A. Funk, A. Susanna, T.F. Stuessy and R.J. Bayer (Eds.), pp. 171–189. IAPT, Vienna.

Gagnepain, F. 1920. Quatre Genres Nouveaux de Composees. **Notulae Systematicae** 4: 14–18.

Geyer, C.J. 1991. Markov chain Monte Carlo maximum likelihood. In: **Computing science and statistics: Proceedings of the 23rd Symposium on the Interface**. E.M. Keramidas (Ed.), pp. 156–163. Interface Foundation, Fairfax Station, VA.

Gleason, H.A. 1906. A revision of the North American Vernonieae. **Bulletin of the New York Botanical Garden** 4: 144–243.

Gleason, H. A. 1922. Vernonieae. **North American Flora** 33: 52-95.

Gleason, H. A. 1923a. Evolution and geographical distribution of the genus *Vernonia* in North America. **American Journal of Botany** 10: 187-202.

Gleason, H. A. 1923b. The Bolivian species of *Vernonia*. **American Journal of Botany** 10: 297-309.

Huang, Y., Ding, Z.-H. and Liu, J.K. 2003. A new highly oxygenated flavone from *Vernonia saligna*. **Zeitschrift für Natürforschung** 58: 347–350.

Isawumi, M. A. 1984. Foliar trichome studies in the genus *Vernonia,* Tribe Vernonieae (Composite) in West Africa. **Nigerian Journal of Science** 18: 52-69.

Isawumi, M.A. 1996. Trichome types and their taxonomic value at the sectional and species level in West African *Vernonia* (Compositae). In: **Compositae: Systematics. Proceedings of the International Compositae Conference, Kew 1994**. D.J.N. Hind and H. Beentje (Eds). vol. 1, pp. 29–39. Kew.

Jansen, R.K. 1992. Current research. **Plant Molecular Evolution Newsletter** 2: 13–14.

Jansen, R.K. and Palmer, J.D. 1987. A chloroplast DNA inversion marks an ancient evolutionary split in the sunflower family (Asteraceae). **Proceedings of the National Academy of Sciences of the United States of America** 84: 5818–5822.

Jeffrey, C. 1988. The Vernonieae of east tropical Africa. Notes on the Compositae: V. **Kew Bulletin** 43: 195–277.

Jones, S.B. 1970. Scanning electron microscopy of pollen as an aid to the systematics of *Vernonia* (Compositae). **Bulletin of the Torrey Botanical Club** 97(6): 325–335.

Jones, S. B. (1973). Revision of *Vernonia* sect. Eremosis (Compositae) in North America. **Brittonia** 25: 86-115.

_____. 1977. Vernonieae-Systematic Review. In: **The Biology and Chemistry of the Compositae**. V.H. Heywood, J.B. Harborne and B.L. Turner (Eds.), pp. 503–521. Academic Press, London.

Keeley, S. C. 1978. A revision of the West Indian Vernonias (Compositae). **Journal of the Arnold Arboretum** 59: 360-413.

Keeley, S.C., Forsman, Z.H. and Chan., R. 2007. A phylogeny of the ''evil tribe'' (Vernonieae: Compositae) reveals Old/New World long distance dispersal: Support from separate and combined congruent datasets (trnL-F, ndhF, ITS). **Molecular Phylogenetics and Evolution** 44: 89–103.

Keeley, S.C. and Jansen, R.K. 1994. Chloroplast DNA restriction site variation in the Vernonieae (Asteraceae), an initial appraisal of the relationship of New and Old World taxa and the monophyly of *Vernonia*. **Plant Systematics and Evolution** 193: 249–265.

Keeley, S.C. and Jones, S.B. 1977. Taxonomic implications of external pollen morphology to *Vernonia* (Compositae) in the West Indies. **American Journal of Botany** 64(5): 576–584.

_____. 1979. Distribution of pollen types in *Vernonia* (Vernonieae: Compositae). **Systematic Botany** 4: 195–202.

Keeley, S.C. and Robinson, H. 2009. Vernonieae. In: **Systematics, Evolution, and Biogeography of Compositae**. V.A. Funk, A. Susanna, T.F. Stuessy and R.J. Bayer (Eds.) pp. 439–461. IAPT, Vienna.

Keeley, S.C. and Turner, B.L. 1990. A preliminary cladistic analysis of the genus *Vernonia* (Vernonieae: Asteraceae). **Plant Systematics and Evolution, Supplementum** 4: 45–66.

Kerr, A.F.G. 1936. *Vernonia* Schreb. **Flora Siamensis Enumeratio** 2(3): 236–245.

Kim, H.-G., Keeley, S.C., Vroom, P.S. and Jansen, R.K. 1998. Molecular evidence for an African origin of the Hawaiian endemic *Hesperomannia* (Asteraceae). **Proceedings of the National Academy of Sciences of the United States of America** 95: 15440–15445.

Kingham, D.L. 1976. A study of the pollen morphology of tropical African and certain other *Vernonieae* (Compositae). **Kew Bulletin** 31: 9–26.

Kirtikar, K.R., Basu, B.D. and I.C.S. 1984. **Indian Medicinal Plants.** Latit Mohan Basu, India.

Koyama, H. 1984. Taxonomic Studies in the Compositae of Thailand 3. **Acta Phytotaxonomica Geobotanica** 35(1–3): 49–58.

_____. 1993. Taxonomic studies in the Compositae of Thailand 10. *Vernonia* Schreb. sect. *Decaneurum* (DC.) Oliv. **Acta Phytotaxonomica Geobotanica** 44(1): 29–34.

_____. 1997. Taxonomic studies in the Compositae of Thailand 11. *Vernonia* Schreb. sect. *Strobocalyx* Bl. **Bulletin of the Science Museum Series B (Botany)** 23(4): 159–166.

_____. 1998. Taxonomic studies in the Compositae of Thailand 12. *Vernonia* Schreb. sect. *Tephrodes* DC. and sect. *Cyanopis* Bl. **Bulletin of the Science Museum Series B (Botany)** 24(3): 109–115.

Koyama, H. 2003. Taxonomic studies in the Compositae of Thailand 15. *Vernonia* sect. *Calcarea* comb. nov. **Bulletin of the Science Museum Series B (Botany)** 29(1): 15–22.

_____. 2004. Taxonomic studies in the Compositae of Thailand 16. *Vernonia* sect. *Xipholepis* and *Claotrachelus*. **Bulletin of the Science Museum Series B (Botany)** 30(1): 21–34.

_____. 2005. Taxonomic studies in the Compositae of Thailand 17. *Vernonia* sect. *Lepidaploa* subsect. *Paniculatae*. **Bulletin of the Science Museum Series B (Botany)** 31(2): 67–78.

Krishna, K.G.N., Masilamani, S., Ganesh, M.R., Aravind, S. and Sridhar, S.R. 2003. Zaluzanin D: a fungistatic sesquiterpene from *Vernonia arborea*. **Fitoterapia** 74: 479–482.

Kumar, S., Tamura, K. and Nei, M. 2004. MEGA3: an integrated software for molecular evolutionary genetics analysis and sequence alignment. **Briefing in Bioinformatics** 5: 150–163.

Lessing, C.F. 1832. **Synopsis Generum Compositarum**. Duncker & Humblot, Berlin.

Liu, Q.-H., Yuan, J.-Q., Suo, M.–R. and Yang, J.-S. 2005. Chemical Constituents of the Roots of *Vernonia cumingiana* Benth. **Acta Botanica Sinica** 47(8): 1016–1020.

Macleish, N. F. F. 1987. Revision of *Eremanthus* (Compositae, Vernonieae). **Annals of the Missouri Botanical Garden** 74(2): 265-290.

Maddison, W.P. and Maddison, D.R. 2001. **MacClade, analysis of phylogeny and character evolution**, version 4.03. Sinauer Associates, Sunderland.

Narayana, B.M. 1979. Taxonomic value of trichomes in *Vernonia* Schreb. (Asteraceae). **Proceedings of the Indian Academy of Sciences** 88B(5): 347–357.

Ogundare, A.O., Adetuyi, F.C. and Akinyosoye, F.A. 2006. Antimicrobial activities of *Vernonia tenoreana*. **African Journal of Biotechnology** 5(18): 1663–1668.

Rambaut, A. 1996. **Se-Al: Sequence Alignment Editor (Se-Al v2.0a11)**. Available Source: http://evolve.zoo.ox.ac.uk/. March 30, 2009.

Robinson, H. 1999a. Generic and subtribal classification of American Vernonieae. **Smithsonian Contributions to Botany** 89: 1–116.

_____. 1999b. Revision of paleotropical Vernonieae (Asteraceae). **Proceedings of the Biological Society of Washington** 112: 220–247.

_____. 2007. Vernonieae. In: **The Families and Genera of Vascular Plants, vol. 8, Flowering Plants, Eudicots, Asterales**. J.W. Kadereit and C. Jeffrey (Eds.), pp. 149–174. Springer, Berlin.

Robinson, H., Bunwong, S. and Chantaranothai, P. (in press). A new genus, *Kurziella*, from Thailand (Vernonieae: Asteraceae). **Proceedings of the Biological Society of Washington**.

Robinson, H. and Skvarla, J.J. 2006. Studies on the Gymnantheminae (Vernonieae: Asteraceae): restoration of the genus *Monosis*. **Proceedings of the Biological Society of Washington** 119: 600–607.

_____. 2007. Studies on the Gymnantheminae (Vernonieae: Asteraceae) II: A new genus, *Decaneuropsis*, from China, India, and southeast Asia. **Proceedings of the Biological Society of Washington** 120: 359–366.

_____. 2009. Study on the Paeotropical Vernonieae (Asteraceae): addition to the genus *Acilepis* from southern Asia. **Proceedings of the Biological Society of Washington** 122: 131–145.

Robinson, H., Keeley, S.C., Skvarla, J.J. and Chan, R. 2008. Studies on the Gymnantheminae (Vernonieae: Asteraceae) III: restoration of the genus *Strobocalyx* and the genus *Tarlmounia*. **Proceedings of the Biological Society of Washington** 121: 19–33.

Ronquist, F. and Huelsenbeck, J.P. 2003. MrBAYES3: Bayesian Phylogenetic inference under mixed models. **Bioinformatics** 19: 1572–1574.

Roque, N., Keil, D.J. and Susanna, A. 2009. Illustrated glossary of Compositae. In: **Systematics, Evolution, and Biogeography of Compositae**. V.A. Funk, A. Susanna, T.F. Stuessy and R.J. Bayer (Eds.), pp. 781–806. IAPT, Vienna.

Saralamp, P., Chuakul, W., Temsiririrkkul, R. and Clayton, T. 1996. **Medicinal Plant in Thailand**. Vol. 1. Department of Pharmaceutical Botany, Faculty of Phamacy, Mahidol University, Bangkok.

Skvarla, J.J., DeVore, M.L. and Chissoe, W.F. 2005. Lophate sculpture of Vernonieae (Compositae) pollen. **Review of Palaeobotany and Palynology** 133: 51–68.

Smith, C.E. 1969. Pollen characteristics of African species of *Vernonia*. **Journal of Arnold Arboretum** 50: 469–477.

Smith, G. L. & Coile, N. C. 2007. *Piptocarpha* (Compositae: Vernonieae). **Flora Neotropica Monograph** 99: 1-94.

Stutts, J. G. 1988. Taxonomic revision of *Vernonia* Subsect - Chamaedrys (Compositae, Vernonieae). **Rhodora** 90(861): 37-99.

Stutts, J. G. & Muir, M. A. 1981. Taxonomic revision of *Piptocoma* Cass. (Compositae, Vernonieae). **Rhodora** 83(833): 77-86.

Suvatti, C. 1978. **Flora of Thailand**. vol. 2. Kurusapha, Thailand.

Swofford, D.L. 2002. **PAUP*: Phylogenetic analysis using parsimony (* and other methods)**, version 4.0b10. Sinauer Press, Sunderland, Massachusetts.

Taberlet, P., Gielly, L., Pautou, G. and Bouvet, J. 1991. Universal primers for amplification of three non-coding regions of chloroplast DNA. **Plant Molecular Biology** 17: 1105–1109.

White, T.J., Bruns, T., Lee, S. and Taylor, J. 1990. Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. In: **PCR protocols: A guide to methods and applications**. M. Innics, D. Glfand, J. Sninsky and T.J. White (Eds.), pp. 315–322. Academic Press, San Diego.

Wodehouse, R.P. 1928. The phylogenetic value of pollen grain characters. **Annals of Botany** 42: 891–934.

Wodehouse, R.P. 1935. **Pollen Grains.** New York & London, McGraw-Hill.

APPENDICES

APPENDIX A

The floristic regions and provinces map of Thailand

The floristic regions and provinces map of Thailand

(Applied from Flora of Thailand, Cyperaceae, vol. 6, part 4)

FLORISTIC REGIONS AND PROVINCES OF THAILAND

***N* (NORTHERN)**
1 Mae Hong Son
2 Chiang Mai
3 Chiang Rai
4 Phayao
5 Nan
6 Lamphun
7 Lampang
8 Phrae
9 Uttaradit
10 Tak
11 Sukhothai
12 Phitsanulok
13 Kamphaeng Phet
14 Phichit
15 Nakhon Sawan

***NE* (NORTHEASTERN)**
16 Phetchabun
17 Loei
18 Nong Bua Lum Phu
19 Udon Thani
20 Nong Khai
21 Sakon Nakhon
22 Nakhon Phanom
23 Mukdahan
24 Kalasin
25 Maha Sarakham
26 Khon Kaen

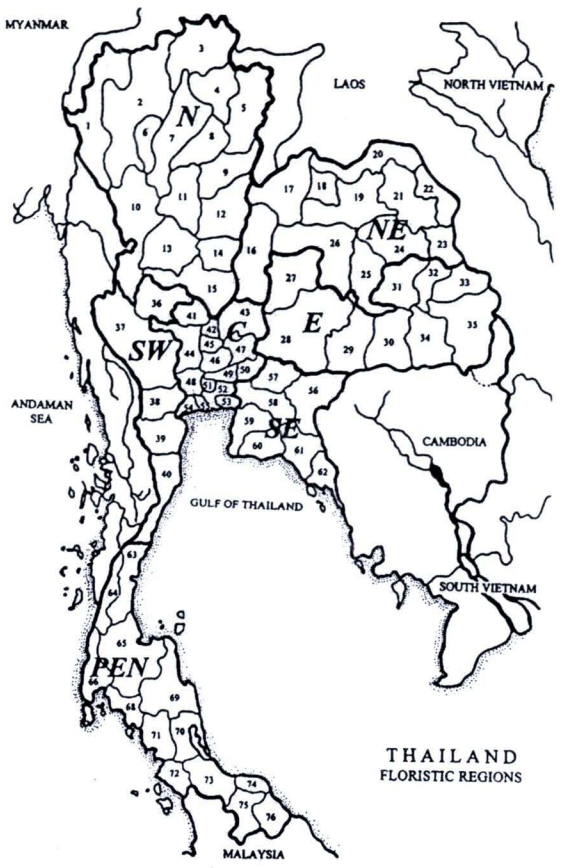
***E* (EASTERN)**
27 Chaiyaphum
28 Nakhon Ratchasima
29 Buri Ram
30 Surin
31 Roi Et
32 Yasothon
33 Amnat Charoen
34 Si Sa Ket
35 Ubon Ratchathani

***SW* (SOUTHWESTERN)**
36 Uthai Thani
37 Kanchanaburi
38 Ratchaburi
39 Phetchaburi
40 Prachuap Khiri Khan

***C* (CENTRAL)**
41 Chai Nat
42 Sing Buri
43 Lop Buri
44 Suphan Buri
45 Ang Thong
46 Phra Nakhon Si Ayutthaya
47 Saraburi
48 Nakhon Pathom
49 Pathum Thani
50 Nakhon Nayok
51 Nonthaburi
52 Krung Thep Maha Nakhon (Bangkok)
53 Samut Prakan
54 Samut Songkhram
55 Samut Sakhon

***SE* (SOUTHEASTERN)**
56 Sa Kaeo
57 Prachin Buri
58 Chachoengsao
59 Chon Buri
60 Rayong
61 Chanthaburi
62 Trat

***PEN* (PENINSULAR)**
63 Chumphon
64 Ranong
65 Surat Thani
66 Phangnga
67 Phuket
68 Krabi
69 Nakhon Si Thammarat
70 Phatthalung
71 Trang
72 Satun
73 Songkhla
74 Pattani
75 Yala
76 Narathiwat



APPENDIX B

Molecular and morphological data set for phylogenetic study

1. ITS set

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Input data matrix:

                              111111111122222222223333333333444444444455555555556666666666777
Taxon/Node           123456789012345678901234567890123456789012345678901234567890123456789012
---------------------------------------------------------------------------------------------
Acilepis attenua     TGCTTAAACTCAGCGGGTAATCCCGCATGACC----TGGGGTCGCGTTCGAAACATTGACAT-GAGACAATG
Acilepis attenua     TGCTTAAACTCAGCGGGTAATCCCGCCTGACC----TGGGGTCGCGTTCGAAACATTGACAT-GAGACAATG
Acilepis attenua     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTTCGAAACATTGACAT-GAGACAATG
Acilepis attenua     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTTCGAAACATTGACAT-GAGACAATG
Acilepis chiangd     ????????????????????????????????????????????????????????????????????????
Acilepis diverge     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCGAAACATTGACATAAAGATAATG
Acilepis diverge     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCGAAACATTGACATAAAGATAATG
Acilepis kingii      TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCGAAACATTAACAT-ACGATAATG
Acilepis namnaoe     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCGAAACATTGACAT-AAGACAATG
Acilepis ngaoens     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCGAAACATTGACAT-AAGACAATG
Acilepis peguens     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCAAAACATTGACAT-ACAATAATG
Acilepis pseudos     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTTCGAAACATTGACAT-GAGACAATG
Acilepis saligna     ----TATGCTAATAGCGTAGTCGC---TGAC-----TGGGGTCGGATTCGAAACATTAACAT-ACGATAATG
Acilepis silhete     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCAAAACATTGACAT-AAGACAATG
Acilepis sutepen     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACCTGACTGGGGTCGCGTTCGAAACATTGACAT-GAGACAATG
Acilepis sutepen     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTTCGAAACATTGACAT-GAGACAATG
Camchaya gracili     TGCTTAAACTCAGCGGGTAATCCCGCCTGGCC----TGGGGTCGCATTTGAAACACCAATAA---CACATCA
Camchaya loloana     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGATCGCATTTGAAACATCAACAC---AACATCA
Camchaya loloana     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGATCGCATTTGAAACATCAACGC---AACATCA
Camchaya mukdaha     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGATCGCATTTGAAACATCAACAC---AACATCA
Camchaya mukdaha     ---------------------------TGA-C----TGGGATCGCATTTG-AACATCAACAC---AACATCA
Camchaya pentago     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGATCGCATTTGAAACATCAACAC---AACATCA
Camchaya sp1         ---------------------------TGA-C----TGGGA-CGCATTTG-AACATCAACAA---GGCATCA
Camchaya spinuli     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGATCGCATTTGAAACATCAACAC---AACATCA
Camchaya spinuli     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGATCGCATTTGAAACATCAACAC---AACATCA
Camchaya spinuli     TGCTTAAACTCAGCGGGTAGTCCCGCCTGAAC----TGGGATCGCATTTGAAACATCAACAC---AACATCA
Camchaya tenuifl     ---------------------------TGACC----TGGGA-CGCATTTG-AACATCAACAA---GGCATCA
Cyanthillium cin     TGCTTAAACTCAGCGGGTAGTCCCGTCTGACC----TGGGGTCGCATTCGAAGCATCAA-ACAAAGATAATG
Cyanthillium hoo     TGCTTAAACTCAGCGGGTAGTCCCGTCTGACC----TGGGGTCGCATTCGAAGCATCAATCA----AAGAAG
Decaneuropsis cu     -------------------------------------GGGGTCGCGATCGAAGCGTCATCAT-AAGACGACA
Decaneuropsis eb     TGCTTAAACTCAGCGGGTAATCCCGCCTGACC----TGGGGTCGCGATCGAAGCGTCATCAT-AAGACGACA
Decaneuropsis ga     ????????????????????????????????????????????????????????????????????????
Distephanus mada     -------------------------------------------------CGAAGCATCGTCAC-GAGACGACA
Distephanus poly     -------------------------------------------------CGAAGCATCATCAC-GAGACGACA
Elephantopus mol     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTCCGAGACATCAAAAC----ACGATG
Elephantopus sca     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTCCGAGGCATCGAATC----ACGATG
Elephantopus sca     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTCCGAGGCATCGAATC----ACGATG
Elephantopus pen     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTCCGAGGCATCGAATC----ACGATG
Gymnanthemum Cyl     ---------------------------TGAC-----TGGGGTCGCGATCGAAGCGTCATCAT-AAGGCAACA
Iodocephalopsis      TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTTGAAACATCAACAA---GGCATCG
Koyamasia calcar     -------------------------------------GGGGTCGCATTCGAAACATTGACAT-GAGACAATG
Kurziella gymnoc     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGGTCGGAGCGCCGTCAC-GAGACGACA
Monosis volkamer     TGCTTAAACTCAGCGGGTAGTCCCGTCTGACC----TGGGGTCGCATTCGATGCATCAACAC---GACAATG
Pseudelephantopu     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTCCGAAGCACCGAATC----ACGATG
Pseudelephantopu     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTCCGAAGCACCGAATC----ACGATG
Strobocalyx arbo     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTTCGAAGCATCTACAT-AAGACAATG
Strobocalyx sola     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTTCGAAGCGTCAACAT-AAGACAATG
Tarlmounia ellip     --GCTAAACTCAGCG-GTAGTC-CGCCTGACC----TGGG-TCGCGTCCGAAGCATCGGCAC-AAGGCAATG
Tarlmounia ellip     AGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCGTTCGAAGCATCGGCAC-AAGGCAATG
Vernonia montana     ----TAAACTCAGCGGGTAGTCCCGTCTGACC----TGGGGTCGCATTCGAAGCATCAA-ACAAAGATAATG
Vernonia montana     ---------------------------TGACC----TGGGGTCGCATTCGAAGCATCAA-ACAAAGATAATG
Vernonia curtisi     TGCTTAAACTCAGCGGGTAGTCCCGCCTGACC----TGGGGTCGCATTCGAAACATTGACAT-GAGACAATG

