



Environmental
Protection Authority
Te Mana Rauhi Taiao

EPA staff report

APP202404 – determination of the new organism status of *Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis*

June 2015



Advice to the Decision-making Committee on determination APP202404: – To determine whether the tree species *Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis* are new organisms for the purpose of the Hazardous Substances and New Organisms Act 1996

Executive Summary and Recommendation

Application APP202404, submitted by the Auckland Council, seeks a determination on the new organism status of three *Agathis* species (*Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis*).

After reviewing the information, we recommend that the Hazardous Substances and New Organisms (HSNO) Decision-making Committee determines that *Agathis dammara* is not a new organism for the purpose of the HSNO Act. We recommend that the new organism status of *Agathis kinabaluensis* and *Agathis borneensis* should be maintained.

However, should new evidence be found regarding the new organism status of any of these organisms, new determinations can be sought.

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1. Introduction

- 1.1. The application from the Auckland Council (the applicant) was submitted under section 26 of the HSNO Act (the Act) to determine whether three species of *Agathis* (*Agathis dammara*, *Agathis borneensis*, and *Agathis kinabaluensis*) are new organisms for the purpose of the Act.
- 1.2. The species under consideration in this determination have been among the subjects of a previous determination (APP202039). In that instance, the Ministry for Primary Industries (MPI) was the applicant and *A. dammara*, *A. borneensis*, and *A. kinabaluensis*, together with *A. atropurpurea* and *A. silbae*, were determined to be new organisms for the purpose of the Act.
- 1.3. In this application, the applicant has provided new information in regard to the presence of three *Agathis* species in New Zealand. We have evaluated this and other readily sourced information (including the information submitted by MPI in support of APP202039) against the legislative criteria for determining whether the three *Agathis* species are new organisms.

2. Organism description

- 2.1. The genus *Agathis* comprises evergreen conifers predominantly found in tropical and sub-tropical rainforests found in Malaysia, Brunei, Indonesia, the Philippines, Melanesia, Australia and New Zealand (de Laubenfels 1988; Earle 2015a).
- 2.2. Information regarding the three *Agathis* species that are the subjects of this determination is summarised in Table 1.

Table 1: Species that are the subject of this determination, with additional information sourced from Earle (2015a) and Roskov et al. (2015)

Species	Common name	Native to:
<i>Agathis dammara</i> (Lamb.) Rich. & A. Rich.	Borneo kauri	Philippines, Indonesia
<i>Agathis borneensis</i> Warb.	Dammar minyak	Sumatra, Borneo and the Malay peninsula
<i>Agathis kinabaluensis</i> de Laub.	Kinabalu kauri	Malaysia



3. Summary of background information

Summary of evidence regarding *Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis* from the previous section 26 determination APP202039

3.1. The evidence provided by MPI, the applicant in APP202039, was summarised as follows:

- “*Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis* are not listed on the PBI;
- *Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis* are not listed on the Landcare Research New Zealand Flora database;
- There is anecdotal evidence that *Agathis* seeds from Malaysia were imported prior to July 29 1998. However, the applicant considers that it is not clear which species were imported;
- Plants purported to be *Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis* are growing in private gardens and the Auckland Botanical Gardens. However, the applicant considers the origins of these plants and when they entered New Zealand is unclear, as is the formal identification of these organisms; and
- There are herbaria records of *Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis* from specimens submitted in 2006 and 2007. However the provenance of these specimens and whether formal species identification has been undertaken is unclear.”

NB: the “PBI” referred to in this quote is the MPI Plant Biosecurity index.

Background information regarding *Agathis dammara*, *Agathis borneensis* and *Agathis kinabaluensis* from the current application APP202404

3.2. The new evidence provided in application APP202404 was researched and prepared by Nicholas Singers and Christine Bayler, of Nicholas Singers Ecological Solutions Ltd., Turangi. As stated on the cover page of their report (Appendix hereafter referred to as the Singers report¹), Mr. Singers has a MS in ecology, and is a “freelance plant

¹ NB: The “Exhibits” referred to in this report are individual documents collected and labelled by Singers and Bayler in the Singers report (Appendix 2)

ecologist with 20 years' experience". Ms. Bayler has a BS in Plant Science/Plant Health, with a postgraduate diploma in Plant Pathology.

- 3.3. The submitted evidence consists of personal statements attesting to the provenance and identification of *Agathis kinabaluensis*, together with numerous New Zealand Forest Service records detailing importation and plantings of several *Agathis* species from the Malay peninsula and the Indonesian archipelago.
- 3.4. EPA staff advised the Department of Conservation (DOC) and the Ministry for Primary Industries (MPI) on receipt of the application, provided copies of the submitted evidence to these agencies, and asked for comment.
- 3.5. Both DOC and MPI provided comment and available information regarding all three species (comments in full from both agencies are found in Appendix 1), which will be addressed in this report by individual species.

4. Evaluation of evidence

- 4.1. The evidence provided in this application has been evaluated in the context of the criteria of the previous determination, comments from MPI and DOC, as well as the taxonomic history in the context of the current understanding of the taxonomic relationships among the species of the genus *Agathis*.
- 4.2. For an organism to be determined as "not new" under section 26 of the Act, the organism must be shown to lie outside the boundaries of the definition of a new organism as defined in section 2A(1) of the Act, which includes:
2A(1)(a) An organism belonging to a species that was not present in New Zealand immediately before 29 July 1998:
- 4.3. The following Act criteria were not applicable to this determination as the three *Agathis* species;
 - have not been prescribed as risk species (section 2A(1)(b));
 - have not been approved to be held in containment or released with controls (sections 2A(1)(c) (ca) and (cb));
 - are not genetically modified organisms (section 2A(1) (d)); and
 - have not been eradicated from New Zealand (section 2A(1)(e)).

