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Multipurpose Tree Species Network Research Series

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1987 Seed Collections of *Acacia auriculiformis* from Natural Populations in Papua New Guinea and Northern Australia

Compiled by
Brian Gunn, Maurice McDonald, and James Moriarty

1988

Australian Tree Seed Centre
CSIRO Division of Forestry & Forest Products
P.O. Box 4008
Queen Victoria Terrace
Canberra ACT 2600
Australia

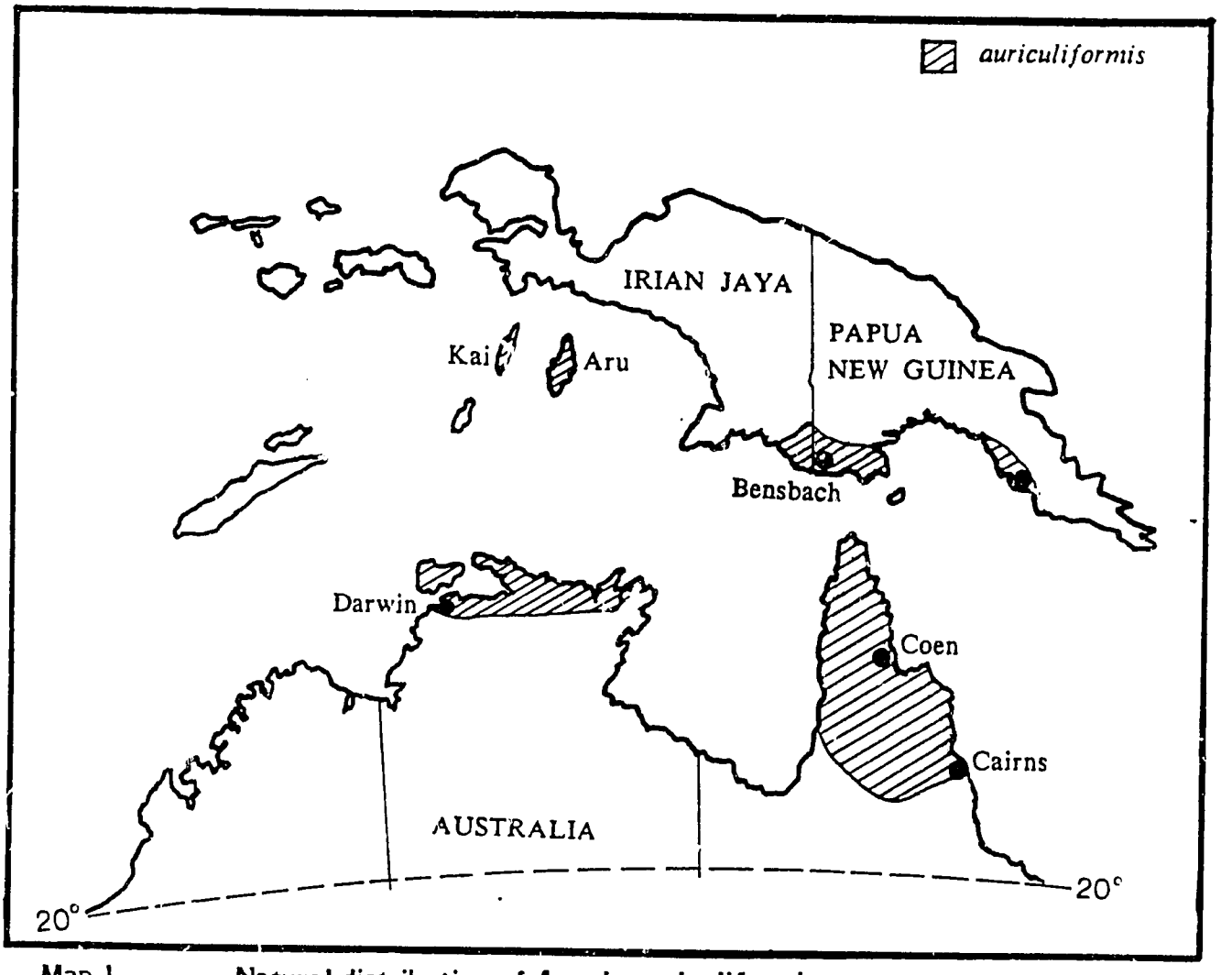
Winrock International-F/FRED
P.O. Box 1038
Kasetsart Post Office
Bangkok 10903, Thailand

TABLE OF CONTENTS

1. INTRODUCTION

The Australian Tree Seed Centre of the Division of Forestry and Forest Products, CSIRO, undertook research collections of Acacia auriculiformis A. Cunn. ex Benth. in the Western Province of Papua New Guinea and northern Australia. Funds for these collections were provided by an F/FRED project managed by Winrock International, Australian International Development Assistance Bureau (AIDAB) and CSIRO.

Three collection teams were provided from the Australian Tree Seed Centre to undertake the work in the three main areas of the species natural distribution: Papua New Guinea, north Queensland and the Northern Territory (Map 1). Collections began at the beginning of September and continued through until the end of October. A total of 54.7 kg of seed was collected from 340 trees representing 32 provenances.



Map 1. Natural distribution of Acacia auriculiformis

2. ACACIA AURICULIFORMIS SEED COLLECTION FROM WESTERN PROVINCE, PAPUA NEW GUINEA - 15 SEPTEMBER TO 23 OCTOBER 1987

2.1 Summary

During September and October Jerry Cole (Private Consultant) and Brian Gunn (CSIRO, Tree Seed Centre) undertook seed collections of Acacia auriculiformis and other species in the Bensbach and Morehead River systems in the Oriomo Plateau region of PNG. The Papua New Guinea Department of Forests provided the necessary authorities to make the collection whilst staff at Daru and Morehead provided valuable support.

A total of 163 mother trees of A. auriculiformis were sampled from 9 provenances of which some could be referred to as sub-provenances as will be discussed later. The Seed Data Sheets for the collections are under Appendix 1. Other species included A. leptocarpa (26 trees, bulked), A. aulacocarpa (24 trees), A. crassicarpa (4 trees), Eucalyptus 'pellita' (30 trees), E. brassiana (9 tree bulk), Melaleuca brassii (5 tree bulk), M. acacioides subsp. acacioides (5 tree bulk), M. symphyiocarpa (10 tree bulk). Natural hybrids were observed between A. auriculiformis and two other species, A. mangium and A. leptocarpa in the Balamuk and Tonda areas respectively. A 3 tree collection from hybrids between A. leptocarpa and A. auriculiformis was of special interest attaining heights of 18 m compared to A. leptocarpa with only 3-6 m in the same area. The trees were erect single stemmed and would appear to have potential for planting on seasonally waterlogged sites in the wet/dry tropics. E. 'pellita' was previously recorded by Messrs. Thomson and Cole in 1986 in the Keru area. Apart from this area where it is uncommon, the species was found between Tokwa and Suki as a common tree growing on the edge of monsoon forest. The specimens are presently being identified to check their affinity with E. urophylla. No seed collections of Acacia mangium were made since the crops were very poor and their maturity clashed with A. auriculiformis.

Acacia auriculiformis as with other acacias from PNG has exhibited rapid early growth in international trials. To date there has not been sufficient data to show marked differences in provenance variation of this species over its natural distribution in Papua New Guinea. Coupled with the fact that the demand for seed

far exceeds supply, it was agreed after consultation with the collaborators to concentrate collections on the Bensbach and Morehead areas. Trees in these two areas are widespread and readily accessible in the dry season. The more isolated populations such as those found on the Oriomo River involve considerably more time and effort to organise with access along the river difficult and tree numbers limited (Thomson/Cole, pers. comm.).

2.2 Background

Papua New Guinea has eight shrub/tree acacias: A. aulacocarpa, A. auriculiformis, A. crassicarpa, A. leptocarpa, A. mangium, A. simsii and A. solandri (Verdcourt 1979) plus A. pubirhachis (Thornson, pers. comm.). These species occur naturally in the Trans-Fly 'Oriomo Plateau' region of Western Province, Papua New Guinea, several extend into Irian Jaya (Van Royen 1963) and all occur in parts of northern Australia.

Geographical occurrence and ecology. Western Province is situated between 5°-9°S latitude and 141°-144°E longitude and forms the greater length of Papua New Guinea's border with Irian Jaya. Detailed descriptions of the climate, land form, soil and vegetation in the province can be found in Paijmans et al. (1971) and McAlpine et al. (1982). Most of the province is an extensive lowland area with the Oriomo Plateau forming a slightly elevated region rising to 40 m a.s.l. from the Fly River in the north to the coastal mangroves in the south. It consists of gently undulating terrain dissected by a number of deep rivers. The soils are acidic to strongly acidic and moderately to very poorly drained. They include undifferentiated fluvial deposits and organic soils, and various weathered soils such as acrisols and ultisols. Lateritic areas are frequent. The flat terrain and the slowly-permeable subsoil result in much of the plateau being flooded during the wet season. The climate is humid to subhumid with an annual rainfall about 2000 mm of which over 75% is received during the wet season lasting from December to May (Table 1).

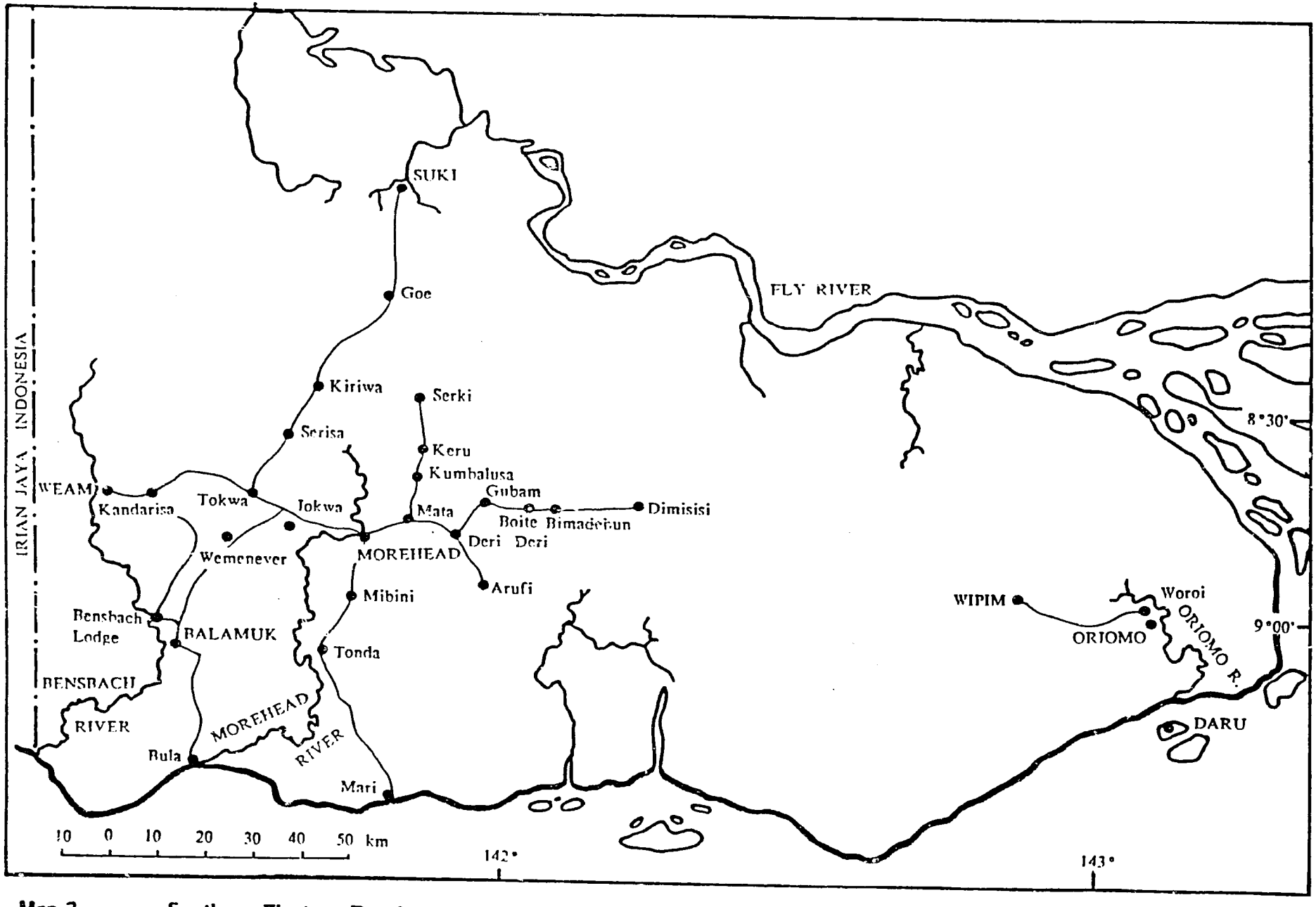
A mosaic of open grassland, savannah woodland and forest covers the plateau. The tall forest has been termed 'monsoon forest' (Paijmans et al. 1971) and acacias are a frequent component of the monsoon forest. The pattern of vegetation types is influenced by flood, fire, local drainage, cultivation and the browsing of animals. Acacias occur throughout the region but the prominence of each species varies within the mosaic. Overall Melaleuca species form the predominant woody vegetation.