Input data matrix (continued):

                                                111111111111111111111111111111111111111111111
                     777777788888888889999999999000000000011111111112222222222333333333344444
Taxon/Node           345678901234567890123456789012345678901234567890123456789012345678901234
---------------------------------------------------------------------------------------------
Acilepis attenua     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACGAATTGTT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis attenua     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACGAATTGTT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis attenua     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACGAATTGTT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis attenua     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACGAATTGTT--ACACAACTCCAAA-CAAAGGTTTTGTCA
Acilepis chiangd     ????????????????????????????????????????????????????????????????????????
Acilepis diverge     CTTTGG-GGTCTTTCATTTACTTTCTT-CCTCACAAATTGCT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis diverge     CTTTGG-GGTCTTTCATTTACTTTCTT-CCTCACAAATTGCT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis kingii      CTTTAG-GGTCTTTCATTTATTTTTTT-CCT--CCACATTGACTACTCAACTCCTAC-CATACGTTTTGTCA
Acilepis namnaoe     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACAAATTGCT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis ngaoens     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACAAATTGCT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis peguens     CTTTGG-GGTCTTTCATTTACTTTTTTCCCTCACAAATTGCT--ACACAACTCCAAA-CAAAGGTTTTGTCA
Acilepis pseudos     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACGAATTGTT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis saligna     CTTTAG-GGTCTTTCATTTACTTTTTT-CCTCCCAAATTGCT--ACACAACTCCAAA-CAAAGGTTTTGTCA
Acilepis silhete     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACAAATTGCT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis sutepen     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACGAATTGTT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Acilepis sutepen     CTTTGG-GGTCTTTCATTCACTTTTTT-CCTCACGAATTGTT--ACACAACTCCAAA-CGAAGGTTTTGTCA
Camchaya gracili     TGTCAA-GGGCTTTCAATAAGTTTTTTCCCTTGCGACGTATGAGACATAACTCCAAA-CGAAGGTCTT-TCA
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Camchaya loloana  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya loloana  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya mukdaha  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya mukdaha  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya pentago  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya spl      TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTCGCAACATATGATCCACAACTCTAA---ACAAGTGTTTTCA
Camchaya spinuli  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya spinuli  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya spinuli  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Camchaya tenuifl  TGTAAG-GGTCTTTCATAAAGTTTTTT-CCTTGCAACATATGATCCACAACTCTAAA-CACAAGTGTTTTCA
Cyanthillium cin  CATGAA-GGTCTTTATTCACGTTCAT--CCTTACGACTTATGACACCCAACTCCAA--CGAAGGTCTTATCA
Cyanthillium hoo  CATGAA-GGTCTTTATTCACGCTGAT--CCTTACGACTTATGACACCCAACTCCAA--CGAAGGTCTTATCA
Decaneuropsis cu  CATTAGAGGATTTTTACAAACTTTT---CCTTACGATTAACGACACACAACAACAAA-CGAAGGTCTTGTCA
Decaneuropsis eb  CATTAGGGGATTTTTACAAA--CTTTT-CCTCACGATTAACGACACACAACAACAAA-CGAAGGTCTTGTCA
Decaneuropsis ga  ??????????????????????????????????????????????????????????????????????
Distephanus mada  CGTTGG-GGTCTTTCACGAGGTCTTC--CCTTGCGAC-------GCACGACTCAAGA--AGAGGATCTTTAA
Distephanus poly  CTTTGG-GGTCTTTCACGAGGTCTTC--CCTTGCGACTCTCGACGCACGACTCAAGA--AGAGGATCTTTAA
Elephantopus mol  CATCAG-GGTTCTAAATGAGGCATTTT-ACCAGTGACTCACA--GCATGACTTTAAA-CGAAGGTCTTTTCA
Elephantopus sca  CATCAG-GGTTCTAAACGAGGCGTTTT-ACCGTTGACTCGCA--ACACGACTCTAGACCGAGGGTATTTTCA
Elephantopus sca  CATCAG-GGTTCTAAACGAGGCGTTTT-ACCGTTGACTCGCA--ACACGACTCTAGACCGAGGGTATTTTCA
Elephantopus pen  CATCAG-GGTTCTAAACGAGGCGTTTT-ACCGTTGACTCGCA--ACACGACTCTAGACCGAGGGTATTTTCA
Gymnanthemum Cyl  CATTAA-GGGATTTTACAAA--CTTTT-CCTTACGGTTAACGATACACAACTCCAAA-CGAAGGTTTTGTCA
Iodocephalopsis   TGTCAG-GGTCTTTCTTGAAGTTTTTT-CCTTACAACGTATGATCCACAACTCCGAA-CGAAGGTCTTTTCA
Koyamasia calcar  CTTTG--GGTCTTAGATTCATTTTTTTCCCTCACAAATCGCT--ACACGACTCCAAA-CGAAGGTTTTGTCA
Kurziella gymnoc  CGTTAG-GGTCTTTGACGGG---CCTT-CCTTGCATCTCATAACACACGACTCCGAGACGAGGCTATTACAA
Monosis volkamer  CATCAG-GGTCTTTTATGAAGTTTATT-CCTTATGATTTGTAACACACGACTCCATA-CGAAGGTCTTGTCA
Pseudelephantopu  CGTCAG-GGTTCTTAGCAAGGCCCTTT-AACTGTGACTTGCA--GCACGACTCCAGA-CGAAGGTCTTTCCA
Pseudelephantopu  CGTCAG-GGTTCTTAGCAAGGCCCTTT-AACTGTGACTTGCA--GCACGACTCCAGA-CGAAGGTCTTTCCA
Strobocalyx arbo  CGTCAG-GGTCTTTCATGAAGCATTTC-ACTTACGACTTGTG--ACACGACTCCAAG-CAAAGGTTATTTCA
Strobocalyx sola  CGTTAG-GGTCTTTCATGAAGTATTTT-ACTTACGACTTGTG--ACACGACTCCAAG-CAAAGGTTATTTCA
Tarlmounia ellip  CGTCAG-GGTCTTTCACGAAGTATTTC-ACTTACGACTTGTG--ACACGACTCGAAG-CAAAGGTTATTTCA
Tarlmounia ellip  CGTCAG-GGTCTTTCACGAAGTATTTC-ACTTACGACTTGTG--ACACGACTCGAAG-CAAAGGTTATTTCA
Vernonia montana  CATGAT-GGTCTTAATTCACGTTCAT--CCTTACGACTTATGACACCCAACTCCAA--CGAAGGTCTTATCA
Vernonia montana  CATGAT-GGTC-TTAATTCACGTTCAT-CCTTACGACTTATGACACCCAACTCCAA--CGAAGGTCTTATCA
Vernonia curtisi  CTTTG--GGTCTTAGATTCATTTTTTT-TCCCTCACAAATCGCTACACGACTCGAAA-CGAAGGTTTTGTCA

Input data matrix (continued):

                  1111111111111111111111111111111111111111111111111111111122222222222222222
                  4444455555555556666666666777777777788888888899999999900000000001111111
Taxon/Node        5678901234567890123456789012345678901234567890123456789012345678901234567890123456
----------------------------------------------------------------------------------------------------
Acilepis attenua  ACCACCAATAGTCATGTATCAATCG-AAAAGG-ACTTTCATTTTAGCCAACCACACC--ATT-GGCATGGGA
Acilepis attenua  ACCACCAATAGTCATGTATCAATCG-AAAAGG-ACTTTCATTTTAGCCAACCACACC--ATT-GGCATGGGA
Acilepis attenua  ACCACCAATAGTCATGTATCAATCG-AAAAGG-ACTTTCATTTTAACCAACCACACC--ATT-GGCATGGGA
Acilepis attenua  ACCACCAATAGTCATGTATCAATCG-AAAAGG-ACTTTCATTTTAGCCAACCACACC--ATT-GGCATGGGA
Acilepis chiangd  ????????????????????????????????????????????????????????????????????????
Acilepis diverge  ACCACCAACAGTCATGTATCAATCGAAAAAAGA-AGTTTCTTTTTAGCCAACCACACC--ATTGGGCATGGGA
Acilepis diverge  ACCACCAACAGTCATGTATCAATCGAAAAAAGA-AGTTTCTTTTTAGCCAACCACACC--ATTGGGCATGGGA
Acilepis kingii   ACCACAAACAGTCATGCTTCAGTCGTAAAAAA-ACCTTCTTTTTAGCCAACCATACC--ATGGGGCATGGGA
Acilepis namnaoe  ACCACCAATAGTCATGTTTCAATCGAAAAATA-ACTTTCTTTTTAGCCAACCACACC--ATTAGGCATGGGA
Acilepis ngaoens  ACCACCAATAGTCATGTTTCAATCGAAAAATA-ACTTTCTTTTTAGCCAACCACACC--ATTAGGCATGGGA
Acilepis peguens  ACCACCAACAGTCATGTATCAATCATAAAAGA-ACTTTCTTTTTAGCCAACCATACC--ATTCGGCATGGGA
Acilepis pseudos  ACCACCAATAGTCATGTATCAATCG-AAAAGG-ACTTTCATTTTAGCCAACCACACC--ATT-GGCATGGGA
Acilepis saligna  ACCACCAACAGTCATGTATCAATCGTAAAAAA-ACCTTCTTTTTAGCCAACCATACC--ATTGGGCATGGGA
Acilepis silhete  ACCACCAATAGTCATGTTTCAATCGAAAAATA-ACTTTCTTTTTAGCCAACCACACC--ATTAGGCATGGGA
Acilepis sutepen  ACCACCAATAGTCATGTATCAATCG-AAAAGG-ACTTTCATTTTAGCCAACCACACC--ATT-GGCATGGGA
Acilepis sutepen  ACCACCAATAGTCATGTATCAATCG-AAAAGG-ACTTTCATTTTAGCCAACCACACC--ATT-GGCATGGGA
Camchaya gracili  ACCACCAATAGTCATGTATCAATCA-TGAAGG-ACTTCCATTTAGGCTAACCATGCC--ATG-AGCACAGGA
Camchaya loloana  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya loloana  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya mukdaha  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya mukdaha  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya pentago  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya spl      ACCACCAACAGTCATGTATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya spinuli  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya spinuli  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya spinuli  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Camchaya tenuifl  ACCACCAACAGTCATGCATCAATCT-TAAAGG-ACTTCCATTTAGGCCAACCATACC--ATA-GGCACAGGA
Cyanthillium cin  ACCACCTATAGTCAGGCATCAATCA---AAGG-ACTAATATTTAGACAAACCACACC--ATG-GGCATGGGA
Cyanthillium hoo  ACCACCTATAGTCGGGCATCAATCA---AAGG-ACTAATTTTTAGACAAACCACACC--ATG-GGCATGGGA
Decaneuropsis cu  ACCACCACTAGTCATGCATCCACCG-ATAAGG-ACTTACGTTTAGGCCAACCACACC--ATG-AACATGGGA
Decaneuropsis eb  ACCACCACTAGTCATGCATCCACCG-ACAAGG-ACTTACGTTTAGGCCAACCACACCGTATC-AGCATGGGA
Decaneuropsis ga  ????????????????????????????????????????????????????????????????????????
Distephanus mada  ACCACCACTAGCCGTGCGTCCACCG-AAGGGG-ACTTCAGTTTGGGCCAACCGCACC--ATT-GGAACGGGA
Distephanus poly  ACCACCACTAGCCGTGCGTCCACCG-AAGGGG-ACTTCAGTTTGGGCCAACCGCACC--ATG-GGAACGGGA
Elephantopus mol  ACCACCAATAGTCATGTGCCAATCA-AGGCGG-CCTTCAATTTGGGCCAACCACACACAAA--GGCATGGGA
Elephantopus sca  ACCACCAATAGTCGTGTGCCAATCA-AGGCGG-CCATCAATTTGGGCCAACCACACGCGAC--GGCATGGGA
Elephantopus sca  ACCACCAATAGTCGTGTGCCAATCA-AGGCGG-CCATCAATTTGGGCCAACCACACGCGAC--GGCATGGGA
Elephantopus pen  ACCACCAATAGTCGTGTGCCAATCA-AGGCGG-CCATCAATTTGGGCCAACCACACGCGAC--GGCATGGGA
Gymnanthemum Cyl  ACCACCACTAGTCATGCATCCACCG-AAAAGG-ACTTGCGTTTAGGCCAACCACACC--ATC-AGCATGGGA
Iodocephalopsis   ACCACCAATAGTCATGTATCAATCG-TAAAGG-ACTTCCATTTAGGCCAACCATGCC--ATG-GGCACAGGA
Koyamasia calcar  ACCACCAATAGTCGTGTATCAATTA-AAAAGG-AATTCTATTTTAGCCAACCACACC--ATTAGGCATGGGA
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Kurziella gymnoc  ACCACCACTAGTCGTGCGTCCGCTGCAAGGGGCACCTGTGTTTGGGCCAACCGCACC--ATG-GGCACGGGA
Monosis volkamer  ACCACCTATAGTCGTGCTTCAATCG-AAAAGG-ACTTCTATTTAGGCCAACCACACC--ATG-GGCACGGGA
Pseudelephantopu  ACCACCAACAGCCGTGTGCCGATCA-AAGAGG-CCATAGTTTTGGGCCAACCATGCACGAG--GGCATGGGA
Pseudelephantopu  ACCACCAACAGCCGTGTGCCGATCA-AAGAGG-CCATAGTTTTGGGCCAACCATGCACGAG--GGCATGGGA
Strobocalyx arbo  ACCACCAATAGTCGTGCATCAATCG-AAGAGG-ACTTCTATTTAGGCCAACCACACC--ATA-AGCATGGGA
Strobocalyx sola  ACCACCAATAGTCGTGCATCAATCG-AAGAGG-ACTTCTATTTAGGCCAACCACACC--ATG-GGCATGGGA
Tarlmounia ellip  ACCACCAATAGTCGTGCATCAATCG-AAGAGG-ACTTCTATTTGGGCCAACCACACC--ATG-GGCATGGGA
Tarlmounia ellip  ACCACCAATAGTCGTGCATCAATCG-AAGAGG-ACTTCTATTTGGGCCAACCACACC--GTG-GGCATGGGA
Vernonia montana  ACCACCTACAGTCAGGCATCAATCA---AAGG-ACTAATATTTAGACAAACCACACC--ATG-GGCATGGGA
Vernonia montana  ACCACCTATAGTCAGGCATCAATCA---AAGG-ACTAATATTTAGACAAACCACACC--ATG-GGCATGGGA
Vernonia curtisi  ACCACCAATAGTCGTGTATCAATTA-AAAAGG-ACTTCTATTTTAGCCAACCACACC--ATTAGGCATGGGA

Input data matrix (continued):

                  222222222222222222222222222222222222222222222222222222222222222222222222
                  111222222222233333333334444444444555555555566666666667777777777888888888
Taxon/Node        789012345678901234567890123456789012345678901234567890123456789012345678
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Acilepis attenua  GACCAATCTTCGC-CCCC--AACAACATGGTCGTCATTCGACAAGGCATTGAAGGGG-TCGACACGATGCGT
Acilepis attenua  GACCAATCTTCGC-CCCC--AACAACATGGTCGTCATTCGACAAGGCATTGAAGGGG-TCGACACGATGCGT
Acilepis attenua  GACCAATCTTCGC-CCCC--AACAACATGGTCGTCATTCGACAAGGCATTGAAGGGG-TCGACACGATGCGT
Acilepis attenua  GACCAATCTTCGC-CCCC--AACAACATGGTCGTCATTCGACAAGGCATTGAAGGGG-TCGACACGATGCGT
Acilepis chiangd  ????????????????????????????????????????????????????????????????????????
Acilepis diverge  GACCAATCTCCGC-TCCC--AACAACATGTTTGTCATTTGACG------TTGAAAGGATCGACATGATGCGA
Acilepis diverge  GACCAATCTCCGC-TCCC--AACAACATGTTTGTCATTTGACG------TTGAAAGGATCGACATGATGCGA
Acilepis kingii   GACCAATCTCCGCTTCCC--AGCAACATGTTTATCATTTGGCG------TTGAGGGGATCGACATGATGCGA
Acilepis namnaoe  GACCAATCTCCGA-TCCC--AACAACATGGTTGTCATTTGACAAGGCTTTGAAGGGA-TCGACATGATACGT
Acilepis ngaoens  GACCAATCTCCGA-TCCC--AACAACATGGTTGTCATTTGACAAGGCTTTGAAGGGA-TCGACATGATACGT
Acilepis peguens  GACCAATCTCCGC-TCCC--AACAACATGTTTATCATCTGGCG------TTGAAGGGATCGACATGATGCGA
Acilepis pseudos  GACCAATCTACGC-CCCC--AACAACATGGTCGTCATTCGACAATGCATTGAAGGGG-TCGACACGATGCGT
Acilepis saligna  GACCAATCTCCGC-TCCC--AACAACATGTTTATCATTTGGCG-----TTGAGGGGGATCGACATGATGCGA
Acilepis silhete  GACCAATCTCCGA-TCCC--AACAACATGGTTGTCATTTGACAAGGCTTTGAAGGGA-TCGACATGATACGT
Acilepis sutepen  GACCAATCTACGC-CCCC--AACAACATGGTCGTTATTCGACAAGGCATTGAAGGGG-TCGACAGGATGCGT
Acilepis sutepen  GACCAATCTACGC-CCCC--AACAACATGGTCGTTATTCGACAAGGCATTGAAGGGG-TCGACAGGATGCGT
Camchaya gracili  AACCAATCTCCAC-CCTT--AATTAAACACTCACCATTAGACAAATATTTTGAAGGG--TGACATAATGTGT
Camchaya loloana  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya loloana  GACCAATCTCCAC-CCTT--AACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya mukdaha  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya mukdaha  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya pentago  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya spl      GACAATTCTCCCC-CCTT--GACTAAACACTTACTATTAGACAAATGTTTTAAAGGG--GGACACAATGTGT
Camchaya spinuli  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya spinuli  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya spinuli  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Camchaya tenuifl  GACCAATCTCCAC-CCTT--GACTAAGCATTTACCATTAGACAAATGTTTTAAAGGG--TGACACAATGTGT
Cyanthillium cin  AGTCAATCTCCTC-CTCC--AAC-AAATTTATGTTGTTTAACATAACATTGGAAAGA---AAGACGATGTGT
Cyanthillium hoo  AGTCAATCTCCTC-CTCC--AAC-AAATTTATGTTGTTTAACATATTATTGGAAAGA---AAGACGATGTGT
Decaneuropsis cu  GACCAATATCCGC-CTCA--AAAAACAAGCCGAATACGAAAAAAGGCATTGAAAGAGG-CGATGCAATGCGT
Decaneuropsis eb  GACCAATATCCGC-CTCA--AACAACAAGCCTGATATGAAAAAAGGTATTGAAAGAGG-TGATGCAATGCGT
Decaneuropsis ga  ????????????????????????????????????????????????????????????????????????
Distephanus mada  GGCCAATCTCCGC-CCCA--GAC-ACATGCGTCCCCGTCGAGGAGGCATGGAGGGGG--CGACGCGATGCGT
Distephanus poly  GACCAATCTCCGC-CCCC--GAC-ACATGCGTCCCCGTCGAGGAGGCATGGAGGGGGG-CGACGCGATGCGT
Elephantopus mol  GACCAATCTCCGC-CCCC--GACGGCATGCTGACGATTCAACATGCCGTGATGGGGG--CGACGCGATGCGT
Elephantopus sca  GACCAATCTCCGC-CCCC--GACGACATGCCGACGATACGACGTGACGTGGTGGGGG--CGACGCGATGCGT
Elephantopus sca  GACCAATCTCCGC-CCCC--GACGACATGCCGACGATACGACGTGACGTGGTGGGGG--CGACGCGATGCGT
Elephantopus pen  GACCAATCTCCGC-CCCC--GACGACATGCCGACGATACGACGTGACGTGGTGGGGG--CGACGCGATGCGT
Gymnanthemum Cyl  GGCCAATATCCGC-CTCA--AACAACAAGCCTACTACGAAAAGAGGCATTGAAAGAGG-CGATGCAATGCGT
Iodocephalopsis   GACCAATATCCAC-CCTT--AACTAAATA--------TAGACAAATG-TTTAGAGGG--TGACACAATGTGT
Koyamasia calcar  GACCAATCTCCAC-TCCC--AACAACATGGTTGTCATTCGACAAGACATTGATGGGA-TTGACACGATGCGT
Kurziella gymnoc  GACCAATCTCCGCCCCCG--AACCAAGCGTC--CCGTTCATGGAGACATGGAGGGGG--CGACGTGATGCGT
Monosis volkamer  GACCAATCTCCGC-CCCC--GATAACATGCTTGCCATTAGACAATACATGAAGGGGAGGCGATACGATGCAT
Pseudelephantopu  GACCAATCTCCGC-CCCCCGAACAACATGCCGACATTTCGACATGCGATGGGGAGG--CGACGCGATGCGT
Pseudelephantopu  GACCAATCTCCGC-CCCCCGAACAACATGCCGACATTTCGACATGCGATGGGGAGG--CGACGCGATGCGT
Strobocalyx arbo  GACCATTTTCCGC-CCCA--AACAACATGCCCGCTATTTAACAAGGCATGGTGGGGGGGCGACGAGATGCGT
Strobocalyx sola  GACCATTCTCCGC-CCCA--AACAACATGCCCGCTATTTGACAAGGCATGGTGGGGGG-CAACGACATGCGT
Tarlmounia ellip  GACCATTCTCCGC-CCCG--AACAACATGCCTGCTATTTGACAAGGCATGGTGGGGGG-CGACGAGATGCGT
Tarlmounia ellip  GACCATTCTCCGC-CCCG--AACAACATGCCTGCTATTTGACAAGGCATGGTGGGGGG-CGACGAGATGCGT
Vernonia montana  AGTCAATCTCCTC-CTCC--AAC-AAATTTATGTTGTTCAACATAACATTGGAAAGA---AAGACGATGTGT
Vernonia montana  AGTCAATCTCCTC-CTCC--AAC-AAATTTATGTTGTTCAACATAACATTGGAAAGA---AAGACGATGTGT
Vernonia curtisi  GACCAATCTCCAC-TCCC--AACAACATGGTTGTCATTCGACAAGACATTGATGGGA-TTGACACGATGCGT