Agathis dammara

4.4. Taxonomically speaking, *A. dammara* has had a convoluted history. The species was initially classified as *Dammara alba*, as described by Rumphius (1741), and it was subsequently assigned to several other genera in the intervening years.

Agathis dammara (among other *Agathis* species) was important for the copal (a resin produced in the inner bark of *Agathis* species) trade, used for many years in the formulations of many varnishes and linoleum, and this interest in copal was responsible in part for the profusion of names (Earle 2015a). A list of *A. dammara* synonyms found on the gymnosperm database (Earle 2015b) is shown below, which includes the comment that many "...names were assigned on the basis of what are now seen as minor variations in foliage characters." (Earle 2015b):

- *Pinus dammara* Lambert 1803
- *Agathis loranthifolia* Salisbury 1807
- *Abies dammara* (Lambert) Poir. 1817
- *Dammara loranthifolia* (Salisb.) Link 1822
- *Dammara orientalis* Lambert 1824
- *Abies sumatrana* Desf. 1829
- *Dammara alba* Rumphius 1842
- *Dammara rumphii* Presl 1851
- *Dammara orientalis* Lambert var. *palens* Carrière 1855
- *Dammara orientalis* Lambert var. *alba* Knight 1865
- *Dammara alba* var. *celebica* Hassk. 1866
- *Dammara celebica* Koord. 1898
- *Agathis beccarii* Warburg 1900
- *Agathis celebica* Warburg 1900
- *Agathis macrostachys* Warburg 1900
- *Agathis philippinensis* Warburg 1900
- *Agathis regia* Warburg 1900
- *Agathis rhomboidalis* Warburg 1900
- *Agathis alba* Jeffrey 1906, *nom. inval.*
- *Agathis beckingii* Meijer Drees 1940
- *Agathis hamii* Meijer Drees 1940
- *Agathis latifolia* Meijer Drees 1940

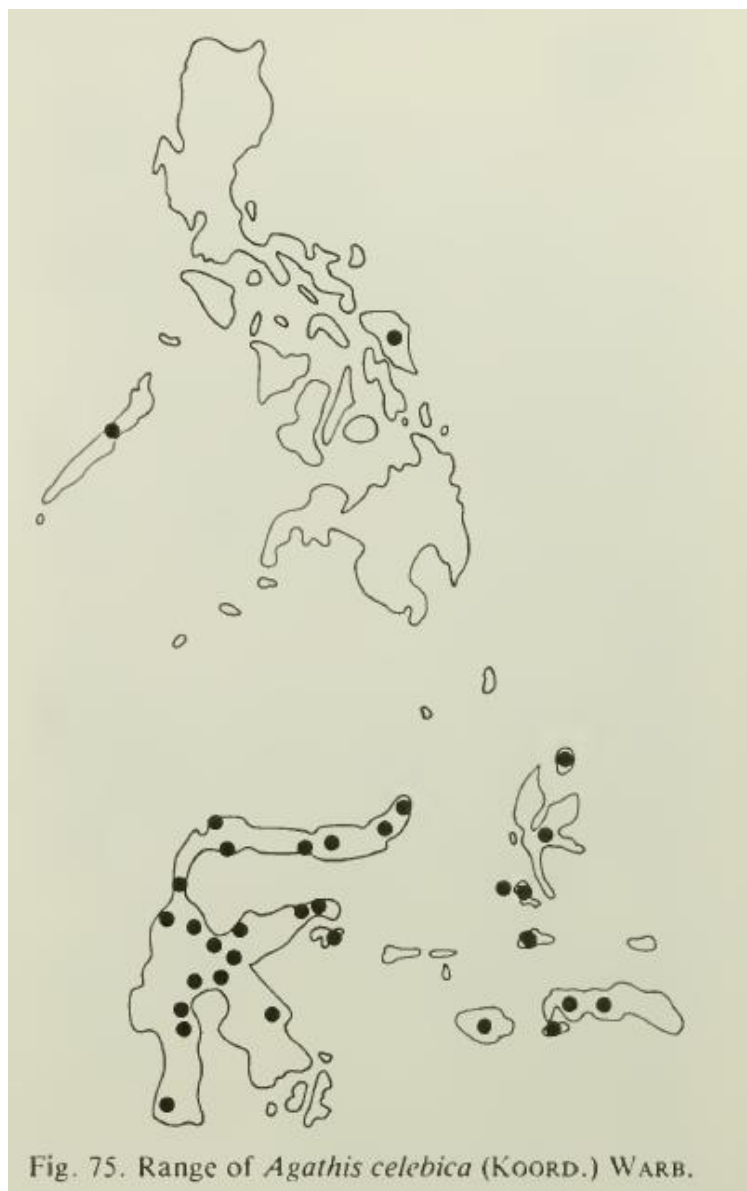
4.5. The species *A. dammara*, *A. celebica* and *A. philippinensis*, were taxonomically united in 2010 (Farjon), with the justification (reminiscent of Earle's remarks quoted above in paragraph 4.17): "The diagnostic pollen cones are a much better organ than the leaves on young trees to look for consistent characters, and they unite *A. celebica*,



A. dammara and *A. philippinensis*, a species which therefore bears the earliest name.” (Farjon 2010).

- 4.6. This species' native range is the Philippines and Indonesia, specifically Sulawesi (Celebes) and the Maluku islands (Moluccas) (de Laubenfels 1988 (as *A. celebica* and *A. philippinensis*); Farjon 2010). The geographic distribution of *A. dammara*, described by de Laubenfels (1988) as *Agathis celebica* and as *A. philippinensis* is shown in Figures 2 and 3, respectively.

