Appendix 2. Phylogenetic trees constructed from the four RAD alignments excluding the loci shared by fewer than a minimum number at a given locus (min 10, 20, 40, or 50). There is a few conflicts between assemblies' topologies resulting in species change position between analysis. In the min10 and min20 assemblies, *O. bofo* Kunth, *O. rubrinervis* Mez, and *O. velloziana* (Meins.) Mez maintains the same relationships, but differ from min40 and min50 (Fig S1- S4, I). Similarly, the position of *O. glaziovii* Mez, with respect to *O. variabilis* (Nees) Mez, and *O. lancifolia* (Schott) Mez persists in min10 and min20, but differ from min40 and min50 (Fig S1- S4, II). In five clades, the topology differences are produced by the change in the position of onesspecies. (e.g., *O. argentea* Mez (Fig S1- S4, III), *E. gracilis* Kosterm (Fig S1- S4, IV), *A. lancifolia Kubitzki* & W.A. Rodrigues (Fig S1- S4, V), *O. lobbii* (Meisn.) Rohwer (Fig S1- S4, VI), and *O. cymosa* (Nees) Palacky (Fig S1- S4, VII).

The few variations between RAxml (min20) and tetrad resulted in different relationships between terminal tips (e.g., the relationship of *O. velloziana* (Meins.) Mez with *O. bofo* Kunth, *O. rubrinervis* Mez, Fig S2 and S5, I; *O. splendens* (Meins.) Baill., with *O. nitida* (Meisn.) Rohwer, *O. xanthocalyx* (Nees) Mez, and *O. aurantiodora* (Ruiz & Pav.) Mez Fig S2 and S5, VIII); and species on the Aniba core Fig S2 and S5, IX). Despite the differences, analyses resulted in the same general topology.

Ancestral state reconstruction from the RAD alignments (min20) for three reproductive characters: breeding systems (hermaphroditic, gynodioecy, dioecy), stamen number (nine, six, or three), and anther locule number (2, or 4). We studied two scenarios for breeding systems (the conservative scoring: as currently described are correct), and (the broad scoring: assuming that all of the species with well-developed pistillodes in those two groups are gynodioecious)