Input data matrix (continued):

                  222222222223333333333333333333333333333333333333333333333333333333333333
                  899999999990000000000111111111122222222223333333333444444444455555555556
Taxon/Node        901234567890123456789012345678901234567890123456789012345678901234567890
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Acilepis attenua  GACGCCCAGGCAGACGTGCCCTCAA-CCAAGTGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis attenua  GACGCCCAGGCAGACGTGCCCTCAA-CCAAGTGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis attenua  GACGCCCAGGCAGACGTGCCCTCAA-CCAAGTGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis attenua  GACGCCCAGGCAGACGTGCCCTCAA-CCAAGTGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis chiangd  ????????????????????????????????????????????????????????????????????????
Acilepis diverge  GACGCCCAGGCAGACGTGCCCTTAA-CCAAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
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Acilepis diverge  GACGCCCAGGCAGACGTGCCCTTAA-CCAAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis kingii   GACGCCCAGGCAGACGTGGGGTCAA-GGAAATGGGTTTAGGGGCAATTTGTGTTCAAAAACTCGATGGTTCA
Acilepis namnaoe  GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis ngaoens  GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis peguens  GACGCCCAGGCAGACATGCCCTCAA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis pseudos  GACGCCCAGGCAGACGTGCCCTCAA-CCGAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis saligna   GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTTAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis silhete   GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis sutepen   GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Acilepis sutepen   GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya gracili   GACGCCCAGGCAGGCGTGCCCTCAA-CCAAATGGCTTCAGGCGCAACTTGCGTTCAAAAACTTGATGGTTCA
Camchaya loloana   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya loloana   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya mukdaha   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya mukdaha   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya pentago   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya spl       GATGCCCAGGCGGACATGCCCTCAACCCAAATGGTTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya spinuli   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya spinuli   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya spinuli   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Camchaya tenuifl   GATGCCCAGGCAGACGTGCCCTCAA-CCAAATGATTTCAGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Cyanthillium cin   GACGCCCAAGCAGACGTGCCCTAAA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Cyanthillium hoo   GACGCCCAAGCAGACGTGCCCTAAA-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Decaneuropsis cu   GACGCCCAGGCAGACGTGCCCTCGG-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Decaneuropsis eb   GACGCCCAGGCAGACGTGCCCTCGG-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Decaneuropsis ga   ??????????????????????????????????????????????????????????????????????
Distephanus mada   GACGCCCAGGCAGACGTGCCCTCAG-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Distephanus poly   GACGCCCAGGCAGACGTGCCCTCAG-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Elephantopus mol   GACGCCCAGGCAGACGTGCCCTCGA-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Elephantopus sca   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Elephantopus sca   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Elephantopus pen   GACGCCCAGGCAGACGTGCCCTCGA-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Gymnanthemum Cyl   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Iodocephalopsis    GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGTTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Koyamasia calcar   GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Kurziella gymnoc   GACGCCCAGGCAGACGTGCCCTCGG-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Monosis volkamer   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Pseudelephantopu   GACGCCCAGGCAGACGTGCCCTCGA-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Pseudelephantopu   GACGCCCAGGCAGACGTGCCCTCGA-CCGAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Strobocalyx arbo   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Strobocalyx sola   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Tarlmounia ellip   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Tarlmounia ellip   GACGCCCAGGCAGACGTGCCCTCGA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Vernonia montana   GACGCCCAAGCAGACGTGCCCTAAA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Vernonia montana   GACGCCCAAGCAGACGTGCCCTAAA-CCAAATGGCTTCGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA
Vernonia curtisi   GACGCCCAGGCAGACGTGCCCTCAA-CCAAATGGCTTTGGGCGCAACTTGCGTTCAAAAACTCGATGGTTCA

Input data matrix (continued):

                   3333333333333333333333333333333333333333444444444444444444444444444444444
                   6666666667777777777888888888899999999900000000001111111112222222222333
Taxon/Node         1234567890123456789012345678901234567890123456789012345678901234567890123
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Acilepis attenua   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCAAGATATC
Acilepis attenua   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCAAGATATC
Acilepis attenua   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis attenua   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis chiangd   ???????????????????????????????????????????????????????????????????????
Acilepis diverge   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis diverge   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis kingii    GGGGATTCTGCAATTCACACCAAGTATGGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis namnaoe   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis ngaoens   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis peguens   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCGAGATATC
Acilepis pseudos   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis saligna   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCATCCGATGCGTG-AGCCGAGATATC
Acilepis silhete   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis sutepen   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Acilepis sutepen   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Camchaya gracili   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya loloana   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya loloana   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya mukdaha   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya mukdaha   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya pentago   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya spl       CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACATTTTTTAT-CGATGCATGAAGCCAAAATATC
Camchaya spinuli   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya spinuli   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya spinuli   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCAAGATATC
Camchaya tenuifl   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Cyanthillium cin   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCGAGATATC
Cyanthillium hoo   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Decaneuropsis cu   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
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Decaneuropsis eb   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Decaneuropsis ga   ????????????????????????????????????????????????????????????????????????
Distephanus mada   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Distephanus poly   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Elephantopus mol   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Elephantopus sca   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Elephantopus sca   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Elephantopus pen   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Gymnanthemum Cyl   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Iodocephalopsis    CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCAAGATATC
Koyamasia calcar   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCGAGATATC
Kurziella gymnoc   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Monosis volkamer   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATACGTG-AGCCAAGATATC
Pseudelephantopu   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Pseudelephantopu   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Strobocalyx arbo   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCAAGATATC
Strobocalyx sola   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCAAGATATC
Tarlmounia ellip   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCAAGATATC
Tarlmounia ellip   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCAAGATATC
Vernonia montana   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Vernonia montana   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCGTG-AGCCGAGATATC
Vernonia curtisi   CGGGATTCTGCAATTCACACCAAGTATCGCATTTTGCTACGTTCTTCAT-CGATGCATG-AGCCGAGATATC
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Input data matrix (continued):

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                   444444444444444444444444444444444444444444444444444444444444444444455555
                   333333344444444445555555555666666666677777777778888888888999999999900000
Taxon/Node         345678901234567890123456789012345678901234567890123456789012345678901234
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Acilepis attenua   CGTTGCCGAGAGTCA-TTTGTGAATTTTAAAGATAG-AAGGCCCAAA-TGCACACC-GAAAACGGATCATTA
Acilepis attenua   CGTTGCCGAGAGTCA-TTTGTGAATTTTAAAGATAG-AAGGCCCAAA-TGCACACC-GAAAACGGATCATTA
Acilepis attenua   CGTTGCCGAGAGTCA-TTTGTGAATTTTAAAGATAG-AAGGCCCAAA-TGCACACC-GAAAACGGATCATTA
Acilepis attenua   CGTTGCCGAGAGTCA-TTTGTGAATTTTAAAGATAG-AAGGCCCAAA-TGCACACC-GAAAACGGATCATTA
Acilepis chiangd   ????????????????????????????????????????????????????????????????????????
Acilepis diverge   CGTTGCCGAGAGTCG-TTTATGAATTTTAAAGATAG-AAGGCCCGAA-TGCAAACC-AAAAACGGATCATTA
Acilepis diverge   CGTTGCCGAGAGTCG-TTTATGAATTTTAAAGATAG-AAGGCCCGAA-TGCAAACC-AAAAACGGATCATTA
Acilepis kingii    CGTTGCCGATAGTCG-TTTATGAATTTTAAAGATAT-AAGGCCCGAA-CGCAAACC-AAAAACGGATCATTA
Acilepis namnaoe   CGTTGCCGAGAGTCG-TTTGTGAATTTTAAAGATAT-AAGGCCCGAA-TACAAACC-AAAAACGGATCATTA
Acilepis ngaoens   CGTTGCCGAGAGTCG-TTTGTGAATTTTAAAGATAT-AAGGCCCGAA-TACAAACC-AAAAACGGATCATTA
Acilepis peguens   CGTTGCCGAGAGTCA-TTTATGAATTTTAAAGATAA-AAGGCCCGAATTACAAACCAAAAAACGGATCATTA
Acilepis pseudos   CGTTGCCGAGAGTCA-TTTGTGAATTTTAAAGATAG-AAGGCCCGAA-TACACACC-GAAAACGGATCATTA
Acilepis saligna   CGTTGCCGAGAGTCG-TTTATGAATTTTAAAGATAGAAAGGCCCGAA-TACAAACC-AAAAACGGATCATTA
Acilepis silhete   CGTTGCCGAGAGTCG-TTTGTGAATTTTAAAGATAT-AAGGCCCGAA-TACAAACC-AAAAACGGATCATTA
Acilepis sutepen   CGTTGCCGAGAGTCA-TTTGTGAATTTTAAAGATAG-AAGGCCCGAA-CACACACC-GAAAACGGATCATTA
Acilepis sutepen   CGTTGCCGAGAGTCA-TTTGTGAATTTTAAAGATAG-AAGGCCCGAA-CACACACC-GAAAACGGATCATTA
Camchaya gracili   CGTTGTCGAGAGTCATTTTTTGATTTCAAAAGTGCA-AAGGCCCCAT-GACACACC-ATAAATGAAGCATCA
Camchaya loloana   CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGTGTA--AGGGCTAAT-GACACATC-ATAAACAAAGCATCA
Camchaya loloana   CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGTGAA--AGGGCTAAT-GACACATC-ATAAACAAAGCATCA
Camchaya mukdaha   CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGTGAA--AGGGCTAAT-GACACCTC-ATAAACAAAGCATCA
Camchaya mukdaha   CGTTGTCAAGAGTCA-TTTTTGATTTCAAAAGTGAA--AGGGCTAAT-GACACATC-ATAAACAAAGCATCA
Camchaya pentago   CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGTGAA--AGGGCTAAT-GACACATC-ATAAACAAAGCATCA
Camchaya sp1       CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGGGTA--AGGGGTAAT-GACACATC-ATAAACAAAGCATCA
Camchaya spinuli   CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGTGAA--AGGGCTAAT-GACACATC-ATAAACAAAGCATTA
Camchaya spinuli   CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGTGAA--AGGGCTAAG-GACACATC-ATAAACAAAGCATCA
Camchaya spinuli   CGTTGTCGAGAGTCA-TTTTTGAATTCAAAAGTGAA--AGGGCTAAT-GACACATC-ATAAACAAAGCATCA
Camchaya tenuifl   CGTTGTCGAGAGTCA-TTTTTGATTTCAAAAGTGTA--AGGGCTAAT-GACACATC-ATAAACAAAGCATCA
Cyanthillium cin   CGTTGCCGAGAGTCA-TTTGTGATAACAAAAGGTTA--AAAACCAAA-GACACACC-ATAAACGGAGT-TCC
Cyanthillium hoo   CGTTGCCGAGAGTCA-TTTGTTATAACAAAAAGGTT-AAGAACCAAA-GACACC---ATAAACGGAGTTCCT
Decaneuropsis cu   CGTTGCCGAGAGTCA-TTTGTAATTACAAAAATGCC-ACGACCTTGAATGCATACC-GCGAACGGGGCATCA
Decaneuropsis eb   CGTTGCCGAGAGTCG-TTTGTAATTACAAAAATGCC-ACGACCTTGAATGCATACC-GCAAACGGGGCATCA
Decaneuropsis ga   ????????????????????????????????????????????????????????????????????????
Distephanus mada   CGTTGCCGAGAGTCG-TTTGTGATTACGAAAGAGAC-AAGGCCCGAA-TGCACACC-GCGAACGGGGCAACA
Distephanus poly   CGTTGCCGAGAGTCG-TTTGTGATTACGAAAGAGAC-AAAGCCCGAG-CGCACACC-GCGAACGGGGCAACA
Elephantopus mol   CGTTGCCGAGAGTCG-TTTGTGATTTTGAAAGGCAG-TGGAATCGGG-CACAAGTCCGATGTCGAAATGTGC
Elephantopus sca   CGTTGCCGAGAGTCG-TTTGTGATTTCGAAAGGCAA-TAGACCCGGG-CACAATTCGAATGCCGAAATGTGC
Elephantopus sca   CGTTGCCGAGAGTCG-TTTGTGATTTCGAAAGGCAA-TAGACCCGGG-CACAATTCGAATGCCGAAATGTGC
Elephantopus pen   CGTTGCCGAGAGTCG-TTTGTGATTTCGAAAGGCAA-TAGACCCGGG-CGCAATTCGAATGCCGAAATGTGC
Gymnanthemum Cyl   CGTTGCCGAGAGTCG-TTTGTAATTACAAAAGTGCC-ACGACCTGAA-TGCATACC-GCGAACGGGGCATCA
Iodocephalopsis    CGTTGCCGAGAGTCA-TTTTTGATTTCAAAAGTGTG-TAGGCCCGAT-GACACACC-ATAATCGAAGCATCA
Koyamasia calcar   CGTTGCCGAGAGTCG-TTTATGAATTTTAAAGATAG-AAGGCCCGAA-TGCACACC-AAAAAGGGATTATTA
Kurziella gymnoc   CGTTGCCGAGAGTCG-TTTGTGATTACAAAGGGAAC--AGGCTCGTG-CGCGCACC-GCGAACAGGGCAACA
Monosis volkamer   CGTTGCCGAGAGTCG-TTTGTAATTTCAAAAAAGAG-AAGGCCCAAA-TGCATTTC-GAAAACGAAGCATCA
Pseudelephantopu   CGTTGCCGAGAGTCG-TTTGTGATTTTCAGAGGGTAGAGGACACGGG-CACGAATCGGATGCCGAAACGTGA
Pseudelephantopu   CGTTGCCGAGAGTCG-TTTGTGATTTTCAGAGGGTAGAGGACACGGG-CACGAATCGGATGCCGAAACGTGA
Strobocalyx arbo   CGTTGCCGAGAGTCA-TTTGTGATTTTGAAAGATAG-AAAGCCCGGG-TGTGCACT-AAAAAGAGAACATCA
Strobocalyx sola   CGTTGCCGAGAGTCG-TTTGTGATTTTGAAAGATAG-AAAGCCCGAG-TGTACACT-AAAAAGAGAACACCA
Tarlmounia ellip   CGTTGCCGAGAGTCG-TTTGTGATTTTGAAAGATAG-AAAGCCCAAG-TGTACCCT-AACAAGAGAACATCA
Tarlmounia ellip   CGTTGCCGAGAGTCG-TTTGTGATTTTGAAAGATAG-AAAGCCCAAG-TGTACCCT-AACAAGAGAACATCA
Vernonia montana   CGTTGCCGAGAGTCA-TTTGTGATAACAAAAGGTTA--AAAGACAAA-GACACACC-ATAAACAGAGT-TCC
Vernonia montana   CGTTGCCGAGAGTCA-TTTGTGATAACAAAAGGTTA--AAAGACAAA-GACACACC-ATAAACAGAGT-TCC
Vernonia curtisi   CGTTGCCGAGAGTCG-TTTATGAATTTTAAAGATAG-AAGGCCCGAA-TGCACACC-AAAAAGGATTATTA
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Input data matrix (continued):

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                       555555555555555555555555555555555555555555555555555555555555555555555555
                       000001111111111222222222233333333334444444444555555555566666666667777777
Taxon/Node             567890123456789012345678901234567890123456789012345678901234567890123456
-----------------------------------------------------------------------------------------------

Acilepis attenua       CGA--GCCA---ACTTCTTATA--TTTTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis attenua       CGA--GCCA---ACTTCTTATA--TTTTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis attenua       CGA--GCCA---ACTTCTTATA--TTTTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis attenua       CGA--GCCA---ACTTCTTATA--TTTTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis chiangd       ????????????????????????????????????????????????????????????????????????
Acilepis diverge       CAG--GCCA-ACTCTTTTTATA--TATTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis diverge       CAG--GCCA-ACTCTTTTTATA--TATTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis kingii        CAG--GCCA-ACTCTTTTTATA--TATTGTTTTC--CTTGACACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis namnaoe       CAG--GCCA-ACTCTTTTTATA--TATTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis ngaoens       CAG--GCCA-ACTCTTTTTATA--TATTGTTTAC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis peguens       CAG--GCCAAACTCTTTTTATA--TATTGTTTTCCTCTTGGCACGTTCCCGTGCCGGGGGTTTGTTTTGGTG
Acilepis pseudos       CGA--GCCA---ACTTCTTATA--TTTTGTTTTC--CTTGGCACTTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis saligna       CAG--GCCAACTCTTTTTTATA-TATTGTTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis silhete       CAG--GCCA-ACTCTTTTTATA--TATTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Acilepis sutepen       CGA--GCCA---ACTTCTTATA--TTTTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTAGTG
Acilepis sutepen       CGA--GCCA---ACTTCTTATA--TTTTGTTTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTGGTG
Camchaya gracili       CAA--GTCACATCTTTCTTTAGTTATTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGGTG
Camchaya loloana       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya loloana       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya mukdaha       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya mukdaha       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya pentago       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya sp1           CAA--GCCGCATCTTTTTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya spinuli       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya spinuli       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya spinuli       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Camchaya tenuifl       CAA--GCCACATCTTTCTTTTGATTTTTCATTTC--CTTGGCACATT-CCGTGCT-GGGGATTGTTTTGATG
Cyanthillium cin       TAA--GCCCAACCTTTTTTCTG--TTTTCATTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATTGTG
Cyanthillium hoo       AAG--GCCCAACCTTTTTTCTG--ATTTCATTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATTGTG
Decaneuropsis cu       CAA--GTCGCACCCATCTCATG---TTTAGTTCATCCTTGGCACGTC-CCGTGCCGGGGGTTTGTTTAAACG
Decaneuropsis eb       CAA--GTCGCACACATCTCATG-TTTTGTTCATC--CTTGGCACGTT-CCGTGCCGGGGGTTTGTTTAAATG
Decaneuropsis ga       ????????????????????????????????????????????????????????????????????????
Distephanus mada       CGG--GCCACACCCTTCTTAAG---TTCGTTTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTTTTGTG
Distephanus poly       CGG--GCCACACCCTTCTTAAG--TTTTGTTTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTTTTGTG
Elephantopus mol       CAC--GCCACACCCTTCTTGAG-TTTTTACGTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTACGTTG
Elephantopus sca       CAC--GCTACACCCTTCTTGAG--TTTTTCATTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTATGTCG
Elephantopus sca       CAC--GCTACACCCTTCTTGAG--TTTTTCATTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTATGTCG
Elephantopus pen       CAC--GCTACACCCTTCTTGAG--TTTTTCATTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTATGTCG
Gymnanthemum Cyl       CAA--GTCGCACCCATCTCATG-TTTTGTTAATC--CTTGGCACGTT-CCGTGCCGGGGGTTTGTTTAAATG
Iodocephalopsis        CAA--GCCACACCCTTCTTTTG--TTTTCATTTC--CTTGGCACGTT-CCGTGCC-GGGGATTGTTTTGGTG
Koyamasia calcar       CGA--GCCA-ACCCTTTTTATA--TTTAGTTTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTTTGGTG
Kurziella gymnoc       CCA--GCCGAACCCTTCTTCTA--TTTAGTCTTC--CTTGGCACGTT-CCGTGCC-GGGGTTTGTTTTTGTT
Monosis volkamer       CGA--GCCACACCCTTCTTATG--TTTTGTTTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTTTGGTG
Pseudelephantopu       CGCATGCCACACCCTTCTTTAG--TTTGTTGTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATGTTG
Pseudelephantopu       CGCATGCCACACCCTTCTTTAG--TTTGTTGTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATGTTG
Strobocalyx arbo       CAG--GCCATACCCTTCATATG--TTTTGTTTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTTTGGTG
Strobocalyx sola       CGG--GCCACACCCTTCATATG--TTTTATTTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTTTGGTG
Tarlmounia ellip       CAG--GCCACACCCTTCGTAAG--TTTTAATTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATGGTG
Tarlmounia ellip       CAG--GCCACACCCTTCGTAAG--TTTTAATTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATGGTG
Vernonia montana       TAA--GCCCAACCTTTTTTCTG--TTTTCATTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATTGTG
Vernonia montana       TAA--GCCCAACCTTTTTTCTG--TTTTCATTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTATTGTG
Vernonia curtisi       CGA--GCCA-ACCCTTTTTATA--TTTAGTTTTC--CTTGGCACATT-CCGTGCC-GGGGTTTGTTTTGGTG

Input data matrix (continued):