Figure 2: Geographic distribution of *Agathis dammara* (as *Agathis celebica*, (de Laubenfels



1988)).

Figure 3: Geographic distribution of *Agathis dammara* (as *Agathis philippinensis*, (de Laubenfels 1988)).



- 4.7. Since the synonymisation of *A. celebica* and *A. philippinensis* into *A. dammara*, *A. dammara* is the only *Agathis* species found on the island of Sulawesi (Celebes) (de Laubenfels 1988; Farjon 2010).

Evidence for the presence of *Agathis dammara* in New Zealand

- 4.8. A number of exhibits discussed in the Singers report describe historical plantings of *Agathis dammara*, *A. celebica* and *A. philippinensis* in 1941 (Exhibits H (*A. philippinensis* as “*A. philipenniensis*”) and N), 1944 (Exhibit I), 1946 (Exhibit E),



1946 and 1947 (Exhibit J) and approximately 1948 (Exhibit G). Each of these records includes specific mention of plantings at the Northern Arboretum at Waipoua. All of these plants would now be considered to be *A. dammara*.

- 4.9. Seed archive records at Scion (the trading name of the New Zealand Forest Research Institute), which holds archived copies of New Zealand Forest Service records, provides species names and provenances for *A. philippinensis* from Batavia, Dutch East Indies (present day Jakarta, Indonesia) in 1941 (record AK473) and another for *A. celebica* sourced from Manado, Celebes in 1942 (record AK477) (Exhibit M). Exhibit Q also records a planting of *A. philippinensis* from Celebes in 1944 and Exhibit R records a planting of *A. celebica* from Manado, Celebes in 1939.
- 4.10. Numerous other exhibits discuss the planting of *A. dammara* synonyms either *A. alba*, *A. loranthifolia* or both (Exhibits F, K, L, M, O, P, Q).

Comments and information from DOC and MPI regarding *Agathis dammara*

- 4.11. DOC considers that the presence of *A. dammara* in the Northern Arboretum as described in the Singers report is unreliable, given that the trees were felled in 2002 and that the only remaining evidence for their presence is testimonials. A DOC technical advisor, Tony Beauchamp, claims that the only species felled in 2002 was *A. robusta*. He further claims that no other exotic *Agathis* species have been found in the arboretum.
- 4.12. MPI acknowledges that the evidence provided by the applicant is sufficient evidence of the presence of *A. dammara* in New Zealand prior to 29 July 1998. However, MPI states that it is surprising that there appears to be no evidence of the continuing presence of this species appears to exist, or at least has not been presented.

Evaluation of evidence for the presence of *A. dammara* in New Zealand

- 4.13. Upon review of the evidence provided and additional EPA staff research, it is clear that *Agathis celebica* and *Agathis philippinensis*, formerly the only two *Agathis* species found on the island of Sulawesi are now considered synonyms of *Agathis dammara*. Therefore, *Agathis dammara* is the only species of *Agathis* found on Sulawesi (Celebes).
- 4.14. The applicant has provided ample evidence of numerous plantings of “*A. dammara*”, (and variations on spelling thereof), “*A. philippinensis*” (and variations on spelling thereof) and “*A. celebica*” in the Northern Arboretum at Waipoua, together with clear provenance information of “*A. celebica*” and “*A. philippinensis*” being imported on at least three separate occasions from “Manado, Celebes” (Sulawesi).

4.15. We believe that this information constitutes sufficient evidence, and therefore recommend that *Agathis dammara* should be determined to be not a new organism under the Act. MPI concurs with this conclusion in its comments on the application (4.26 and Appendix 1).

Agathis borneensis

4.16. *Agathis borneensis* has a wide variety of common names, presumably reflecting the wide variety of languages that are spoken across its range (Earle 2015c). Unlike *Agathis dammara*, it has relatively few historical taxonomic synonyms. Known synonyms for this species are listed below (Earle 2015c):

- *A. beccarii* Warburg 1900
- *A. rhomboidalis* Warburg 1900
- *A. latifolia* Meijer Drees 1940
- *A. endertii* Meijer Drees 1940

