

[;` , Fgd W4ž>đ 5Wđ geS] >žž/Wžž7Ua`aYk aXZV BaVaUcbSUW F dab[US^8adMfežI SeZ]` Yfa` ,
E_ [fZea` [S` ;` e[fgf[a` EUZa`SckBdMđ S" ##ž/E_ [fZea` [S` 5a` fd[Tgf[a` efa 4afS` kEMW-+` f]

4

Neal J. Enright and Tanguy Jaffré

ABSTRACT.

INTRODUCTION

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Podocarpus

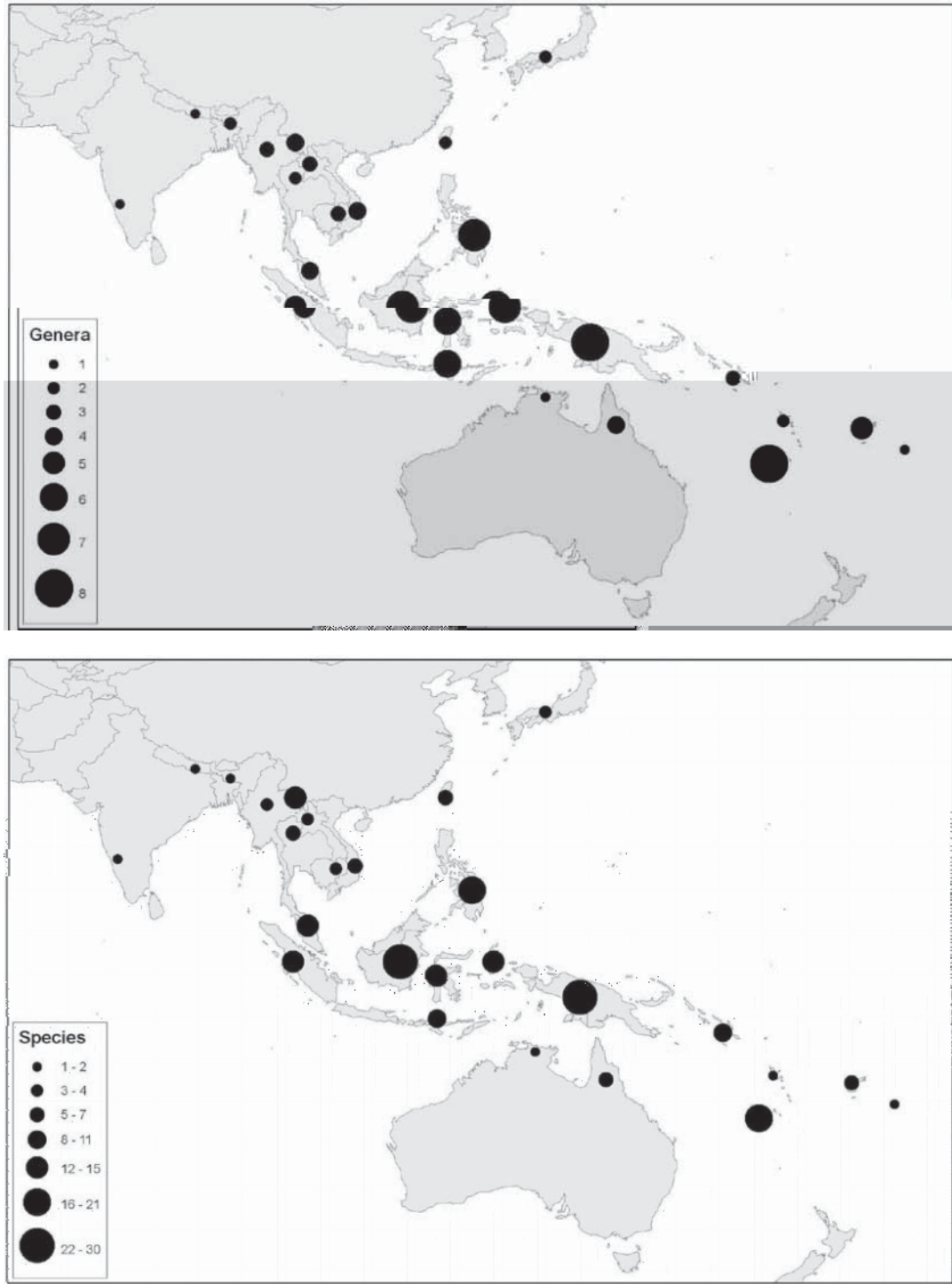


FIGURE 4.1.