                       555555555555555555555556666666666666666666666666666666666666666666666666
                       777888888888899999999990000000000111111111122222222223333333333444444444
Taxon/Node             789012345678901234567890123456789012345678901234567890123456789012345678
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Acilepis attenua       CCAACAAGACATGAGAAA---CCAATTA-TAGGCGAC-TCAAATATC-TATCAGCAAG--GCAAAAGGAGGC
Acilepis attenua       CCAACAAGACATGAGAAA---CCAATTA-TAGGCGAC-TCAAATATC-TATCAGCAAG--GCAAAAGGAGGC
Acilepis attenua       CCAACAAGACATGAGAAA---CCAATTA-TAGGCGAC-TCAAATATC-TATCAGCAAG--GCAAAAGGAGGC
Acilepis attenua       CCAACAAGACATGAGAAA---CCAATTA-TAGGCGAC-TCAAATATC-TATCAGCAAG--GCAAAAGGAGGC
Acilepis chiangd       ????????????????????????????????????????????????????????????????????????
Acilepis diverge       CCAACATGACATG---AGAGACCAATTA-TAGGCAAC-CCAAATGTC-AATTAGCAAG--GCAAAAGGAGGC
Acilepis diverge       CCAACATGACATG---AGAGACCAATTA-TAGGCAAC-CCAAATGTC-AATTAGCAAG--GCAAAAGGAGGC
Acilepis kingii        GCGTCTTGACAAG---AAAGAGCACCGA-TGGCTAAC-CCAGATGTC-AATCAGCCAG--GCAGAAGGAGGC
Acilepis namnaoe       CCAACATGACATG---AGAGACCAATTA-TAGGCAAC-CCAAATGTC-AATCAGCAAG--GCAAAAGGAGGC
Acilepis ngaoens       CCAACATGACATG---AGAGACCAATTA-TAGGCAAC-CCAAATGTC-AATCAGCAAG--GCAAAAGGAGGC
Acilepis peguens       CCAACATGACATG---AGAGACCAATTA-TAGGTAAC-CCAAATGTCAAATCAGCAAG--GCAAAAGGAGGC
Acilepis pseudos       CCAACAAGACATGAGAAA---CCAATTA-TAGGCGAC-TCAAATATC-TATCAGCAAG--GCAAAAGGAGGC
Acilepis saligna       CCAACATGACAAG---AAAGACCAATTA-TAGGTAAC-CCAAATGTC-AATCAGCAAG--GCAAAAGGAGGC
Acilepis silhete       CCAACATGACATG---AGAGACCAATTA-TAGGCAAC-CCAAATGTC-AATCAGCAAG--GCAAAAGGAGGC
Acilepis sutepen       CCAACAAGACATGAGAAA---CCAATTA-TAGGCGAC-TCAAATATC-TATCAGCAAG--GCAAAAGGAGGC
Acilepis sutepen       CCAACAAGACATGAGAAA---CCAATTA-TAGGCGAC-TCAAATATC-TATCAGCAAG--GCAAAAGGAGGC
Camchaya gracili       CCAATAAGGCATATACAATACCCA-----AAGGCATT-ATAAATGTC-CATCAGCAAA--GACGAAAGAGTA
Camchaya loloana       CCATCAAGACAAGTACAATGCCCATCAA-AAG-CATT-ATAAATGTC-CATCAGCAAA--GATGAAGGAGTA
Camchaya loloana       CCATCAAGACAAGTACAATGCCCATCAA-AAGCCATT-ATAAATGTC-CATCAGCAAA--GATGAAGGAGTA
```

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Camchaya mukdaha  CCATCAAGACAAGTACAATGCCCATCAA-AAGCCATT-ATAAATGTC-CATCAGCAAA--GATGAAGGAGTA
Camchaya mukdaha  CCATCAAGACAAGTACAATGCCCATCAA-AAG-CATT-ATAAATGTC-CATCAGCAAA--GATGAAGGAGTA
Camchaya pentago  CCATCAAGACAAGTACAATGCCCATCAA-AAGCCATT-ATAAATGTC-CATCAGCAAA--GATGAAGGAGTA
Camchaya spl      CCATCAAAACAAATACAATGCCTATCAA-AAG-CCTT-ATAAATGTC-CCTCAGCAAA--GATGAAGGAGTA
Camchaya spinuli  CCATCAAGACAAGTAAAATGCCCATCAA-AAG-CATT-GTAAATGTC-CATCAGCAAA--GATGAAGGAGTA
Camchaya spinuli  CCATCAAGACAAGCACAATGCCCATCAA-AAG-CATT-ATAAATGTC-CATCAGCAAA--GATGAAGGAGTA
Camchaya spinuli  CCATCAAGACAAGTACAATGCCCATCAA-AAG-CATT-ATAAATGTC-AATCAGCAAA--GATGAAGGAGTA
Camchaya tenuifl  CCATCAAGACAAGTACAATGCCCATCAA-AAG-CATT-ATAAATGTC-CATCAGCAAA--GATGAAGGAGTG
Cyanthillium cin  CCACCA---TATTCATAACGCTCTTTTA-TAAACGCT-ACAACAAT--GGATAGCAAG--GCGCAAAGAGTC
Cyanthillium hoo  CCACCA---TATTCATAACACTCTTTTA-CAAGCGCT-ACAACAAT--AGATAGCAAG--GCGCAAAGAGTC
Decaneuropsis cu  CTAACAAGACACCTGCACGACCCTATAA-AAGGCTTT-ACAAGTGTA-TGCCAGCATGATGCAAAGAGGGT-
Decaneuropsis eb  CTAACAAGACACCTGCACGACCCTATAA-GAGGCTTT-ACAAGTGTA-TGCCAGCATGATGCAAAGAGGGT-
Decaneuropsis ga  ??????????????????????????????????????????????????????????????????????
Distephanus mada  CCCACG-GACGCCCACGATGCCCCGTGA-GAGGCACC-GAGAACGTA-CGTCGGCAGGGAGCAAAGGGATG-
Distephanus poly  CCCACG-GACGCCCACGATGCCCTGTGA-GAGGCAYC-GAGAACGTA-CGTTAGCAGGGTGCAAGGGGATG-
Elephantopus mol  CCGGCAGGACTTCTACGACGCCTACTTA-TAGGCATC-ATAAAAATC-CATTGGCAGG-----GCATGGGCT
Elephantopus sca  CCGGCAAGACTTCTACGAGGCCCCGTCG-GGGACATC-GTATAATTC-CGTCAGCGGG--GCATAGGTTGG-
Elephantopus sca  CCGGCAAGACTTCTACGAGGCCCCGTCA-GGGACATC-GTATAATTC-CGTCAGCGGG--GCATAGGTTGG-
Elephantopus pen  CCGGCAAGACTTCTACGAGGCCCCGTCA-GGGACATC-GTATAATTC-CGTCGGCGGG--GCATAGGTTGG-
Gymnanthemum Cyl  CTAACAAGACACCTGCACGACCCTATAA-GAGGCTTT-ACAAGTGTA-TGTCACCATGATGAAAAGAGGGT-
Iodocephalopsis   CCATCAAGACATGTACAATGCCCGTTAA-AGG-CAAT-ATAAATGTC-CATCAGC-AG--GACGAAAGAGTA
Koyamasia calcar  CCAACAAGACATACGAGA---CCAATTA-TAGGAAAC-CCACATGTC-TATCAGCAAG--GCAAAAGGAGGA
Kurziella gymnoc  CCGACGAAACGTACACGATGCCCGT--ACGAGGCAGC-TTGCACGTA-CGTCGGCAGAAGGACGTACGAGGT
Monosis volkamer  CCATCGAGACACTTACAAGGCCCCGTTA-GAGGCGAT-ACAAATGTC-CGTCAGCAAG--GAGCATGGAATC
Pseudelephantopu  CCAGCAAGACTTCTTCAAGGCCCCGTTA-GAGACTTCAATAAAAATC-CGTTGGCAGG--GCGTAGGATTC-
Pseudelephantopu  CCAGCAAGACTTCTTCAAGGCCCCGTTA-GAGACTTCAATAAAAATC-CGTTGGCAGG--GCGTAGGATTC-
Strobocalyx arbo  CCAACAAGATATCTATAAGGCCCCAATA-GAAGCCAC-ATAAATACC-TATTGGCAAG--GCAT-TGAAGTC
Strobocalyx sola  CCAACAAAATATCTATAAGGCCTCATTAGGAGGCCAC-ATAAATACC-TATTAGCAGG--GCATAAAAGTC-
Tarlmounia ellip  CCAACAAGATATCTATAATGCCCCATTA-AAGGCAAC-ATAAATACC-TATTAGCAGG--GCATAAAAGTC-
Tarlmounia ellip  CCAACAAGATATCTATAATGCCCCATTA-AAGGCAAC-ATAAATACC-TATTAGCAGG--GCATAAAAGTC-
Vernonia montana  CCACCA---TATTCATAACACTCTTTTA-TGAACGTT-ATAACAAT--GGATAGCAAG--GCGCAAAGAGTC
Vernonia montana  CCACCA---TATTCATAACACTCAACGTTACAACAAT----------GGATAGCAAG--GCGCAAAGAGTC
Vernonia curtisi  CCAACAAGACATACGAGA---CCAATTA-TAGGAAAC-CCACATGTC-TATCAGCAAG--GCAAAAGGAGGA

Input data matrix (continued):

                  6666666666666666666666666666666666666666666666666666777777777777777777
                  4555555555566666666667777777778888888888999999999000000000011111111112
Taxon/Node        9012345678901234567890123456789012345678901234567890123456789012345678890
-------------------------------------------------------------------------------------------
Acilepis attenua  --ACAAGACTAGG-CCCGACCCCCTAGTACCTGATCA--TCAATACAAGTTCACAGGTCGTTTTGAG-TGCA
Acilepis attenua  --ACAAGACTAGG-CCCGACCCCCTAGTACCTGATCA--TCAATACAAGTTCACAGGTCGTTTTGAG-TGCA
Acilepis attenua  --ACAAGACTAGG-CCCGACCCCCTAGTACCTGATCA--TCAATACAAGTTCACAGGTCGTTTTGAG-TGCA
Acilepis attenua  --ACAAGACTAGG-CCCGACCCCCTAGTACCTGATCA--TCAATACAAGTTCACAGGTCGTTTTGAG-TGCA
Acilepis chiangd  ???????????????????????????????????????????????????????????????????????
Acilepis diverge  --ACAAGACTAGG-CCCGACCTCCTAACACCTGATCA--GCAATACAAGTTCACATGTCATTTTAAG-TGCA
Acilepis diverge  --ACAAGACTAGG-CCCGACCTCCTAACACCTGATCA--GCAATACAAGTTCACATGTCATTTTAAG-TGCA
Acilepis kingii   ACAGAATCTTCCG------GGCCCTAATACCAGGTAA-GGGAATACAAGTTCACATGTCATTTT--CCTACA
Acilepis namnaoe  --ACAAGACTGGG-CCCGACCCCCTAACACCTGATCG--TCAATACAAGTTCACATGTCATTTTAAA-TGCA
Acilepis ngaoens  --ACAAGACTGGG-CCCGACCCCCTAACACCTGATCG--TCAATACAAGTTCACATGTCATTTTAAA-TGCA
Acilepis peguens  --ACAAGACTAGG-TCTGACCCCCTAACACCTGATCA--TCAATACAAGTTCACATGTCATTTTAAG-TGCA
Acilepis pseudos  --ACAAGACTAGG-CCCGGCCCCCTAGCACCTGATCA--TCAATACAAGTTCACAGGTCGTTTTGAG-TGCA
Acilepis saligna  --ACAAGACTAGG-CCCGACCCCCTAACACCTGATCA--TCAATACAAGTTCACATGTCATTTTAAG-TGCA
Acilepis silhete  --ACAAGACTGGG-CCCGACCCCCTAACACCTGATCG--TCAATACAAGTTCACATGTCATTTTAAA-TGCA
Acilepis sutepen  --ACAAGACTAGG-CCCGACCCCCTAGCACCTGATCA--TCAATACAAGTTCACAGGTCGTTTTGAG-TGCA
Acilepis sutepen  --ACAAGACTAGG-CCCGACCCCCTAGCACCTGATCA--TCAATACAAGTTCACAGGTCGTTTTGAG-TGCA
Camchaya gracili  C-ATAAGCATGCG-CTCATCTCTCAAACGCCCAATCATATCTTTACTTGTTCACAAGTCACTCTATACAG--
Camchaya loloana  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya loloana  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya mukdaha  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya mukdaha  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya pentago  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya spl      CAATAAGCA-ACG-CTCATCACCCAAACATCCAACCATATCTTTACTTGGTCCCCAATCATTCTAAACTG--
Camchaya spinuli  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya spinuli  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya spinuli  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATGTCTTTACTTGTTCACAAATCATTCTAAACTG--
Camchaya tenuifl  C-ATAAGCA-ACG-CTCATCACCCAAACATCCAACCATATCTTTACTTGTTCACAAATCATTCTAAACTG--
Cyanthillium cin  --ACAAGCATGAC-CTTGAGCCCTTAACG-CCGATTG--TTAGTAAATATTCACAGGTCATTCTAAAATGCG
Cyanthillium hoo  --ACAAGCATGAC-CTTGTGCCCTTAACA-CCGATTG--TTTGTAAATATTCACAAGTCATTCTAAAATGCG
Decaneuropsis cu  --GCGAGCATTAG-CCCGTCCTCCCAACACCCAATTA--ATAATACATGTTCACAGGTTATTCTGGAATGCT
Decaneuropsis eb  --GCGAGCATTAG-CCCGTCCTCCCAACACCCAATTA--ATAATACATGTTCGCAGGTTATTCTGGAATGCT
Decaneuropsis ga  ??????????????????????????????????????????????????????????????????????
Distephanus mada  --GCAGGCATGAG-CCTGTCCCCCCGACGCCCGGTTG--TCAGTACGTGTTCACAGGTCGTTCTGAGGTG--
Distephanus poly  --GCAGGCATGAG--CCAGTCCCCCGACGCCCGGTTG--TCGGAACGTGTTCACTGGTCGTTCTGAG-----
Elephantopus mol  TGACGAGCACAAGGCCGTCTCACCTAGCCCAAGATTT--TCAATACGTGTTCACGGTTCGTTTTGAATTGCA
Elephantopus sca  --ACGAGCATCTGGCCGTTTCACCTAAC--CCGATATTTTCAGTGCGTGTTCACGGTTCATTTTGAGTTGCA
Elephantopus sca  --ACGAGCATCTGGCCGTTTCACCTAAC--CCGATATTTTCAGTGCGTGTTCACGGTTCATTTTGAGTTGCA
Elephantopus pen  --ACGAGCATCTGGCCGTTTCACCTAAC--CCGATATTTTCGGTGCGTGTTCACGGTTCATTTTGAGTTGCA
Gymnanthemum Cyl  --GCGACCATTAG-CCCGTCCTCTCAACACCCAATTA--GTAATACATGTTCACAGGTTATTCTGAAATGCT
Iodocephalopsis   C-ACAAGCATGAG-CTCATCTCCCTAATGTCCAATCATATTATTACTTGTTCACGAGTCATTCTAAACTG--
Koyamasia calcar  --ACATGACTAGG-CACGACCCCCTAACACCTGATCA--TCAATACAAGTTCACATGTCGTTTTAAG-TGCA
Kurziella gymnoc  C-ACGGGTATTGGCCCTGCTTCCCCGACGCCCGGTAT--CCGGTACATGTTCACGGGTCGTTCTGCAAAGCA
Monosis volkamer  --AAAGGCATGAG-CCCATCATCCCAGCACCCGATTG--TCAATACTTGTTCACGGGTCGTTCTAAAGTGTG
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Pseudelephantopu  --ACAGGCACAAGGCCGCTTCACCAAACCCGAGATTT--TCAGTACGTGTTCGCGGTTCGATTTGATTTGTG
Pseudelephantopu  --ACAGGCACAAGGCCGCTTCACCAAACCCGAGATTT--TCAGTACGTGTTCGCGGTTCGATTTGATTTGTG
Strobocalyx arbo  --ACAAGCATGAG-CCTATTTCTTCAACCCTAGATTG--TCGGTACATGTTCACAGGTCATTTAGAAGAATG
Strobocalyx sola  --ACAGGTATGAG-CCTATTTCTTCAACCCTAGATTG--TGAGTACATGTTCACAGGTCATTTTGAAGTATG
Tarlmounia ellip  --ACAGGCATGAA-CCTGTTTCTTCAACCCTAGATTG--TCAGTACGTGTTCACAGGTCATTTTGAAGTATG
Tarlmounia ellip  --ACAGGCATGAA-CCTGTTTCTTCAACCCTAGATTG--TCAGTACGTGTTCACAGGTCATTTTGAAGTATG
Vernonia montana  --ACAAGCATGAC-CTTGAGCCCTTAACG-CCGATTG--TTAGTAAATATTCACAGGTCATTCTAAAATGCG
Vernonia montana  --ACAAGCATGAC-CTTGAGCCCTTAACG-CCGATTG--TTAGTAAATATTCACAGGTCATTCTAAAATGCG
Vernonia curtisi  --ACATGACTAGG-CACGACCCCCTAACACCTGATCA--TCAATACAAGTTCACATGTCGTTTTAAG-TGCA

Input data matrix (continued):

                  7777777777777777777777777777777777777777777777777
                  2222222223333333333444444444455555555566666666666
Taxon/Node        1234567890123456789012345678901234567890123456789
-------------------------------------------------------------------
Acilepis attenua  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis attenua  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis attenua  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis attenua  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis chiangd  ???????????????????????????????????????????????????
Acilepis diverge  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis diverge  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis kingii   TCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis namnaoe  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis ngaoens  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis peguens  GCATTCTACA-----------------------------------------
Acilepis pseudos  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAA--CCTGT
Acilepis saligna  GCA-TCTACAA-TGAT---CTTTCGCAG-TTCAACTACGAA---CTTGT
Acilepis silhete  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis sutepen  GCATTCTACAATTGATCCCCTTCCGCAGGTTCACCTACGGAAACCTTGT
Acilepis sutepen  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Camchaya gracili  GCATTCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Camchaya loloana  ACATTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Camchaya loloana  ACATTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Camchaya mukdaha  ACATTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Camchaya mukdaha  ACA-TTGACAA-TGTC--CCT----------------------------
Camchaya pentago  ACATTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Camchaya spl      ACA-TTGACAA-TGTC---------------------------------
Camchaya spinuli  ACATTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Camchaya spinuli  ACATCTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGA
Camchaya spinuli  ACATCTGACAA-TGAT--CCTTCCGCAGCTTCACCTACGGAAACCTTGT
Camchaya tenuifl  ACA-TTGACAA-TGTC---------------------------------
Cyanthillium cin  ACGTTCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Cyanthillium hoo  ACGTTCGACAAATGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Decaneuropsis cu  TTAATCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Decaneuropsis eb  TTAATCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Decaneuropsis ga  ???????????????????????????????????????????????????
Distephanus mada  ------------------------CGGGCTCGA---------------
Distephanus poly  -------------------------AGGCTCGA---------------
Elephantopus mol  ----TCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Elephantopus sca  ----TCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Elephantopus sca  ----TCGACAA--GAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Elephantopus pen  ----TCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Gymnanthemum Cyl  TTAATCGACAA-TGT---------------------------------
Iodocephalopsis   ACATTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Koyamasia calcar  GCATTCTACAA-TGAT--CC-----------------------------
Kurziella gymnoc  GTGCTCGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Monosis volkamer  ACTTTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Pseudelephantopu  GC----GACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Pseudelephantopu  GC----GACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Strobocalyx arbo  ACGTTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Strobocalyx sola  ACGTTTGACAATTGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Tarlmounia ellip  ACGTTTGACAT---ATGTCCTTCCGCAG-TTCAC-TACGGGAAACTTGT
Tarlmounia ellip  ACGTTTGACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
Vernonia montana  ACGGTCGACAATTGAT--CCTTCCGCAGGTTCACCTAC-----------
Vernonia montana  ACG-TCGACAA-TGTC---------------------------------
Vernonia curtisi  GCATTCTACAA-TGAT--CCTTCCGCAGGTTCACCTACGGAAACCTTGT
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2. ndhF set

Input data matrix:

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                 7777777777777777777777777777778888888888888888888888888888888888888888888888
                 7777777778888888888999999999900000000001111111111222222222233333333344
Taxon/Node       0123456789012345678901234567890123456789012345678901234567890123456789012345678901
-------------------------------------------------------------------------------------------------------
Acilepis attenua  ------------------CTTATATTGATTCTATTTACTTTGTTTCGTTGGATTCTTAGGAAATTCCTTT-
Acilepis attenua  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis attenua  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis attenua  TACTATGCTA-TCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis chiangd  ------------------------------------------------------GATCTTAGG--ATTCCTTT-
Acilepis diverge  -------------------------------------------------------GATTCTTAGG--ATTCCTTT-
Acilepis diverge  ----------------------------------------G-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis kingii   TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis namnaoe  -------------------------------------CTTTG-TTCGTTGGATTCTTAAGGAATTCCTTT-
Acilepis ngaoens  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis peguens  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis pseudos  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis saligna  TACTATGCTATTCCCAAAACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis silhete  -------------------------------------------------------GGATTCTTAGG--ATTCCTTT-
Acilepis sutepen  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Acilepis sutepen  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Camchaya gracili  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya loloana  ---------------------------GATTCAATTTAC-TTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya loloana  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya mukdaha  ------------------------------------TTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya mukdaha  --------------------------------CGATGCACTTTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya pentago  -------------------------------------------------GCATTCT--GG-GATTCCTTT-
Camchaya spl      -------------------------------------------------GGATTCTTAGG-AATTCCTTTC
Camchaya spinuli  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya spinuli  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya spinuli  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Camchaya tenuifl  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTTGTTGGATTCTTAGG-AATTCCTTT-
Cyanthillium cin  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Cyanthillium hoo  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Decaneuropsis cu  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Decaneuropsis eb  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Decaneuropsis ga  --CTATGCTATTCCCAATACAAATATTGATTCTATATACTTTG-TTCGTGGGATTCTTAGG-AATTCCTTT-
Distephanus mada  ------------------ACTTATATTGATTCTATTTACTKTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Distephanus poly  ------------------CTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Elephantopus mol  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Elephantopus sca  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Elephantopus sca  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Elephantopus pen  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Gymnanthemum Cyl  ---TATGCTATTCCCAATACT-ATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Iodocephalopsis   TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Koyamasia calcar  ----------------------------------TCTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Kurziella gymnoc  ------------------------------------------------GGATC----GGAGATTCGTTT-
Monosis volkamer  ---------------------------GATTCTATTTACTTTGTTTCGTTGGATTCTTAGG-AATTCCTTT-
Pseudelephantopu  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Pseudelephantopu  TACTATGCTATTCCCAATACTTATATTGATTCTATTTACTTTG-TTGGTTGGATTCTTAGG-AATTCCTTT-
Strobocalyx arbo  ------------------------------------------------------ATTCATAGG-AGTTCCTTT-
Strobocalyx sola  TACTATGCTATTTCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Tarlmounia ellip  TACTATGCTATTTCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Tarlmounia ellip  TACTATGCTATTTCCAATACTAATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Vernonia montana  TACTATGCTATTCCCAAAACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Vernonia montana  TACTATGCTATTTCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
Vernonia curtisi  -ACTATGCTA-TCCCAATACTTATATTGATTCTATTTACTTTG-TTCGTTGGATTCTTAGG-AATTCCTTT-
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Input data matrix (continued):