Table 1. Climatic data for meteorological stations close to the Acacia auriculiformis collection sites

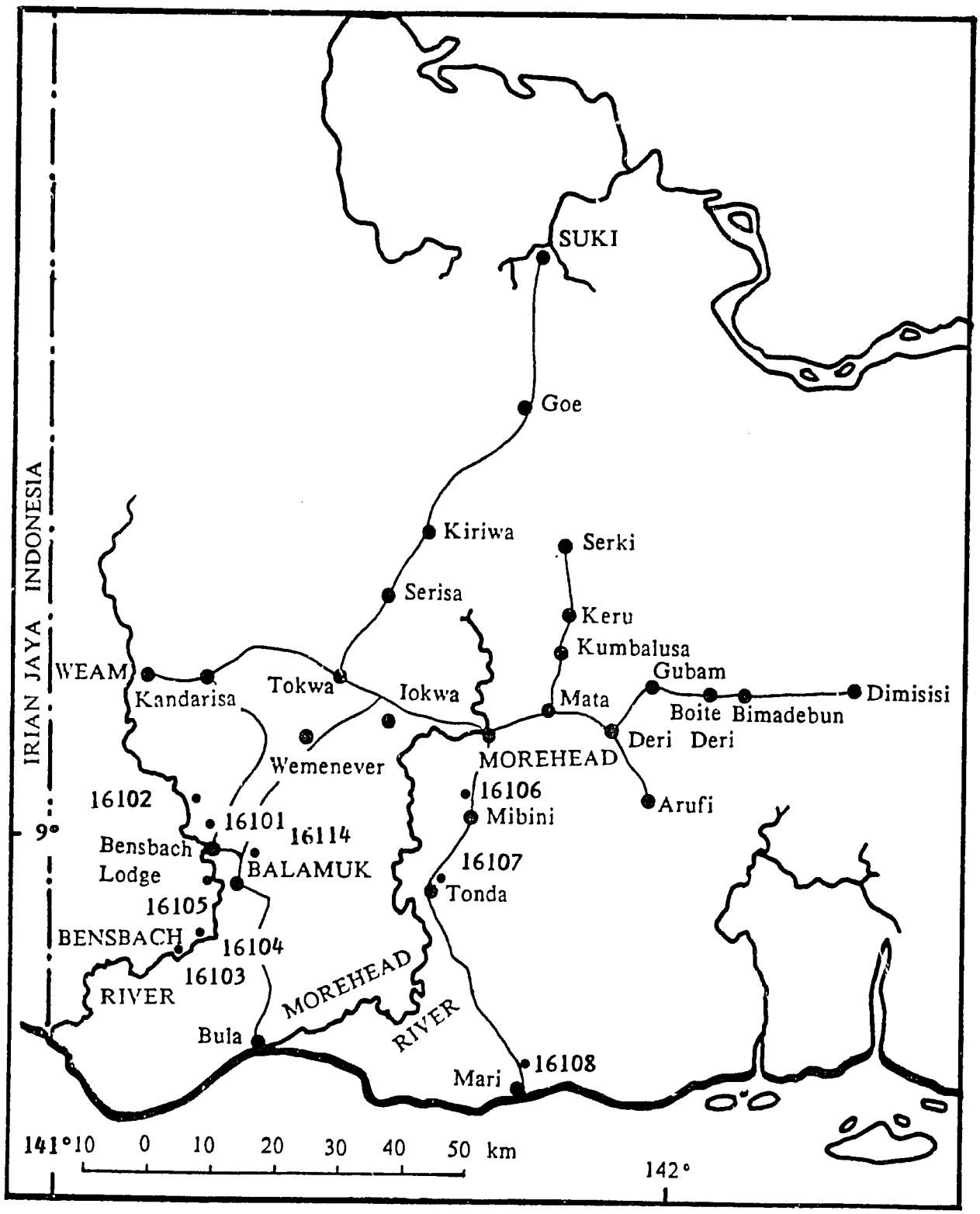
Station location details				Temperature (°C)				Mean monthly rainfall (mm)												Mean annual rainfall (mm)
Name	Lat. (°S)	Long. (°E)	Alt. (m)	January Mean min.	January Mean max.	July Mean min.	July Mean max.	J	F	M	A	M	J	J	A	S	O	N	D	
Morehead	8 43	141 38	31	-	-	-	-	332	262	318	157	154	86	54	52	38	80	114	224	1913
Daru	9 04	143 12	8	23	32	22	29	280	258	325	321	223	108	93	52	42	55	111	204	2063
Oenpelli	12 19	133 03	7	24	33	18	32	324	287	264	74	12	2	3	1	3	28	109	216	1322
Coen	13 57	143 12	193	23	31	17	27	272	266	247	94	12	9	6	3	2	22	52	67	1052
Laura	15 36	144 27	91	-	-	-	-	232	241	180	31	8	9	4	3	4	17	56	134	919
Moreton	12 27	142 38	39	23	33	17	29	318	323	373	110	22	11	8	4	5	16	71	201	1462
Darwin	12 26	130 52	29	25	32	19	30	154	147	115	23	4	5	1	2	4	19	53	100	1536
Maningrida	12 03	134 14	11	25	32	16	30	250	260	252	74	35	0	0	0	0	16	64	189	1141
Pine Creek	13 50	131 50	189	-	-	-	-	270	232	196	48	6	3	1	1	8	42	106	201	1114
Yirrkala	12 15	136 53	9	25	32	21	28	219	244	258	256	87	31	12	5	3	6	50	144	1315

Seed collection techniques. Western Province is remote, with numerous rivers and swamps but few roads (Map 2). Most of the Oriomo Plateau is accessible by walking from small airstrips. The severe limitations of aircraft cost, payload, space and the unavailability of land transport at such locations restrict accessibility for seed collections and makes it time-consuming, expensive and difficult to organise.

Since climbers were not available in the area, seed collections were made using 0.308 calibre rifles supplemented by felling trees with a chainsaw for larger populations.



Map 2. Southern Western Province, Papua New Guinea



Map 3. • A. auriculiformis collection sites, W.P., Papua New Guinea 1987.

2.3 Objectives

The primary objective was to collect seed from a large number of individuals of Acacia auriculiformis mainly in the Bensbach River system. Where time permitted collections were to be made from other woody species with potential for F/FRED and CSIRO.

2.4 Planning

A reconnaissance to check on seed crops was not mounted prior to the collection. Mr Lucas Lupre of the Forestry Office in Daru had offered to undertake some but funds had to be sent from Canberra which caused considerable delays and ultimately resulted in the idea having to be abandoned. Past experience has shown considerable difficulty in accurate assessment of the seed crop when undertaken 4-6 weeks prior to seed maturation. Factors including climatic conditions and insect attacks can rapidly change the situation.

The starting date of 17 September was decided upon in light of the 1986 collection. On arrival at Bensbach, crops were found to be immature by 2-3 weeks. The unseasonal cool moist conditions in early September may have caused the delays in seed ripening.

Previous visits to the Western Province from Canberra had flown in via Port Moresby. This often restricted the transport of equipment including ammunition and entailed delays of up to a week in order to reach the collection site. On this occasion it was decided to charter an aircraft (Beechcraft Super King Air with payload of over 1000 kg) from Cairns to fly to Bensbach via Daru. This proved a most efficient way to operate with only four hours flying time involved and no problems with the transport of equipment.

A CSIRO seed thresher plus all the equipment required for the collection had to be brought in which amounted to over 900 kg. The thresher enabled the pod material to be broken down into manageable quantities for final cleaning in Canberra. 3000 rounds of ammunition and two .308 calibre rifles were also taken. These items are restricted imports into PNG, however the Commissioner for Police in Port Moresby very kindly provided the necessary documentation for their temporary import.

Quarantine restrictions for importing plant material was handled by Mr L. Govaars of CSIRO. This enabled the acacia material to be sent directly to the Division of Forestry and Forest Products, Canberra, for cleaning and storage in our facilities. Eucalyptus seed is a restricted import into Australia because of Guava Rust (Puccinia psidii) and for this reason most of the seed is held under quarantine.

2.5 **Collection Details**

On the 17 September the party left Cairns airport 7.30 am arriving Daru 10.00 am for customs clearance. At the Daru Forestry office, the OIC Mr Lupre informed us that our counterpart Anau was on a timber survey on the Fly River and was therefore unable to accompany us. We continued on to Bensbach Lodge, a flight time of 35 minutes. At the lodge Mr & Mrs Brian Brumley allowed us to use their facilities and in addition hired out a Toyota Land Cruiser SWB plus trailer for the duration of the trip. Kiaer, one of the lodge staff accompanied us with the collection and proved to be a tremendous asset.

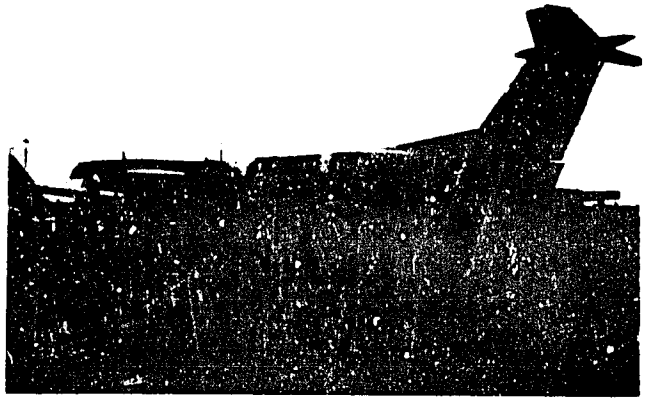


Fig. 1. Aircraft at Cairns used to charter PNG party

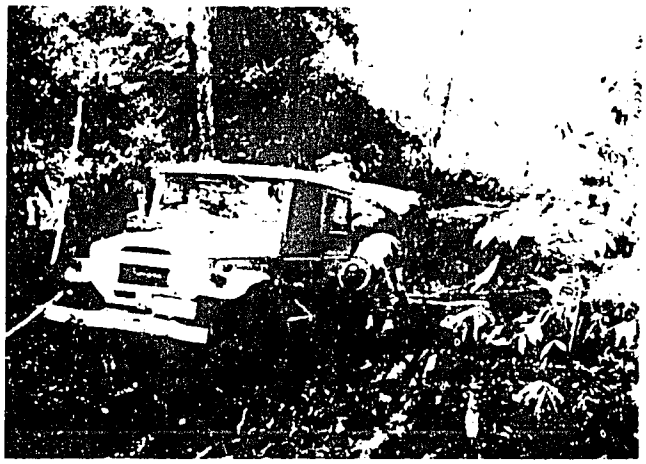


Fig. 2. Bogged at Mibini collection site

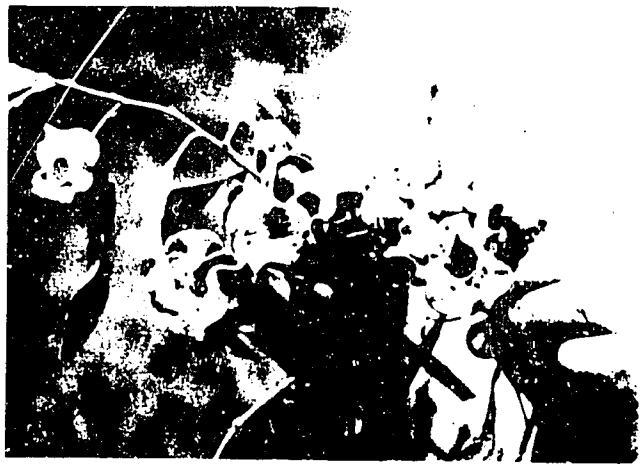


Fig. 3. A. auriculiformis legumes 2-3 weeks prior to maturity. Note small black marks indicating parasitic damage.

Since crops were immature in the Bensbach area it was decided to spend time making a reconnaissance of the Bensbach/Morehead region. Around Bensbach, crops were plentiful but had been parasitised (Fig. 3). The recent rains had made the Dog Track, north of Bensbach Lodge, and the road to Bula impassable.

The Balamuk trees had very poor crops. Trees between Balamuk and Morehead growing in woodland or monsoon forest situations had occasional light crops. Along the same stretch of road A. crassicarpa, one population of A. aulacocarpa and E. brassiana all had crops which were included in the collection. Light crops were noted on A. auriculiformis at the Morehead River crossing. South of Morehead on the road to Tonda Village two large populations were noted at Mibini and Tonda. These had exceptionally good crops and in the case of one tree we could not see the leaves for the legumes. Crops were again immature similar to that at Bensbach River. A. leptocarpa is widespread along this road growing on the drier infertile ridges. Very green crops were noted on a number of trees. Earlier in the year the villagers had repaired the bridge over the Tonda River which allowed access to the coast at Mari.

From Morehead the party drove east to Boite then north from Mata to Keru. There are extensive stands of A. mangium and A. crassicarpa between Morehead and Boite but no A. auriculiformis. The same applied for the road to Keru. Along the Keru road we made a 9 tree collection of E. pellita near Kumbalusi as well as A. aulacocarpa.

After returning to Morehead we continued west to the village of Tokwa (Toko). From here a new road has just been opened up to Suki, a village not far from the Fly River. We were in fact only the third vehicle to have used it. Whilst we saw no A. auriculiformis the main attraction were the extensive populations of E. pellita growing on the edge of monsoon forests to the north and south of Kiriwa. Occasional A. crassicarpa, A. aulacocarpa, A. mangium and A. leptocarpa were also noted but without seed. E. brassiana was sampled just south of Suki.

The above areas covered the extent of our reconnaissance and subsequent collections. After returning to Bensbach Lodge on the 2 October, it was decided to commence the A. auriculiformis collections at Bensbach.

2.6 A. auriculiformis

The species occurs in disjunct populations throughout the Oriomo plateau. It forms more or less pure dense stands along much of the Bensbach River to the north and south of Bensbach Lodge (Fig. 4). It is also reportedly common along the Morehead River. The most impressive population was to the north and south of Mibini growing in moist swamp conditions between Melaleuca and open woodland. It is also found scattered on the edge of monsoon forests, open savannah woodland and more prolifically bordering the grass plains to the south of Balamuk. Here the trees are shorter, have broad crowns, are often windswept and of poor form (Fig. 5). The larger trees occur on better drained sites. However, it will tolerate flooding as trees bordering the grass plains bear flood marks 80-90 cm up the trunk. This flooding lasts up to 5 months of the year. Other species of acacia are absent from these flooded sites and nearly pure stands of Melaleuca species occur frequently on such sites.

Fig. 4. Typical habitat of A. auriculiformis on the banks of Bensbach R. north of Balamuk

Fig. 5. Single A. auriculiformis standing on the edge of open flood-plains.

2.7 Collections on Bensbach River System

A total of 97 trees were sampled from 6 sites. Some of the sites are fairly close together with little or no variation in site characteristics. Once collections commenced on the mature crops it was found that the insect attack was considerably more severe than first anticipated a fortnight earlier. It appeared that early parasitisation of the immature green seed caused limited seed loss. However, as the crops start maturing with fully developed green seed turning black, the caterpillars emerge in their masses and eat the seed. (Figs 6 & 7). An attempt was made to collect green seed before most of it was eaten but this seed shrivelled when dried. The insect problem was rather unfortunate since there was an abundance of crop material yet, as can be seen by the seed weights and viability figures the yield is poor particularly in the Bensbach area. Seedlots 16104 and 16105 could be considered sub-provenances as the trees grow on similar site conditions with less than 10 km separating them.

Fig. 6. A. auriculiformis seed legume showing severe insect attack.

Fig. 7. A. auriculiformis legume opened to show seed eaten.

2.8 Individual collection site details

Seedlot: 16101. 4 km north of Bensbach Lodge

A total of 16 trees were sampled of which 6 went into a bulk seed sample in the field. This is a site from which a number of collections have been made in the past. The site is drier than the others with a number of large trees growing in the area, approximately 1 km from the river.

Seedlot: 16102. Dog Track, north of Bensbach

A total of 21 trees were sampled. A number of other trees were also sampled but yielded no seed. Many of the trees grow along the river bank or in large populations along the edge of grassed flood plains in asssociation with Melaleuca. A high degree of flooding occurs in the wet. Trees have generally large open crowns though on better sites attained good single-stemmed form as in the case of Figure 8. Abundant pin-head size root nodules were located and collected from just below the soil surface especially in moist sites.

Fig. 8. One of the best A. auriculiformis trees seen in the Dog Track area. 26 m tall.

Seedlot: 16103. 1 hr down river from Balamuk on the Bensbach River (Iramb)

A total of 12 trees collected from, a number of which yielded less than 10 grams . This site was the harshest site we encountered subject to severe waterlogging and hot winds prior to the rains. Soils are heavy cracking clays with poor drainage and pH:4.5. The trees growing on the edge of this grassed flood plain were of poor form, open crowns and short boles. This seedlot together with 16104 and 16105 was collected with the aid of a boat hired from the Bensbach Lodge.

Seedlot: 16104. ½ hr south of Balamuk on Bensbach River. (Karmuben)

A total of 14 trees. See seedlot 16105 for description.

