THE AGATHIS OF ESPIRITU SANTO (ARAUCARIACEAE, NEW HEBRIDES)

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Abstract

In October 1986 John Silba financed a private botanical expedition to the island of Espiritu Santo in conjuction with Mike N. Askin of the Flecker Botanic Garden (CAIRNS). Specimens of Agathis have been reported from this island previously but have never been collected before. Mike N. Askin was not able to collect specimens from the interior of the island due to hostility of the natives. He did however manage to collect bark, foliage and male cone samples from a cultivated tree on the coast. An analysis of this collection proves this to be a distinct species.

It has long been known that Agathis occurs on the island of Espiritu Santo (Vanuatu) but collections have only now been achieved. T. C. Chambers reported in 1971 having seen the trees in 1963. In 1964 D.J. De Laubenfels talked with J. C. Rouleau in Vila and he reported going to see these trees in order to assess their commercial possibilities. He described them as huge in girth but rather short boles and thus not commercially promising. The bark he described as rather smoother than that of A. obtusa (Lindl.) Mast. from Erromango and Aneityum, and he felt the Espiritu Santo Agathis was distinct. Chambers described the trees as being large emergents. M.N. Askin was told that a tree was measured by ten men holding hands around the trunk. T.C. Whitmore assumed the Espiritu Santo Agathis is identical with A. macrophylla (Lindl.) Mast. as is A. obtusa but reported their location as the west side of the Cumberland Peninsula which appears to be an error. Hostility by the local natives has prevented study of the wild trees but John Silba succeeded in arranging to have M.N. Askin collect fertile material fom a tree brought as a seedling to the coast in 1967 and now about 15 m. tall and 0.5 m. in diameter.

Agathis silbai De Laubenfels, sp. nov. Strobili masculi lineari 37-55 x 15-18 mm. partis superis microsporophyllorum 2-2.5 mm. longis et latis apicis gibbo 5-6 lateri instructis, subtus costis medianus. Folia lanceolata non glauca.
Type collection: Askin 13156 (Holotype-NY, Isotypes at GH, US, K), 31 Oct. 1986, S.W. Espiritu Santo, cultivated near Tasmalum, 35 m. elevation, on coastal limestone.

Leaves on young trees lanceolate, not at all acuminate nor glaucous. Buds globular, 2-3 mm. long x 3 mm. wide, scales obtuse. Juvenile leaves dull light green, 7.6-11.8 cm. long x 2.1-3.7 cm. wide, spreading sideways and somewhat forwards, petiole 1.5-3 mm. long. Male strobili cylindrical, oblong, somewhat broadened on the upper half, coppery-brown to red-brown, peduncle 3.5-4 mm. long x 3.5-4 mm. long. Pollen cones 37-55 x 15-18 mm., linear, with the upper expanded part of the microsporophyll 2-2.5 mm. long and wide and with a 5-6 sided raised boss at the apical end. Between the raised area, which crowds against those of surrounding microsporophylls on immature pollen cones, and the pendent pollen sacks is a broad unraised area with a ridge along the center, narrow where two sides of the raised area meet at its upper end and lanceolate starting as wide as the adjacent side of the raised area where one of those sides is located in the center of the expanded part of the microsporophyll. Bark gray on the surface, the more weathered parts nearly white, straw colored interior and slightly fibrous, on young trees with numerous shallow more or less horizontal splits. When cut the bark yields a pink resin with an aromatic smell.

Scattered as isolated specimens or small populations invariably on the knolls or ridges above the Navaka River south of Namaus at 457-762 m.. This area is on the lower southern slopes of Santo Peak. Branches reaching upward at an angle to the trunk to produce a broad nearly flat crown. Young trees with a conical shape.

This new species is most closely related to A. labillardieri Warb. of New Guinea whose microsporophylls do not have a broad unraised area behind the raised part which in this latter species essentially forms the entire expanded part of the microsporophyll. Agathis macrophylla also differs in that it is known to produce white resin copiously.

Interestingly, M.N. Askin also collected specimens of an Agathis species from a cultivated tree near Wailapa, S. Espiritu Santo, near the coast (Askin 13157, NY). The tree was about 10 m. tall with two trunks and appeared somewhat stunted. This collection consists of juvenile foliage samples and bark samples which seem to be typical of A. macrophylla. The bark was grayish becoming distinctly whitish, breaking off in papery plates and coppery-brown below. This collection does seem to differ somewhat in its somewhat curved non-glaucous leaves and was also noted as being a poor producer of white resin. It seems uncertain whether this specimen was originally obtained from the interior of Espiritu Santo as rumored, or rather it seems more likely that it was transplanted from another island in Vanuatu such as Erromango or Aneityum where typical A. macrophylla occurs.