```
                 888888888888888888888888888888888888888888888888888888888888888888999999999999999
                 444444445555555555566666666667777777777888888888899999999900000000001111
Taxon/Node       2345678901234567890123456789012345678901234567890123456789012345678901234567890123
-------------------------------------------------------------------------------------------------------
Acilepis attenua  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis attenua  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis attenua  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis attenua  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis chiangd  CAATCACGACA-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis diverge  C-ATCACGACA-TGGAT-GTATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis diverge  CAATCACGACA-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis kingii   CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis namnaoe  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis ngaoens  CAATCACGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
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Acilepis pseudos  CAATCACGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis saligna  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTCTTATAAATCTTTTACATAAAAATTC-
Acilepis silhete  C-ATCACGACA-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Acilepis sutepen  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
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Acilepis sutepen  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Camchaya gracili  AAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCATC-TATAAATCTTTTACATAAAAATTC-
Camchaya loloana  CAATCACGACG-TGGGG-ATATTAAAACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Camchaya loloana  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Camchaya mukdaha  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Camchaya mukdaha  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATGAATCTTTTACATAAAAATTC-
Camchaya pentago  C-ATCACAACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Camchaya spl      CAATCACGACGTTGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Camchaya spinuli  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
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Camchaya spinuli  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Camchaya tenuifl  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Cyanthillium cin  CAATCACGACA-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Cyanthillium hoo  CAATCACGACA-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Decaneuropsis cu  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATCAATCTTTTACATAAAAATTC-
Decaneuropsis eb  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATCAATCTTTTACATAAAAATTC-
Decaneuropsis ga  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATCAATCTTTTACATAAAAATTC-
Distephanus mada  CAATCAAGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Distephanus poly  CAATCAAGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
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Elephantopus pen  CAATCACGACG-TGGAT-ATATT--ATCCAAATGGTTAAACCCGTC-TATAAATCTTTTACATAAAAATTC-
Gymnanthemum Cyl  CAATCATGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATCAATCTTTTACATAAAAATTC-
Iodocephalopsis   CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTCA
Koyamasia calcar  CAATCACGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Kurziella gymnoc  C-GTCAGAAGA-TGGAT-ATATT--ATCCAAACGGTTAACCCCGGC-TATAAATCTTTTACATAAAAATTC-
Monosis volkamer  CAATCACGACG-TGGATAATATT-AACCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAAATTC
Pseudelephantopu  CAATCACGACG-TGGAT-ATATT--ATCCAAATGGTTAAACCCGTC-TATAAATCTTTTACATAAAAATTC-
Pseudelephantopu  CAATCACGACG-TGGAT-ATATT--ATCCAAATGGTTAAACCCGTC-TATAAATCTTTTACATAAAAATTC-
Strobocalyx arbo  CAATCACGACA-TGGTA-TTATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Strobocalyx sola  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Tarlmounia ellip  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Tarlmounia ellip  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Vernonia montana  CAATCACGACA-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TAGAAATCTTTTACATAAAAATTC-
Vernonia montana  CAATCACGACG-TGGAT-ATATT--AACCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-
Vernonia curtisi  CAATCACGACG-TGGAT-ATATT--ATCCAAATGGTTAACCCCGTC-TATAAATCTTTTACATAAAAATTC-

Input data matrix (continued):

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Taxon/Node        456789012345678901234567890123456789012345678901234567890123456789012345
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Acilepis attenua  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
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Acilepis chiangd  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCACTATAGCTT-CTTT
Acilepis diverge  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Acilepis diverge  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Acilepis kingii   AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
Acilepis namnaoe  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
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Acilepis peguens  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
Acilepis pseudos  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
Acilepis saligna  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
Acilepis silhete  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCAGGTTTTTTCAGTCAGTATAGCTT-CTTT
Acilepis sutepen  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
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Camchaya gracili  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya loloana  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya loloana  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya mukdaha  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya mukdaha  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya pentago  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya spl      AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCATTCAGTATAGCTT-CTTT
Camchaya spinuli  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCATTCAGTATAGCTT-CTTT
Camchaya spinuli  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya spinuli  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Camchaya tenuifl  AAACAATTCAATG----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Cyanthillium cin  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Cyanthillium hoo  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Decaneuropsis cu  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Decaneuropsis eb  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Decaneuropsis ga  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Distephanus mada  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Distephanus poly  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT
Elephantopus mol  AAACAATTTAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCTCCTTT
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Elephantopus pen  AAACAATTTAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Gymnanthemum Cyl  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
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Kurziella gymnoc  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Monosis volkamer  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Pseudelephantopu  AAACAATTTAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Pseudelephantopu  AAACAATTTAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Strobocalyx arbo  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Strobocalyx sola  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-CTTT
Tarlmounia ellip  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Tarlmounia ellip  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Vernonia montana  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Vernonia montana  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCTT-CTTT
Vernonia curtisi  AAACAATTCAATA----GATTGGTATGAATTTTGTAAAGATGCA-GTTTTTTCAGTCAGTATAGCCT-TTTT

Input data matrix (continued):

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                  9999999999999900000000000000000000000000000000000000000000000000000
                  8888999999999900000000001111111111222222222233333333334444444444555555555
Taxon/Node        6789012345678901234567890123456789012345678901234567890123456789012345678
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Acilepis attenua  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Acilepis attenua  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Acilepis attenua  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
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Acilepis chiangd  CGGAATATTTATCGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Acilepis diverge  CGGAATATTTATCGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAACTT-GGACTTAATTAATT
Acilepis diverge  CGGAATATTTATCGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAACTT-GGACTTAATTAATT
Acilepis kingii   CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Acilepis namnaoe  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTTAGGACTTAATTAATT
Acilepis ngaoens  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Acilepis peguens  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Acilepis pseudos  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Acilepis saligna   CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
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Acilepis sutepen  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
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Camchaya gracili  CGGAATATTTATATCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya loloana  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya loloana  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya mukdaha  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya mukdaha  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya pentago  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya spl      CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya spinuli  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya spinuli  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Camchaya spinuli  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-AGACTTAATTAATT
Camchaya tenuifl  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
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Decaneuropsis cu  CGGAATATTTATAGCATTTTTCTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
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Distephanus mada  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Distephanus poly  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Elephantopus mol  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Elephantopus sca  TGGAATATTTATAGCATTTT--TTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Elephantopus sca  CGGAATATTTATAGCATTTT--TTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Elephantopus pen  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Gymnanthemum Cyl  CGGAATATTTATAGCATTTTTCTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Iodocephalopsis   CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Koyamasia calcar  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Kurziella gymnoc  CGGAATATTTATCGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAACTT-GGACTTAATTAATT
Monosis volkamer  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Pseudelephantopu  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Pseudelephantopu  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Strobocalyx arbo  CGGAATATTTATCGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAACTT-GGACTTAATTAATT
Strobocalyx sola  GGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Tarlmounia ellip  GGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Tarlmounia ellip  GGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Vernonia montana  CGGAATATTTATCGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Vernonia montana  GGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT
Vernonia curtisi  CGGAATATTTATAGCATTTTTTTTATATAAACCTCTTTATTCATCTTTTCAAAATTT-GGACTTAATTAATT

Input data matrix (continued):

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                  0000000000000000000000000000000000000000000011111111111111111111111111111
                  5566666666667777777777888888888999999999900000000001111111112222222222
Taxon/Node        8901234567890123456789012345678901234567890123456789012345678901234567890
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Acilepis attenua  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis attenua  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
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Acilepis chiangd  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis diverge  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis diverge  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis kingii   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis namnaoe  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis ngaoens  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis peguens  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis pseudos  CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis saligna   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis silhete   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis sutepen   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Acilepis sutepen   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya gracili   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATCAAAAAATGCTATATATGATTGGTCATATA
Camchaya loloana   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya loloana   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya mukdaha   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya mukdaha   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya pentago   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya sp1       CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya spinuli   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya spinuli   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya spinuli   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Camchaya tenuifl   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Cyanthillium cin   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Cyanthillium hoo   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Decaneuropsis cu   CATTTGTTAAAATGGGTCCTAAGAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Decaneuropsis eb   CATTTGTTAAAATGGGTCCTAAGAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Decaneuropsis ga   CATTTGTTAAAATGGGTCCTAAGAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Distephanus mada   CATTTGTTAAAATGGGTCCTAAGAGAATTTTTTCTGACAAAATTAAAAATGCTATATATGATTGGTCATATA
Distephanus poly   CATTTGTTAAAATGGGTCCTAAGAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Elephantopus mol   CATTTTTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATCTATGATTGGTCATATA
Elephantopus sca   CATTTGTTAAAATGGGCCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATCTATGATTGGTCATATA
Elephantopus sca   CATTTGTTAAAATGGGCCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATCTATGATTGGTCATATA
Elephantopus pen   CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATCTATGATTGGTCATATA
Gymnanthemum Cyl   CATTTGTTAAAATGGGTCCTAAGAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Iodocephalopsis    CATTTGTGAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Koyamasia calcar   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Kurziella gymnoc   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Monosis volkamer   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Pseudelephantopu   CATTTGTTAAAATGGGTCCTAAAAGGATTTTTTCTGACAAAATAAAAAATGCTATCTATGATTGGTCATATA
Pseudelephantopu   CATTTGTTAAAATGGGTCCTAAAAGGATTTTTTCTGACAAAATAAAAAATGCTATCTATGATTGGTCATATA
Strobocalyx arbo   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Strobocalyx sola   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGATAAAATAAAAAATGCTATATATGATTGGTCATATA
Tarlmounia ellip   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGATAAAATAAAAAATGCTATATATGATTGGTCATATA
Tarlmounia ellip   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGATAAAATAAAAAATGCTATATATGATTGGTCATATA
Vernonia montana   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
Vernonia montana   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGATAAAATAAAAAATGCTATATATGATTGGTCATATA
Vernonia curtisi   CATTTGTTAAAATGGGTCCTAAAAGAATTTTTTCTGACAAAATAAAAAATGCTATATATGATTGGTCATATA
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Input data matrix (continued):

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                   1111111111111111111111111111111111111111111111111111111111111111111111111111111
                   1111111111111111111111111111111111111111111111111111111111111111111111111111122
                   3333333333444444444455555555556666666666777777777788888888889999999999900
Taxon/Node         0123456789012345678901234567890123456789012345678901234567890123456789012345678901
-------------------------------------------------------------------------------------------------------
Acilepis attenua  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis attenua  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis attenua  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis attenua  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis chiangd  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis diverge  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis diverge  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis kingii   ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis namnaoe  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTTCTC
Acilepis ngaoens  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis peguens  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis pseudos  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis saligna   ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis silhete   ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis sutepen   ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Acilepis sutepen   ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Camchaya gracili   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTGTCCGAATTTGCTC
Camchaya loloana   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAAAAAATTATCCGAATTTGCTC
Camchaya loloana   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Camchaya mukdaha   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Camchaya mukdaha   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Camchaya pentago   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Camchaya sp1       AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Camchaya spinuli   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Camchaya spinuli   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
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Camchaya spinuli  AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Camchaya tenuifl  AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTATCCGAATTTGCTC
Cyanthillium cin  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Cyanthillium hoo  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Decaneuropsis cu  ATCGGGGTTACATAGATGCCTTTTTATGAAACATTTTTAACTGTGGGGATGAGAAAATTGGCCGAATTCGCTC
Decaneuropsis eb  ATCGGGGTTACATAGATGCCTTTTATGAAACATTTTTCACTGTGGGGATGAGAAAATTGGCCGAATTCGCTC
Decaneuropsis ga  ATCGGGGTTACATAGATGCCTTTTATGAAACATTTTTAACTGTGGGGATGAGAAAATTGGCCGAATTCGCTC
Distephanus mada  ATCGGGGTTACATAGATGCCTTTTATGGAACATTCTTTACTGTGGGGATGAGAAAATTGGCCGAATTCGCTC
Distephanus poly  ATCGGGGTTACATAGATGCCTTTTATGGAACATTCTTTACTGTGGGGATGAGAAAATTGGCCGAATTCGCTC
Elephantopus mol  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATCAGAAAATTGTCCGAATTTGCTC
Elephantopus sca  ATCGGGGTTACATAGATGCTTTTTATGAGACATTCTTAATTGTGGGGATCAGAAAATTGTCCGAATTTGCTT
Elephantopus sca  ATCGGGGTTACATAGATGCTTTTTATGAGACATTCTTAATTGTGGGGATCAAAAAATTGTCCGAATTTGCTT
Elephantopus pen  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGGATCAGAAAATTGTCCGAATTTGCTC
Gymnanthemum Cyl  ATCGGGGTTACATAGATGCCTTTTTATGAAACATTTTTAACTGTGGGGATGAGAAAATTGGCCGAATTCGCTC
Iodocephalopsis   AACGGGGTTACATAGATGCTTTTTATGAAACATTCTTCACTGTGGGCATCAGAAAATTGTCCGAATTTGCTC
Koyamasia calcar  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTCGGGATGAGAAAATTGTCCGAATTTGCTC
Kurziella gymnoc  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGGGGGGATGAGAAAATTGTCCGAATTTGCTC
Monosis volkamer  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Pseudelephantopu  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATCAGAAAATTGTCTGAATTTGCTC
Pseudelephantopu  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATCAGAAAATTGTCTGAATTTGCTC
Strobocalyx arbo  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Strobocalyx sola  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Tarlmounia ellip  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Tarlmounia ellip  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Vernonia montana  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTGGGGATGAGAAAATTGTCCGAATTTGCTC
Vernonia montana  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTCGGGATGAGAAAATTGTCCGAATTTGCTC
Vernonia curtisi  ATCGGGGTTACATAGATGCTTTTTATGAAACATTCTTAACTGTCGGGATGAGAAAATTGTCCGAATTTGCTC
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Input data matrix (continued):

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                  11111111111111111111111111111111111111111111111111111111111111111111111111111
                  22222222222222222222222222222222222222222222222222222222222222222222222222222
                  00000000111111111122222222223333333333444444444455555555556666666666777777
Taxon/Node        23456789012345678901234567890123456789012345678901234567890123456789012345
-------------------------------------------------------------------------------------------------
Acilepis attenua  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTGTTAGCAGAG
Acilepis attenua  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis attenua  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis attenua  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis chiangd  ATTTTTTTGATAGACGAATAATTGATGCAGTTCCAAATGGGGTTGGTCTTAGGAGTTTTTTTG-TAGCAGAG
Acilepis diverge  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis diverge  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis kingii   ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis namnaoe  ATTTTTTTTATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis ngaoens  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis peguens  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis pseudos  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis saligna   ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis silhete  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAAAG
Acilepis sutepen  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Acilepis sutepen  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya gracili  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya loloana  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya loloana  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya mukdaha  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya mukdaha  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya pentago  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya spl      ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya spinuli  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya spinuli  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya spinuli  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Camchaya tenuifl  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Cyanthillium cin  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGGAGAG
Cyanthillium hoo  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Decaneuropsis cu  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTCTTTG-TAGCAGAG
Decaneuropsis eb  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTCTTTG-TAGCAGAG
Decaneuropsis ga  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTCTTTG-TAGCAGAG
Distephanus mada  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATGAGTTTCTTTG-TAGCAGAG
Distephanus poly  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATGAGTTTCTTTG-TAGCAGAG
Elephantopus mol  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATTAGTTTTTTTG-TAGCAGAG
Elephantopus sca  ATTTTTTTGATAGATGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Elephantopus sca  ATTTTTTTGATAGATGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Elephantopus pen  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATTAGTTTTTTTG-TAGCAGAG
Gymnanthemum Cyl  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTCTTTG-TAGCAGAG
Iodocephalopsis   ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Koyamasia calcar  ATTTTTTTGATAGACGAATAATTGATGCGATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Kurziella gymnoc  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Monosis volkamer  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Pseudelephantopu  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Pseudelephantopu  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGAGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Strobocalyx arbo  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Strobocalyx sola  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTC-TAGCAGAG
Tarlmounia ellip  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
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Tarlmounia ellip  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Vernonia montana  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Vernonia montana  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG
Vernonia curtisi  ATTTTTTTGATAGACGAATAATTGATGCAATTCCAAATGGGGTTGGTCTTATGAGTTTTTTTG-TAGCAGAG

Input data matrix (continued):

                  1111111111111111111111111111111111111111111111111111111111111111111111111111
                  2222222222222222222222222233333333333333333333333333333333333333333333333333
                  7777778888888888999999999900000000001111111111222222222233333333334444444
Taxon/Node        4567890123456789012345678901234567890123456789012345678901234567890123456789012345
-------------------------------------------------------------------------------------------------
Acilepis attenua  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTATTTTTTCTTATGTATCAA--T
Acilepis attenua  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis attenua  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis attenua  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA-TT
Acilepis chiangd  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis diverge  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis diverge  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis kingii   GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis namnaoe  GATATT-AAATCGGTAGGGGGTGGCCGTAAATCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis ngaoens  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis peguens  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis pseudos  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis saligna  GTTATTAAAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis silhete  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis sutepen  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Acilepis sutepen  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya gracili  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya loloana  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya loloana  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya mukdaha  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya mukdaha  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya pentago  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya sp1      GTTATA-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya spinuli  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya spinuli  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya spinuli  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Camchaya tenuifl  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Cyanthillium cin  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Cyanthillium hoo  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Decaneuropsis cu  GTTATT-AAATCGGTAGGGGGTGGGCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCCA--T
Decaneuropsis eb  GTTATT-AAATCGGTAGGGGGTGGGCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCCA--T
Decaneuropsis ga  GTTATT-AAATCGGTAGGGGGTGGGCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCCA--T
Distephanus mada  GTTATT-AAATCGGTAGGGGGTGGGCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Distephanus poly  GTTATT-AAATCGGTAGGGGGTGGGCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Elephantopus mol  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Elephantopus sca  GTTATT-AAATCAGTAGGGGGTGGCCGTATTTCTTCTTATTAGTTCTTTTA-TTTTTCTTATGTATCAATTT
Elephantopus sca  GTTATT-AAATCAGTAGGGGGTGGCCGTATTTCTTCTTATTAGTTCTTTTA-TTTTTCTTATGTATCAATTT
Elephantopus pen  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Gymnanthemum Cyl  GTTATT-AAATCGGTAGGGGGTGGGCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCCA--T
Iodocephalopsis   GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTACCTGTTCTTTTA-TTTTTCTTATGTATCAA-TT
Koyamasia calcar  ATTATT-AAATCGGTAGGGGGTGGACGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T
Kurziella gymnoc  GTTATT-AAATCGGTGGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Monosis volkamer  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Pseudelephantopu  GTTGTT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCCA--T
Pseudelephantopu  GTTGTT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCCA--T
Strobocalyx arbo  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTAGGTATCAA--T
Strobocalyx sola  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Tarlmounia ellip  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Tarlmounia ellip  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Vernonia montana  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Vernonia montana  GTTATT-AAATCGGTAGGGGGTGGCCGTATTTCTTCTTATCTGTTCTTTTA-TTTTTCTTATGTATCAA--T
Vernonia curtisi  GTTATT-AAATCGGTAGGGGGTGGACGTATTTCTTCTTATCTCTTCTTTTA-TTTTTCTTATGTATCAA--T

Input data matrix (continued):

                  1111111111111111111111111111111111111111111111111111111111111111111111111111
                  3333333333333333333333333333333333333333333333333444444444444444444444444444
                  4444555555555566666666667777777778888888888999999999900000000001111111111
Taxon/Node        6789012345678901234567890123456789012345678901234567890123456789012345678901234567
-------------------------------------------------------------------------------------------------
Acilepis attenua  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis attenua  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis attenua  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis attenua  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis chiangd  TTTTTTATTAATTTACTACTTTACTTTACTACTTTTTTAATCTT-----------------------------
Acilepis diverge  TTTTTTATTAATTTACTACTTTAATTTACTACTTTTTTAATCTT-----------------------------
Acilepis diverge  TTTTTTATTAATTTACTACTTTAATTTACTACTTTTTTAATCTT-----------------------------
Acilepis kingii   TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis namnaoe  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis ngaoens  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis peguens  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
```