Seedlot: 16105. Balamuk area on Bensbach River.

A total of 23 trees. Seedlot 16104 and this seedlot had similar habitats along the river and were separated by a distance of ± 6 km. Most trees followed the bank of the river forming a dense pure stand. Many trees were over 20 metres tall with reasonably erect habit though normally branching 1/8-1/4 trunk height (Figs. 9,10 & 11).

Seedlot: 16114. Deer Farm Junction, between Bensbach and Balamuk.

10 tree bulk collection made from mainly saplings growing round a dam wall built in 1978. There may in fact be some A. mangium influence in the population as some of the leaf characteristics resembled this species. There is also doubt on the origin of this population in light of the fact that there had been earth moving works in forming the dam wall on which the trees were growing.

Fig. 9. Typical habitat of A. auriculiformis growing as a pure stand flanked by the Bensbach River and open flood-plains.

Fig. 10. A. auriculiformis on the Bensbach River - Seedlot 16105 showing typical short bole and large branching crown to 22 m tall.

Fig. 11. A. auriculiformis on the Bensbach River - Seedlot 16105.

2.9 Collection sites south of Morehead

Seedlot: 16106. Approx. 2 km north of Mibini village

Collection from 38 trees. This population of A. auriculiformis was the most impressive stand sampled comprising trees of consistently good form with clear straight boles and a fairly dense stocking (Fig. 12). The stand is in a moist swamp bordering melaleucas on the one hand and woodland savannah on the other and forms part of the Morehead River system. Crops both here and to a lesser extent at seedlot 16107 had less insect damage but this varied considerably between trees. In addition crops maturation varied over the crown from immature to shedding (Fig. 13). This might be all very well as a survival mechanism but it is most frustrating for a seed collector! Trees growing on the drier woodland sites generally had more mature crops. Root nodule samples were taken.

Fig. 12. A. auriculiformis at Mibini - Seedlot 16106 showing excellent form, 32 m tall, 58cm dbh.

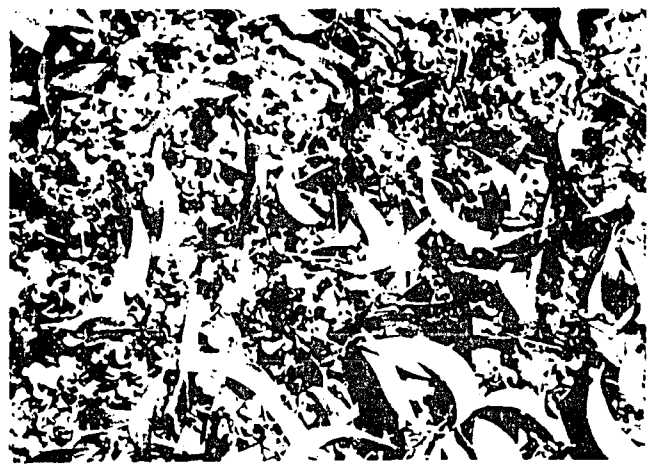


Fig. 13. A. auriculiformis legumes at various stages of development from a single tree.

Seedlot: 16107. Old Tonda Village

23 trees collected from a population of about 80 trees. The trees are not as well formed as at Mibini but again form part of the Morehead River population which is only about 4 km away.

Seedlot: 16108. North of Mari Village on the coast

Bulk collection was made from 8 trees. This is an unusual site in that it is quite separate from any other known populations and is not linked to any drainage systems. The stand comprises short, open-crowned trees to 10 metres tall in a small scattered population (Fig. 14). Soils are heavy cracking clays seasonally waterlogged and about 500 metres from the coast. The crop though small was starting to shed, but had very little insect attack. This population had not been previously sampled.

Fig. 14. A. auriculiformis at Mari - Seedlot 16108

Fig. 15. A. auriculiformis - woodland form south of Tonda village

Fig. 16. A. auriculiformis felled at Mibini. Note heartwood.

2.10 Other species from which provenance collections were made

Acacia aulacocarpa

Occurs infrequently in the mosaic of savannah woodland and monsoon forest. This species shows considerable promise with specimens observed to 30 m (Fig. 17). Two populations were sampled. One west of Morehead where it formed a fairly pure stand on the edge of monsoon forest. Seed crops were undamaged by insect attack (Fig. 18) and yielded 5 kg from 14 individual trees. The seeds must be black and pods brown and not green before collection. Seed may be retained in the pod on the tree for 1-2 weeks even after they open. The second site south of Keru was less fruitful. Trees were scattered along the road in monsoon forest. No other populations were located with crops.

Fig. 17. A. aulacocarpa north of Tokwa in Monsoon forest. 30 m tall.

Fig. 18. Mature A. aulacocarpa legumes showing black seed.

Acacia leptocarpa

Slender trees to 14 metres growing on infertile soils on dry ridges (Figs 18 & 19). Seedlings have the ability to re-shoot after fire as in the case of A. crassicarpa (Fig. 20). Seeds ripen and shed very quickly making the timing for such collections difficult. Two bulk collections were made on the road south of Morehead. Seedlot 16109 was a bulk collection of 9 trees from old Tonda Village, whilst seedlot 16110 comprised a 17 tree bulk from north of Mibini.

Fig. 19. A. leptocarpa 14 m tall south of Morehead.

Fig. 20. Habitat of A. leptocarpa south of Morehead.

Fig. 21. A. leptocarpa seedling re-shooting after fire. Note large horizontal root system.

Eucalyptus pellita.

3 provenance collections were made from a total of 30 trees. One collection was made south of Keru whilst the other two were made north and south of Kiriwa. Seed material from the Western Province has not been made available in the past apart from a 3 tree collection from Keru in 1986. The trees grow on the edge of monsoon forests and are widespread around Kiriwa.

Fig. 22. A. crassicarpa in open dry woodland situation after fire. 22 m tall.

Fig. 23. Camp site at Mibini.

Fig. 24. A. auriculiformis legume material drying in the sun prior to threshing.

Fig. 25. A. auriculiformis material ready for threshing using a mobile petrol driven thresher.

List of seed collections apart from A. auriculiformis

Seedlot no.	Species	Lat.	Long.	Alt. (m)	Tree Nos.
16112	A. aulacocarpa	8°42'	141°34'	30	14
16113	A. aulacocarpa	8°35'	141°45'	30	10
16109	A. leptocarpa	8°55'	141°33'	40	9 Bulk
16110	A. leptocarpa	8°48'	141°38'	45	17 Bulk
16146	A. leptocarpa x A. auriculiformis	8°55'	141°33'	40	3
16122	E. pellita	8°20'	141°32'	50	10
16120	E. pellita	8°36'	141°45'	30	9
16121	E. pellita	8°30'	141°25'	45	11
16118	E. brassiana	8°06'	141°43'	37	6 Bulk
16119	E. brassiana	8°49'	141°20'	20	3
16115	M. symphyocarpa	8°45'	141°38'	25	10 Bulk
16116	M. brassii	8°20'	141°32'	50	5 Bulk
16111	M. acacioides	9°11'	141°42'	10	5 Bulk

2.11 Suggested additional collection sites in PNG

For anyone considering collections from the broader geographical range of A. auriculiformis, it is important to consider the possible genetic gains, the cost of operating under more trying conditions, the limited numbers of trees and subsequent seed crops. A list of possible sites not sampled on the collections are included:

Bensbach River system north of Bensbach Lodge and the area around Weam
Morehead River system using a boat
Oriomo River
Binaturi River
Pahoturi River
Wassi Kuosa River
Fly River near Suki
Brown River near Port Moresby
Irian Jaya, and other islands in Indonesia

3. ACACIA AURICULIFORMIS SEED COLLECTIONS CAPE YORK PENINSULA, NORTH QUEENSLAND 2 SEPTEMBER TO 28 OCTOBER 1987

3.1 Summary

During the 8 week collection trip, 11,300 km were covered from Canberra to the top of Cape York. 14.4 kg of Acacia auriculiformis seed was obtained after cleaning, from 6 localities and 36 individual trees. During our absence a bushfire at the Wenlock River destroyed 25 single tree collections while sun drying. 20 of these were from 2 other localities and 5 were from 3 of the 6 localities not destroyed.

3.2 Party Jim Moriarty & Glenn Tomlinson CSIRO

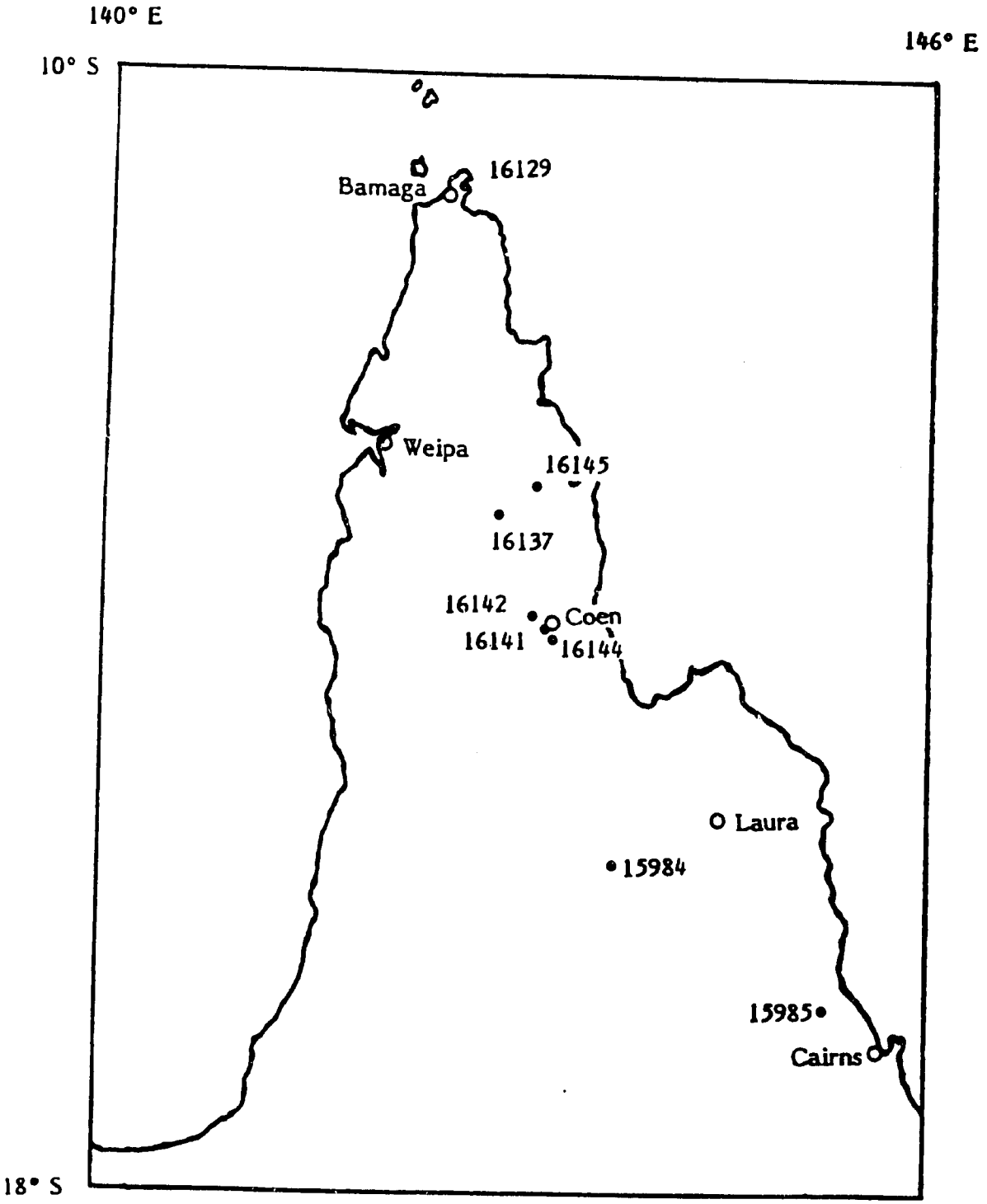
Esben Scholer, Danida Forest Seed Centre
Denmark Until 28 September

Douglas Poa, Ministry of Mines, Energy, Forestry & Conservation
Solomon Islands Until 28 September

3.3 Introduction

The occurrence of Acacia auriculiformis in Queensland ranges from near the top of Cape York Peninsula to about 16°50'S although in this report Cape York Peninsula is considered to be that part of Queensland north of 16°S. All seed collections were made on the Peninsula (Map 4 shows the localities).

Acacia auriculiformis in Queensland is most commonly of riparian distribution but occasionally occurs in rainforest and windswept woodland on coastal sand dunes. The species occurs on most river systems in the Peninsula. It is common scattered along rivers, streams or drainage lines but in some areas forms stands on floodplains or poorly drained areas adjacent to rivers.



Map 4. A. auriculiformis collection sites, north Queensland 1987.

Seed crops displayed considerable variation both in abundance and maturation, between and within localities. At most locations crops were moderate, a few were reasonably heavy (Wenlock, Coen & Morehead Rivers) and several large populations were sterile. Seed maturation showed no obvious trend from north-south or east-west but seed generally matured on the drier sites before those that had access to underground water. Because of the difference in times of maturity of seed crops within the one site, it was necessary to recollect in some cases after allowing time for the less mature crops to mature.

The form of sampled trees was very similar throughout the Peninsula except for a population of about seven spreading trees at Fly Point growing on sand dunes and frequently exposed to strong winds. Generally the trees on wetter sites were larger, those growing along the larger creeks and rivers in gallery forest were of better form but when exposed to full sunlight (e.g. centre of stream bed), were often of very poor form. Taking into account the environmental factors, there was no noticeable difference between the general form of trees from different localities.

3.4 Seed collection and cleaning

Most trees were collected by removing limbs with a .308 calibre rifle. Other methods of collection included the cutting of branches with a bow saw, pulling branches by rope with a vehicle and felling. legumes were sun dried for 2 or 3 days, then threshed and sieved. The threshed and sieved samples were then bagged and ready for processing with the Tree Seed Centre's seed cleaning equipment in Canberra.

3.5 Hybridism

Hybridism between Acacia auriculiformis and other acacias (possibly A. leptocarpa and A. mangium although these were not present) was recorded at four disjunct sites on the Peninsula. In form these hybrids were indistinguishable from typical A. auriculiformis. Some gene interchange with other acacias was suspected in several A. auriculiformis trees. Specimens of these, together with the hybrids are in the process of being determined by taxonomists.

3.6 Evidence of browsing of acacias

Acacia holosericea and A. oraria were the only species observed to be consistently browsed by cattle. Other species, more commonly A. auriculiformis, A. polystachya and A. leptocarpa were occasionally browsed, sometimes quite severely. A prostrate form of A. humifusa occurs on sand in a few different habitats. It may be worth testing for palatability and nutrient value as it survives dry periods and binds the soil far better than the grasses.

3.7 Future seed collections

Possible future collection sites are listed with latitudes and longitudes given to the nearest 10 minutes. Collection from these areas would provide, combined with the present seedlots, a reasonably complete sampling of this species in Queensland taking into account the environmental factors as well as the geographic range of the species. There are many more smaller potential collection sites not listed.