4.17. The geographic distribution of *A. borneensis* as described by de Laubenfels (1988) is shown in Figure 4.

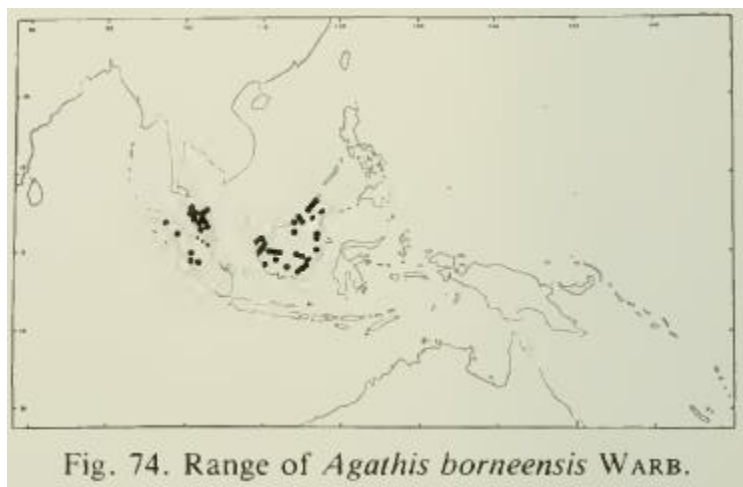


Figure 4: Geographic distribution of *Agathis borneensis* (de Laubenfels 1988).

4.18. *Agathis borneensis* is one of only two *Agathis* species found on the Malay peninsula. The other, *A. flavescens*, is only found in high elevation sites on some of the peninsula's tallest mountains, such as Mt. Tahan and Mt. Rabong (de Laubenfels 1988; Farjon 2010).

Evidence for the presence of *Agathis borneensis* in New Zealand

4.19. The Singers report mentions that historically, *Agathis alba* and *Agathis rhomboidalis* were commonly used synonyms for *A. borneensis*. Although *A. alba* is not recognised



as a synonym by Earle (2015c) or Farjon (2010), some of the Scion archive records (Exhibit M) state that: “In Malaya, the name *Agathis alba* is used for all their forms of *Agathis*.”, which would include *A. borneensis*.

- 4.20. Exhibit M also contains a record of 43 *A. rhomboidalis* seedlings (an accepted synonym for both *A. borneensis* and *A. dammara*) sourced from Kedah Peak Malaya (now peninsular Malaysia) in 1947, through “FRI Kepong Selongget” [*sic*- should be Selangor] (the Malaysian Forest Research Institute) (Scion archive record AK47/555). Based on this provenance, the species was very likely *A. borneensis*, since *A. dammara* is not found in peninsular Malaysia (Figs. 2 and 3). These were distributed to and planted at the Waipoua Northern Arboretum in 1947. However, none of the seedlings survived. There was no importation of any “*Agathis alba*”, with similar provenance information.

Comments and information from DOC and MPI regarding *Agathis borneensis*

- 4.21. DOC’s comments regarding the presence of *A. borneensis* in New Zealand are essentially identical to those provided regarding *A. dammara*. DOC considers that the presence of *A. borneensis* in the Waipoua Northern Arboretum as described in the Singers report is unreliable, given that the trees were felled in 2002 and that the only remaining evidence for their presence is testimonials. DOC technical advisor Tony Beauchamp claims that no other exotic *Agathis* species have been found in the arboretum.
- 4.22. MPI asserts that the species claimed in the Singers report to be *A. borneensis* imported under the synonyms *A. alba*, *A. rhomboidalis*, and *A. loranthifolia* are unlikely to actually be *A. borneensis* because *A. alba* and *A. loranthifolia* are not recognised synonyms for *A. borneensis*, and *A. rhomboidalis* is a synonym for both *A. borneensis* and *A. dammara*.

Evaluation of evidence for the presence of *A. borneensis* in New Zealand

- 4.23. Although it appears likely that *Agathis borneensis* seed was imported into New Zealand, based on various identifications of *A. rhomboidalis* and *A. alba*, the one example provided with unequivocal supporting provenance information (Kedah Peak), did not survive planting in New Zealand. Therefore, we consider that there is insufficient evidence to determine that *A. borneensis* is not a new organism under the Act.
- 4.24. However, if it can be shown that *Agathis borneensis* was present in New Zealand prior to 29 July 1998 (e.g. through the age and formal identification of the *Agathis* plants

purported to be *A. borneensis* currently growing in New Zealand), new determinations can be sought under section 26(3) of the Act regarding this species.