TABLE 4.1.

| Distribution | <i>Acropyle</i> | <i>Dacrycarpus</i> | <i>Dacrydium</i> | <i>Falcatifolium</i> | <i>Nageia</i> | <i>Parasitaxus</i> | <i>Phyllocladus</i> | <i>Podocarpus</i> | <i>Prumnopitys</i> | <i>Retrophyllum</i> | <i>Sundacarpus</i> | Total |
|--------------|-----------------|--------------------|------------------|----------------------|---------------|--------------------|---------------------|-------------------|--------------------|---------------------|--------------------|-------|
|--------------|-----------------|--------------------|------------------|----------------------|---------------|--------------------|---------------------|-------------------|--------------------|---------------------|--------------------|-------|

Podocarpus

**DISTRIBUTION AND ECOLOGY
OF MALESIAN PODOCARPS**

Podocarpus Nageia Prumnopitys Sundacarpus

carpus Falcatifolium Dacrydium Dacry-

carpus Dacrydium Podo-

WIDESPREAD AND COMMON SPECIES

Dacrycarpus imbricatus

Podocarpus neriifolius

Nageia wallichiana

ana

sum

Dacrydium como-

Nageia fleuryi

Podocarpus costalis

P. nakaii

Podocarpus neriifolius

Dacrycarpus kinabaluensis *Podocarpus gibbsiae* *P. globululus* *Falcatifolium angustum*

Sundacarpus amarus

Podocarpus pilgeri

Dacrydium beccarii

Dacrydium leptophyllum

D. spathoides

Podocarpus lophatus

D. xanthandrum

ALTITUDINAL ZONATION AND HIGH-ALTITUDE STANDS

rycarpus compactus

Dac-

Podocarpus

papuana

Papuacedrus

Phyllocladus hypophyllum

Podocarpus

Dacrydium

Nothofagus

Dacrycarpus

Papuacedrus

Podocarpus gibbsiae

P. confertus

Dacrydium corn-

wallianum

D. pectinatum

RARE AND RESTRICTED SPECIES

Dacrycarpus kinabaluensis *Dacrydium medium* *Podocarpus spathoides* *Dacrycarpus imbricatus* *Podocarpus pilgeri*

Acmopyle sahniana
nausoriense

Dacrydium

Podocarpus affinis

Dacrycarpus cinctus

Nothofagus

Acmopyle sahniana

P. pallidus
Garcinia

Calophyllum-

Dacrycarpus compactus

Podocarpus pilgeri

LOWLAND RAINFOREST

compactus *Gleichenia bolanica* *Dacrycarpus*
neriifolius *Nageia wallichiana* *N. motleyi* *Podo-*
N. fleuryi *Sundacarpus amarus*
Dacrycarpus compactus *Rapanea vaccini-*
oides *neriifolius* *S. amarus* *P.*
Araucaria *Castanopsis* *Lithocarpus*
S. amarus *P. neriifolius*
Dacrycarpus imbricatus *Dacrydium pectinatum*
Falcatifolium falciforme
Falcatifolium falciforme *leyi* *N. mot-*
Dacrydium *Dacrycarpus* *Podocarpus neriifolius*
Dacrycarpus kinabaluensis
Dacrydium gibbsiae *P. dispersum*
D. kinabaluensis