Weipa region	Numerous creeks & rivers	12°30'S	141°50'E
Moreton PO	Wenlock River	12°30'S	142°40'E
Port Stewart	Stewart River	14°00'S	143°40'E
'Yarraden'	Holroyd River	14°20'S	143°00'E
'Kalpower'	Normanby River	14°50'S	144°10'E
WNW of Laura	Kennedy River	15°30'S	144°10'E

14 collections from 11 other promising species were also made. The following table lists these collections. Some very promising species in the Peninsula of which

no seed had previously been collected were Acacia fleckeri, A. homaloclada syn. Racosperma paniculatum (F.Muell.) Pedley, Acacia pubirhachis, A. leptostachya and an undescribed Acacia species near Laura.

List of seed collections apart from Acacia auriculiformis

Seedlot	Species	Lat. (° 'S)	Long. (° 'E)	Alt. (m)	Tree Nos
16126	Acacia platycarpa	10 54	142 24	20	13 Bulk
16127	A. rothii	10 57	142 22	20	13 Bulk
16128	A. crassicarpa	11 02	142 22	20	13 Inds
16130	A. platycarpa	10 44	142 27	10	12 Bulk
16131	A. simsii	11 39	142 33	90	12 Bulk
16132	Sinoga lysicephala	11 39	142 33	90	12 Bulk
16133	Grevillea pteridifolia	11 39	142 33	90	85 Bulk
16134	A. brassii	11 36	142 35	120	43 Bulk
16135	A. mangium	12 02	142 33	60	1 Ind
16136	A. aulacocarpa	13 09	142 48	40	2 Inds
16138	G. pteridifolia	12 41	143 20	20	100 Bulk
16139	G. pteridifolia	12 44	143 13	150	105 Bulk
16140	A. oraria	13 57	143 11	170	25 Bulk
16143	A. holosericea	13 55	143 03	170	50 Bulk

3.8 Environment

Climate

The area has a monsoonal type climate. The greater part of the Peninsula has a mean annual rainfall exceeding 1000 mm and ranging up to nearly 1800 mm at Cape York and near Cooktown. The rainfall has a strong summer dominance and is highly reliable. Temperatures are high with an average daily summer maximum ranging from 30-32°C with an average winter minimum of 15-21°C. Frosts are only rarely recorded in the southern central parts of the Peninsula and are absent

elsewhere (Pedley & Isbell 1971). Frosts are absent from the entire distribution of Acacia auriculiformis (Pedley & Isbell 1971). Table 1 shows climatic data for some meteorological stations close to the Acacia auriculiformis collection sites.

Soils

Soils of the Peninsula range widely in morphology but almost all have low levels of plant nutrients, with phosphorous in particular being extremely low throughout. The overall low soil fertility status probably limits the range of plant communities that might be expected under the generally favourable rainfall regime, and it seems likely that soil water status, which is influenced by soil profile depth and texture as well as by topography and climate, is the most important factor influencing vegetation on Cape York Peninsula. This edaphic factor determines both community structure and floristics in many areas. Soil drainage is obviously of considerable importance, because due to the marked seasonality of the rainfall, many sites become waterlogged for several months during the wet season (Isbell 1980).

Vegetation

The most dominant and widespread vegetation in the Peninsula is eucalypt woodland. Melaleuca woodland and heath occupy different regions of the Peninsula in large areas, substantial areas of rainforest occur in three regions while mangroves and grasslands occupy only small areas. Gallery forest or forest dependent on the waterways is common throughout the Peninsula and includes many genera but some of the more dominant ones are Melaleuca, Acacia, Lophostemon, Buchanania, Blepharocarya, Nauclea and Dillenia. It is in the gallery forests of creeks and rivers running through eucalypt woodland that most populations of Acacia auriculiformis occur.

A feature of the region is that several of the communities may occur in different structural forms depending on edaphic and climatic factors (Pedley & Isbell 1971). This is typical of the communities in which Acacia auriculiformis occurs.

34 species of Acacia occur in the Peninsula. Of these, 25 are trees, 10 are shrubs and one a vine. One species, A. calyculata assumes tree and shrub form. Only the mangrove and grassland communities are devoid of acacias and they comprise an insignificant portion of the Peninsula.

3.9 Notes on the localities of seed collections

Seedlot: 16129. Fly point, 1.1 km SE of Somerset
Collections from one tree yielding 105 g

A population of about seven spreading trees to about 8 m growing on sand dunes. Collections from other trees could possibly be made in the future but most of them are growing very close together and the trees in this relatively isolated population would probably show little genetic diversity.

Seedlot: 16137. Piccaninny Creek, 22 km NNE of 'Wolverton'
Collection from 3 trees yielding 1229 g

Scattered along a dry, seasonal creek bed and banks. Trees were mostly infertile or had very light crops of fruit. About 5 more trees could be collected in the future if they produce sufficient seed.

Seedlot: 16141. Coen River, 2 km SW of Coen
Collection from 3 trees yielding 691 g

Common along river bed and banks in gallery forest. Most of the trees had only very light crops of fruit and further collection is quite feasible, about 5 more trees could be collected at this site if they produce sufficient seed. One tree was lost in the fire.

Seedlot: 16142. Coen River, 15 km WNW of Coen
Collection from 7 trees yielding 2208 g

Common along river bed and banks in gallery forest. The crops were mostly moderate to heavy. 3 trees were lost in the fire, these or others nearby could be collected from in future years.

Seedlot: 16144. 11 km S of Coen
Collection from 3 trees yielding 500 g

Scattered along a dry, seasonal creek and drainage lines. Trees had mostly moderate crops but a couple were left a little late for collection and a couple (beside a dam) were still too immature for collection. About 5 more trees could be collected in the future if sufficient seed is produced and the time of collection is more suitable.

Seedlot: 16145. Wenlock River, 55 km SW of Lockhart
Collections from 20 trees yielding 9690 g

Common in bed and on banks of seasonal river in gallery forest and sometimes on floodplains in eucalypt woodland. Most trees had moderate to heavy crops. The river was well sampled over a distance of about 2 kilometres.

Fig. 26. Acacia auriculiformis Rifle Creek, Mount Molloy

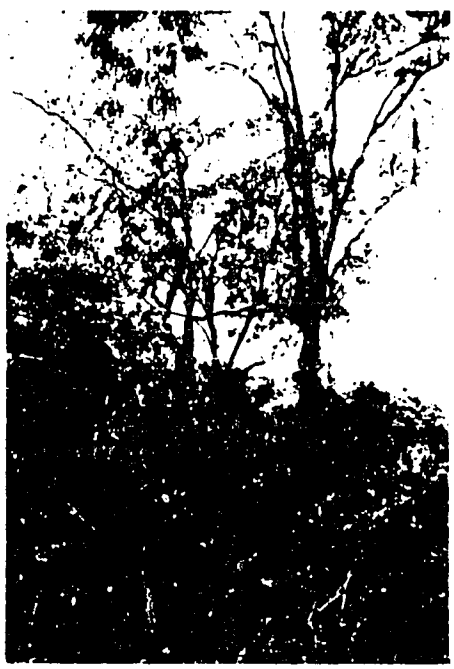


Fig. 27. Acacia auriculiformis Rifle Creek, Mount Molloy

Fig. 28. Acacia auriculiformis Near Stone Crossing, Weipa region

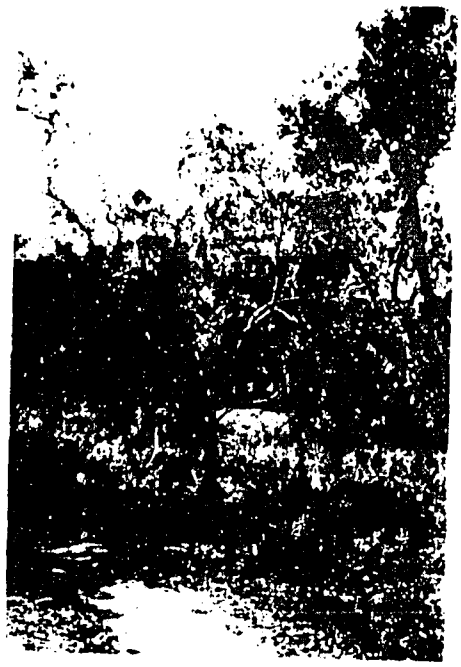


Fig. 29. Acacia auriculiformis
41 km E of Weipa

Fig. 30. Acacia auriculiformis
41 km E of Weipa

4. ACACIA AURICULIFORMIS SEED COLLECTIONS FROM ARNHEM LAND AND THE TOP END OF THE NORTHERN TERRITORY 2 September to 15 October 1987

4.1 Summary

Over 6,000 kilometres, traversing 24 Northern Territory Top End river systems, were travelled. Acacia auriculiformis was sampled from fourteen of these rivers, totalling 141 trees yielding 26,135g of seed. This is comprised of 17 seedlots with 109 individual seedlots.

The collecting party consisted of:

Maurice McDonald, Australian Tree Seed Centre, CSIRO, Canberra A.C.T.
Graham Barnes, Technical Assistant with Conservation Commission, N.T.
Phil Rout, Horticultural Apprentice with Conservation Commission, N.T.

4.2 Introduction

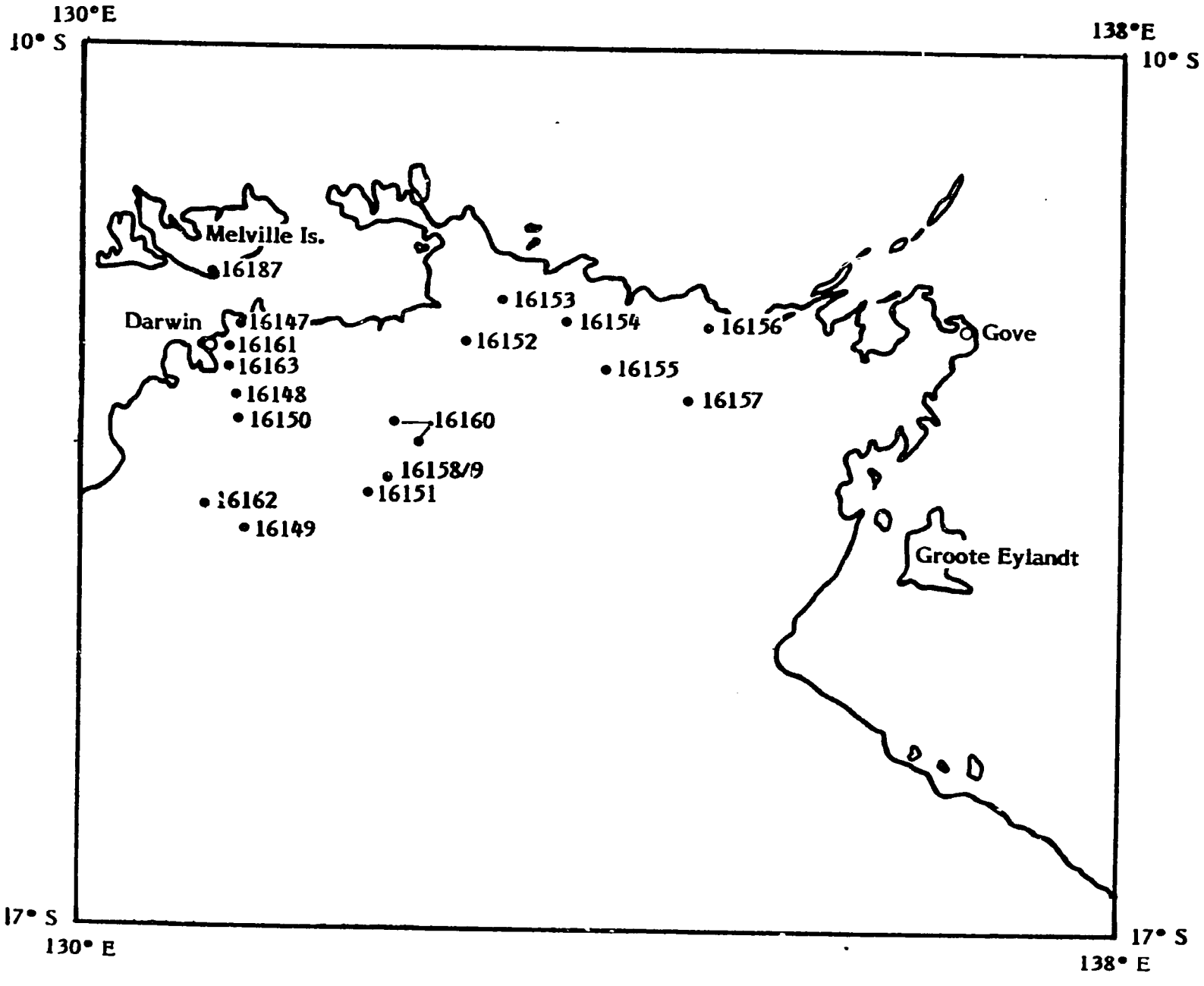
The collections were commenced on 2 September 1987 with the last collection on 15 October 1987. It was possible that the collections could have commenced one to two weeks earlier and extended one to two weeks beyond the 15 October. This allows a relatively lengthy time for seed collections of A. auriculiformis in the Northern Territory. This is due to its relatively wide distribution; its apparent continual flush of flower production (with up to three sequential maturations of seed crop); and inter-river system variation in flowering times.

In the Northern Territory A. auriculiformis is generally a riparian species, however its habitat preference also includes the periphery of saline flats, behind coastal foredunes, floodplains, springs and on the periphery of lagoons (saline and freshwater). It is a common associate of the relict gallery rainforests of the Northern Territory.

The soil types range from alkaline coastal sands with a pH of 9.0 to heavy waterlogged clays with a pH of 4.5.

Climatic data representative of the collection locations is shown in Table 1.

Map 5 shows the location of the seedlots collected. The Data Sheets for the collections are in Appendix 3.



Map 5. A. auriculiformis collection sites, Northern Territory 1987.

4.3 Collection site details of A. auriculiformis:

Seedlot: 16147. Noogoo Swamp
A collection of five individuals.

The dense, 100 m vegetation zone that fringes the Noogoo Swamp tidal salt-pan system is dominated by pure stands of A. auriculiformis, (see Fig. 31).

Fig. 31. Noogoo swamp is a saline flat and is seasonally inundated by spring tides and also during the wet season.

The pure stands were usually composed of three to four mature trees with younger trees forming even-aged 'thickets'. The trees were of generally poor form with an average height of 10m.

Although large numbers of specimens were present, seed crops were erratic and considerable reconnaissance was required to obtain seed. Immature seed pods were present on many of the trees. Green Tree Ants (Oecophylla smaragdina) were abundant throughout the population. (These aboreal ants construct their nest of leaves in the crown foliage and will attack intruders that cause the slightest disturbance).

This provenance is recommended for trials in saline situations. The vegetation zone closest to the saline flat consisted of a pure band of a mangrove species (to 2m).

Seedlot: 16148. Manton River (a tributary of the Adelaide River)
A collection of 10 individuals

A. auriculiformis dominates the riparian forest of the Manton River. The trees have short boles with prominant crowns and thus are of relatively poor form (see Fig. 32). The pods were at all stages of maturation, however the bulk of the seed crops was mature. At this site the species is restricted to the sandy clay river banks and overflow banks.