Agathis kinabaluensis

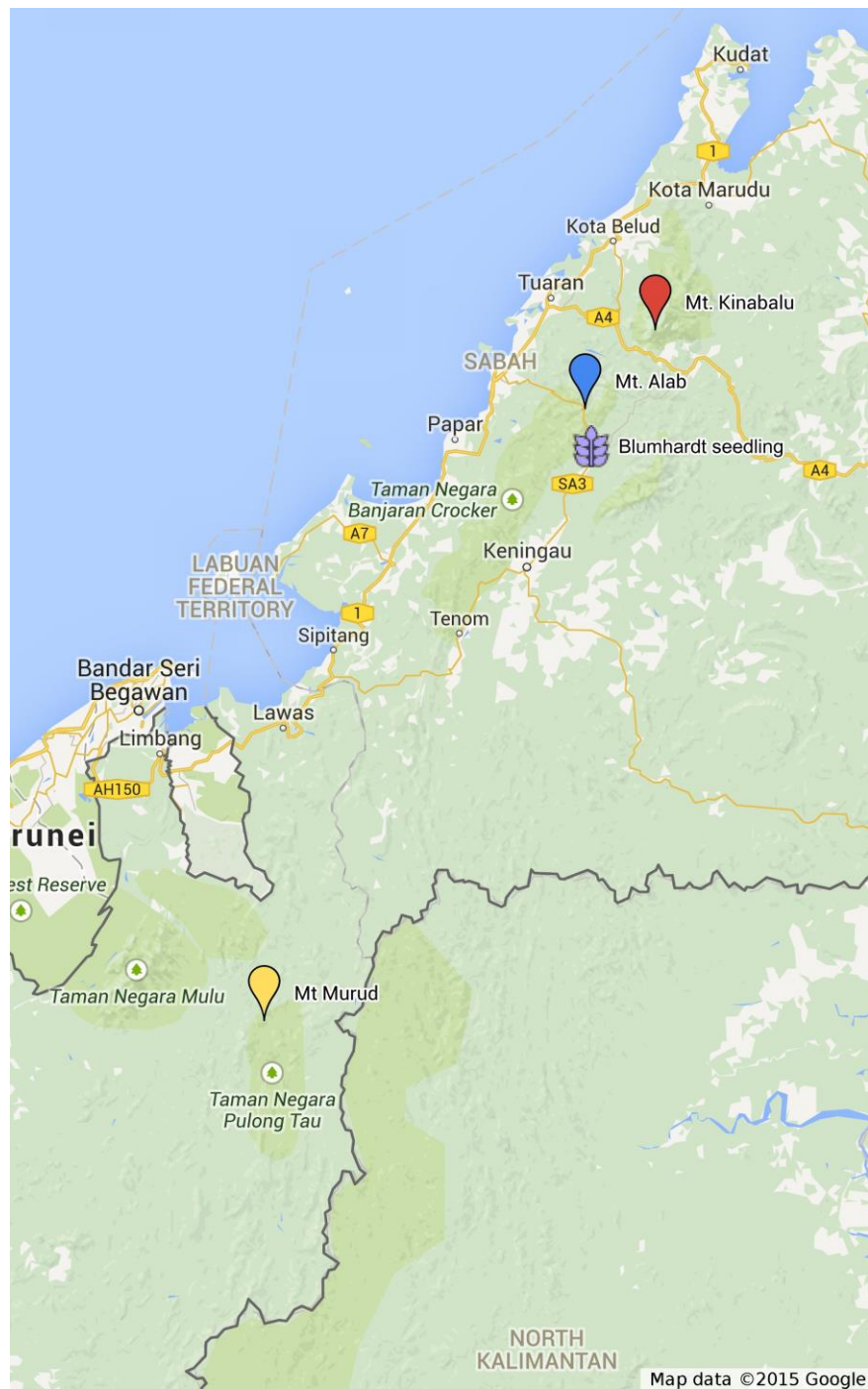
Taxonomy and geographic distribution of *Agathis kinabaluensis*

- 4.25. *Agathis kinabaluensis* was first described by D. J. de Laubenfels in his paper “*The species of Agathis (Araucariaceae) of Borneo*” (de Laubenfels 1979), in which he described two other new species, *Agathis lenticula* and *Agathis orbicula*, in addition to the two known Bornean species (at the time) *A. borneensis* and *A. endertii*. Descriptive characteristics of all species, both vegetative and reproductive, were provided as a key to identification (de Laubenfels 1979). *Agathis kinabaluensis* has no synonyms.
- 4.26. The geographic distribution of *A. kinabaluensis* as described by de Laubenfels (1979; 1988) is “at least” on Mt. Kinabalu and Mt. Murud in Malaysia on the island of Borneo (Farjon 2010). The species is montane at these equatorial latitudes and is only found at elevations of 1500-2400 m (de Laubenfels 1979; de Laubenfels 1988; Farjon 2010).

Evidence for the presence of *A. kinabaluensis* in New Zealand

- 4.27. The applicant provided evidence in reference to an *Agathis* tree growing at Koromiko Nursery near Whangarei. This nursery was owned by Oswald Blumhardt (now deceased), who collected the seedling from Gunung Alab (Mt. Alab) in 1983, brought it to the nursery and planted it there, per a statement given by his brother, Albert Blumhardt, who also claims that the tree is an *Agathis kinabaluensis* (Exhibit A, Singers report).
- 4.28. In terms of the geographical location of the point of collection, Mt. Alab is approximately 40 km southwest of Mt. Kinabalu and in a nearly straight line between it and Mt. Murud (the only other acknowledged locale for *A. kinabaluensis* (Farjon 2010)), approximately 225 km to the southwest (Fig. 1).

Figure 1: Known locations of *Agathis kinabaluensis* (Mt. Kinabalu and Mt. Murud) and the Blumhardt *Agathis* seedling collection site relative to Mt. Alab (Gunung Alab) in Sabah, Malaysia (Borneo).



Comments and information from DOC and MPI regarding *Agathis kinabaluensis*

4.29. Additional evidence for the presence of *A. kinabaluensis* in New Zealand is provided in Exhibit B, in the form of correspondence regarding the Blumhardt *Agathis* between Graham Dyer, an *Agathis* collector and grower based in Tauranga, and David de

Laubenfels, who originally identified the species. Professor de Laubenfels states that the characteristics of the tree (presumably as they were described to him, as it seems he did not examine the tree himself, based on his comments) are not consistent with other *Agathis* species that might have been collected in the area, and that the specimen growing in Whangarei is most likely *A. kinabaluensis*. A key identifying characteristic is the fact that the leaves of this plant are not glaucous and those of all other species in Borneo are (de Laubenfels 1979; Exhibit C).