Leptospermum recurvum

HEATH AND SWAMP FORESTS

Dacrydium pectinatum *Nageia maxima*
Podocarpus laubenfelsii *uma*

Agathis borneensis

neriifolius

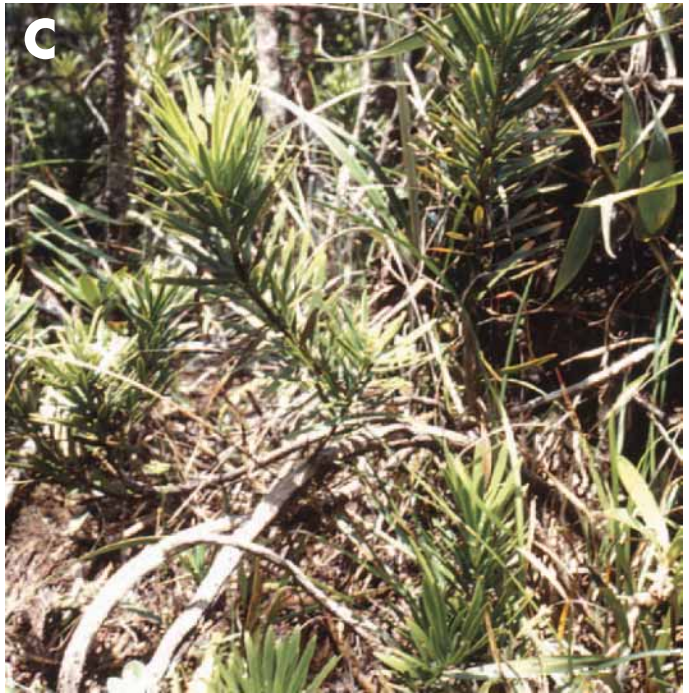
Podocarpus

oluta

Shorea ovata *S. rev-*

lichiana

N. wal-



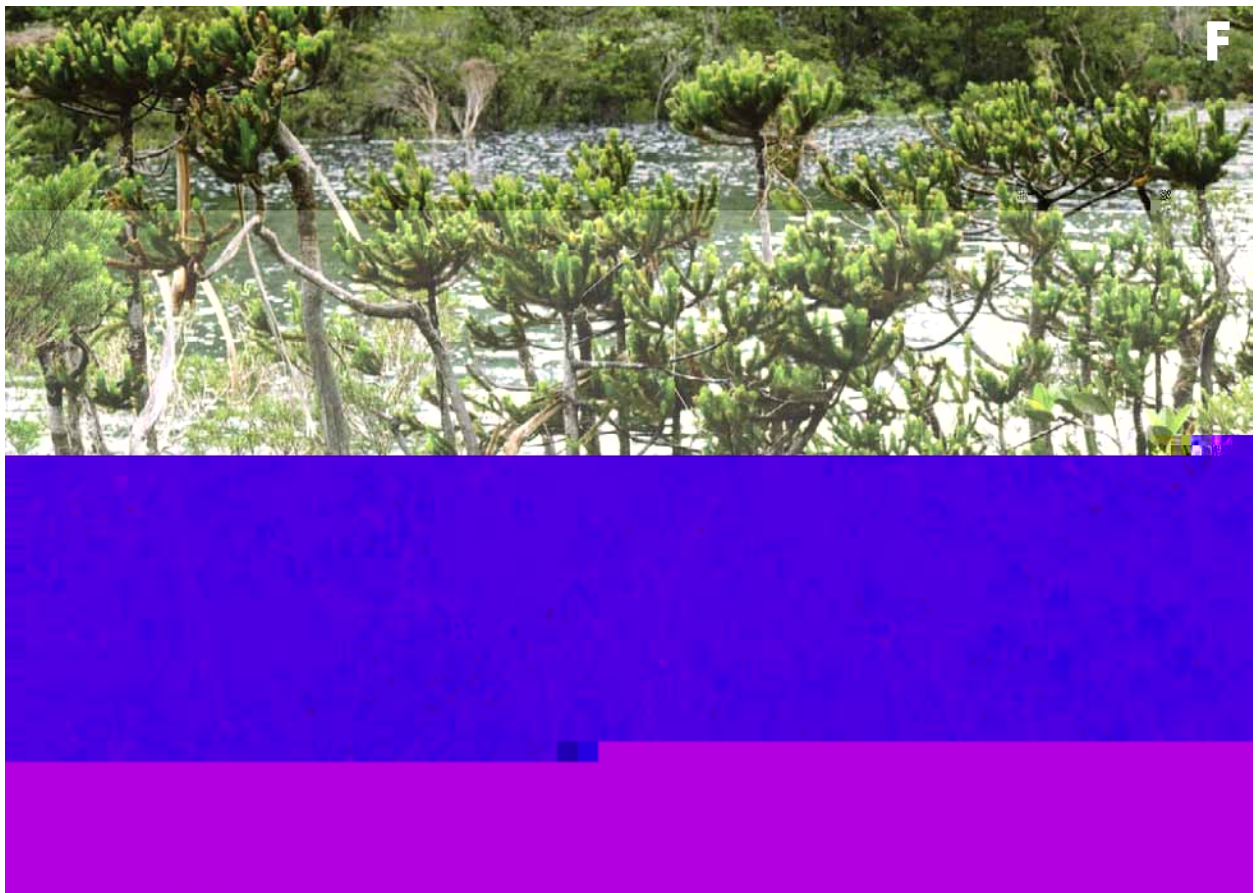


FIGURE 4.2.
Retrophyllum minus
Podocarpus decumbens

Facing page *Parasitaxus usta*

Podocarpus novae-caledoniae
Dacrydium guillauminii

Above *Acmopyle pancheri*

Dacrydium lycopodioides

Acropyle pancheri *Dacrycarpus vieillardii* *Dacrydium balansae* *Falcatifolium taxoides*, *Podocarpus longefoliosus* *P. polyspermus*, *P. lucienii*, *Prumnopitys ferruginoides*

D. vieillardii *D. balansae*
Podocarpus polyspermus *Dacrydium guillauminii* *Retrophyllum minus*

Podocarpus novae-caledoniae *P. gnidioides* *P. decumbens* *Parasitaxus usta*
Podocarpus decumbens
P. gnidioides

MYA

Retrophyllum

VEGETATION TYPES AND SPECIES DISTRIBUTIONS

Dacrydium araucarioides
G. deplancheanum

Dacrydium guillauminii *Retrophyllum minus*

Metrosideros *Cunonia* *Pancheria*

Nemuaron *Paracryphia* *Quintinia*, *Sphenostemon*

Trimenia Zyggynum

Retrophyllum comptonii *Dacrydium lycopodioides*
Dacrydium lycopodioides

Retrophyllum comptonii
Podocarpus longefoliosus
liolatus

Acropyle pancheri *Falcatifolium taxoides* *Parasitaxus usta* *Podocarpus lucienii* *P. sylvestris* *Prumnopitys ferruginoides*

Dacrycarpus vieillardii
Podocarpus polyspermus