Fig. 32. A broad crowned specimen at Manton River.

Seedlot: 16149. Douglas River (a tributary of the Daly River)
A collection of 10 individuals.

This population extends from the river's edge up the four metre high banks to ca. 100m beyond the banks (see Figs. 33,34). The species becomes more numerous and

decreases in stature with distance from the river. The ten individuals collected were from a pure stand, along a minor seasonally-dry tributary. One sterile individual near the mouth of the tributary measured 20m with a dbh of 100cm and was of good form.

The species avoided sandy levees and tended to occur on the black alluvial clay of this river system.

Fig. 33. A 10m specimen ca. 100m from the river's edge.

Fig. 34. Bark.

Seedlot: 16150. Coomarlie Creek (a tributary of the Adelaide River)
A collection of one individual.

Although A. auriculiformis was present in reasonable numbers, two factors led to only one individual being collected. The site is a popular roadside stop and camping area (limiting collection with a high powered rifle); and - the specimen from which the seed was collected (2 kg), had fallen across the creek bank (see Fig. 35) allowing ready access to a heavy seed crop.

Unlike most creeks and rivers in the area Coomarlie Creek was still flowing. The fine textured clay was waterlogged (mid dry season).

Fig. 35. A. auriculiformis - with half its root system exposed.

Seedlot: 16151. Mary River
A collection of eight individuals.

At this section of the Mary River A. auriculiformis is not a dominant component of the riparian association. Bamboo, (Bambusa arnhemica), and relict rainforest species were more common.

Several trees of good form were observed, attaining 15-18 m in height.

Seed maturity ranged from the seed having already been shed to seed dangling from the pod by its aril with no apparent gradient between stages. As with most populations observed, a proportion of the seed crop was still green and developing. This would appear to suggest that A. auriculiformis has the ability to set fruit from at least two flowerings per season.

Seedlot: 16152. East Alligator River

A collection of 10 individuals.

Large pure stands of A. auriculiformis are present at this site. The hydrology of this floodplain favours the establishment of a broad zone of the species. About one kilometre of treeless floodplain separate the stand from the East Alligator estuary.

The stand is an open woodland and tree form is characterized by short boles and prominant crowns, with some very large boled specimens present (see Figs. 36 and 37).

Fig. 37. Habit of the dbh 105cm specimen.

Fig. 36. A large specimen at East Alligator River (dbh 105 cm)

Green Ants (Oecophylla smaragdina) were prolific, seed crops abundant, and seed predation negligible.

It is expected that this provenance would be relatively tolerant to saline and waterlogged conditions.

Seedlot: 16153. Cooper Creek
A bulk collection of five trees.

Colonising the banks and rises of the creek bed, A. auriculiformis is a co-dominant component of the riparian vegetation.

Most trees were of relatively poor form with short boles and prominent upright branching crowns. Flowers and seed were at all stages of development from shed seed to flower buds still forming.

Melaleuca argentea is also a very common species along this creek. Unlike A. auriculiformis, its habitat is the sandy areas of the creek.

Green Ants (Oecophylla smaragdina) were again prevalent and some relationship may exist between presence or absence of ant colonies and seed crop yields (i.e., presence of ants = a lack of predation of the seed pods by other insects = good seed yield).

Seedlot: 16154. Goomadeer River
A collection of 10 individuals.

This population exhibits trees of impressive stature and form. In this river system A. auriculiformis is co-dominant with M. argentea along the banks and billabongs. The mature and over-mature age-classes, with open spreading crowns and sparse foliage, are well represented (see Fig. 38). Large dead individuals are also present.

The river bed here is wide and A. auriculiformis colonises the steep clay rises and banks. M. argentea also attaining 20-25m, occurs on the lower, sandy terrain of the river bed.

Maturation of the seed crops was at an optimal stage for collection and relatively uniform throughout the population.

Fig. 38. An impressive specimen (25m tall, 80cm dbh) growing at Goomadeer R.

Seedlot: 16155. Mann River
A collection of four individuals.

While A. auriculiformis is a common component of the species-rich, riparian rainforest alliance, some small pure stands do occur. Melaleuca argentea is dominant along the more sandy sections of the river. Mature specimens are of reasonably good form, attaining heights of 18-20m with a 5-6m bole and 50cm dbh (see Fig. 39,40).

Seed crops were sporadic and many individuals were sterile while others had completed seed shed.

Access to upstream sections of the river was limited due to an encampment of about 100 aborigines present for ceremonial purposes. While permission was obtained from the leaders of the tribe to use a rifle to collect seed, we maintained a safe distance from the camp while collecting. This limited the number of trees able to be collected. 'Gaybal' was the local name for A. auriculiformis. When asked about its uses they remarked that it was a good firewood. They were keen to warn us of the 'big croc' that inhabited a waterhole of the river.

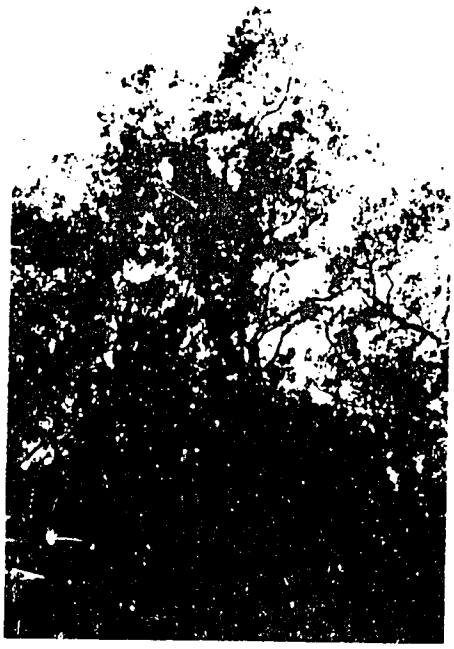


Fig. 39. A mature Mann R. specimen.

Fig. 40. The dbh was 51cm

Seedlot: 16156. Yarunga Creek
A bulk of six trees.

The stature and form of this population was by far the most impressive encountered. A. auriculiformis attains excellent form and heights of up to 25m (see Figs. 41, 42 and 43) but is uncommon in the riparian forest along this relatively small creek.

Although it was mid dry season the creek was still flowing. The creek vegetation is dominated by Melaleuca leucodendra with occasional occurrences of several rainforest species including A. auriculiformis.

Fig. 41. A 25m tree

Fig. 42. An 8m bole

It was unfortunate that seed crops were rare and only a bulk seed collection could be managed.

Our guide to the site was John Djatjmrrilil (President of the Ramingining settlement). John was an obliging fellow and sought permission for us to collect from the 'old man' who 'owns' that part of the country. Permission was granted for collections upstream from the crossing. Collecting downstream was forbidden as sections of the creek were sacred and perhaps not coincidently contained 'big' crocodiles.

Howard Amery, an advisor with the community, translated the following local aboriginal names for A. auriculiformis.

. 'Gaybal' or 'Muawngga' by the Djambarrpuyngu tribe and
. 'Miriwurr' by the Djimang tribe which is the main tribe and dialect of the region.

Fig. 43. An over-mature specimen of A. auriculiformis on Yarunga Creek.

Seedlot: 16157. Ramingining/Arafura Station

Gullies that cut into the 80-100m high scarp along the western edge of the Arafura Swamp, (Muckaninnie Plains), support remnant rainforests. These are often very small populations.

Only two individuals of A. auriculiformis were present at this site. Seed was collected from one specimen with an immense spreading crown (see Figs. 44, 45). Whilst it is expected that seed collected from this individual will have a narrow genetic base it is considered a 'plus' tree and of high conservation value.

Fig. 44. Lateral branches extended into the canopies of nearby associates.

Fig. 45. The dbh was 52 cm.

Seedlots: 16158/9. Gerowie Creek (a tributary of the South Alligator River system) A collection of 12 individuals and 10 bulked.

A. auriculiformis is a common component of the riparian forest. They are trees of moderate height and fair form.

One month earlier this seed crop had a small proportion of seed crops were mature with the majority green and immature. This highlights the variation between river systems in flowering and subsequent seedling times.

Gerowie Creek is a narrow flowing streambed which meanders through a heavy clay floodplain. Further downstream on the South Alligator River the only surface water was stagnating waterholes.

The palatabity of A. auriculiformis was evident at this site. Branches brought down from the trees during seed collection were stripped of their foliage by stock from nearby Goodparla Station.

Seedlot: 16160. South Alligator River
A collection of 10 individuals.

This seedlot is represented by two collections. The first collection of three individuals was made at the crossing on Kakadu Highway on the 10 September 1987 and these were 20km upstream from the Old Darwin-Jim Jim Road collections that were made on the 8 October 1987.

A. auriculiformis at the Kakadu Highway section of the river has a very sparse distribution. The river bed is very sandy and dominated by Melaleuca argentea and Bambusa arnhemica. A. auriculiformis occurs where clay banks outcrop along the riverbed. One impressive specimen was present (see Fig. 46). Predation of the seed crops also made collecting very difficult.

Fig. 46. A lone 21m specimen.

At the Old Darwin-Jim Jim Road crossing of the South Alligator River, A. auriculiformis is present in good numbers. Mature trees are present with spreading crowns (see Figs. 47 and 48).

Fig. 47. A 16m specimen.

Fig. 48. The 53 cm dbh bole.

This provenance had a very lengthy seeding period with what appears to be three discrete flushes. Surrounding river systems had long since shed their seed crops.

Seedlot: 16161. Howard Springs (becomes a tributary of the Howard River)
A bulk collection of 12 trees.

Rainforest, with A. auriculiformis as a conspicious component, is present at this popular recreational area. The population consists of small to medium sized trees which in places form spindley 'thickets'.

Picnic areas present have been planted out with A. auriculiformis as an ornamental. The seed source of these ornamentals is not known and contamination of the endemic gene pool may occur here.

As with many of the provenances sampled, terminal foliage had bud crops forming.

Seedlot: 16162. Reynolds River
A collection of 10 individuals.

At this site A. auriculiformis is a very common component of the riparian forest and the floodplain open woodland (see Figs. 49 and 50). The habitat of the species has a direct influence on the habit of the species.

Fig. 49. (above) Floodplain individual.

Fig. 50. (left) Riparian stand.

Browse lines were evident on low crowns (Fig. 51).

Fig. 51. A browse line on the Reynolds R. floodplain population.

Seedlot: 16163. Elizabeth River
A collection of 10 individuals.

Trees with dense upright crowns dominate the riparian forest.

This was the only location sampled that had A. leptocarpa as an associate. Its occurrence was usually upslope from the riverbed. A small amount of seed was obtained from a hybrid A. auriculiformis x leptocarpa. (See Appendix 3, S16164, 12g only). The habit of the hybrid is shown in Fig. 52.

Fig. 52. A. auriculiformis x leptocarpa hybrid is on the left.

The palability of the species to cattle was confirmed by observations at this site (Fig. 53).

Fig. 53. Well fed dairy cows were attracted to the foliage whilst collecting.

Seedlot: 16187. Cape Gambier, Melville Island
A collection of seven individuals.

This provenance came from a coastal foredune system. The population extends to the edge of the beach. They had a low shrubby habit.

(This collection took place the week following my depature from Darwin. It was carried out to compliment the collections, as Merv Haines, a forester with the Conservation Commission of N.T., wishes to carry out a range wide provenance trial of A. auriculiformis on Melville Island. He intends to have individual seedlots represented).

4.4 Reconnaissance of the Cobourg Peninsula

Following the collection at Cooper Creek it was intended to sample some populations of the Cobourg Peninsula.

Three populations were located:

* Wai Wau Lagoon is south of Brogden Point on the east coast of the Peninsula. The riparian rainforest of this small creek has some excellent specimens (see Fig. 54).

Fig. 54. a Wai Wau specimen

Few bore seed crops. Those that did had small amounts of immature crops that were invariably galled. Seed collection was not possible.

* Smith Point is a north west extremity of the Peninsula. A. auriculiformis is present in extensive pure stands which occupy the swales of the dune system and fringe the estuary (see Fig. 55).

Fig. 55. The Smith Point estuary. A highly saline environment with A. auriculiformis on left bank and mangroves on right bank.

The trees were of relatively poor form with seed crops negligible. When seed pods were present they were galled, poorly formed or with seed shed. The aeolian sand over a limestone substrate had a pH recording of 8.0-9.0.

* Danger Point is a northern extremity of the Peninsula. Limestone parent material is also present on this headland. A. auriculiformis fringes a saline lagoon and occurs with Casuarina equisetifolia ssp. equisetifolia on the foredunes where it is reduced to a shrub near the high water mark (see Fig. 56).

Fig. 56. A. auriculiformis occurring as a 2-3 m shrub close to the high tide mark.

A population at the rear of the foredune had small trees of good form present (see Fig. 57).

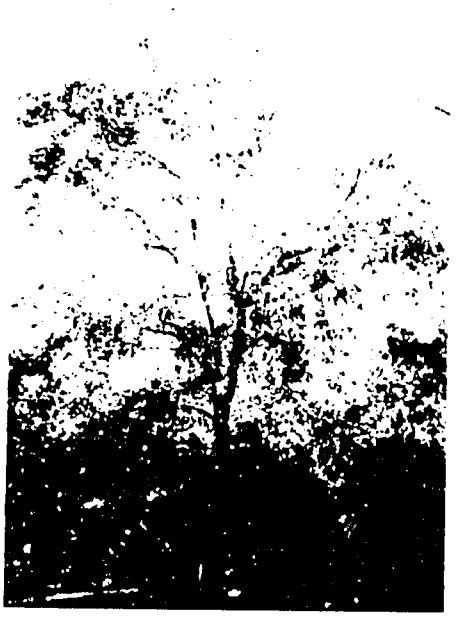


Fig. 57. An 8m rear foredune specimen on Danger Point.

Because of the saline and alkaline nature of these habitats, future collections of these populations is strongly recommended.

4.5 Reconnaissance from the Arafura Swamp to the Gove Peninsula.

The escarpment on the eastern edge of the Arafura Swamp (Muckaninnie Plains) supports remnant gully rainforests. The A. auriculiformis present among these forests were the most eastern populations encountered. River systems further east had A. leptocarpa replacing A. auriculiformis. When the aborigines of these these river systems were shown a specimen of A. auriculiformis they invariably took us to A. leptocarpa! (this is not surprising considering they refer to both species by the same name 'Gaybal').

4.6 Opportunistic seed collections.

Seed collections of other species occurring in the Top End/Arnhem Land region was also undertaken. These are shown in the table below.