- 4.30. DOC suggested that the comments of Dr. De Laubenfels (Exhibit B discussed above in 4.8) in the Singers report are significantly doubtful because it appears that he did not actually examine any specimens from the Blumhardt *Agathis*, but rather commented on descriptions of provenance and morphological characteristics from Graham Dyer. DOC further suggested that an appropriate identification would be based on plant material from the specimen in question.
- 4.31. MPI had similar comments regarding the basis of Dr. De Laubenfels's identification of *A. kinabaluensis*, and suggested additional expert examination and identification should be sought. They further suggested that the requisite expertise for this identification is unlikely to be found in New Zealand.
- 4.32. MPI further calls into question the testimonial of Albert Blumhardt (Exhibit B in the Singers report), because MPI was unable to find a record of an import permit for these specimens in searches of its archives. MPI found other permits issued to Mr. Blumhardt allowed import of plants and seed from Malaya, but they did not include *Agathis* species. MPI acknowledges that its inability to locate such a permit does not mean that the permit does not exist, and suggests that Koromiko Nurseries or the O. Blumhardt estate should have such records archived, and further suggests that the applicant look for these records.
- 4.33. Finally, MPI suggested that the tree's age be verified to confirm that it is 32-33 years old.

Evaluation of evidence for the presence of *A. kinabaluensis* in New Zealand

- 4.34. After examination of the evidence provided and EPA staff research, we believe that the provenance information provided by Albert Blumhardt, together with the support provided by Prof. de Laubenfels and the morphological characteristics of the species (particularly the non-glaucous leaves) keying to *A. kinabaluensis* is compelling.
- 4.35. However, given that Prof. de Laubenfels's opinion is based on testimonial information from Mr. Graham Dyer, rather than any examination of the actual specimen, coupled with the lack of importation records of this species by MPI and Koromiko Nurseries, we

think that the evidence supporting the presence of *A. kinabaluensis* is not sufficiently strong to recommend that *Agathis kinabaluensis* should be determined to be a not new organism under the Act.

- 4.36. Therefore, we recommend that the current status of *Agathis kinabaluensis* as a new organism be maintained.
- 4.37. However, if it can be shown that *Agathis kinabaluensis* was present in New Zealand prior to 29 July 1998 (e.g. through the age and formal identification of the *Agathis* plant(s) purported to be *A. kinabaluensis* currently growing in New Zealand), new determinations can be sought under section 26(3) of the Act regarding this species.

5. Appendix 1: Full text of comments from DOC and MPI (received via e-mail).

DOC comments on EPA s26 determination for *Agathis* APP202404

Applicant: Auckland Council

Application purpose: To revoke the new organism determination for *Agathis kinabaluensis*, *A. dammara* and *A. borneensis* on the basis of the information provided in the Nicholas Singers Ecological Solutions Ltd report

Written comments deadline: 7 May 2015

Thank you for the opportunity to comment on this HSNO section 26 application.

The Department advised the EPA on 7 February 2014 that it had no records that would suggest any of these species are naturalised anywhere in NZ or any of these species are/were present in private cultivated collections before 29 July 1998. At this time DOC asked the EPA to verify any such claims by accurate taxonomic identification and ageing. This information and request for verification remains the same for the current application.

In the 2014 Authority decision regarding the 5 *Agathis* species (which included the three above), the Committee concluded there was “significant doubt” when/how the plants entered NZ and the formal identification of the plants to species level. This current application provides some indication that *Agathis kinabaluensis*, *A. dammara* and *A. borneensis* were present in New Zealand before July 29 1998, and it is on this basis this new organism revocation is being sought.

It appears that David de Laubenfels’ advice (Appendix B) that the specimen growing in the Koromiko Nursery was ‘most likely’ *A. kinabaluensis* is based on the geographic location where the seedling was collected (and presumably a photograph or at least a description of the leaf shape and colour), rather than from a sample of the plant. If this was the only basis for the identification, the Department considers it to be a low evidence threshold (significant doubt). If Dr Laubenfels’ advice was based on more than this, it is not evident from the information supplied. The Department would consider an appropriate identification would be based on plant material from the specimen growing here at a minimum, or preferably DNA evidence.

The presence of the *A. dammara* in the Waipoua Forest and *A. borneensis* in the Northern Aboretum do not appear very reliable given the Singers report states the specimens were felled in 2002 and thus the evidence is reliant entirely on testimonials. One of DOC’s own Technical Advisor-Threats (and DOC member of the Planning and Intelligence team for the Kauri Dieback response) Tony Beauchamp, understands that the only species felled in 2002 was *A. robusta* and that these trees are now coppicing. Tony advises that in more recent checks no other *Agathis* species were found in the Aboretum, adding that the site has very poor soils with chest high reeds and umbrella fern. If you wish for further detail please contact Tony directly on tbeauchamp@doc.govt.nz or direct dial (09) 470 3312.