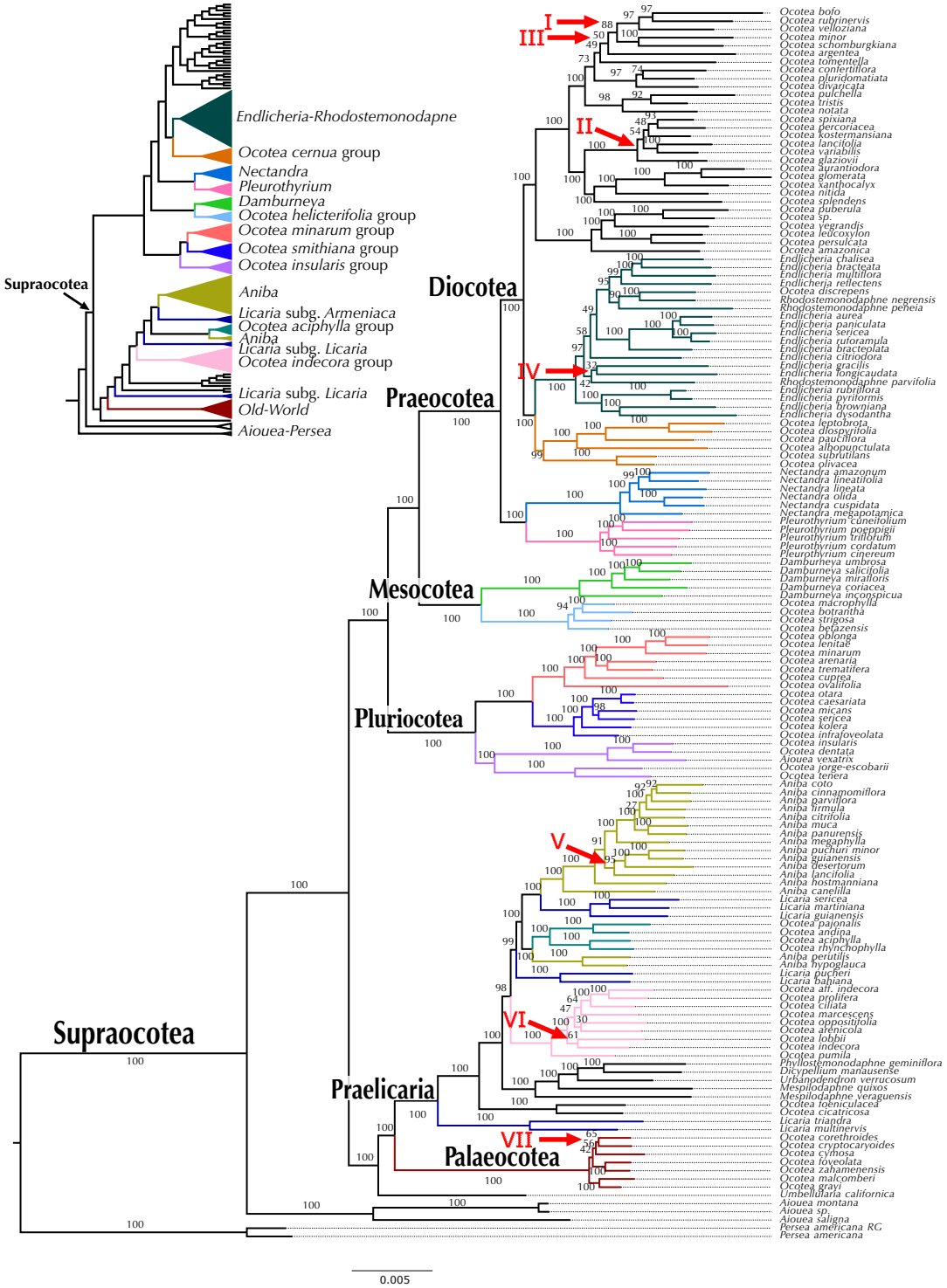

Figure S1. RAxML tree of RAD-seq data for species of **Supraocotea** (*Ocotea* complex) excluding loci shared by fewer than 10 samples. Node support bootstrap values. Colors represent the genera and informal taxonomical group included and highlighted on the cartoon phylogeny top left.

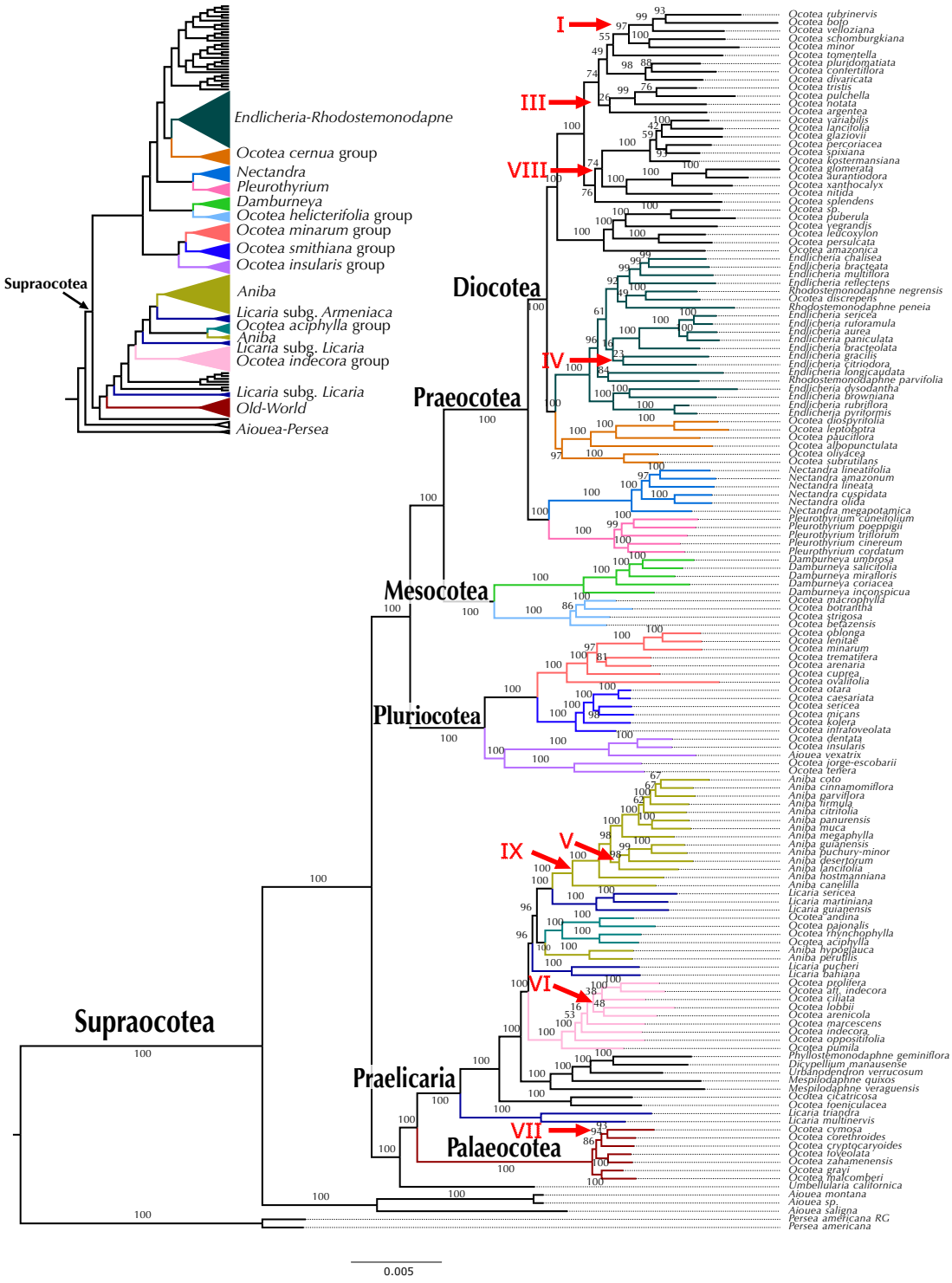

Figure S2. RAxML tree of RAD-seq data for species of **Supraocotea** (*Ocotea* complex) excluding loci shared by fewer than 20 samples. Node support bootstrap values. Colors represent the genera and informal taxonomical group included and highlighted on the cartoon phylogeny top left.