Seedlot	Species	Lat.	Long.	No. of trees
16165	Sesbania formosa	13°01'	131°07'	4 bulked
16166	Casuarina equisetifolia	11°07'	132°20'	5 individuals
16167	Acacia torulosa	12°17'	134°25'	6 bulked
16168	A. aulacocarpa	12°19'	136°49'	15 bulked
16169	A. oncinocarpa	12°21'	136°43'	58 bulked
16170	A. difficilis	12°24'	135°44'	86 bulked
16171	A. latescens	12°24'	135°44'	23 bulked
16172	A. leptocarpa	12°28'	135°46'	7 bulked
16173	A. difficilis	12°55'	135°18'	35 bulked
16174	Sesbania formosa	13°03'	134°54'	6 bulked
16175	Sesbania formosa	13°09'	134°52'	5 bulked
16176	A. leptocarpa	13°14'	134°45'	8 individuals
16177	A. difficilis	13°14'	134°45'	10 bulked
16178	A. holosericea	13°14'	134°45'	4 bulked
16179	A. holosericea	12°25'	134°42'	4 bulked
16180	A. aulacocarpa	12°11'	134°18'	5 individuals
16181	A. umbellata	12°15'	134°20'	23 bulked
16182	A. plectocarpa	12°13'	134°03'	5 bulked
16183	Cathormion umbellatum	13°03'	132°19'	2 bulked
16184	Adenanthera pavonia	12°27'	131°03'	2 bulked
16185	Tamarindicus indica	12°06'	134°53'	5 bulked

4.7 Future seed collections of A. auriculiformis in the Northern Teritory.

Sites on the mainland yet to be sampled include:

* Finnis River
* Darwin River
* Wildman River
* West Alligator River/Kapalga Floodplain
* Blyth River
* the Cobourg Peninsula populations
* the gully rainforest populations along the eastern scarp of the Arafura Swamp

As well A. auriculiformis is known to occur on at least five Northern Territory islands:

* Groote Eylandt
* Elcho Island
* Millingimbi Island
* Croker Island
* Melville Island

ACKNOWLEDGEMENTS

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APPENDICES

Appendix 1

PNG Seed Data Sheets

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis

Seedlot No. 16101

Collection Locality: 4.0km N of Bensbach Lodge on the road to Weam, W.P., P.N.G.

Latitude: 08° 50'S Longitude: 141 ° 15 'E Altitude: 20 (m) Aspect: East to West Slope: Very gentle

Climatic Zone: Wet/dry tropics Met. Station:

Association includes: A. mangium; Melaleuca leucadendra, Eucalyptus brassiana

Geology and Soil: Heavy black soil - waterlogging pH: 5.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description Trees insect attacked	Seed wt (g)	No. viable seed/10g
BVG 891	*		21	40	A single stem tree, some lean in the open, few seeds	2	-
892	*		14	33	A tree with pronounced suppressed crown under paperbarks	71	117
893	*		20	30	A straight open grown pole tree, POOR CROP fire damage	7	55
894	*		11	26	A small tree beneath paperbark canopy, has mangium like phyllodes?	40	125
895	*		24	65	A dominant tree, open, crown depth is half tree height	50	267
896	*		10	18	Small tree with POOR seed crop	9	236
897	*		10	22	A well formed juvenile extremely straight with small crown	40	100
898			9	17	Single stemmed sapling of poor form growing with Melaleuca.	120	276
899		Roll 5	10	17	Sapling forked from 2m. Light seed crop, mostly insect attached	33	181
900		1 - 8	8	12	Sapling of poor form, edge of Melaleuca scrub. Light green - brown crop	75	300
901			3-5	6-10	BULK of 6 trees collected separately to the above from saplings with small green crops.		
						267	

Work supervised by: B Gunn/J Cole Date: 3 October 1987 Total: 712 grams

60

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Photos R5/13 - 17 crops at various stages showing parasitic damage.

Species: Acacia auriculiformis **Seedlot No.** 16102

Collection Locality: Dog track, North of Bensbach Lodge, following the river (travelling time of ± ½hr), Western Province, PNG

Latitude: 8 ° 48 'S **Longitude:** 141 ° 13 'E **Altitude:** 20 (m) **Aspect:** _____ **Slope:** Flat

Climatic Zone: Wet/dry tropics **Met. Station:** _____

Association includes: Mel. leucadendra; A. mangium (occasional); Barringtonia, rainforest scrub

Geology and Soil: Fine silty clays on alluvial plains. Also heavy clays. **pH:** 4.0-4.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
					BVG Largest tree noted in area of 909 - 912 was Ht 27m, Diam. 97cm, 4m clear bole - — large typical erect crown. Black/grey bark.		
BVG 902		R5/9	15	34	Poorly formed tree growing in a small clump near river. Green, pods. too immature	5	86
903		R5/10	19	47	Poorly formed tree, branching to the base, 100m from 902. Large green crop.	2	-
904	*		12	52	Large umbraceous tree branching from 1m. Green crops.	60	340
905	*		17	36	Single stemmed tree of poor form. Green crops.	15	203
906	*		15	50	Large umbraceous tree of poor form.	2	-
907	*	R5/11	19	39	Slender tree of good form growing on the edge of the Bensbach River. V. green crop	7	-
908	*		20	38	Tree of poor form, twisted trunk, light crown, growing on the edge of the river.	5	-
910	*		21	52	Large mature tree of mod. form, clear bole ½ Ht. As above. Very green pods.	8	133
911	*	R5/12	18	74	Large umbraceous tree growing on edge of forest thicket. Good green pods.	10	211
912	*		20	30	Single stemmed tree of average form. Some of the crop too immature.	5	-
913	*		17	40	Poorly formed umbraceous tree. Very poor crops, immature.	8	344
914	*		21	41	Tree of moderate - good form, single stem, small crown. Green crops.	10	224

Work supervised by: B Gunn/J Cole **Date:** 4-5 October 1987 **Total:** _____ grams

61

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16102

Collection Locality: Dog track, North of Bensbach Lodge, following the river (travelling time of ± ½hr), Western Province, PNG

Latitude: 08° 48 'S **Longitude:** 141° 13 'E **Altitude:** 20 (m) **Aspect:** _____ **Slope:** Flat

Climatic Zone: Wet/dry tropics **Met. Station:** _____

Association includes: Mel. leucadendra; A. mangium (occasional); Barringtonia rainforest scrub

Geology and Soil: Fine silty clays on alluvial plains. Also heavy clays. **pH:** 4.0-4.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 915	*		22	71	Large crowned tree forked from 1m. Green pods with orange arils	17	529
916	*		22	80	Large mature tree, forked from 2m, umbraceous. Very green crop.	1	-
917	*		18	41	Small tree with single bole for 4m. Light crop but fairly healthy	10	-
918	*		19	28	Small tree with single stem in Melaleuca bush. Small green crop.	1	-
919	*		21	45	Tree of good form, small crown growing 20m from 918. Green crop.	3	-
920			26	33	Slender tree of average form, light crown, small crop, green.	5	-
921		RS 24/25	23	58	Tree of good form, clear bole to 12m. Good green crop	32	312
922			10	30	Tree of very poor form, growing on edge of open flood plain. Mature pods.	85	429
923			20	72	Large poorly formed tree, large crown. Good green pods.	2	-

Work supervised by: B Gunn/J Cole **Date:** 5 October 1987 **Total:** 293 grams

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CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacua auriculiformis **Seedlot No.** 16103

Collection Locality: South of Balamuh (1hr) on the Bensbach River, locally referred to as Iramb, Western Province, PNG.

Latitude: 09 ° 00 'S **Longitude:** 141° 15 'E **Altitude:** 10 (m) **Aspect:** Flat **Slope:** Three hundred meters from the river bank.

Climatic Zone: Wet/dry tropics **Met. Station:**

Association includes: An almost pure stand of open woodland form with Melaleuca sp.; Barringtonia sp. growing adjacent.

Geology and Soil. A very harsh site seasonally waterlogged and exposed to hot dry winds. Soils heavy cracking clays. **pH:** 4.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
		R 5			Opposite this collection area is a large treeless plain.		
BVG 924	*		12	29	A single stem juvenile with some lean toward the light, modest upright crown.	34	130
925	*	f27	14	74	Old open grown, short 2m bole tree. Very few seeds.	12	244
926	*		12	38 51	d/1 @ ground level, short bole 2m, spreading crowns	10	225
927	*		12	46	d/1 @ 2m, ½ open growns- fire damaged	25	208
928	*		12	64	Old scarred 3 leaders @ 2m, ½ open grown	3	-
929	*		15	53	Reasonably straight 4m to 1st branch. Fairly wide crown.	65	247
930	*		10	30	A young tree surrounded by paperbarks	12	195
931	*		8	45	Tree damaged years ago: has 5 horizontal leaders.	2	-
932	*		11	53	Quad-stemmed @ 2m, wide spreading crown	12	152
933	*		9	29	Young tree leaning toward light/space	1	-
934	*		10	53	4 leaders @ 1.5m, upright crown.	2	-
935	*	f28 f30	17	82	Fairly open grown - huge crown branches	28	301

f31 habitat

Work supervised by: B Gunn/J Cole **Date:** 6 October 1987 **Total:** 206 grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No** 16104

Collection Locality: Karmuben, South of Balamuh, Bensbach River, Western Province, PNG

Latitude: 08 • 59 'S **Longitude:** 141 • 16 'E **Altitude:** 15 (m) **Aspect:** Forest adjacent to Riverbank **Slope:** NIL

Climatic Zone: Wet/dry tropics **Met. Station:**

Association includes: A fairly pure stand in parts intermingled with Melaleuca plus Barringtonia sp. 'Bush Mangrove'

Geology and Soil: Brown friable top soils, over deep clays **pH:** 5.5-6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description (R6? f1 = early morning discussion in the boat. f4 = crop cutting f3 = habitat/BVG f6 = 'nodule hunting' f7-8 = crop hunters BVG 947)	Seed wt (g)	No. viable seed/10g
BVG 936	*		9	29	Riverside small tree, bending - good seed crop	145	157
937	*	f2	16	52	A straight boled tree for 5m then heavy branch to light	36	130
938	*		11	50	River bank tree. Triple leader @ 2m, wide crown	10	166
939	*		17	72	Multistemmed @ 2m all upright	30	38
940	*		19	101	Double leader @ 2m: just off riverbank 15m. Very large upright crown.	5	165
941	*		20	100	Multistemmed @ 2m, large forest tree and crown.	12	27
944	*		11	28	A reasonably straight tree, somewhat crowded out by larger trees	18	260
*945	*		22	52	Double-stemmed @ 3m, a vigorous tree occupying a large tree area	15	308
*946	*	f5	22	92	f5 is cutting a branch from large crowned BVG 946	20	169
*947	*		21	48	A short bole tree: vines throughout trying to pull tree-down	12	390
948			14	37 46	Typical multi-stemmed tree from 1m; large fairly mature crops	25	208
949		R6/10	16	55	As for above. Mature green crops, insect damage.	10	175
950					BULK of 2 trees.		

Work supervised by: B Gunn/J Cole **Date:** 7 October 1987 **Total:** 391 grams

64

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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis (Ngarari) Seedlot No. 16105

Collection Locality: (Birrbant) 5 minutes South of Balamuk on the edge of the Bensbach River, Western Province, PNG

Latitude: 8 • 55 'S Longitude: 141 • 17 'E Altitude: 20 (m) Aspect: Slope: Flat

Climatic Zone: Wet/dry tropics Met. Station:

Association includes: Trees BVG 951 - growing in clump away from the river on the edge of an open plain 154
Barringtonia. An almost pure stand densely populated mixed in part with melaleuca; Pandanus Palm

Geology and Soil: Heavy clays with no structure pH: 4.5-5.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
					An extensive population		
BVG 951	*		10	40	Small poorly formed tree growing on the edge of the river. Crop immature	3	-
952		R6/14	11	52	Stout umbraceous tree growing in the open, large crown. 100m from 951	96	419
953			13	24 34	Slender tree forked from the base growing on edge of stand. Crops immature	10	355
954	*		21	34	Clear bole to 12m, light open crown, immature crop	20	344
*955	*		6	24	Sapling with large crown. Good seed crop mature green to shedding	24	269
*956			13	37	Young tree, branched from 1m growing in open 100m from bank. Very good mature seed.	182	410
*957			8	20	Sapling with single main trunk and large crown. Green to mature crops	30	339
*958			6	14	Sapling of poor form growing near the edge of the bank. Crops immature to shedding	4	-
*959	*		15	41	Single bole for 2 metres then forked 100m from river. Green to shedding crop	4	-
*960			14	29	Tree of poor form, forked at 1m growing 100m in from river. Mature to shedding	3	-
*961			16	39	Single boled tree with erect habit growing in a closed canopy. Green crop. seed	5	-
962			17	37	Single stemmed with erect habit growing in a closed canopy. Immature to mature crop	10	-

* Bulk collection made from the above trees. Over 90% of the seed would have come from BVG 956

Work supervised by: B Gunn/J Cole Date: 8 October 1987 Total: grams

Tree Seed Centre,
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SEED DATA SHEET

Species: Acacia auriculiformis — Seedlot No. 16105

Collection Locality: North of Balamuk/Wando on Bensbah River

2km S of Wando and to 1km N of Balamuk Street on the road to Balamuk, ±3km E of Bensbach River collection is on the surrounds of abandoned gardens.

Latitude: 8 ° 55 'S Longitude: 141 ° 17 'E Altitude: 20/18 (m) Aspect: _____ Slope: Flat Very slight

Climatic Zone: Wet-dry tropics Met. Station: _____

Association includes: Melaleuca leucadendra; Acacia mangium

Geology and Soil: Some brown forest leaf soils over black/grey clay pH: 5.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 963		R6/18-20	17	51	BVG 967 looks mangium f27-28 habitat includes BVG 974 Multi-stemmed from close to the base. Large open crown. Immature to shedding	3	-
965	*		24	60	A fire scarred tree but has good main axis	10	115
966	*		15	47	Edge of swamp/forest: crown has major lean toward light	3	-
967	*	f23/24	13	25	A double leader: is different, a good looking tree:	4	-
968	*		13	37	Single stem, major crown lean toward light	18	185
969	*		20	49	Inside the forest canopy a good straight tree.	1	-
970	*		24	59	Tree form is good early to 10m then wide double crown	12	284
971	*		23	57	Straight bole for 8m then forks to wide crown	12	228
972	*		16	55	A tree hanging its crown out of the forest	6	300
973	*		5	12	A juvenile straight with seed crop	1	-
974	*		14	60	A mature tree, leaning to the light, early stem is good	7	410

Work supervised by: B Gunn/J Cole Date: 8 October 1987 Total: 1171 grams

Tree Seed Centre,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Crop is not as insect attacked as the Bensbach provenances. Country is burnt annually and all trees bear major fire scars. Species will tolerate fire but falls over before veteran age. The paperbarks are better survivors.