Combining this with the significant uncertainty around the non-NZ *Agathis* nomenclature and taxonomy (synonyms pasted below and attached) infers some doubt that these two



species were present in NZ prior to 29 July 1998, despite the NZ government-led programme of *Agathis* introduction in the 1940s/50s. The Department considers the level of doubt is significant enough to request the Authority provide verification from experts to better inform the decision. Peter de Lange (DOC botanist) suggests Dr Brian Molloy (bbmmolloy@xtra.co.nz), Dr de Laubenfels in USA or Landcare would provide sufficient expertise.

The Department would also welcome the Authority's advice on how "eradication" is factored into organism presence/absence s26 decisions. If it is found that *A. dammara* and *A. borneensis* were considered present in NZ prior to 29 July 1998 but have subsequently been eradicated, does this affect the Authority's decision for this application?

Kind regards,

Verity Forbes

Kai-mātanga Matua - Koiora Mōrearea


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***Agathis dammara* and *A. borneensis* synonyms**

Agathis dammara

- *Abies dammara*
- *Agathis alba*
- *Agathis celebica*
- *Agathis hamii*
- *Agathis loranthifolia*
- *Agathis orientalis*
- *Agathis philippensis*
- *Agathis pinus-dammara*
- *Agathis regia*
- *Dammara alba*
- *Dammara alba* var *celebica*
- *Dammara celebica*
- *Dammara loranthifolia*
- *Dammara orientalis*
- *Dammara orientalis* var *alba*
- *Dammara orientalis* var *pallens*
- *Dammara rumphii*
- *Pinus dammara*



June 2015

Agathis borneensis

- *Agathis beccarii*
- *Agathis beckingii*
- *Agathis endertii*
- *Agathis latifolia*
- *Agathis macrostachys*
- *Agathis rhomboidalis*

Agathis kinabaluensis

- No synonyms
- Named in 1979 so in files older than this will be recorded as *A. borneensis* or *A. lenticula*
-



Comments Form to the EPA for New Organism Applications

Application Code(s):	APP202404
Applicant Name:	Auckland Council
Application Categories:	To obtain a determination of whether an organism is a new organism
Application Title(s):	To determine if <i>Agathis dammara</i> , <i>Agathis kinabaluensis</i> and <i>Agathis borneensis</i> are new organisms
EPA Applications Contact:	Tim Strabala
Date:	30 April 2015
MPI Response Coordinator:	Barry Wards
Option to Speak in support of these comments:	No

BASIS ON WHICH COMMENT IS PROVIDED

MPI submits these comments for consideration to the EPA on the following (where relevant to the type of application):

- Clarity of information;
- Information that MPI considers should be taken into consideration by the EPA;
- Adequacy of the proposed containment system, including suggestions for controls and amendments to proposed controls; and
- Enforceability of any proposed controls.

Matters relating to the application that are not within the scope of these comments may be provided to the EPA separately.

Comments

- | | |
|-------------------------|---|
| General | <ul style="list-style-type: none">▪ The applicant has provided new information they consider relevant to the previous determination (APP202039) by the EPA that <i>Agathis dammara</i>, <i>Agathis kinabaluensis</i> and <i>Agathis borneensis</i>, are new organisms.▪ Under section 26(3) of the HSNO Act, the applicant has sought new determinations based on this new information. |
| <i>A. kinabaluensis</i> | <ul style="list-style-type: none">▪ The applicant has provided testimonial evidence (fr. Albert Blumhardt) that Oswald Blumhardt imported seed of <i>A. kinabaluensis</i> into New Zealand in 1979 and an <i>Agathis</i> seedling in April 1983.▪ While A. Blumhardt stated that O. Blumhardt grew seedlings from the <i>A. kinabaluensis</i> import in 1979, no evidence is provided indicating that these organisms now exist. Based on A. Blumhardt's testimonial, MPI considers this information not relevant to the s26 determination; the 1983 importation being the relevant one.▪ A. Blumhardt further indicated that the 1983 importation of an <i>Agathis</i> |





seedling was a legal importation because, to the best of his knowledge, O. Blumhardt had the proper permits to import.

- MPI has searched its archives and, while copies of permits to import plants/seeds were found for the years specified, no documented evidence was found that the importations of *A. kinabaluensis* seed in 1979 or of an *Agathis* seedling in 1983 were carried out under permit. This is not to say, however, that a permit did not exist; simply that no evidence has been found supporting a legal importation. The permits found indicated that plants/seed were to be brought back from Malaya but the permits did not permit *Agathis* importation.
- If, as is claimed, the Whangarei specimen was imported under permit, there should be records held by O. Blumhardt and/or Koromiko Nurseries to that effect. However, the applicant has given no indication that such records exist or have been searched for. Given that (a) there is no commentary on the fate of the *A. kinabaluensis* seeds imported in 1979, (b) *A. kinabaluensis* has a very restricted distribution, (c) the indication by D. de Laubenfeis that he is unaware (up until 2002, at least) of any *A. kinabaluensis* in cultivation, and (d) *A. kinabaluensis* is an IUCN Red List species (threatened) and would likely have required a number of permissions to take from Borneo and import into New Zealand, it is surprising that no documentation has been looked for. MPI suggests this should be carried out.
- The key issues in the determination appear to be (a) whether the tree in the Koromiko Nursery is *A. kinabaluensis*, and, if so, (b) how long has it been there?
 - (a) Nicholas Singers Ecological Solutions Ltd experts have stated that, based on leaf morphology and the location of the seedlings location, they have no doubt that the tree at the Koromiko Nursery is *A. kinabaluensis*.