```
Acilepis pseudos  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis saligna  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis silhete  TTTTTTATTAATTTACTACTTTAATTTACTACTTTTTTAATCTT-------------------------
Acilepis sutepen  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Acilepis sutepen  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Camchaya gracili  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Camchaya loloana  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya loloana  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya mukdaha  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya mukdaha  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya pentago  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya spl      TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya spinuli  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya spinuli  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya spinuli  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Camchaya tenuifl  TTTTTTATTAATTT-------------ACTACTTTTGTAATCTT------TG------------AATCTT--
Cyanthillium cin  TTTTTTATTAATTTACTACTTTAATTTACTACTTTTTTAATCTTAATCTTTG------------AATCTT--
Cyanthillium hoo  TTTTTTATTAATTTACTACTTTAATTTACTACTTTTTTAATCTT-------------------------
Decaneuropsis cu  TTTTTTATTTATTT-------------ACTACTTTTTGAATCTT------TG------------AATCTT--
Decaneuropsis eb  TTTTTTATTTATTT-------------ACTACTTTTTGAATCTT------TG--------------------
Decaneuropsis ga  TTTTTTATTTATTT-------------ACTACTTTTTGAATCTT------TG--------------------
Distephanus mada  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATTTT--
Distephanus poly  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Elephantopus mol  TTTTTTATTAATTT-------------ACTACTTTTTAAATCTT------TG------------AG------
Elephantopus sca  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TT------------AG------
Elephantopus sca  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AG------
Elephantopus pen  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT-------------------------
Gymnanthemum Cyl  TTTTTTATTTATTT-------------ACTACTTTTTGAATCTT------TG------------AATCTTTA
Iodocephalopsis   TTTTTTATTAATTT-------------ACTACTTTTTGAATCTT------TAATCTTTAAATTTAATCTT--
Koyamasia calcar  TTTTTTATTAATTT-------------ACTACTTTTTTAATTTT------TG------------AATCTT--
Kurziella gymnoc  TTTTTTATTAATTTACTACTTTAATTTACTACTTTTTTAATCTT-------------------------
Monosis volkamer  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AATCTT--
Pseudelephantopu  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AG------
Pseudelephantopu  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG------------AG------
Strobocalyx arbo  TTTTTTATTAATTTACTACTTTAATTCACTACTTTTTTAATCTT-------------------------
Strobocalyx sola  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG--------------------
Tarlmounia ellip  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG--------------------
Tarlmounia ellip  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG--------------------
Vernonia montana  TTTTTTATTAATTTACTACTTTAATTTACTACTTTTTTAATCTTAATCTTTG------------AATCTT--
Vernonia montana  TTTTTTATTAATTT-------------ACTACTTTTTTAATCTT------TG--------------------
Vernonia curtisi  TTTTTTATTAATTT-------------ACTACTTTTTTCATTTT------TG------------AATCTT--

Input data matrix (continued):

                  1111111111111111111111111111111111111111111111111111111111111111111111111111
                  4444444444444444444444444444444444444444444444444444444444444444444444444444
                  1122222222223333333333444444444455555555556666666666777777777788888888888
Taxon/Node        8901234567890123456789012345678901234567890123456789012345678901234567890123456789
-------------------------------------------------------------------------------------------------------
Acilepis attenua  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis attenua  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis attenua  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis attenua  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis chiangd  ------------------AATC-----------------------------------------------
Acilepis diverge  ------------------AATC-----------------------------------------------
Acilepis diverge  ------------------AATC-----------------------------------------------
Acilepis kingii   --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis namnaoe  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis ngaoens  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis peguens  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis pseudos  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis saligna  --------TTTTTA----AATCTTTAAT-----------TAATCTTT------------------------
Acilepis silhete  ------------------AATC-----------------------------------------------
Acilepis sutepen  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Acilepis sutepen  --------TTTTT-----AATCTTTAAT-----------TAATCTT-------------------------
Camchaya gracili  --------TTTG------AATCTTTAATTTTT----CTTTAATCTTATTTCTTT-----------------
Camchaya loloana  --------TTTG------AATCTTTAATCTTT----CTTTAATCTTTTTAATCTTTCTTTAATCTTTTTAAT
Camchaya loloana  --------TTTG------AATCTTTAATCTTT----CTTTAATCTTT-----------------------
Camchaya mukdaha  --------TTTG------AATCTTTAATCTTT----CTTTAATCTTTTAACTTTAATCTTTCTTTAATC---
Camchaya mukdaha  --------TTTG------AATCTTTAATCTTT----CTTTAATC-------------------------
Camchaya pentago  --------TTTG------AATCTTTAATCTTT-------------------------------------
Camchaya spl      --------TTTG------AATCTTTAATCTTT----CTTTAATCTTTTTAATCTTTCTTTAATCTTTTTAAT
Camchaya spinuli  --------TTTG------AATCTTTAATCTTT----CTTTAATCTTTTTAATCTTTCTTTAATCTTTTAATC
Camchaya spinuli  --------TTTG------AATCTTTAATCTTT----CTTTAATC-------------------------
Camchaya spinuli  --------TTTG------AATCTTTAATCTTT----CTTTAATCTTTTAATCTTTTTCTTTAATC-------
Camchaya tenuifl  --------TTTG------AATCTTTAATCTTT----CTTTAATCTTAATCTTT-----------------
Cyanthillium cin  --------TTT-------AATCTTTGA-------------ATCTTC----------------------
Cyanthillium hoo  ------------------AATC-----------------------------------------------
Decaneuropsis cu  --------T-------------------------------------------------------------
Decaneuropsis eb  ------------------AATCT----------------------------------------------
Decaneuropsis ga  ------------------AATCTTTAAC-------------------------------------------
Distephanus mada  --------T---------AAT-----------------------------------------------
Distephanus poly  --------T---------AAT-----------------------------------------------
```

```
Elephantopus mol  ----------------AATCC-----------------------------------------------------
Elephantopus sca  ----------------AATCC-----------------------------------------------------
Elephantopus sca  ----------------AATCC-----------------------------------------------------
Elephantopus pen  -----------------------------------------------------------------------------
Gymnanthemum Cyl  ACTTTGAATCTTTTAATGAATCTTTTATTTAA------TGAATCTTTTAATTTATTTAATGAATCTTTTTTT
Iodocephalopsis   --------TCTTT-----AATCTTTAAT----------TTAATCTTT-------------------------
Koyamasia calcar  --------TTTTTATTTTAATCTTTAAT----------TAATCTT--------------------------
Kurziella gymnoc  ----------------AATC-------------------------------------------------
Monosis volkamer  --------T---------AATATTTAATCTTTGAATCTTTAATATTTAATCTTTGAATCTTTAATATTTAAT
Pseudelephantopu  ----------------AATCC-----------------------------------------------------
Pseudelephantopu  ----------------AATCC-----------------------------------------------------
Strobocalyx arbo  ----------------AATCTTTGAA-------------------------------------------------
Strobocalyx sola  ----------------AATCTTTAA--------------------------------------------------
Tarlmounia ellip  ----------------AATCTTTAA--------------------------------------------------
Tarlmounia ellip  ----------------AATCTTTAA--------------------------------------------------
Vernonia montana  --------TTT-------AATCTTTGA-------------ATCTTC-------------------------
Vernonia montana  ----------------AATCTTTAA--------------------------------------------------
Vernonia curtisi  --------TTTTTATTTTAATCTTTAA-------------------------------------------------

Input data matrix (continued):

                  11111111111111111111111111111111111111111111111111111111111111111111111111111
                  44444444445555555555555555555555555555555555555555555555555555555555555555555
                  99999999990000000000111111111122222222223333333333444444444455555555566
Taxon/Node        01234567890123456789012345678901234567890123456789012345678901234567890123456789
-------------------------------------------------------------------------------------------------
Acilepis attenua  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis attenua  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis attenua  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis attenua  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis chiangd  ------------------------TTTGAATC-----TTTAAGAAT-----------------CCAATCCC
Acilepis diverge  ------------------------TTTGAATC-----TTTAAGAAT-----------------CCAATCCA
Acilepis diverge  ------------------------TTTGAATC-----TTTAAGAAT-----------------CCAATCCA
Acilepis kingii   ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis namnaoe  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis ngaoens  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis peguens  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis pseudos  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis saligna  ------------------------TTTAAATC-----TTTAAGAAA-------------------AATCCA
Acilepis silhete  ------------------------TTTGAATC-----TTTAAGAAT-----------------CCAATCCA
Acilepis sutepen  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Acilepis sutepen  ------------------------TTTTAATC-----TTTAAGAAA-------------------AATCCA
Camchaya gracili  ------------------------CTTTAATC-----TT--------------------------ATTTAA
Camchaya loloana  CTTCTTTTTAATCTTTCTTTAATCTTTTTAATC-----TTTAAGAAC-------------AATCCAATCCA
Camchaya loloana  ------------------------CTTTAATC-----TTTAAGAAC-------------AATCCAATCCA
Camchaya mukdaha  ------------------------TTTTAATC-----TTTAAGAAC-------------AATCCAATCCA
Camchaya mukdaha  ------------------------TTTTAATC-----TTTAAGAAC-------------AATCCAATCCA
Camchaya pentago  -------------------------------------------------------------------C
Camchaya spl      CTTTCTTTAATCTTTTAATCT----TTTTAATC-----TTTAAGAAC-------------AATCCAATCCA
Camchaya spinuli  T------------------------TTTTAATC-----TTTAAGAAC-------------------AATCCA
Camchaya spinuli  ------------------------TTTTAATC-----TTTAAGAAC-------------AATCCAATCCA
Camchaya spinuli  ------------------------TTTTAATC-----TTTAAGAAC-------------AATCCAATCCA
Camchaya tenuifl  ------------------------CTTTAATC-----TTTAAGAAC-------------------AATCCA
Cyanthillium cin  ------------------------TTTGAATC-----TTTAAGAAT-CCAAACTAATAAGAATCCAATCCA
Cyanthillium hoo  ------------------------TTTGAATC-----TTTAAGAAT-----------------CCAATCCA
Decaneuropsis cu  ----------------------------------------TAACAAA-------------------AATCCA
Decaneuropsis eb  ---------------------------------------TTTAACAAA-------------AATCCAATCCA
Decaneuropsis ga  ------------------------TTTGAATCT----TTTAACAAA-------------------AATCCA
Distephanus mada  ---------------------------------------TTTAATAAA-------------------AATCCA
Distephanus poly  ---------------------------------------TTTAATAAA-------------------AATCCA
Elephantopus mol  -----------------------------------------------------------------AATCCA
Elephantopus sca  -----------------------------------------------------------------AATCCA
Elephantopus sca  -----------------------------------------------------------------AATCCA
Elephantopus pen  ------------------------TACTAATG---------AGAAT-----------------CCAATGCA
Gymnanthemum Cyl  AATTTATTTAATGAATC--------TTTTAA-------TTTAACAAA-------------------AATCCA
Iodocephalopsis   ------------------------CTTTAATC-----TTTAAGAAA-------------AATCCAATCCA
Koyamasia calcar  ------------------------TTTTAATCTTTAATTTAAGAAA-------------------AATCCA
Kurziella gymnoc  ------------------------TTGGAATC-----TTTAAGAAT-----------------CCAATCCA
Monosis volkamer  CTTTGAAT----------------CTTTAATA-----TTTAATAAA-------------AATCCAATCCA
Pseudelephantopu  -----------------------------------------------------------------AATCCA
Pseudelephantopu  -----------------------------------------------------------------AATCCA
Strobocalyx arbo  ---------------------------------------TCTAA---------------------------
Strobocalyx sola  ------------------------GTTGAATC-----TTTAAGAAA-------------------AATCCA
Tarlmounia ellip  ------------------------GTTGAATC-----TTTAAGAAA-------------------AATCCA
Tarlmounia ellip  ------------------------GTTGAATC-----TTTAAGAAA-------------------AATCCA
Vernonia montana  ------------------------TTTGAATC-----TTTAAGAATCCAAACTAATAAGAATCCCAATCCA
Vernonia montana  ------------------------GTTGAATC-----TTTAAGAAA-----------------AATCCA
Vernonia curtisi  ---------------------------------------TTTAAGAAA-------------------AATCCA

Input data matrix (continued):

                  11111111111111111111111111111111111111111111111111111111111111111111111111111
                  55555555555555555555555555555555555556666666666666666666666666666666666666
```

```
                  6666666677777777778888888888999999999900000000001111111111222222222233333
Taxon/Node        2345678901234567890123456789012345678901234567890123456789012345678901234567890123
-------------------------------------------------------------------------------------------------------
Acilepis attenua  TTTCAT-GAAAAAAATGTGACCAATTATCCCAACCAACAAAAC-TACT-TGTTACAAATAGCA--ACTCG--
Acilepis attenua  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCATCTCTTGCT
Acilepis attenua  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis attenua  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis chiangd  TTTCAT-GAAAAAAATGTGACCAA-----------------------------------------------------
Acilepis diverge  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAACC-TACT-TGTTACAAATAACA--TCTTGCT
Acilepis diverge  TTTCATGGAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis kingii   TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis namnaoe  TTTCAT-GAAAAAAATGTGACCAATTATCCCCCCC--CAAAAC-TACTCTGTTACAAATAGCA--TCTTGCT
Acilepis ngaoens  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis peguens  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis pseudos  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis saligna  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCT-GCT
Acilepis silhete  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis sutepen  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Acilepis sutepen  TTTCAT-GAAAAAAATGTG-CCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya gracili  TCT----GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya loloana  TTTCATGAAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya loloana  TTTCAT-GAAAAAAATGTGACCAATTATCCCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya mukdaha  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya mukdaha  TTTCAT-GAAAAAAATGTGACCAATTAT-TCCACCAACAAAACTTACTTTGTTACAAATAGCA--TCTTGCT
Camchaya pentago  TTTCAA-------------------------------------------------------------------------
Camchaya spl      TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATA------------
Camchaya spinuli  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya spinuli  TTTCAT-GAAAAAAATGTGACCAATTATCCCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya spinuli  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Camchaya tenuifl  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Cyanthillium cin  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Cyanthillium hoo  TTTCATGAAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Decaneuropsis cu  TTTCAT-GAATAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Decaneuropsis eb  TTTCAT-GAATAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Decaneuropsis ga  TTTCAT-GAATAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Distephanus mada  TTTCAT-GAATAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAMATAGCA--TCTTGCT
Distephanus poly  TTTCAT-GAATAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Elephantopus mol  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Elephantopus sca  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATTGCA--TCTTGCT
Elephantopus sca  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Elephantopus pen  TTTCAT-GAACAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Gymnanthemum Cyl  TTTCAT-GAATAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Iodocephalopsis   TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Koyamasia calcar  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Kurziella gymnoc  TTTCAT-GAAAAAAATGTGACCGGTTAT-TCAACCAACAAGAC-TACT-TGTTACAAATAGCA--TCTTGCT
Monosis volkamer  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTT-CT
Pseudelephantopu  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Pseudelephantopu  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Strobocalyx arbo  -------GAATAAAAC-------------CCATCCA-------------TGT--------------------
Strobocalyx sola  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Tarlmounia ellip  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Tarlmounia ellip  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Vernonia montana  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Vernonia montana  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
Vernonia curtisi  TTTCAT-GAAAAAAATGTGACCAATTAT-CCAACCAACAAAAC-TACT-TGTTACAAATAGCA--TCTTGCT
```

Input data matrix (continued):

```
                  11111111111111111111111111111111111111
                  66666666666666666666666666666666666666
                  33333344444444445555555555666666666666
Taxon/Node        45678901234567890123456789012345678 9
-------------------------------------------------------
Acilepis attenua  ------------------------------------
Acilepis attenua  GTTGCATCGAAACAT-AAAATG-TTGACTAA-----
Acilepis attenua  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Acilepis attenua  GTTGCATCGAAACATAAAAATG-TTGACTA------
Acilepis chiangd  ------------------------------------
Acilepis diverge  GTTGCATCGAAACATCAAAATG-TTGACTAATCTCC
Acilepis diverge  GTTGCATCGAAACATCAAAATG-TTGACTAATCTCG
Acilepis kingii   GTTGCATCGTAACAGAAAATTG-TTGACTAACCTCG
Acilepis namnaoe  GTTGCATCGAAACAT-AAAATG-TTGACTAATCTCG
Acilepis ngaoens  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Acilepis peguens  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Acilepis pseudos  GTTGCATCGAAACAT-AAAATG-TTGACTAATCTCG
Acilepis saligna  G-TGCATCGAA-------------------------
Acilepis silhete  GTTGCATCGAAACATCAAAATG-TTGACTAATCTCG
Acilepis sutepen  GGTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Acilepis sutepen  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Camchaya gracili  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Camchaya loloana  GTTGCATCGAAACATAAAAATGTTTGACTAATCTCG
Camchaya loloana  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Camchaya mukdaha  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
```

```
Camchaya mukdaha  GTTGCATCGAAACAT-AAAATG-TTGACTAATC---
Camchaya pentago  ------------------------------------
Camchaya spl      ------------------------------------
Camchaya spinuli  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Camchaya spinuli  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Camchaya spinuli  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Camchaya tenuifl  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Cyanthillium cin  GTTGCATCGAAACATCAAAATG-TTGACTAATCTCG
Cyanthillium hoo  GTTGCATCGAAACAT-CAAATG-TTGACTAATCTCG
Decaneuropsis cu  GTTGTATCGAAACATAAAAATG-TTGACTAATCTCG
Decaneuropsis eb  GTTGTATCGAAACATAAAAATG-TTGACTAATCTCG
Decaneuropsis ga  GTTGTATCGAAACATAAAAATG-TTGACTAATCTC-
Distephanus mada  GTTGCATCG--------------------------
Distephanus poly  GTTGCATCG--------------------------
Elephantopus mol  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Elephantopus sca  ATTGCGTCGAAAAA-AAAAATC-TTGAGTAATCC--
Elephantopus sca  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Elephantopus pen  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Gymnanthemum Cyl  GTTGTATCGAAACATCAAAATG-TTGACTAATCTC-
Iodocephalopsis   G------------------------------------
Koyamasia calcar  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Kurziella gymnoc  GTTGCATCGAAACATCAAAATG-TTGACTAATCTCG
Monosis volkamer  G-TGCATC----------------------------
Pseudelephantopu  GTTGCATCG-AACATAAAAATG-TTGACTAATCTCG
Pseudelephantopu  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Strobocalyx arbo  ------------------------------------
Strobocalyx sola  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Tarlmounia ellip  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Tarlmounia ellip  GTTGCATCGAAACATAAAAATG-TTGACT-------
Vernonia montana  GTTGCTTCGAAACATCAAAT---GTGACTAACCTCG
Vernonia montana  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
Vernonia curtisi  GTTGCATCGAAACATAAAAATG-TTGACTAATCTCG
```

3. trnL-F set

Input data matrix:

```
                 1111111111111111111111111111111111111111111111111111111111111111111111111111111111
                 6666666666666666666666666666666777777777777777777777777777777777777777777777777777
                 7777777777888888888899999999990000000001111111112222222223333333334
Taxon/Node       012345678901234567890123456789012345678901234567890123456789012345678901
-------------------------------------------------------------------------------------------
Acilepis attenua  ----------------------------------ACTTACTAAGT-GAT-ACTT--TC---AAATTCAG-A
Acilepis attenua  --CCGCTATTGATGAGGCTTGTT----ATGGA---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis attenua  --------GGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC--AAAATTCAG-A
Acilepis attenua  -----TTATGGATGAGCCT-GGT----ATGGA---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis chiangd  --------TAATTGATGAGCTGT----ATGAA---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis diverge  --TTAATTGGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis diverge  -----TATTGATTGAGCCTTGGT----AGGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis kingii   --TCGACTATGATGAGCCT-GGT----ATGGA---ACTTACTAAGT-GATAACTT--TC----AATTCAG-A
Acilepis namnaoe  --CGACTATGGATGAGCCTTGGT----ATGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis ngaoens  --TTA-TTGGATTGAGCCTTGGG----TATGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis peguens  ---TTATTGGATTGAGCCTTGGT----AGGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis pseudos  -----------------------------GG--ACTTACTAAGTAGGTAACTTAGTC---AAATTCAGAA
Acilepis saligna  --TTAATTGGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis silhete  --CCGATTATGATGAGCCT--------GTAGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis sutepen  ----TTATTGATTGGGCCTTGGT----ATGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Acilepis sutepen  --TTAATTGGATTGAGCCTTGGT----ATGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya gracili  --GATATTGGATTGAGCCCTTGTT---AGGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya loloana  --TTAATTGGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya loloana  --TTAATTGGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya mukdaha  -----------------------------GGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya mukdaha  ----------------------------------ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya pentago  --------GGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya sp1      --CTTATTGGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GAT-ACTT--TC---CAATTCAG-A
Camchaya spinuli  --TTAATTGGATTGAGCCTTGGT----ATGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya spinuli  --CCGACTATGATGAGCCT--------GTATGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya spinuli  --GTCGCTATGATGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Camchaya tenuifl  --ATTATTGGATTGAGCCTTGGT----AGGGG---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Cyanthillium cin  ----CTATTGGATGAGCCT-GGT----ATGGG---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Cyanthillium hoo  --TTAATTGGATTGAGCCT-GGT----AGGGGG--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Decaneuropsis cu  --ATTATTGGATTGAGCCTTGGT----ATGGA---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Decaneuropsis eb  --TTAATTGGATTGGGCCTTGAT----ATGGAA--ACTTACTAAGT-GAAAACTT--TC---AAATTCAG-A
Decaneuropsis ga  ---------------------------------------CTACGT-GATGACTT--TC----AATTAGG-A
Distephanus mada  ----------------------------------ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Distephanus poly  ----------------------------------ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Elephantopus mol  --CCCGATATGATGAGCTTTGCT----TTGAAAGGACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Elephantopus sca  --GGGATATGGATGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Elephantopus sca  -----TATTGATTGAGCCTTGGT----AGGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Elephantopus pen  --TTAATTGGATTGAGCCCTGGT----AGGGA---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Gymnanthemum Cyl  --TTAAATGGATTGGGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Iodocephalopsis   -----------------------------GGA--ACTTACTAAGT-GATAACTT--TCAAAAAATTCAG-A
Koyamasia calcar  --TTAATTGGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TA---AAATTCAG-G
Kurziella gymnoc  ----TTATTGGATGAGCCTTGGT----ATGGA---ACTTACTAAGT-GATACTTT-------CAATTCAG-A
Monosis volkamer  ----TTATGGATTGGG-CTTGGTATGAAAAGA---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Pseudelephantopu  ------------TGAGCCTTGGCTTGAAAGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Pseudelephantopu  --TTAATTGGATTGAGCCTTGGT----ATGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Strobocalyx arbo  ----------------------------------CTTACTAAGT-GAGAACTT--TC---AAATTCAG-A
Strobocalyx sola  --CCGATATTGATGAGCCTTGGT----TAGGGA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Tarlmounia ellip  --TTAATTGGATTGAGCCTTGGT----AGGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Tarlmounia ellip  GCGGATATTGATGTGG--CTTGT----AAGGA---ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Vernonia montana  --GATATTGGATTGAGCCTTGGT----AGGG----ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Vernonia montana  ----TTATTGATTGAGCCTTGGT----AGGGAA--ACTTACTAAGT-GATAACTT--TC---AAATTCAG-A
Vernonia curtisi  --GACTATTGATTGAGCCTTGGT----ATGGA---ACTTACTAAGT-GATAACTT--TA---AAATTCAG-G
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Input data matrix (continued):

```
                 1111111111111111111111111111111111111111111111111111111111111111111111111111111111
                 7777777777777777777777777777777777777777777777777777777777788888888888888888888
                 4444444455555555556666666666777777777788888888889999999990000000000011111
Taxon/Node       2345678901234567890123456789012345678901234567890123456789012345678901234567890123
-------------------------------------------------------------------------------------------
Acilepis attenua  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis attenua  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis attenua  GAAATCCCTGGAATTAATGAAAAATGGGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA-CCAAAG
Acilepis attenua  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis chiangd  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis diverge  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis diverge  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis kingii   GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis namnaoe  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis ngaoens  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis peguens  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis pseudos  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis saligna  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
```