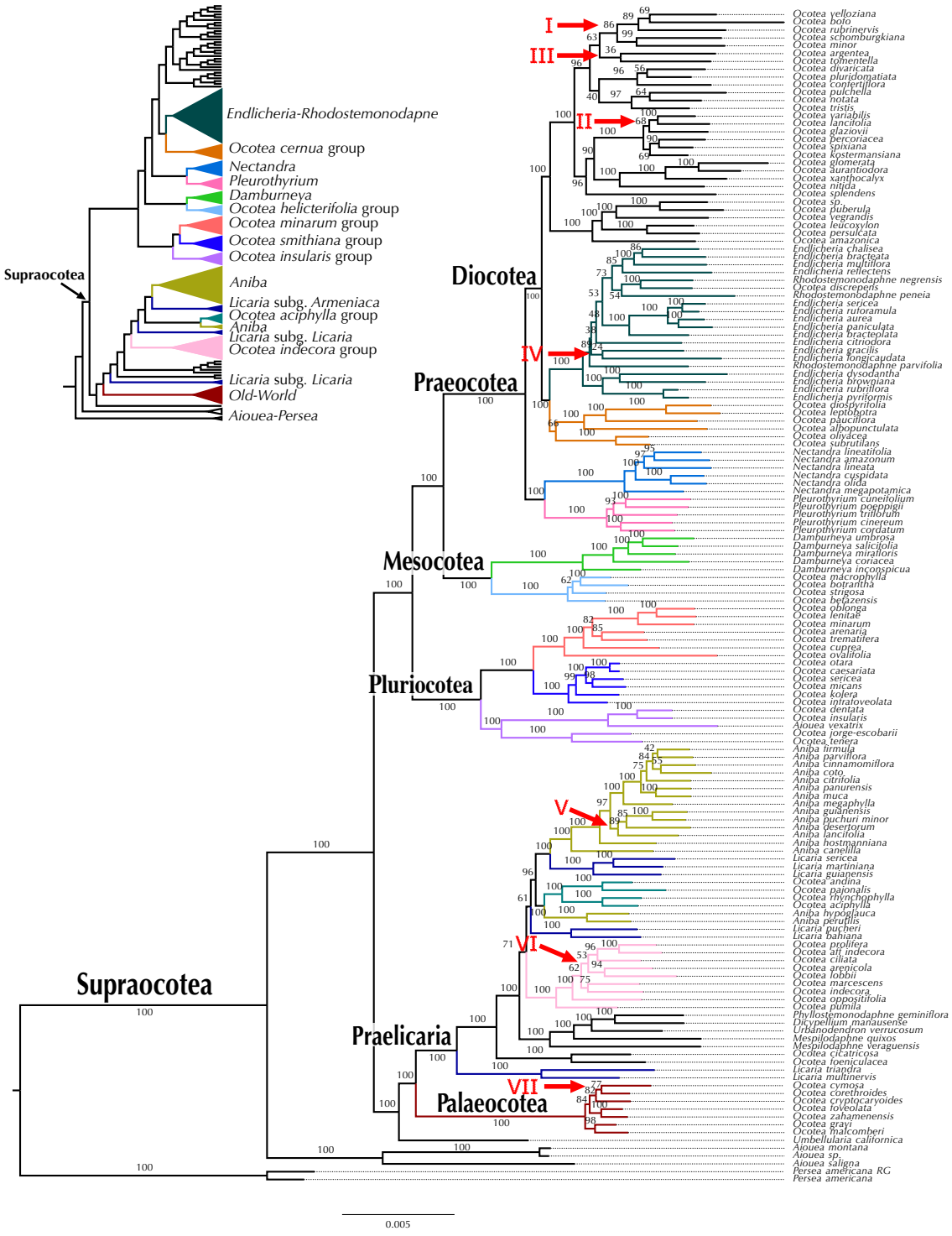

Figure S3. RAxML tree of RAD-seq data for species of **Supraocotea** (*Ocotea* complex) excluding loci shared by fewer than 40 samples. Node support bootstrap values. Colors represent the genera and informal taxonomical group included and highlighted on the cartoon phylogeny top left.