Species: Acacia auriculiformis (Biar Warr) **Seedlot No.** 16106

Collection Locality: Approximately 2km N of Mibini Village, South of Morehead, Western Province, PNG

Latitude: 8 ° 49 'S **Longitude:** 141 ° 38 'E **Altitude:** 40 (m) **Aspect:** _____ **Slope:** Flat

Climatic Zone: Wet/dry tropics **Met. Station:** _____

Association includes: Melaleuca leucadendra, mostly short, 10 - 15m scrub forest

Geology and Soil: Black fiable heavy clays. Trees growing above edge of swamp with Melaleuca. Extensive area following the swamp which feeds into Morehead River. **pH:** 4.5-5.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description A. auriculiformis has better form here than at Bensbach. 90% of the trees are single-stemmed with erect habit . clear boles	Seed wt (g)	No. viable seed/10g
*BVG 975	*	R7/2	24	45	Tree of good form, straight clear bole for 12m, erect crown. Mature crop	343	120
976	*		21	27	Young tree with single slightly crooked bole, light crown. Small crop	50	61
977			24	36	Tree of good form, 9m clear bole, small crown. Poor crop, mostly eaten	84	200
978			22	33	Slender tree of good form, clear bole for 10m. Light crown	130	220
979			20	26	Slender tree with 9m clear bole - slightly crooked. Small crown.	40	182
980			24	34	Slender tree of poor form, crooked bole. Small seed crop	84	115
981			23	31	Slender tree with a 15m clear bole, light crow. . Small crop, green to brown.	155	367
* 983			22	44	Poorly formed tree for this site, spiral grain, large seed crop.	353	258
984	*		23	48	Tree of good form 1st 15m then DL	109	178
985	*		23	38	Good 7m stem bole, then some branching to form long crown	63	85
986	*		20	32	A young pole tree - some twisting to find light space	30	155

Work supervised by: B Gunn/J Cole **Date:** 12, 13 and 14 October 1987 **Total:** ____ grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Acacias have grey-white mould on the bark surface.

Species: Acacia auriculiformis **Seedlot No.** 16106

Collection Locality: Approximately 2km N of Mibini Village, South of Morehead, Western Province, PNG

Latitude: 8 ° 49 'S **Longitude:** 141 ° 38 'E **Altitude:** _____ (m) **Aspect:** Nil **Slope:** Gentle

Climatic Zone: Wet/dry tropics **Met. Station:** _____

Association includes: Melaleuca leucadendra mostly 10 - 15cm high, some are over 20 m.

Geology and Soil: _____ _____ **pH:** _____

Collection No.	Bot. spec. R7	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 987	*		18	28	A young tree twisting to find light, well below crown canopy.	169	208
988	*		23	48	Fairly robust tree, clear bole 10m, some twisting to light space	80	-
*989	*		22	56	Clean bole for 15m a little twisting to light.	116	435
990	*		18	30	Straight bole for 6m then dl to light space	14	375
991	*		23	53	Straight bole of 14m. No twist	136	361
992	*		20	35	A very straight tree, bole of 12m	115	354
993	*		19	33	d/l @ 6m, bole very straight	110	382
994	*	f12	24	53	Fine upright tree - seed crop on ground.	42	139
995	*	26-27	21	37	Slender tree with 10m slightly crooked bole. Large crop range from shedding to immature green.	40	245
996	*		27	51	Large tree of excellent form 12m clear bole, little taper. Large crown.	105	230
*997			27	57	Large mature tree of good form, 13m clear bole, large crown. Green to shedding crop	80	415
998			29	59	Large mature tree with crooked bole, buttressed, large crown, crops green to shedding.	345	405

Work supervised by: B Gunn/J Cole **Date:** 13 October 1987 **Total:** ____ grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16106

Collection Locality: Mibini Village

Latitude: ___°___'S Longitude: ___°___ E Altitude: _____ (m) Aspect: _____ Slope: _____

Climatic Zone: _____ Met. Station: _____

Association includes: _____

Geology and Soil: _____ pH: _____

Collection No.	Bot. spec.	Photo No. R8	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 1005	*		26	31	Slender tree with crooked bole and damaged crown. Crop green to shedding.	36	300
*1008			27	37	Slender tree with wavy bole. Small crown. Seed collected off the ground.	50	239
1009	*		27	41	Tree with single crooked bole to 13m. Large crown. Crops green to shedding.	128	138
1010	*		23	27	Slender tree of good form 14m clear cole, light crown. Crop immature	232	395
*1011		R8/1	24	41	Tree of good form, clear bole - 11m. Large crown. Pale timber.	173	200
1012	*		23	47	Tree of moderate form, clear crooked bole, large crown, crop green to shedding	180	412
1013	*		24	32	Slender tree of good form 10m clear bole, small crown, green to mature crop	125	329
1014	*		24	31	Slender tree of good form, clear 11m bole, erect branching, green to mature crop	74	191
1015			29	58	Large tree of very good form 16m clear bole perfectly straight, large crown	35	440
1016			25	38	Tree of good form 14m clear straight bole, erect branching, small crown	75	-
1017			27	57	Tall slender tree of excellent form, 15m clear bole, light crown.	172	-
*1018			28	56	Tree of good form, single bole for 16m, large erect branching, green to shedding seed.	65	381

Work supervised by: B Gunn/J Cole **Date:** 14-18 October 1987 **Total:** _____ grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16106

Collection Locality: Mibini Village, Western Province, PNG

Latitude: ___°___'S Longitude: ___°___'E Altitude: _____ (m) Aspect: _____ Slope: _____

Climatic Zone: _____ Met. Station: _____

Association includes: _____

Geology and Soil: _____ pH: _____

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 1019			31	52	Tree of good form, 17m clear bole, erect running, green to shedding crop	65	54
*1020			26	33	Tree of good form clear bole for 12m, light crown, mature seed collected off the ground.	278	492
1052		*	32	58	Tree of excellent form with clear bole to 22m, light crown.	135	331
					*In addition to above collection a 5 tree BULK was made which included BVG 1020		
					from off the ground.		
					*BULK extra 3662 grams		
					A very extensive stand		

Work supervised by: B Gunn/J Cole Date: 15 October 1987 Total: 8178 grams

70

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16107

Collection Locality: Old Tonda Village, South of Morehead, Western province, PNG

Latitude: 8 ° 55 'S Longitude: 141 ° 33 'E Altitude: 40 (m) Aspect: - Slope: Flat to very slight

Climatic Zone: Wet/dry tropics Met. Station:

Association includes: A. mangium; A. leptocarpa; Lophostemon Melaleuca

Geology and Soil: Heavy clay with little structure pH: 5.0

Collection No.	Bot. spec.	Photo No. R8	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 1021	*	R8/29	25	58	Moderate form 8m clear bole, basal damage, erect branching.	80	
1022	*	R8/30	25	56	8m clear bole, large erect crown. Dominant tree for area.	60	
1023			22	56	Tree of poor form, forked from 1.5m, light erect branching, seed shed.	9	
1024	*		26	56	Large mature tree with 4m bole then large crown, erect habit, immature crop.	24	
1025	*		26	68	Large mature tree - 4m clear bole then forked, erect habit, immature crop.	3	
1026		R8/31	21	42	6m clear bole then erect branching, light crown. Tree growing in woodland.	17	
1027			23	62	Tree of poor form, crooked bole, rotten at base, large branching.	30	
1028			23	42	3m bole then forked, erect habit. Tree growing on the edge of woodland	67	
1029			18	30	3m bole then large erect crown growing in open. Seed mostly shed.	26	
1030	*	8/32	23	67	Tree of fairly good form, 6m clear bole, main leader, erect habit, good crop.	71	
1031	*		20	27	Tree of poor form with single leader, light crown, poor crop.	80	
1032	*		23	43	Tree of moderate form, 5m clear bole, erect habit green to shedding crop.	26	

Work supervised by: B Gunn/J Cole Date: 16 October 1987 Total: ____ grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16107

Collection Locality: Old Tonda Village

Latitude: ___°___'S Longitude: ___°___'E Altitude: _____ (m) Aspect: _____ Slope: _____

Climatic Zone: _____ Met. Station: _____

Association includes: _____

Geology and Soil: _____ pH: _____

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 1033	*		25	41	Tree of above average form, 8m clear cole, light crown. Growing on edge of woodland	15	
1034	*		13	22	3m twisting bole then upright triple leader	50	
1035	*		13	24	3m straight bole then double upright leader	64	
1036	*		18	34	Short 3m straight bole, then twisting double leader	282	
1037	*		12	37	A leaning multistemmed tree @ 4m	192	
1038	*		16	36	A twisting 8m bole, narrow upright crown	730	
1039	*		23	51	Straight bole for 7m then wide open crown	125	
1040	*		19	53	Leaning d/l @ 5m then crown	310	
1041			19	40	Woodland tree with a 5m crooked bole, erect branching, good mature crop	288	
1042	*	R9/21	26	71	Large tree with 12m clear bole, large open crown, good crop green to brown	160	
1043	*	R9/22	24	56	Tree of moderate form, 7m clear bole, erect branching, much of crop shed	61	

Work supervised by: B Gunn/J Cole Date: 16-18 October 1987 Total: 2770 grams

16107

Comments

1. *Trees growing in the tall moist forested area. Remainder in open dry woodland.

2. This site is drier than Mibini and most of the Bensbach collection areas. There is a small patch of large trees round the Old Tonda Village which appear to receive more moisture and exhibit larger dimensions. Few of the trees in this area have the good form of Mibini.

3. The population is not nearly as extensive as that at Mibini. Many of the trees are growing in the drier woodland situation.

4. Most of the woodland trees have no seed on or have shed much of their seed whilst those in the more densely forested area are much greener and in many cases immature as we experienced at Mibini .

5. Insect attacks were heavy here and much of this seed had been lost in this manner.

6. Most of the collection was made between the Centre of the Tonda Village to the south along the road and footpaths. Close to the Tonda Creek bridge, Melaleuca takes over the site.

7. Trees collected vary from 20 - 100m apart.

27.

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SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16108

Collection Locality: Just North of Mari Village on the coast South of Morehead, Western province, PNG

Latitude: 9 ° 11 'S **Longitude:** 141 ° 42 'E **Altitude:** 5 (m) **Aspect:** _____ **Slope:** Flat

Climatic Zone: Wet-dry tropics **Met. Station:** _____

Association includes: Melaleuca (BVG 1046)

Geology and Soil: Heavy cracking clays with no structure, seasonally dry and waterlogged. Soil sample taken. **pH:** _____

Collection No.	Bot. spec.	Photo No. R9	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 1045	*	R9 (15-10	15-		BULK collection from 8 trees. Trees are of poor form growing in a harsh	368	194
		to 11)		35	environment some 1/2 - 2 km from the sea. Trees randomly scattered. Crops were		
					shedding and there were no green pods to be found. Seed was still hanging in the		
					pod.		

Work supervised by: B Gunn/J Cole **Date:** 17 October 1987 **Total:** 368 grams

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SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16114

Collection Locality: Deer Farm Junction, South of Bensbach on the Balamuk side of the junction, PNG

Latitude: 8 ° 52 'S **Longitude:** 141 ° 15 'E **Altitude:** 20 (m) **Aspect:** - **Slope:** Flat

Climatic Zone: Wet dry tropics **Met. Station:**

Association includes: A. mangium

Geology and Soil: Majority of trees growing on a dam wall, red clay soils **pH:** -

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
BVG 823	*	R1/8-9	6-8	7-18	Bulk of 10 trees. Sapling sized tree several multi-stemmed growing on the bank of a dam built in 1978. Crops varying from green immature to shedding.	156	191

Work supervised by: B Gunn/J Cole **Date:** 19 September & 9 October 1987 **Total:** 156 grams

Appendix 2

Cape York Seed Data Sheets

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis A. Cunn. ex Benth. Seedlot No. 16129

Collection Locality: Fly Point, 1.1 km SE of Somerset. Between Fly Point and Somerset, 1.1 km by road from Fly Point, QLD

Latitude: 10 ° 45 'S Longitude: 142 ° 36 'E Altitude: 15 (m) Aspect: - Slope: Moderate

Climatic Zone: Sub-Equatorial Coast (Atlas Aust. Resources) Met. Station: Cape York, Stn 027004

Association includes: Mid-high windswept woodland with Eucalyptus tessellaris, Acacia crassicarpa, Syzygium suborbiculare, Grevillea glauca, Alphitonia excelsa and Acacia calyculata

Geology and Soil: Reddish brown loamy sand pH: 6.0

Collection No	Bot spec	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
1449			6	11	Spreading tree	105	192

Work supervised by: Jim Moriarty Date: 17 September 1987 Total: 105 grams

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P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis A. Cunn. ex Benth. Seedlot No. 16137

Collection Locality: Piccaninny Creek, 22km NNE of 'Wolverton', QLD

Latitude: 13° 09 'S Longitude: 142 ° 49 'E Altitude: 40 (m) Aspect: - Slope: Very gently undulating

Climatic Zone: Tropical Inland (Atlas Aust. Resources) Met. Station: -

Association includes: Seasonal creek in tall eucalypt woodland with Lophostemon grandiflorus, Acacia polystachya, A. crassicarpa, A. aulacocarpa, Corypha elata and Erythrina vespertilio.

Geology and Soil: Grey, light medium clay pH: 6.5

Collection No	Bot. spec	Phot. No	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No viable seed/10g
1472	*		13	24	Upright main branches, damaged base	463	500
1473	*		9	38	Old, badly damaged and badly leaning	533	428
1474	*		14	24	Twisted tree, some dead branches	233	487

Work supervised by: Jim Moriarty Date: 24 September 1987 Total: 1229 grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis A. Cunn. ex Benth. **Seedlot No.** 16141

Collection Locality: Coen River, 2km SW of Coen, QLD

Latitude: 13 °57 'S **Longitude:** 143° 11 'E **Altitude:** 170 (m) **Aspect:** - **Slope:** -

Climatic Zone: Tropical Inland (Atlas Aust. Resources) **Met. Station:** Coen, Station 027005

Association includes: Gallery forest on seasonal river in tall eucalypt woodland. Riparian spp. include Melaleuca argentia, Acacia polystachya, A. oraria, Lophostemon grandiflorus, Callistemon viminalis, Acacia holosericea and Blepharocarya involucrigera

Geology and Soil: Brown loamy sand and river sands **pH:** 7.0-7.5

Collection No	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
1479			11	28	Spreading tree with bole 2.5m	271	404
1480			17	24	Tree leaning over stream	225	250
1482			9	13	Young, vigorous tree	195	408
1536			9	26	Badly damaged and badly bent	-	-

Work supervised by: Jim Moriarty **Date:** 30 September - 1 October 1987 **Total:** 691 grams

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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis A. Cunn. ex Benth. Seedlot No. 16142

Collection Locality: Coen River, 15km WNW of Coen, QLD

Latitude: 13° 53.44'S Longitude: 143° 03.26'E Altitude: 170 (m) Aspect: - Slope: -

Climatic Zone: Tropical Inland (Atlas Aust. Resources) Met. Station: Coen, Stn 027005

Association includes: Gallery forest on sandy seasonal river with Melaleuca leucadendra, M. argentia, Blepharocarya involucrigera Bucanania arborescens, Dillenia alata, Nauclea orientalis, Acacia oraria, Lophostemon grandiflorus, Barringtonia calyptrata, Syzygium tierneanum, Pongamia pinnata, Callistemon viminalis and Leptospermum longifolia

Geology and Soil: Sandy river bed and dark grey loamy sand on banks pH: 6.5-7.0

Collection No	Bot. spec.	Photo No	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
1483	*		19	44	Mature tree, 8m bole	470	428
1484	*		7	-	Multistemmed, crooked and leaning	250	324
1485	*		14	24	Mature tree, bendy bole 7.5m	470	525
1486	*		19	38	Vigorous, healthy tree. Strait bole with several small branches 7m	550	413
1487	*		17	35	Mature, bendy and twisted tree	170	188
1488	*		21	70	Spreading tree, damaged bole 4m	-	-
1489	*		18	46	Vigorous spreading tree	195	282
1490	*		23	54	Mature tree, 6m bole	103	255
1491	*		15	29	Leaning badly, 8m bole	-	-
1537	*		26	55	Bendy tree, 7.5m bole	-	-