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Acilepis silhete  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Acilepis sutepen  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTTCCCGAAAACAAA--CAAAG
Acilepis sutepen  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya gracili  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya loloana  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya loloana  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya mukdaha  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya mukdaha  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya pentago  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya spl      GAAA-CCCTGGAATTAATAAAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya spinuli  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya spinuli  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya spinuli  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Camchaya tenuifl  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Cyanthillium cin  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA------G
Cyanthillium hoo  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA------G
Decaneuropsis cu  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Decaneuropsis eb  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Decaneuropsis ga  GAAA-CCCTGGAAGTAAT-AAAAAT-GGGGAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Distephanus mada  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Distephanus poly  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Elephantopus mol  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Elephantopus sca  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Elephantopus sca  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Elephantopus pen  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Gymnanthemum Cyl  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Iodocephalopsis   GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAAAACAAACAAAG
Koyamasia calcar  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Kurziella gymnoc  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCATGTTTT-CCGAAAACAAA--CAAAG
Monosis volkamer  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Pseudelephantopu  GAAA-CCCTGGAATTAAG-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAAACCAAAG
Pseudelephantopu  GAAA-CCCTGGAATTAAGAAAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA-CAAAAG
Strobocalyx arbo  GAAA-CCCTGGAATTAAT-AAAAAG-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Strobocalyx sola  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAAACCAAAG
Tarlmounia ellip  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Tarlmounia ellip  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG
Vernonia montana  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA------G
Vernonia montana  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA------G
Vernonia curtisi  GAAA-CCCTGGAATTAAT-AAAAAT-GGGCAATCCTGAGCCAAATCACGTTTT-CCGAAAACAAA--CAAAG

Input data matrix (continued):

                  1111111111111111111111111111111111111111111111111111111111111111111111
                  8888888888888888888888888888888888888888888888888888888888888888888888
                  1111112222222222333333333344444444455555555556666666666777777777788888
Taxon/Node        4567890123456789012345678901234567890123456789012345678901234567890123
------------------------------------------------------------------------------------------
Acilepis attenua  GTTCAG-AAAGCAAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCTGGGTTCTA
Acilepis attenua  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis attenua  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis attenua  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis chiangd  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis diverge  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis diverge  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis kingii   GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis namnaoe  GTTCAG-AAAGCGAA-----------AATAAAAAAAGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis ngaoens  GTTCAG-AAAGCGAA-----------AATAAAAAAGGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis peguens  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis pseudos  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis saligna  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis silhete  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis sutepen  GTTCAG-AAAGCGAA-----------AATAAAAAAGGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Acilepis sutepen  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya gracili  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya loloana  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya loloana  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya mukdaha  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya mukdaha  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya pentago  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya spl      GTTCAG-AAAGCGAA-----------AAAGAAAAAAGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya spinuli  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya spinuli  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya spinuli  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Camchaya tenuifl  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Cyanthillium cin  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Cyanthillium hoo  GTTCAG-AAAGCGAA-----------AAGAAAAA--GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Decaneuropsis cu  GTTCAG-AAAGCGAA-----------AATCAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Decaneuropsis eb  GTTCAG-AAAGCGAA-----------AATAAAAAAGGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Decaneuropsis ga  GTTCAG-AAAGCGAA-----------ATAAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Distephanus mada  GTTCAG-AAAGCGAA-----------AATCAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Distephanus poly  GTTCAG-AAAGCGAA-----------AATCAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Elephantopus mol  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Elephantopus sca  GTTCAG-AAAGCGAAAAGAAAAAAGAAGAAAAAAGGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
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Elephantopus sca  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Elephantopus pen  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Gymnanthemum Cyl  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Iodocephalopsis   GTTCAGAAAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Koyamasia calcar  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Kurziella gymnoc  GTTCAG-AAAGCAAA-----------AATCAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Monosis volkamer  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Pseudelephantopu  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Pseudelephantopu  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Strobocalyx arbo  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Strobocalyx sola  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Tarlmounia ellip  GTTCAG-AAAGCGAA-----------AAGAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Tarlmounia ellip  GTTCAG-AAAGCGAA-----------AAGAAAAAAGGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Vernonia montana  GTTCAG-AAAGCGAA-----------AAGAAAAAAGGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Vernonia montana  GTTCAG-AAAGCGAA-----------AAGAAAAAAGGGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA
Vernonia curtisi  GTTCAG-AAAGCGAA-----------AATAAAAAA-GGATAGGTGCAGAGACTCGATGGAAGCT--GTTCTA

Input data matrix (continued):

                  11111111111111111111111111111111111111111111111111111111111111111111111111111
                  88888888888888999999999999999999999999999999999999999999999999999999999999999
                  88889999999999000000000001111111111222222222233333333344444444455555555
Taxon/Node        67890123456789012345678901234567890123456789012345678901234567890123456789
-------------------------------------------------------------------------------------------------
Acilepis attenua  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGGAAAAAACTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis attenua  ACGAATGGAAGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis attenua  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis attenua  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis chiangd  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis diverge  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis diverge  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis kingii   ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis namnaoe  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis ngaoens  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis peguens  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis pseudos  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis saligna   ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis silhete  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis sutepen  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Acilepis sutepen  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Camchaya gracili  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya loloana  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya loloana  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya mukdaha  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya mukdaha  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya pentago  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya spl      ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya spinuli  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya spinuli  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya spinuli  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Camchaya tenuifl  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Cyanthillium cin  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Cyanthillium hoo  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Decaneuropsis cu  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Decaneuropsis eb  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Decaneuropsis ga  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Distephanus mada  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Distephanus poly  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Elephantopus mol  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Elephantopus sca  ACGAGTGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Elephantopus sca  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Elephantopus pen  ACGAGTGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Gymnanthemum Cyl  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Iodocephalopsis   ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATTCTTCTATCGAAACTTCAG-A------GAAGG
Koyamasia calcar  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG
Kurziella gymnoc  ACGAATGG-AGTTGATTGTCTTAC-----TAGAGA----------TCGAAACTTCAG-AAAAGATGAAGG
Monosis volkamer  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Pseudelephantopu  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--CATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Pseudelephantopu  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--CATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Strobocalyx arbo  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Strobocalyx sola  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Tarlmounia ellip  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Tarlmounia ellip  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAGAAAAAGATGAAGG
Vernonia montana  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Vernonia montana  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTCAG-AAAAGATGAAGG
Vernonia curtisi  ACGAATGG-AGTTGATTGTCTTACGTTATTAGAGG--AATCCTTCTATCGAAACTTGAG-AAAAGATGAAGG

Input data matrix (continued):

                  11111111111111111111111111111111111111111111222222222222222222222222222222
                  99999999999999999999999999999999999999999999000000000000000000000000000000
                  55666666666677777777778888888888999999999900000000001111111112222222222
Taxon/Node        89012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789
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```
Acilepis attenua  -ATAAA-CCTGTATACATAATACCGAACTGGAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis attenua  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis attenua  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis attenua  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis chiangd  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis diverge  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis diverge  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis kingii   -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis namnaoe  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis ngaoens  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis peguens  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis pseudos  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis saligna  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis silhete  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis sutepen  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Acilepis sutepen  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya gracili  -ATAAA-CCTGTATACATAATACTGAA---GAAGTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya loloana  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya loloana  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya mukdaha  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya mukdaha  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya pentago  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya sp1      -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya spinuli  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya spinuli  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya spinuli  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Camchaya tenuifl  -ATAAA-CCTGTATACATAATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Cyanthillium cin  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Cyanthillium hoo  -ATAAACCCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Decaneuropsis cu  -ATAAA-CCTGTATACATAATACAGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Decaneuropsis eb  -ATAAA-CCTGTATACATAATACAGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Decaneuropsis ga  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Distephanus mada  -ATAAA-CCTGTATACATAATACAGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Distephanus poly  -ATAAA-CCTGTATACATAATACAGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Elephantopus mol  -ATAAA-CCTGTATACATCATACTGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Elephantopus sca  -ATAAA-CCTGTATACATAATACCGAA---GATTTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Elephantopus sca  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Elephantopus pen  -ATAAA-CCTGTATACATAATACCGAA---GATTTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Gymnanthemum Cyl  -ATAAA-CCTGTATACATAATACAGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Iodocephalopsis   -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Koyamasia calcar  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Kurziella gymnoc  -ATAAA-CCTGTATACATAATACAGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Monosis volkamer  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Pseudelephantopu  AATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Pseudelephantopu  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Strobocalyx arbo  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Strobocalyx sola  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Tarlmounia ellip  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Tarlmounia ellip  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAAGGAATCGAA
Vernonia montana  -ATAAA-CCTGT-------ATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Vernonia montana  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
Vernonia curtisi  -ATAAA-CCTGTATACATAATACCGAA---GAATTGTTGTGAATCGATTCCATATTGAAGAAA-GAATCGAA
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Input data matrix (continued):

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                  22222222222222222222222222222222222222222222222222222222222222222222222
                  00000000000000000000000000000000000000000000000000000000000000000000011
                  33333333334444444444555555555566666666667777777777888888888899999999900
Taxon/Node        01234567890123456789012345678901234567890123456789012345678901234567890
-----------------------------------------------------------------------------------------
Acilepis attenua  TATTCATT-------GATCAAACCATTTCTTGCCACTCCTGAATCTGATTAGATCTTTTGAAGAACTGATTA
Acilepis attenua  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis attenua  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis attenua  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis chiangd  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis diverge  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis diverge  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis kingii   TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis namnaoe  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis ngaoens  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis peguens  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis pseudos  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis saligna  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis silhete  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis sutepen  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Acilepis sutepen  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya gracili  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya loloana  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya loloana  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya mukdaha  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya mukdaha  TATTCATTGATCAAAGATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya pentago  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
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Camchaya spl      TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya spinuli  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya spinuli  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya spinuli  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Camchaya tenuifl  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Cyanthillium cin  TATTCATC-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Cyanthillium hoo  TATTCATC-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Decaneuropsis cu  TATTCATT-------GATCAAACCATT------CACTCCATAATCTGA-TAGATCTTTTGAAGAACTGATTA
Decaneuropsis eb  TATTCATT-------GATCAAACCATT------CACTCCATAATCTGA-TAGATCTTTTGAAGAACTGATTA
Decaneuropsis ga  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Distephanus mada  TATTCATT-------GATCAAACCATT------CACTCCATAATCTGA-TAGATCTTTTGAAGAACTGATTA
Distephanus poly  TATTCATT-------GATCAAACCATT------CACTCCATAATCTGA-TAGATCTTTTGAAGAACTGATTA
Elephantopus mol  TATTCATTGATCAAAGATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Elephantopus sca  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Elephantopus sca  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Elephantopus pen  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Gymnanthemum Cyl  TATTCATT-------GATCAAACCATT------CACTCCATAATCTGA-TAGATCTTTTGAAGAACTGATTA
Iodocephalopsis   TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Koyamasia calcar  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACGGATTA
Kurziella gymnoc  TAGTCATT-------GATCAAACCATT------CACTCCATAATCTGA-TAGATCTTTTGAAGAACTGATTA
Monosis volkamer  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Pseudelephantopu  TATTCATT-------GATCAAACCATT------CACTCCAGAATCAGA-TAGATCTTTTGAAGAACTGATTA
Pseudelephantopu  TATTCATT-------GATCAAACCATT------CACTCCAGAATCAGA-TAGATCTTTTGAAGAACTGATTA
Strobocalyx arbo  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Strobocalyx sola  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Tarlmounia ellip  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Tarlmounia ellip  TATTCATT-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Vernonia montana  TATTCATC-------GATCAAACCATT------CACTCCAGAATCTGA-TAGATCTTTTGAAGAACTGATTA
Vernonia montana  TATTCATC-------GATCAAACCATT------CACTCCAGAATCTTA-TAGATCTTTTGAAGAACTGATTA
Vernonia curtisi  TATTCATT-------GATCAAACCATT------GACTCCAGAATCTGA-TAGATCTTTTGAAGAACGGATTA
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Input data matrix (continued):

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                  22222222222222222222222222222222222222222222222222222222222222222222222222
                  11111111111111111111111111111111111111111111111111111111111111111111111111
                  00000000111111111122222222223333333333444444444455555555556666666666777777
Taxon/Node        23456789012345678901234567890123456789012345678901234567890123456789012345
-------------------------------------------------------------------------------------------
Acilepis attenua  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis attenua  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis attenua  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis attenua  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis chiangd  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis diverge  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis diverge  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis kingii   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis namnaoe  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis ngaoens  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis peguens  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis pseudos  ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis saligna   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis silhete   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis sutepen   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Acilepis sutepen   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya gracili   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTGATAGTAAGAGG
Camchaya loloana   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya loloana   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya mukdaha   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya mukdaha   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya pentago   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya spl       ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya spinuli   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya spinuli   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya spinuli   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Camchaya tenuifl   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Cyanthillium cin   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Cyanthillium hoo   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Decaneuropsis cu   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Decaneuropsis eb   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Decaneuropsis ga   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Distephanus mada   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATACCGGCAACAATGAAATTTATAGTAAGAGG
Distephanus poly   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATACCGGCAACAATGAAATTTATAGTAAGAGG
Elephantopus mol   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCACTCCCGGCAACAATGAAATTTATAGTAAGAGG
Elephantopus sca   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Elephantopus sca   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Elephantopus pen   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Gymnanthemum Cyl   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Iodocephalopsis    ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Koyamasia calcar   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Kurziella gymnoc   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATACCGGCAACAATGAAATTTATAGTAAGAGG
Monosis volkamer   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Pseudelephantopu   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Pseudelephantopu   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
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Strobocalyx arbo   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Strobocalyx sola   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Tarlmounia ellip   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Tarlmounia ellip   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Vernonia montana   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Vernonia montana   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG
Vernonia curtisi   ATCGGACGAGAATAAAGATAGAGTCCCGTTCTACATGTCAATCCCGGCAACAATGAAATTTATAGTAAGAGG

Input data matrix (continued):

                   222222222222222222222222222222222222222222222222222222222222222222222222
                   111111111111111111111111112222222222222222222222222222222222222222222222
                   777777888888888899999999990000000000111111111122222222223333333333444444
Taxon/Node         456789012345678901234567890123456789012345678901234567890123456789012345
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Acilepis attenua   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis attenua   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis attenua   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis attenua   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis chiangd   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis diverge   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis diverge   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis kingii    AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis namnaoe   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis ngaoens   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis peguens   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis pseudos   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis saligna   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis silhete   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis sutepen   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Acilepis sutepen   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Camchaya gracili   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTGGCTCCCTAA
Camchaya loloana   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya loloana   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya mukdaha   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya mukdaha   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya pentago   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya sp1       AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya spinuli   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya spinuli   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya spinuli   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Camchaya tenuifl   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Cyanthillium cin   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCTTTTGGCTCCCTAA
Cyanthillium hoo   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCTTTTGGCTCCCTAA
Decaneuropsis cu   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Decaneuropsis eb   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Decaneuropsis ga   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Distephanus mada   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Distephanus poly   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Elephantopus mol   AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGAACATTTTGCTCCCTAA
Elephantopus sca   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Elephantopus sca   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Elephantopus pen   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Gymnanthemum Cyl   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Iodocephalopsis    AAAATCCGTCGATTTCAAAAATCATGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Koyamasia calcar   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Kurziella gymnoc   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTGGGCTCCCTAA
Monosis volkamer   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Pseudelephantopu   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATGTGGCTCCCTAA
Pseudelephantopu   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATGTGGCTCCCTAA
Strobocalyx arbo   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Strobocalyx sola   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Tarlmounia ellip   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Tarlmounia ellip   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA
Vernonia montana   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCTTTTGGCTCCCTAA
Vernonia montana   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCTTTTGGCTCCCTAA
Vernonia curtisi   AAAATCCGTCGATTTCAAAAATCGTGAGGGTTCAAGTCCCTCTATCCCCAAAAAGACCATTTGGCTCCCTAA

Input data matrix (continued):

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                   222222222222222222222222222222222222222222222222222222333333333333333333
                   444455555555556666666666777777777788888888889999999999000000000011111111
Taxon/Node         678901234567890123456789012345678901234567890123456789012345678901234567
-------------------------------------------------------------------------------------------
Acilepis attenua   TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
Acilepis attenua   TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
Acilepis attenua   TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
Acilepis attenua   TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
Acilepis chiangd   TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
Acilepis diverge   TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
Acilepis diverge   TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
Acilepis kingii    TTATTTATCGTATCCTTTTTATTTATCC------------------------TTTTTTCGTTAGCGGTTCAA
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Acilepis namnaoe  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Acilepis ngaoens  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Acilepis peguens  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Acilepis pseudos  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Acilepis saligna  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Acilepis silhete  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Acilepis sutepen  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Acilepis sutepen  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya gracili  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya loloana  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya loloana  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya mukdaha  TTATTTATCGTATCCTTTTTATTTATCCTTTTTTCGTTATTTTTATTTATCCTTTTTTCGTTAGCGGTTCAA
Camchaya mukdaha  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya pentago  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya spl      TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya spinuli  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya spinuli  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya spinuli  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Camchaya tenuifl  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Cyanthillium cin  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Cyanthillium hoo  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Decaneuropsis cu  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Decaneuropsis eb  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Decaneuropsis ga  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Distephanus mada  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Distephanus poly  TTATTTATCGTATCCTTTTTATTTATCCT---------TTTTTTCGTTAGCGGTTCAA
Elephantopus mol  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Elephantopus sca  TTCTTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Elephantopus sca  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Elephantopus pen  TTCTTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Gymnanthemum Cyl  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Iodocephalopsis   TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Koyamasia calcar  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Kurziella gymnoc  TTCTTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Monosis volkamer  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Pseudelephantopu  TTCTTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Pseudelephantopu  TTCTTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Strobocalyx arbo  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Strobocalyx sola  TTCTTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Tarlmounia ellip  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Tarlmounia ellip  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Vernonia montana  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Vernonia montana  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA
Vernonia curtisi  TTATTTATCGTATCCTTTTTATTTATCC----------TTTTTTCGTTAGCGGTTCAA

Input data matrix (continued):

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                  3333333333333333333333333333333333333333333333333333333333333333333333333333
                  1122222222223333333333444444444455555555556666666666777777777788888888888
Taxon/Node        8901234567890123456789012345678901234567890123456789012345678901234567890123456789
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Acilepis attenua  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis attenua  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis attenua  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis attenua  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis chiangd  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis diverge  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis diverge  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis kingii   AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis namnaoe  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis ngaoens  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis peguens  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis pseudos  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis saligna  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis silhete  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis sutepen  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Acilepis sutepen  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya gracili  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya loloana  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya loloana  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya mukdaha  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya mukdaha  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya pentago  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya spl      AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya spinuli  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya spinuli  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya spinuli  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Camchaya tenuifl  AACTC-----------CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Cyanthillium cin  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Cyanthillium hoo  AACTC-----------CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Decaneuropsis cu  AACTC-----------CTTATCTTTCTCA------TTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Decaneuropsis eb  AACTC-----------CTTATCTTTCTCA------TTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
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Decaneuropsis ga  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Distephanus mada  AACTC-----CTTATCTTTCTCA------TTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Distephanus poly  AACTC-----CTTATCTTTCTCA------TTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Elephantopus mol  AACTC-----CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Elephantopus sca  AACTCCTTCTCTTTCTCTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCCGAGCGGAAAT
Elephantopus sca  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Elephantopus pen  AACTCCTTCTCTTTCTCTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCCGAGCGGAAAT
Gymnanthemum Cyl  AACTC-----CTTATCTTTCTCA------TTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Iodocephalopsis   AACTC-----CTTATATTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Koyamasia calcar  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Kurziella gymnoc  AACTC-----CTTATCTTTCTCA------TTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Monosis volkamer  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Pseudelephantopu  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATCCAAATGGATCCGAGCAGAAAT
Pseudelephantopu  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATCCAAATGGATCCGAGCAGAAAT
Strobocalyx arbo  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Strobocalyx sola  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Tarlmounia ellip  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Tarlmounia ellip  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Vernonia montana  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Vernonia montana  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT
Vernonia curtisi  AACTC-----CTTATCTTTCTCATTCACTTTCACTACTCTTTATACAAATGGATCTGAGCGGAAAT