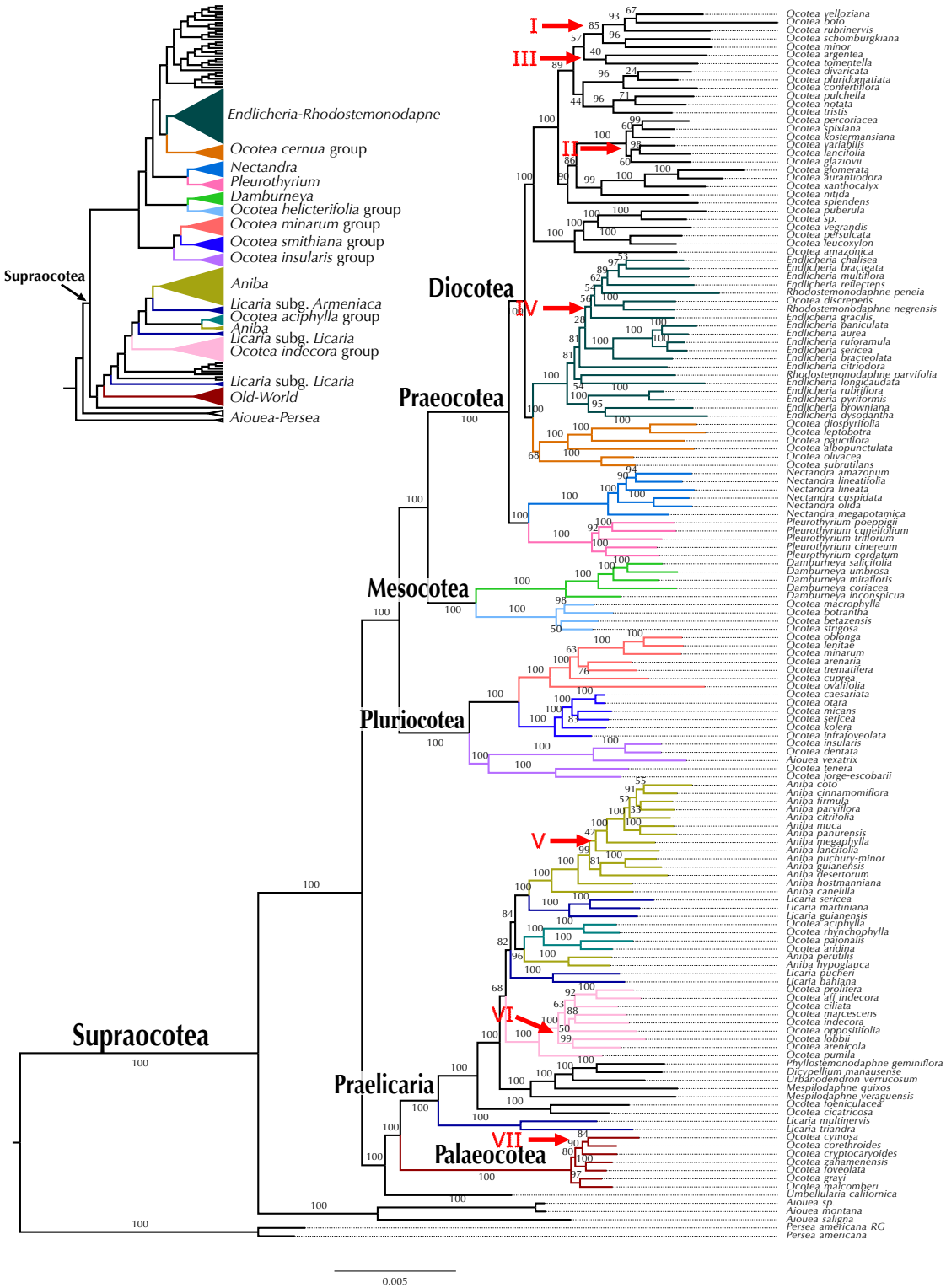

Figure S4. RAxML tree of RAD-seq data for species of **Supraocotea** (*Ocotea* complex) excluding loci shared by fewer than 50 samples. Node support bootstrap values. Colors represent the genera and informal taxonomical group included and highlighted on the cartoon phylogeny top left.