While MPI acknowledges the qualifications and expertise of the Nicholas Singers Ecological Solutions Ltd experts, their confirmation of identity appears to be solely based on the morphology description of the leaves according to D. de Laubenfeis (1979)² and not from any previous knowledge of, or experience with, specimens of *A. kinabaluensis* or other exotic *Agathis* species. Nicholas Singers Ecological Solutions Ltd experts note themselves that '*Agathis* species are difficult to determine and there is a precedent for misidentification of species not known to be present in New Zealand'. MPI suggests that further expert advice should be sought from someone with more extensive knowledge and experience of *Agathis* taxonomy and identification – it is acknowledged this is a highly complex and difficult area and it is likely that such expertise would not be present in New Zealand.

² Blumea 25: 531-541





Noting that the distribution of *A. kinabaluensis* is extremely restricted (only found on Mt Kinabalu, Borneo), the growth characteristics and morphology of the species in Whangarei may be quite different to those in its endemic area. MPI suggests that a leaf morphology confirmation would be more certain if the leaves of the Koromiko Nursery specimen were compared to those from a Mt Kinabalu-sourced specimen. This may already have been done through photograph comparison, at least, but the evidence does not suggest this.

Nicholas Singers Ecological Solutions Ltd experts also state that their identification is supported by correspondence from D. de Laubenfeis (cited as "B"). However, the email from D. de Laubenfeis is dated 25 June 2002 and the context of the discussion is unclear. It is uncertain whether it relates to the specimen at Whangarei and there is little information indicating that it is a confirmation of species identity at all. MPI suggests that interpretation of this email should be treated with scepticism.

- (b) As noted by the Department of Conservation (DoC)³, further claims of presence in New Zealand would need to be verified by accurate identification and ageing.

The only evidence to suggest that the tree at the Koromiko Nursery is the seedling brought back from Borneo in 1983 is the statement of A. Blumhardt (s3.4/3.5). MPI suggests this is insufficient evidence to age the tree and supports the DoC contention that age analysis should be carried out to provide a scientific basis to confirm whether the tree is ~31 years old.

- Current evidence strongly suggests that there is only one specimen of *A. kinabaluensis* present in New Zealand. The email from D. de Laubenfeis suggests that this specimen is sterile, meaning it cannot reproduce. Noting that the EPA staff advice on APP202039 did not include an evaluation of 'organism' against the statutory criteria, it may be appropriate to do so in this determination.
- The applicant has provided extensive evidence indicating that *A. dammara* was imported many times in the 1940s and 50s by the New Zealand Forest Service, under various synonyms.
- MPI supports the applicant's contention that this is suitable evidence of presence of *A. dammara* in New Zealand prior to July 1998.
- It is surprising that no evidence of continued presence appears to exist, noting the rarity of the species in New Zealand.
- Similarly, the statement that all exotic *Agathis* were felled in Waipoua Forest in 2002 is also surprising, given that they were part of the Northern

A. dammara

³ Section 3.11 in the EPA advice for application APP202039





Arboretum and possibly containing the only specimens of some *Agathis* species in New Zealand. No evidence of presence during those ~60 years, including photographs or citations, nor any evidence of felling, has been provided. Such information must exist and would have been informative.

A. borneensis

- The applicant has provided evidence indicating that *A. borneensis* was imported under the synonyms *A. rhomboidalis* and *A. alba* in the 1940's and 50's by the New Zealand Forest Service.
- However, the Gymnosperm Database ("D") cites *A. rhomboidalis* and *A. alba* as being synonyms of *A. dammara*. It also cites *A. rhomboidalis* as being a synonym of *A. borneensis*.
- Attachment "O" cites receipt of 100 gr of *A. alba* and that all seeds 'failed'. It further states the synonym as *A. loranthifolia*, which is now recognised as a synonym of *A. dammara*. There does not appear to be a reasonable connection here to *A. borneensis*.
- One seedling purported to be *A. rhomboidalis* was held at the Waipoua Nursery in 1948. According to the evidence provided ("E"), this seedling arose from Lot Number HO.47/388. This Lot Number is also identified in the Scion Tree Seed Register ("M") under the *A. rhomboidalis* register sheet. The Lot consisted of three dozen seeds imported from Malaya. The Seed Register sheet notes that 'In Malaya the name *Agathis alba* is used for all their forms of *Agathis*'. This raises questions as to the reliability of the information provided and the confidence that the three dozen seeds imported from Malaya were actually *A. rhomboidalis*.
 1. Given this information, MPI suggests that all that can be concluded with any certainty from the evidence provided is:
 2. Three dozen seeds of an *Agathis* species were imported from Malaya;
 3. Only one seed germinated and formed a 6-month old seedling; and
 4. It is not known whether that seedling was planted out, matured and/or definitively identified as *A. rhomboidalis*.
- Given that *A. alba* is only mentioned in attachment "M"
- Given the above information, MPI suggests that this is insufficient to conclude that *A. borneensis* was present in New Zealand prior to July 1998.

Other

- MPI suggests that the following report be reviewed for further evidence of presence of the *Agathis* spp. In Waipoua forest:
 - Morrison, F.T. 1961. A report on the northern arboretum – Waipoua Forest. NZ. Forest Service unpublished report. 15pp.



6. References

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