Podocarpus novae-caledoniae *P. gnidioides*

Dacrydium balansae

D. araucarioides
nostoma deplancheanum *Gym-Dacrydium araucarioides*

R. minus

D. guillauminii

Dacrycarpus vieillardii
Podocarpus novae-caledoniae,

Parasitaxus usta

Falcatifolium taxoides

P. usta

F. taxoides,

CONSERVATION AND THREATS

caria

Arau-

Podocarpus decumbens
P. longefolaliatus,
Dacrydium guillaumi-

des

F. taxoi- *nii* *Retrophyllum minus*
guillauminii
minus

Dacrydium
Retrophyllum mi-

ENVIRONMENTAL CONTROLS

Dacrydium balansae

Podocarpus beecherae
P. novae-caledoniae

P. colliculatus

P. colliculatus

tris

P. sylves-

taxoides, *Prumnopitys ferruginoides*
comptonii

Falcatifolium
Retrophyllum

Acropyle pancheri

A. pancheri

Parasitaxus usta

N. fleuryi

P. grayae

-

-

Araucaria nemorosa

Nageia

**LIFE HISTORY ATTRIBUTES AND
POPULATION ECOLOGY**

lichiana

N. wal-

lius

Podocarpus latifo-

ECOPHYSIOLOGY

POPULATION ECOLOGY

Podocarpus,

Nageia

Podocarpus lambertii

Nageia nagi

Araucaria

Podocarpus drouynianus

Podocarpus neriifolius

Dacrycarpus imbricatus *Nageia fleuryi* *P. neriifolius*

Podocarpus neriifolius *Dacrycarpus imbricatus*

Dacrydium comosum

Podocarpus lambertii

Sundacarpus amarus

Dacrycarpus imbricatus *Falcatifolium falciforme*

Afrocarpus falcatus

P. matudae

PERSISTENCE AND COEXISTENCE

hardeniana

Eidothea

Callitris

Dacrycarpus imbricatus

Falcatifolium falciforme
Nageia wallichiana

TABLE 4.2.