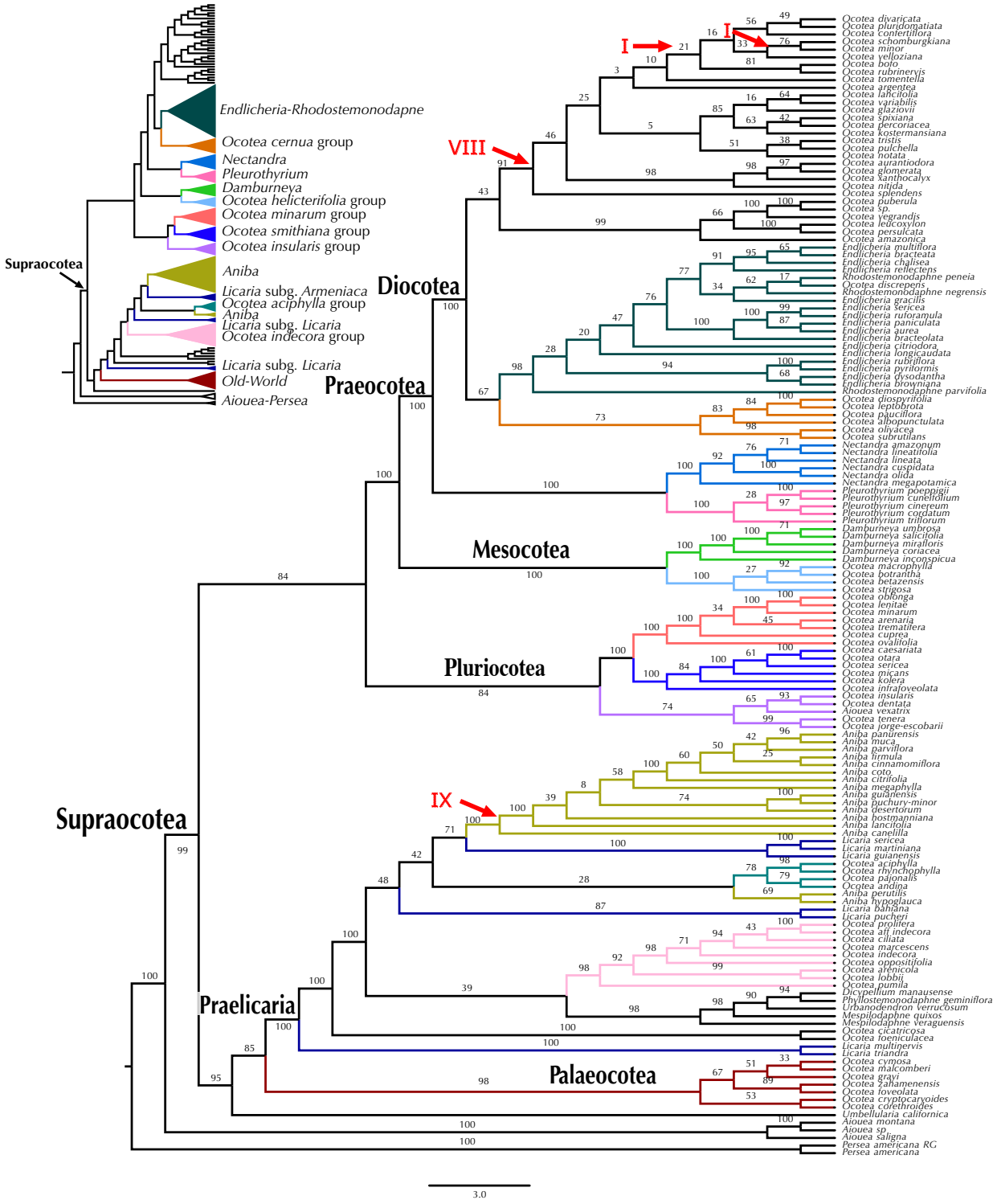

Figure S5. Tetrad tree of RAD-seq data for species of **Supraocotea** (*Ocotea* complex). Colors represent the genera and informal taxonomical group included and highlighted on the cartoon phylogeny top left.