Input data matrix (continued):

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                  3333333333444444444444444444444444444444444444444444444444444444444444444
                  9999999999000000000011111111112222222222333333333344444444455555555566
Taxon/Node        0123456789012345678901234567890123456789012345678901234567890123456789
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Acilepis attenua  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis attenua  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis attenua  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATAAACATCTTTGAGCAA-GGAAT-CCC
Acilepis attenua  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis chiangd  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis diverge  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis diverge  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis kingii   GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis namnaoe  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis ngaoens  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis peguens  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis pseudos  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAAGGGAAT-CCC
Acilepis saligna  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis silhete  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis sutepen  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Acilepis sutepen  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya gracili  GCTGTTCTCTTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya loloana  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya loloana  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya mukdaha  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya mukdaha  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya pentago  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya spl      GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya spinuli  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya spinuli  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Camchaya spinuli  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGGGCAA-GGAAT-CCC
Camchaya tenuifl  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Cyanthillium cin  GCCGTTC-TCTTATCACATGTGATATATAT-GATAAATGTACAAATGAACATATTTGAGCAA-GGAAT-CCC
Cyanthillium hoo  GCCGTTC-TCTTATCACATGTGATATATAT-GATAAATGTACAAATGAACATATTTGAGCAA-GGAAT-CCC
Decaneuropsis cu  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Decaneuropsis eb  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Decaneuropsis ga  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Distephanus mada  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTATAAATGAACATCTTTGAGCAA-GGAAT-CCC
Distephanus poly  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTATAAATGAACATCTTTGAGCAA-GGAAT-CCC
Elephantopus mol  GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Elephantopus sca  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Elephantopus sca  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Elephantopus pen  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Gymnanthemum Cyl  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Iodocephalopsis   GCTGTTC-TCTTATCACATGTGATGTATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Koyamasia calcar  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Kurziella gymnoc  GCTACTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Monosis volkamer  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Pseudelephantopu  GCTGTTC-TCTTATCACATGTGCCAAATATTAATACATGTACAAATGAACATCTTTGAGCAAGGGAAT-CCC
Pseudelephantopu  GCTGTTC-TCTTATCACATGTGCTATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Strobocalyx arbo  GCTGTTC-TCTTATCACATGTGATATATATGGATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Strobocalyx sola  GCTGTTTCTCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Tarlmounia ellip  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Tarlmounia ellip  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Vernonia montana  GCCGTTCTTCTTATCACATGTGATATATAT-GATAAATGTACAAATGAACATATTTGAGCAA-GGAAT-CCC
Vernonia montana  GCCGTTC-TCTTATCACATGTGATATATAT-GATAAATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC
Vernonia curtisi  GCTGTTC-TCTTATCACATGTGATATATAT-GATACATGTACAAATGAACATCTTTGAGCAA-GGAAT-CCC

Input data matrix (continued):
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                  2222222222222222222222222222222222222222222222222222222222222222222222222222
                  4444444444444444444444444444444444444455555555555555555555555555555555555
                  6666666677777777778888888888999999999900000000001111111111222222222233333
Taxon/Node        2345678901234567890123456789012345678901234567890123456789012345678901234
-----------------------------------------------------------------------------------------------
Acilepis attenua  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis attenua  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis attenua  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis attenua  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTTCAAGGTTGTTC-TTTTGACGG-CCT
Acilepis chiangd  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis diverge  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis diverge  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis kingii   CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis namnaoe  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis ngaoens  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis peguens  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis pseudos  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis saligna  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis silhete  CATTTGAATGATTCACGATCAATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Acilepis sutepen  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGGCCCT
Acilepis sutepen  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Camchaya gracili  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGG-CCT
Camchaya loloana  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTTTTTTTGACGA-CCT
Camchaya loloana  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya mukdaha  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya mukdaha  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya pentago  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya spl      CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya spinuli  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya spinuli  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya spinuli  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Camchaya tenuifl  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Cyanthillium cin  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGA-CCT
Cyanthillium hoo  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Decaneuropsis cu  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTCCAAGGTTGTTC-TTTTGACGG-CCT
Decaneuropsis eb  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTCCAAGGTTGTTCTTTTTGACGG-CCT
Decaneuropsis ga  CATTTGAATGATTCACGATCAATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Distephanus mada  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Distephanus poly  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Elephantopus mol  CATTTGAATGATTCACGATCGATATTTTTATTCCATACTGAAACTTACAAGGTTG-TTTTTTTGACGACCCT
Elephantopus sca  CATTGGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTATTC-TTTTGACGG-CCT
Elephantopus sca  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Elephantopus pen  CATTGGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTATTC-TTTTGACGG-CCT
Gymnanthemum Cyl  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTCCAAGGTTGTTCTTTTTGACGGGCCT
Iodocephalopsis   CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTT-TTTTGACGG-CCT
Koyamasia calcar  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Kurziella gymnoc  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGT-CCT
Monosis volkamer  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGA----TACAAGGTTATTCTTTTTGACGG-CCT
Pseudelephantopu  CTTTTGAATGATTCACGATCGATATTTTTATT-CATACTGA----TACAAGGTTATTC-TTTTGACGG-CCT
Pseudelephantopu  CTTTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGGT--------TGTTGG-CCT
Strobocalyx arbo  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTT---------GG-CCT
Strobocalyx sola  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTT---------GG-CCT
Tarlmounia ellip  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTT---------GG-CCT
Tarlmounia ellip  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTCTTTTTGACGG-CCT
Vernonia montana  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTCTTTTTGACGG-CCT
Vernonia montana  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
Vernonia curtisi  CATTTGAATGATTCACGATCGATATTTTTATT-CATACTGAAACTTACAAGGTTGTTC-TTTTGACGG-CCT
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Input data matrix (continued):

```
                  2222222222222222222222222222222222222222222222222222222222222222222222222222
                  5555555555555555555555555555555555555555555555555555555555555555555555555555
                  3333334444444444555555555566666666667777777777888888888899999999990000000
Taxon/Node        4567890123456789012345678901234567890123456789012345678901234567890123456
-----------------------------------------------------------------------------------------------
Acilepis attenua  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis attenua  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATC
Acilepis attenua  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis attenua  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis chiangd  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis diverge  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis diverge  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTCTCT-AGTAAAA-TGAAAATG
Acilepis kingii   GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis namnaoe  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGACCCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis ngaoens  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis peguens  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis pseudos  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis saligna  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis silhete  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis sutepen  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Acilepis sutepen  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya gracili  GGGTGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
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Camchaya loloana  GGATGA-GGA-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya loloana  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya mukdaha  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya mukdaha  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya pentago  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya spl      GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTCTTCT-AGTAAAA-TGAAAATG
Camchaya spinuli  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya spinuli  GGATGA-GGC-TTTGTAATACCCTTTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya spinuli  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Camchaya tenuifl  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Cyanthillium cin  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Cyanthillium hoo  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Decaneuropsis cu  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCAAAGTTC-TCT-AGTAAAA-TGAAAATG
Decaneuropsis eb  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCAAAGTTC-TCT-AGTAAAA-TGAAAATG
Decaneuropsis ga  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Distephanus mada  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Distephanus poly  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Elephantopus mol  GGATGAGGGC-TTTGTAATACCC-TTTCAATTGGACATAGACCCCAAGTTC-TCT-AGTAAAATTGAAAATG
Elephantopus sca  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Elephantopus sca  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Elephantopus pen  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCCAGTTC-TCT-AGTAAAA-TGAAAATG
Gymnanthemum Cyl  GGATGA-GGCTTTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCTAAGTAAAA-TGAAAATG
Iodocephalopsis   GGATGA-GGCTTTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCTAAGTAAAA-TGAAAATG
Koyamasia calcar  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Kurziella gymnoc  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CTCAAGTTC-TCT-AGTAAAA-TGAAAATG
Monosis volkamer  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Pseudelephantopu  GGATGA-GGCTTTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Pseudelephantopu  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Strobocalyx arbo  GGAGGA-GGC-TTTGTAATACCC-TTTCAATT--GCATAGA-CCCAGGTTC-TCT-AGTAAAA-TGAAAATG
Strobocalyx sola  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Tarlmounia ellip  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Tarlmounia ellip  GGATGA-GGC-TTTGTAATAACCCTTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Vernonia montana  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Vernonia montana  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG
Vernonia curtisi  GGATGA-GGC-TTTGTAATACCC-TTTCAATT-GACATAGA-CCCAAGTTC-TCT-AGTAAAA-TGAAAATG

Input data matrix (continued):

                  22222222222222222222222222222222222222222222222222222222222222
                  66666666666666666666666666666666666666666666666666666666666666
                  00001111111111222222222233333333334444444444555555555566666666
Taxon/Node        67890123456789012345678901234567890123456789012345678901234567
-------------------------------------------------------------------------------
Acilepis attenua  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGAAGAGCAAAAGACTGAAA-
Acilepis attenua  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAAAGCCGA-GACTGAA--
Acilepis attenua  AGGATGAGACATCAGGAATAGTCGGGGA-AGC-TCAGT-TGGTAGAGCAGA-GACTGAAA-
Acilepis attenua  AGGATGAGACATCAGGAATAGTCGGGAT-AGCTTCAGT-TGGTAAAGCAAA-GACTGAAAT
Acilepis chiangd  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCTTT-T--------------------
Acilepis diverge  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGAAAAGCAAAAGAATGAAAA
Acilepis diverge  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTC----------------
Acilepis kingii   AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TTTTT-GGGGGG---------------
Acilepis namnaoe  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCATT-TGGAAAAAGCAGAGACTGAAAT
Acilepis ngaoens  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAA-GAATGAAA-
Acilepis peguens  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGG-TGGTAGAGCAAAAGAATGAAA-
Acilepis pseudos  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-T-GTAGAGCAGA-GACTGAAA-
Acilepis saligna  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-T-GTAGAGCAGA-GACTGAAA-
Acilepis silhete  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAGA-GACTGAAAA
Acilepis sutepen  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAA-GACTGAA--
Acilepis sutepen  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAGAGGACTGAA--
Camchaya gracili  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAA-GACTGAAAA
Camchaya loloana  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGAAGAGCAAAGGACTGAAA-
Camchaya loloana  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAAAGCAGA-GACTGAAAA
Camchaya mukdaha  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCA--------------------------
Camchaya mukdaha  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT----------------------
Camchaya pentago  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAGA-GACTGAA--
Camchaya spl      AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCACT-TGGGAAAGCAGAAGACTGAAA-
Camchaya spinuli  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGAAGAGCAGAGGACTGAAAT
Camchaya spinuli  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGAAAAGCAGA-GACTGAAAA
Camchaya spinuli  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGTTGGGAAAAGCAGAGGACTGAAA-
Camchaya tenuifl  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGGAGAGCAAA-GACTAAATC
Cyanthillium cin  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAAAGACTGAAA-
Cyanthillium hoo  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGTGTAGAAAAAAAAAAAAAATGAATC
Decaneuropsis cu  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAA-GACTGAAAT
Decaneuropsis eb  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAAAGCAAA-AACTGAAA-
Decaneuropsis ga  AGGATGAGACATCAGCAATAGTCGGGAT-AGC-TCAAT-TGGTAGAGCAAA-GACTGAAAT
Distephanus mada  AGGATGAGACATCAGGAATAGTCGGGAT-AGTA-----------------------------
Distephanus poly  AGGATGAGACATCAGGAATAGTCGGGAT-AG-------------------------------
Elephantopus mol  AGGATGAGACATCAGGAATAGTCGGGATAAGC-TCAGT-TGGAAGAGGAGA-GACTGAAA-
Elephantopus sca  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCACT-TGGAAAAGCAAA-GACTGAAA-
Elephantopus sca  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTC----------------
Elephantopus pen  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCCCT-TGGGAAAGCAAA-GACTAAAA-
Gymnanthemum Cyl  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT---GTAGAG--------------
Iodocephalopsis   AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-T--------------------
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```
Koyamasia calcar  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAGAGGACTGAAA-
Kurziella gymnoc  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAGAGGACTGAAAT
Monosis volkamer  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGAAAAGCAAA-GACTGAAAT
Pseudelephantopu  AGGAGGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAA--GACTGAA--
Pseudelephantopu  AGGAGGAGACATCAGGAATAGTCGGGAT-AGC-TCAAT-TGGAAAAGCAGAGGACTGAAAT
Strobocalyx arbo  AGGATGAGACATCAGGAATAGTC-----------------------------------
Strobocalyx sola  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAA-GACTGAAA-
Tarlmounia ellip  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAAGAACTGAAAA
Tarlmounia ellip  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAA-GACTAAAAT
Vernonia montana  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAAAGGACTGAAA-
Vernonia montana  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAGAGCAGAGGACTGAAAA
Vernonia curtisi  AGGATGAGACATCAGGAATAGTCGGGAT-AGC-TCAGT-TGGTAAAGCAGA-GAATGAAAT
```

4. Morphological set

Input data matrix:

```
                 2222222222222222222222222222222222222222222222222
                 6666666666666666666666666666666666677777777777777
                 6667777777777888888888899999999900000000000111
Taxon/Node       7890123456789012345678901234567890123456789012
-----------------------------------------------------------------
Acilepis attenua 00101111101000004401321031130201120001110111111
Acilepis attenua 00101111101000004401321031130201120001110111111
Acilepis attenua 00101111101000004401321031130201120001110111111
Acilepis attenua 00101111101000004401321031130201120001110111111
Acilepis chiangd 01121011100100104401111120131101020001111111111
Acilepis diverge 01121011100100044114110001311010200011010111l
Acilepis diverge 01121011100100004411411000131101020001101011l1
Acilepis kingii  01101011100100004411111000130101120001100111l1
Acilepis namnaoe 01121111001000044111110301311010200010001111l
Acilepis ngaoens 01101111100100004411221030130101020001002111l1
Acilepis peguens 01131111000100004411111010131101020001000011l1
Acilepis pseudos 01131111101000004401111010131101020001000111l1
Acilepis saligna 01130011100100004411111020130101120001100111l1
Acilepis silhete 01120111100100004411421011130201020001100010l1
Acilepis sutepen 01120010100100004??111010131101020001110111l1
Acilepis sutepen 01120010100100004??111010131101020001110111l1
Camchaya gracili 01020220000100004401411010331101120111101110000
Camchaya loloana 01020010010100104411111131231201120111103001O2
Camchaya loloana 01020010010100104411111131231201120111103001O2
Camchaya mukdaha 01020010010100104411111130231201120111103001O2
Camchaya mukdaha 01020010010100104411111130231201120111103001O2
Camchaya pentago 01021010010100104411121130231201120111103000O2
Camchaya spl     01001210010000110011411010301201120111103001O2
Camchaya spinuli 01020010010100114411221130230201120111103001O2
Camchaya spinuli 01020010010100114411221130230201120111103001O2
Camchaya spinuli 01020010010100114411221130230201120111103001O2
Camchaya tenuifl 01021010010100104411111130231201120111103011O2
Cyanthillium cin 01131011010000113301111110131101120001011111l1
Cyanthillium hoo 01131210010000010311111130131201120001010010l1
Decaneuropsis cu 11011221100100100311111010110101121002011101l1
Decaneuropsis eb 11001221100000100000111010100100021002010101l1
Decaneuropsis ga 11001221110100100001121100100101011002103101l1
Distephanus mada 111211?101???????22?1?1110030?1000???????0101?1
Distephanus poly 21000120102?????01112110100 2?10??????????01???1
Elephantopus mol 01021201010010102211100210120010021001101101l1
Elephantopus sca 00031100010010102201300210120010020001101101l1
Elephantopus sca 00031100010010102201300210120010020001101101l1
Elephantopus pen 00021100000010102201300210121010020001103101l1
Gymnanthemum Cyl 31001111010100100001421000100101011002010111l1
Iodocephalopsis  01001211010100100011411010131101121002110011OO
Koyamasia calcar 01000011010100004401211010301201020111101001O2
Kurziella gymnoc 01100110110100004411011100100100001002010100l1
Monosis volkamer 31021111000001000001111010130101021000100111l1
Pseudelephantopu 00001110000010000001000210300000020001101101l1
Pseudelephantopu 00001110000010000001000210300000020001101101l1
Strobocalyx arbo 31001223100010000011111000100101001002010110l1
Strobocalyx sola 11011011110011000101111000110101101002010111l1
Tarlmounia ellip 11031211100000010300111000131101001002010010l1
Tarlmounia ellip 11031211100000010300111000131101001002010010l1
Vernonia montana 01121011010100010211111111012010002000101011l1
Vernonia montana 01121011010100010211111111012010002000101011l1
Vernonia curtisi  01001011010100000011221111300201120001101011l1
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RESEARCH PUBLICATIONS

1. Bunwong, S. and Chantaranothai, P. 2008. Pollen Morphology of the Tribe Vernonieae (Compositae) in Thailand. **The Natural History Journal of Chulalongkorn University** 8(1): 45-55.
2. Bunwong S., Robinson, H. & Chantaranothai, P. 2009. Taxonomic notes on *Camchaya* and *Iodocephalus* (Vernonieae: Asteraceae), and a new genus *Iodocephalopsis*. **Proceedings of the Biological Society of Washington** 122(3): 357-363.
3. Robinson, H., Bunwong, S. & Chantaranothai, P. 2010. A new genus, *Kurziella* from Thailand (Vernonieae: Asteraceae). **Proceedings of the Biological Society of Washington**. 123(2):174–178.
4. Bunwong, S. and Chantaranothai, P. 2010. A new record of *Pseudelephantopus spicatus* C.F.Baker (Asteraceae) from Thailand. **Thai Forest Bulletin (Botany)**. (In press)
5. Bunwong, S., Keeley, S.C. and Chantaranothai, P. Phylogenetic relationships in Vernonieae (Asteraceae) in Thailand based on DNA sequence data from the nuclear rDNA ITS region and chloroplast regions *ndhF* and *trnL*. **Systematic Botany**. (submitted)

Oral presentation:

1. Bunwong, S. and Chantaranothai, P. 2008. Morphological Taxonomy of *Vernonia* (Asteraceae) in Thailand. In: **The 14th Flora of Thailand Meeting 18th–21st August**, The Carlsberg Academy, Copenhagen, Denmark.
2. Keeley, S.C. and Bunwong, S. 2010. The relationships of Vernonieae (Compositae) from Thailand to those in Africa, Madagasccar and Asia. In: **Botany 2010, July 31 – August 4, Rhode Island, USA**. Available Source: http://2010.botanyconference.org/engine/search/index.php?func=detail&aid=211. June 9, 2010.
3. Bunwong, S. and Chantaranothai, P. 2010. Revision of Tribe Vernonieae (Asteraceae) in Thailand. In: **The 2nd Symposium of the "Flore du**

Cambodge, du Laos et du Viêtnam" 6th – 8th December 2010, Hanoi, Vietnam. (Accepted).

Poster presentations:

1. Keeley, S.C. and Bunwong, S. 2008. Preliminary Phylogenetic relationships in Thai Vernonieae (Compositae). In: **Botany 2008: Botany without Borders**, University of British Columbia, Vancouver, BC, 26th – 30th July.
2. Bunwong, S., Chantaranothai, P. and Keeley, S.C. 2008. A preliminary study of phylogenetic relationships in Thai Vernonieae (Asteraceae). In: **Abstracts: Research and Thesis 2008.** V. Baimai and R. Tanthalekha (Eds.), p. 112. BRT program, Bangkok.
3. Bunwong, S., Chantaranothai, P. and Keeley, S.C. 2009. Molecular taxonomy of tribe Vernonieae (Asteraceae) in Thailand. In: **Abstract of Research and Thesis 2009**. V. Baimai and R. Tanthalekha (Eds.), p. 81. BRT program, Bangkok.
4. Bunwong, S. and Chantaranothai, P. 2010. Generic revision of Vernonieae (Asteraceae) in Thailand. In: **The 4th Symposium of the Botany in Thailand 24th – 26th March**, p. 150. Chiang Mai.

Awards:

1. Popular vote for poster presentation at 13th BRT Annual Meeting, Holiday Inn, Chiang Mai, Thailand, 12th – 14th October 2009.
2. The Excellent award for poster presentation at the 4th Symposium of the Botany in Thailand, Chiang Mai, 24th – 26th March 2010.

VITAE

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Publications

1. Bunwong, S., Chantaranothai, P. and Thammathaworn, A. 2004. Taxonomy of Tribe Vernonieae (Asteraceae) in Thailand. **KKU Research Journal (Graduate Studies)** 4: 1-11.
2. Pornpongrungreung, P., Vanijajiva, O. and Bunwong, S. 2006. A historical study of Thai Asteraceae. In: **Proceedings of the International Compositae Alliance (TICA-Deep Achene)**. Barcelona, Spain.

Awards

1. The excellent award for oral presentation of research and thesis presentation of the 6 th Graduate School, Khon Kaen University conference, 2003.
2. The excellent award in poster presentation of research and thesis presentation of the 7 th BRT annual conference (Taxonomy of tribe Vernonieae (Compositae) in Thailand), 2003.
3. The excellent award in poster presentation of research and thesis presentation of the 8 th BRT annual conference (Palynology of tribe Vernonieae (Compositae) in Thailand), 2004.