| Species | Location | Longevity (years) | Growth rate | Shade tolerance |
|---------------------------------|----------|----------------------|----------------|--------------------|
| <i>Afrocarpus falcatus</i> | | | | |
| <i>Dacrycarpus dacrydioides</i> | | | | |
| <i>D. imbricatus</i> | | | | |
| <i>Dacrydium araucarioides</i> | | | | |
| <i>D. cupressinum</i> | | | | |
| <i>D. nidulum</i> | | | | |
| <i>Falcatifolium falciforme</i> | | | | |
| <i>Nageia wallichiana</i> | | | | |
| <i>Podocarpus hallii</i> | | | | |
| <i>P. latifolius</i> | | | | |
| <i>P. lawrencei</i> | | | | |
| <i>P. nubigenus</i> | | | | |
| <i>P. totara</i> | | | | |
| <i>Prumnopitys ferruginea</i> | | | | |
| <i>P. ladei</i> | | | | |
| <i>P. taxifolia</i> | | | | |
| <i>Saxegothaea conspicua</i> | | | | |

Podocarpus neriifolius

SYNTHESIS

Araucaria angustifolia

APPENDIX

TABLE 4.A1.

| Genus and species | Tonga | Fiji | New Caledonia | Vanuatu | Solomon Islands | NE Australia | New Guinea | Moluccas | Sulawesi | Sunda Islands | Borneo | Sumatra | Malaya | Vietnam | Laos | Thailand | Cambodia | Assam | India | Nepal | China | Philippines | Taiwan | Burma | |
|-------------------------|-------|------|---------------|---------|-----------------|--------------|------------|----------|----------|---------------|--------|---------|--------|---------|------|----------|----------|-------|-------|-------|-------|-------------|--------|-------|--|
| <i>Acmopyle</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>A. pancheri</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>A. sahniana</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Dacrycarpus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. cinctus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. compactus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. cumingii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. expansus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. imbricatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. kinabaluensis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. steupii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. vieillardii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Dacrydium</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. araucarioides</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>D. balansae</i> | | | | | | | | | | | | | | | | | | | | | | | | | |

continued

D. beccarii

D. comosum

D. cornwallianum

D. elatum

TABLE 4.A1. *Continued*

| Genus and species | Tonga | Fiji | New Caledonia | Vanuatu | Solomon Islands | NE Australia | New Guinea | Moluccas | Sulawesi | Sunda Islands | Borneo | Sumatra | Malaya | Vietnam | Laos | Thailand | Cambodia | Assam | India | Nepal | China | Philippines | Taiwan | Burma | |
|-----------------------------|-------|------|---------------|---------|-----------------|--------------|------------|----------|----------|---------------|--------|---------|--------|---------|------|----------|----------|-------|-------|-------|-------|-------------|--------|-------|--|
| <i>P. borneensis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. bracteatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. brassii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. brevifolius</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. chinensis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. chingianus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. colliculatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. confertus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. costalis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. crassigemmis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. decumbens</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. deflexus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. degeneri</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. dispermus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. elatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. fasciculus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. gibbsiae</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. glaucus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. globulus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. gnidioides</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. grayae</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. insularis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. laubenfelsii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. ledermannii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. levis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. longefoliolatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. lophatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. lucienii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. macrocarpus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. macrophyllus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. micropedunculatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. nakaii</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. neriiifolius</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. novae-caledoniae</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. palawanensis</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. pallidus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. pilgeri</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. polyspermus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. polystachyus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. pseudobracteatus</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. ridleyi</i> | | | | | | | | | | | | | | | | | | | | | | | | | |

continued

TABLE 4.A1. *Continued*

| Genus and species | Tonga | Fiji | New Caledonia | Vanuatu | Solomon Islands | NE Australia | New Guinea | Moluccas | Sulawesi | Sunda Islands | Borneo | Sumatra | Malaya | Vietnam | Laos | Thailand | Cambodia | Assam | India | Nepal | China | Philippines | Taiwan | Burma |
|-------------------------|-------|------|---------------|---------|-----------------|--------------|------------|----------|----------|---------------|--------|---------|--------|---------|------|----------|----------|-------|-------|-------|-------|-------------|--------|-------|
| <i>P. rotundus</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. rubens</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. rumphii</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. salomoniensis</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. smithii</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. spathoides</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. subtropicalis</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. sylvestris</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. teysmannii</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Prumnopitys</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. ferruginoides</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>P. ladei</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Retrophyllum</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>R. comptonii</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>R. minus</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>R. vitiense</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Sundacarpus</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>S. amarus</i> | | | | | | | | | | | | | | | | | | | | | | | | |

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