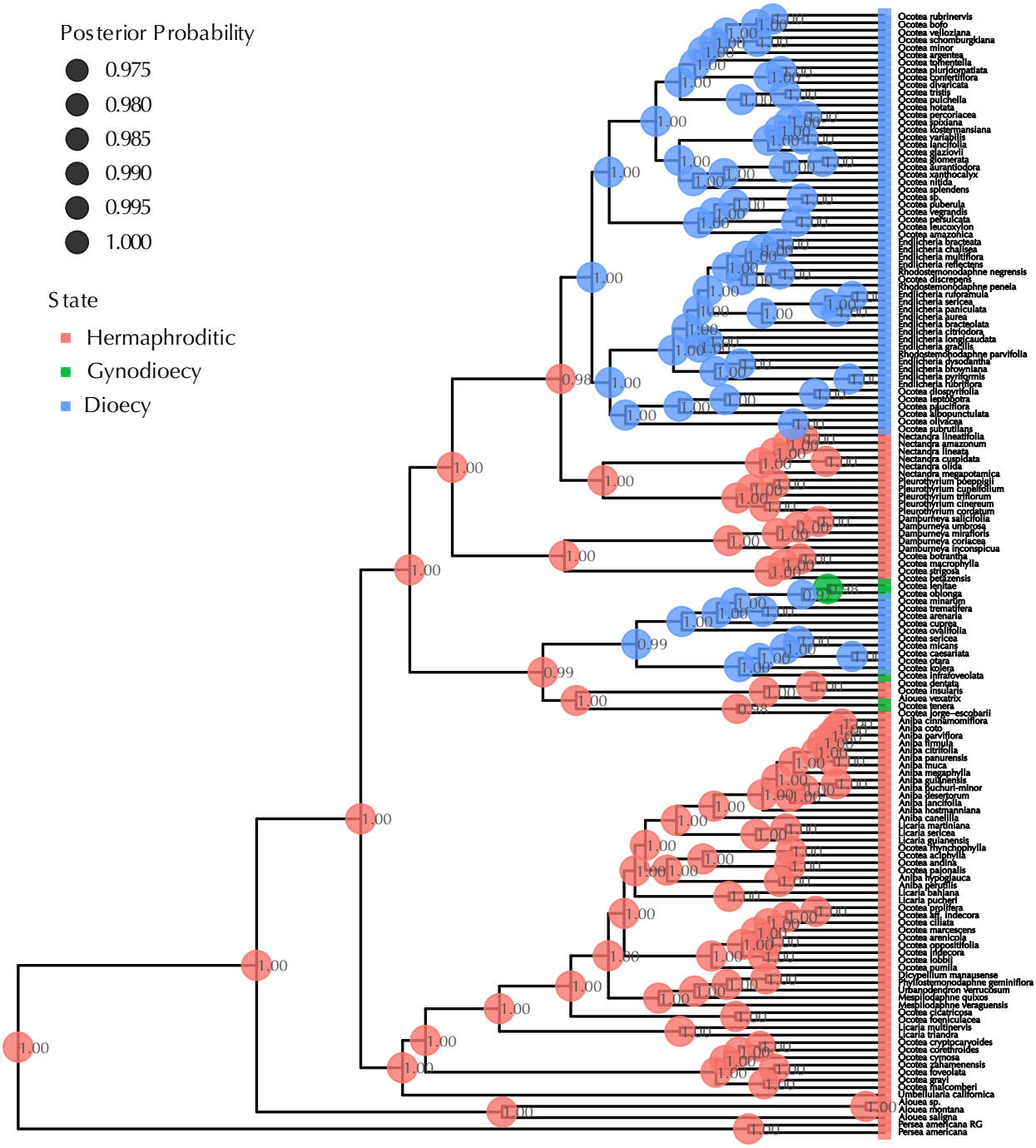

Figure S6. Ancestral state reconstruction of breeding systems (conservative scoring) for species of **Supraocotea** (*Ocotea* complex). Number on nodes represent posterior probabilities. Circles on nodes represent the state with higher posterior probability. Rectangle represent the species state. Open circles and rectangles= red: hermaphroditic, blue: dioecy, green gynodioecy.