While M.N. Askin was in Vanuatu he talked to P.E. Neil of the Vanuatu Forestry Department in Vila about the distribution of Agathis in Vanuatu. Mr. Neil stated that Agathis occurs also on the island of Malekula. If so, specimens have probably not yet been collected from Malekula. This could be a range extension of the nearby A. silbaii from Espiritu Santo or possibly yet another entity.

Fig. 1. Type tree of Agathis silbai in center (Askin 13156), near Tasmalum.

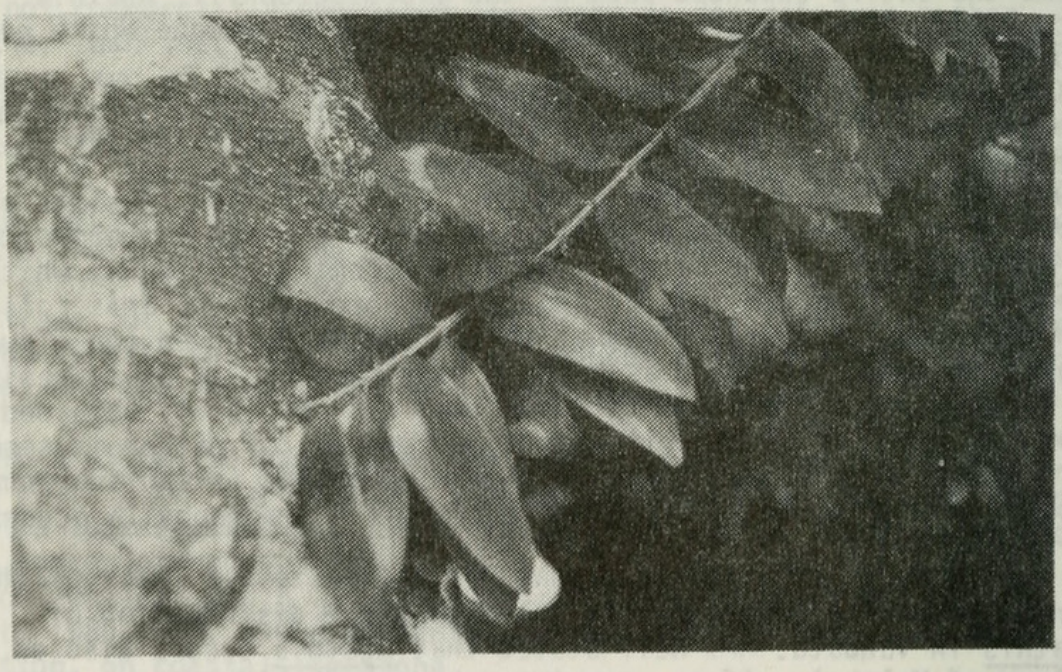

Fig. 2. Close-up of bark and foliage of type tree of Agathis silbai De Laub. (Askin 13156).

Fig. 3. Agathis macrophylla ? Askin 13157, near Wailapa, tree in center between two palm trees, guide is collecting leaves near the base.

Fig. 4. Agathis macrophylla ? Askin 13157, close-up of juvenile foliage, showing curved leaves.

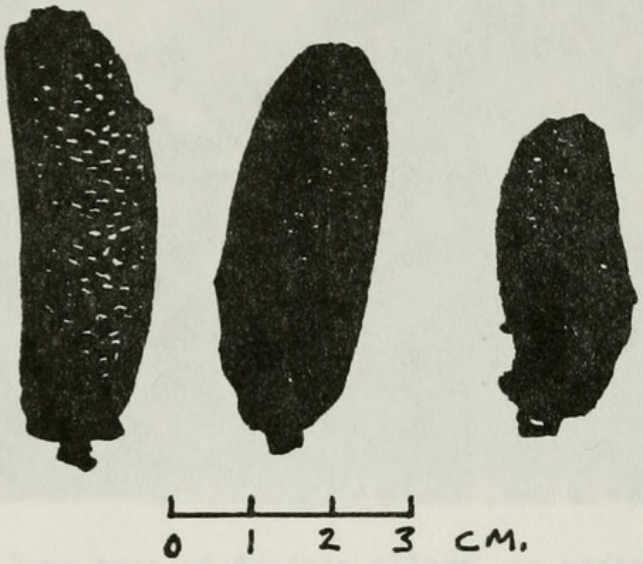

Fig. 5. Agathis silbai De Laub., pollen cones, portion of the holotype (Askin 13156, NY).

References

CHAMBERS, T. C. et al, A Collection of Ferns from Espiritu Santo, New Hebrides, Brit. Fern Gaz. 10 (1971): 175-182.

SILBA, J. Notes on some Conifers reported from some inaccesible areas of the South Pacific, Phytologia 60 (1986): 497-499.

WHITMORE, T. C., A Monograph of Agathis, Pl. Syst. Evol. 135 (1980): 41-69.