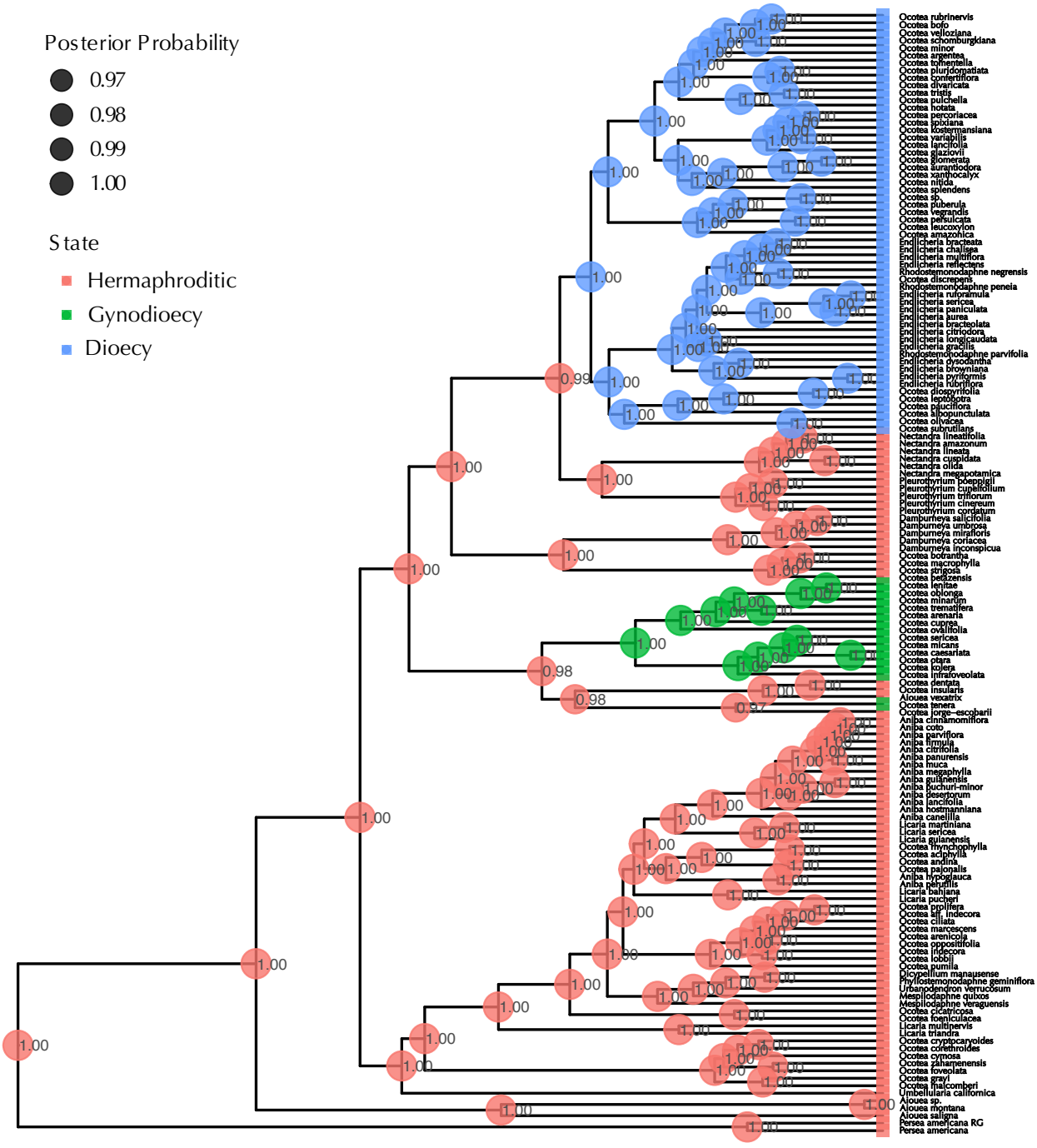

Figure S7. Ancestral state reconstruction of breeding systems (broad scoring) for species of **Supraocotea** (*Ocotea* complex). Number on nodes represent posterior probabilities. Circles on nodes represent the state with higher posterior probability. Rectangle represent the species state. Open circles and rectangles= red: hermaphroditic, blue: dioecy, green gynodioecy.

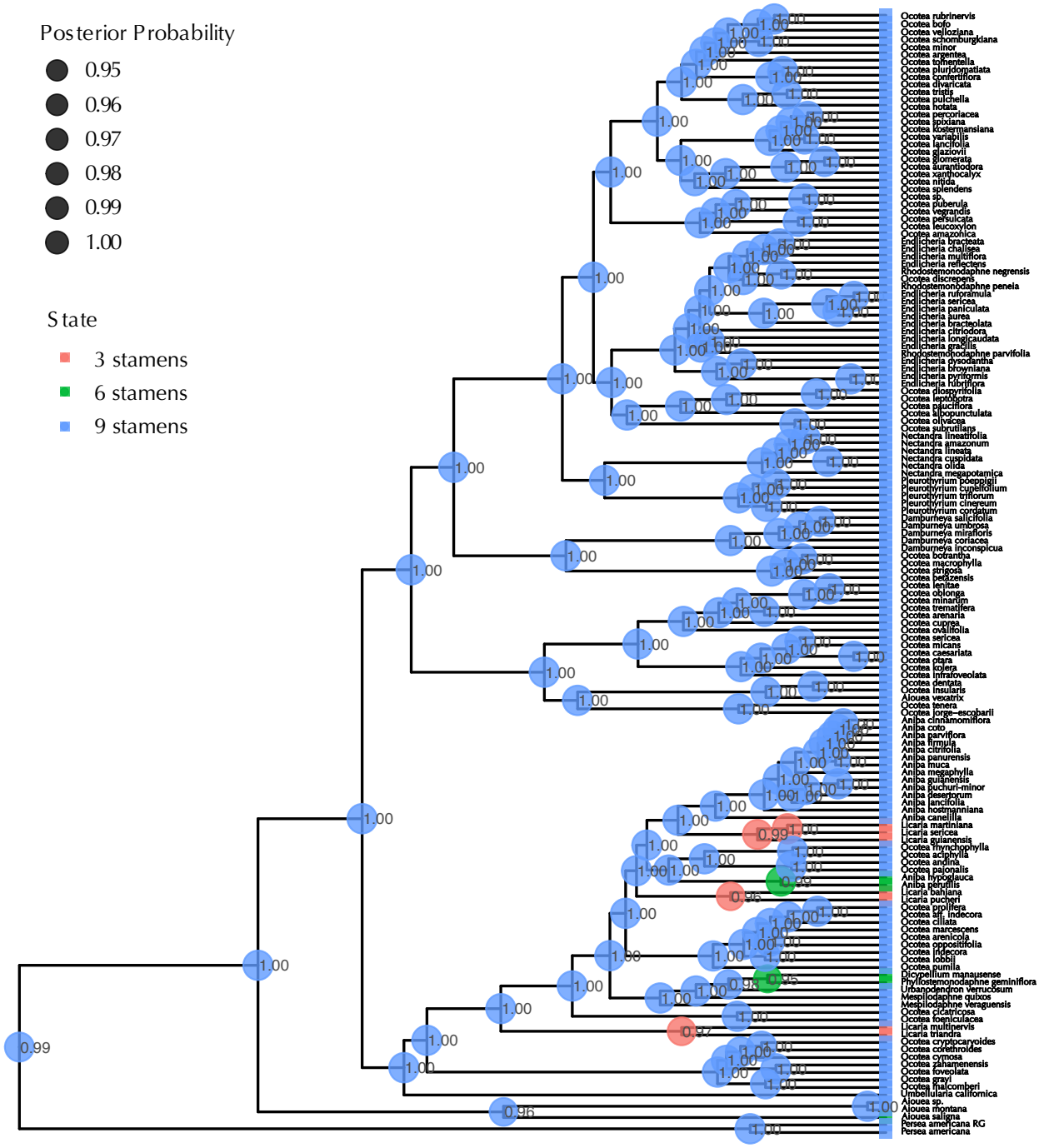

Figure S8. Ancestral state reconstruction of stamen number for species of **Supraocotea** (*Ocotea* complex). Number on nodes represent posterior probabilities. Circles on nodes represent the state with higher posterior probability. Rectangle represent the species state. Open circles and rectangles= blue: nine stamens, green: six stamens, red: three stamens.

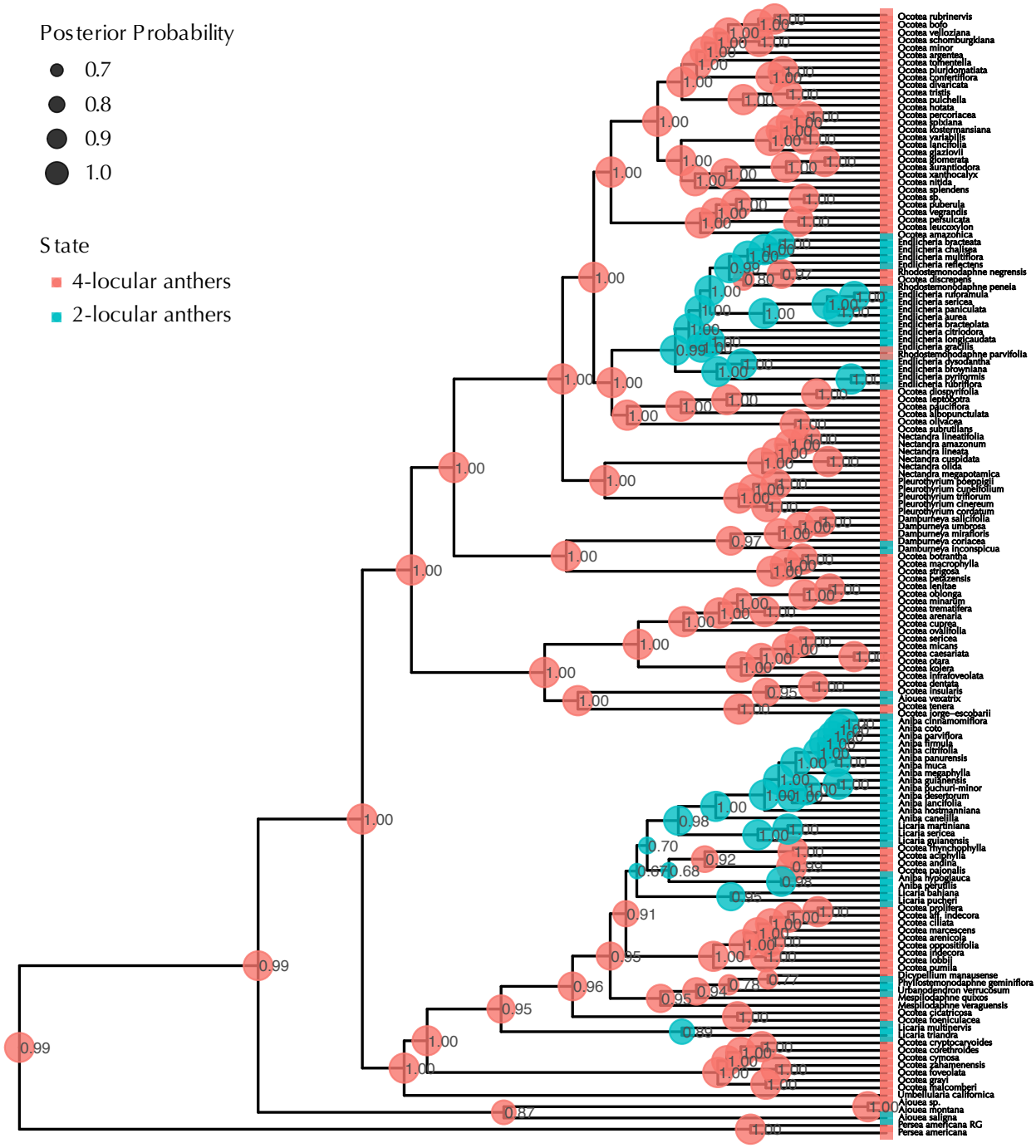

Figure S9. Ancestral state reconstruction of anther locule number for species of **Supraocotea** (*Ocotea* complex). Number on nodes represent posterior probabilities. Circles on nodes represent the state with higher posterior probability. Rectangle represent the species state. Open circles and rectangles= red: four-locular anthers, green two-locular anthers.