Work supervised by: Jim Moriarty Date: 1 and 10 October 1987 Total 2208 grams

Tree Seed Centre,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis A.Cunn. ex Benth. Seedlot No. 16144

Collection Locality: 11 km S of Coen. 10.7-13.6 km S via Peninsula Developmental Road of Coen, QLD

Latitude: 14 • 03 'S Longitude: 143 • 12 'E Altitude: 250 (m) Aspect: - Slope: Gently undulating

Climatic Zone: Tropical Inland Met. Station: Coen, Stn 027005

Association includes: Shallow seasonal creek and drainage lines in tall eucalypt woodland with Eucalyptus leptophleba, E. polycarpa, E. papuana and Erythrophloem chlorostachys

Geology and Soil: Pale grey loamy sand pH: 6½

Collection No	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
1500			13	26	Healthy tree	300	285
1501			13	16	Young healthy tree	-	-
1502			22	55	Mature spreading tree	200	269

Work supervised by: Jim Moriarty Date: 3 October 1987 Total: 500 grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
P.O. Box 4008, Queen Victoria Terrace,
Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis A. Cunn. ex Benth. Seedlot No. 16145

Collection Locality: Wenlock River at Portland Roads Road crossing. 55km SW of Lockhart River Aboriginal Community. QLD

Latitude: 13°06'S Longitude: 142°56'30" Altitude: 130 (m) Aspect: - Slope: -

Climatic Zone: Tropical Inland (Atlas Aust. Resources) Met. Station: -

Association includes: Gallery forest on seasonal river in tall eucalypt woodland. Common ssp. in gallery forest are: Melaleuca leucadendra; M. argentia; Barringtonia calyptrata; Acacia fleckeri; Bombax ceiba; Castanospermum australe; Acacia crassicarpa; A. flavescens; A. brassii; A. torulosa; Buchanania arborescens; Nauclea orientalis; Desmodium umbellatum

Geology and Soil: Grey brown loamy sand and river sands pH: 6.5-7.0

Collection No	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
1548	*		24	60	Spreading, bendy bole 4m	95	
1549	*		20	43	Slightly curved bole 8m	513	
1550	*		24	42	Branching 3.5m	305	
1551	*		28	76	Old spreading tree, 7m bole	370	
1552	*		27	58	Badly scarred bole with some old dead branches 12m	665	
1553	*		26	75	Spreading, mature tree with a twisted bole 4m	480	
1554	*		24	54	Old spreading tree with 5m bole. Fallen by fire	415	
1555	*		19	34	Two main stems branching at 1.5m	695	
1556	*		25	110	Old spreading tree, bendy and forked at 3m	565	
1557	*		18	45	Spreading, branching heavily at 2.5m	314	
1558	*		25	65	Reasonably strait bole 10m	304	
1559	*		28	59	Leaning tree with bendy, notchy bole 13m	985	

Work supervised by: Jim Moriarty Date: 13-17 October 1987 Total: _____ grams

Tree Seed Centre,
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SEED DATA SHEET

Species: Acacia auriculiformis

Seedlot No. 16145

Collection Locality: _____

Latitude: ° 'S Longitude: ° 'E Altitude: _____ (m) Aspect: _____ Slope: _____

Climatic Zone: _____ Met. Station: _____

Association includes: _____

Geology and Soil: _____ pH: _____

Collection No.	Bot spec	Photo No	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
1560	*		27	67	Badly damaged at base, reasonably strait bole 11m	220	380
1561	*		25	58	Bendy bole 5m	285	422
1562	*		11	-	Young, multistemmed	275	476
1563	*		12	23	Twisted, badly leaning	455	550
1564	*		12	31	Damaged bole, branching at 1.5m	600	578
1565	*		11	27	Bent, leaning tree branching 1.5m	1045	594
1566	*		23	38	3m bole, upright main branches	437	696
1567	*		28	61	4m bole then forking into two upright branches	667	470

Work supervised by: Jim Moriarty Date: 13-17 October 1987 Total: 9690 grams

Appendix 3

N.T. Seed Data Sheets

Tree Seed Centre,
CSIRO, Division of Forest Research,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16147

Collection Locality: Noogoo Swamp, King Creek, 10km E of Darwin, NT

Latitude: 12 • 23 'S Longitude: 131 • 00 'E Altitude: 28 (m) Aspect: W side of salt pan Slope: 1 - 2°

Climatic Zone: Wet - dry tropic Met. Station: Darwin

Association includes: Eucalyptus polycarpa; Breynia cernua; Canarium australianum; Syzygium eucalyptoides ssp. bleeseri; Melaleuca dealbata; M. cadjeputi; Pandanus spiralis; Alphitonia excelsa; Alstonia actinophylla

Geology and Soil: Black cracking clay/black soil rise fringing tidal salt pan pH: 5.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 355	*	*	10	15	Short bole (1.5m) then double leaders, dense crown (1/5 bole), up-right branching.	575	
356	*	*	8	13	Short bole (1m) then double leaders, dense crown, up-right branching.	220	
357			8	15	Short bole (2m) then double leaders, dense crown, " " .	525	
358	*		7	20	Short bole (2.5m) then triple leaders, dense crown " " .	160	
359			9	27	Short bole (2.5m) then double leaders, dense crown, " " .	55	
					A collection of 5 individuals		
					Largest specimen 12 - 15m, dbh 40cm, bole 2.5m - photo.		
					Green ant abundant		
					Root nodules were sampled from MM 355 and MM 357.		

Work supervised by: M McDonald Date: 2 September 1987 Total: 1535 grams

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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16148

Collection Locality: Manton River, [illegible]m S of Darwin along Stuart Highway, NT (a tributary of the Adelaide River system).

Latitude: 12 ° 50 'S Longitude: 131 ° 07 'E Altitude: 100 (m) Aspect: Riparian Slope: River bank flats

Climatic Zone: Wet/dry tropics Met. Station: Darwin

Association includes: Melaleuca leucodendra; Nauclea orientalis; Terminalia platyphylla; M. cadjeputi; Pandanus spiralis; M. dealbata

Geology and Soil: Alluvial/black clay - sandy pH: 6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 361			12	25	3m bole; upright branching; 1/4 bole; 3/4 crown.	60	
362			14	30	2m bole; upright branching.	160	
363			15	43	2m bole; upright branching.	180	
364	*		12	2 x 30	Double leader at 1.0m, upright branching, 1/2 bole, 1/2 crown.	460	
365			15	39	4m bole; 1/3 bole; 2/3 crown; upright branching.	340	
366			12	25	Bole 1m (1/5 bole; 4/5 crown); very upright branching.	90	
367	*	*	10	26	Bole 4m; 1/3 bole; 2/3 crown ; very upright branching.	145	
368		*	15	35	Bole 4m; 1/3 bole; 2/3 crown; very upright branching.	40	
369			10	25	Bole 2m; 1/4 bole; 3/4 crown; very upright branching.	65	
370			12	31	Bole 5m; 2/5 bole; 3/5 crown; very upright branching.	170	
					A collection of 10 individuals		

Work supervised by: M McDonald Date: 3 September 1987 Total: 1710 grams

Tree Seed Centre,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16149

Collection Locality: Douglas River, 20 km SE of Tipparary Station (or 3.8 km N of Douglas Daly Research Farm), NT.

Latitude: 13° 51'S **Longitude:** 131° 09'E **Altitude:** 70 (m) **Aspect:** On broad d-lines or slight ridges **Slope:** 2° - 5°

Climatic Zone: Wet-dry tropics **Met. Station:** Pine Creek

Association includes: Eucalyptus papuana; Terminalia platyphylla; A. holosericea; Melaleuca leucodendra; M. dealbata; Cathormium umbellatum; Pandanus spiralis.

Geology and Soil: Alluvial/black clay on drainage lines that feed Douglas River **pH:** 5.5 - 6.(

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 371	*	-	12	18	Double leader at 1m; very upright branching; fairly sparse crown.	200	
372			14	30	" " " 2m; " " " " " "	110	
373		*	15	49	" " " 2m; " " " " " "	130	
374			10	28	" " " 5m; " " " " " "	195	
375			7	15	" " " 3m; " " " " " "	125	
376	*		12	35	" " " 3m; " " " " " "	120	
377			13	30	" " " 6m; " " " " " "	200	
378			10	15	" " " 2m; " " " " " "	65	
379			12	18	" " " 4m; " " " " " "	300	
380			14	32	" " " 3m; " " " " " "	120	
					On drainage lines near river 20m specimens dbh 1m - sterile		
					A collection of 10 individuals		

Work supervised by: M McDonald **Date:** 4 September 1987 **Total:** 1567 grams

Tree Seed Centre,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16150

Collection Locality: Coomarlie Creek, 74.4 km S of Berrimah, along the Stuart Highway, NT. (Coomarlie Creek is a tributary of the Adelaide River system).

Latitude: 13 • 01 'S **Longitude:** 131 • 07 'E **Altitude:** 100 (m) **Aspect:** Riparian **Slope:** Slight

Climatic Zone: Wet-dry tropics **Met. Station:** Darwin-Pine Creek

Association includes: Melaleuca leucodendra; Bambusa arnhemica; Terminalia sp.

Geology and Soil: Black alluvial clay (fine waterlogged black pug) **pH:** 6.5-7.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	Dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 383	*	*	7	100	A fallen-over specimen laden with fruit; upright branching.	2020	
			laying down		2/3 bole - 1/3 crown. A very fine specimen that still lives with only half		
			18		its root system in the ground.		
			upright		One tree only.		

Work supervised by: M McDonald **Date:** 8 September 1987 **Total:** 2020 grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis — Seedlot No. 16151

Collection Locality: Mary River, 61.8 km E along Kakadu Highway from Pine Creek (boundary of National Park), NT.

Latitude: 13° 36'S Longitude: 132° 08'E Altitude: 120 (m) Aspect: Riparian Slope: Bank edge

Climatic Zone: Wet-dry tropics Met. Station: Pine Creek

Association includes: Xanthostemon sp.; Mel. leucodendra; Bambusa arnhemica; Canarium australiensis; Eleocarpus arnhemicus; Euc. polycarpa; A. holosericea; Pandanus spiralis.

Geology and Soil: Alluvial/light brown silty clay pH: 5.5-6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 385	*	*	12	20	Single-stemmed bole to 4m; upright branching	25	
386			8	15	Multi-stemmed; 3 leaders to less than 1m; upright branching	50	
387		1	4	11	Single stem; bole 1/3-crown 2/3; upright young tree	145	
388	*		7	35	Bole 3m twisted; 2/3 crown; 1/3 bole	425	
389			8	30	Double leader at 1m; 3/4 crown; 1/4 bole; upright branching	310	
390	*	*	5	15	Single stem young tree: upright branching/ 4/5 crown	35	
391			12	{20 15 12	Multi-stemmed; 1/4 bole - 3/4 crown; upright branching	295	
392			9	22	Single stemmed; lateral branching; very close to Euc. (MM 381)	195	
					A collection of 8 individuals		

Work supervised by: M McDonald Date: 9 September 1987 Total: 1540 grams

Tree Seed Centre,
CSIRO, Division of Forest Research,
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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16152

Collection Locality: East Alligator River, 10.4km N of Cannon Hill on track around edge of floodplain, western side, NT

Latitude: 12° 17'S Longitude: 132° 55'E Altitude: Less than 10 (m) Aspect: Vegetation zone up from Melaleucas fringing floodplain Slope: 2°

Climatic Zone: Wet-dry tropics Met. Station: Oenpelli

Association includes: Euc. papuana; Barringtonia acutangula; Lophostemon grandiflorus; A. holosericea; Mel. viridiflora; Pandanus spiralis; Diosporos sp.; Syzygium suborbiculare; Alstonia actinophylla (milkwood).

Geology and Soil: Alluvial/silty-sandy-loamy clay; periphery of perennial floodplain pH: 5.0-5.5-6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 402	*		7	25	Single stem; double leader at 3m; upright branching	175	
403	*	*	10	30	Double leader at 1m; very upright branching	220	
404		*	9	25	Single stem to 2m; upright crown	370	
405			20	80	Single stem to 2m; " "	345	
406			8	15	Double leader at 1m; " "	355	
407	*		8	30	" " " 1m; " "	285	
408			9	40	" " " 2m; " "	500	
409			11	60	" " " 2m; " "	410	
410			12	35	" " " 1m; " "	195	
411			10	25	" " " 2m; " "	360	
					A collection of 10 individuals		
					Specimens observed dbh 105 and 120cm/ Green Ant abundant		

Work supervised by: M McDonald Date: 12 September 1987 **Total:** 3215 grams

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SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16153

Collection Locality: Cooper Creek, 17.8 km N along the road to Murgenella from Oenpelli, Arnhem Land, NT.

Latitude: 12 ° 06 'S Longitude: 133 ° 11 'E Altitude: 40 (m) Aspect: Riparian Slope: Negligible

Climatic Zone: Wet-dry tropics Met. Station: Oenpelli

Association includes: Melaleuca argentea; Acacia tropica; MM 413a; MM 413b (relict rainforest spp.)

Geology and Soil: Alluvium/sandy loam (laterite rocks nearby) pH: 6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 412	*	*	8-	30-	Most are single stemmed; 3/4 crown - 1/4 bole; with upright branching	1365	
			15	60			
					A BULK of five trees		

Work supervised by: M McDonald Date: 13 September 1987 Total: 1365 grams

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SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16154

Collection Locality: Goomadeer River, 52.6km NE Nabarlek, Arnhem Land, NT

Latitude: 12 ° 08 'S **Longitude:** 133° 41 'E **Altitude:** 50 (m) **Aspect:** Riparian **Slope:** Steep banks at base

Climatic Zone: Wet-dry tropics **Met. Station:** Oenpelli

Association includes: Mel. symphyocarpa; M. argentea (in flower); M. viridiflora; Alphitonia excelsa (some fruit); Pandanus spiralis; Acacia holosericea (some pod); Barringtonia sp. (in flower); Carallia sp.; E. polycarpa; A. difficilis; E. grandifolia

Geology and Soil: Alluvium/yellow clay **pH:** 5.5-6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 431	*		8	25	3m bole; upright double leaders	320	
432	*		14	35	Branching at 6m; sparse crown; upright branching	225	
433			15	45	3m bole; upright double leaders	125	
434	*	*	21	62	4m bole; spreading branching	200	
435			8	30	2m bole; upright branching	355	
436			15	80	6m bole; spreading branching	160	
437	*	*	12	50	2.5m bole; very upright branching	315	
438			8	32	3m bole; very upright branching	680	
439			14	81	2m bole; triple leaders; upright branching	130	
440	*		10	58	2m bole; triple leaders; upright branching	lost in transit?	
					Green Ant negligible. Some specimens have died (fairly large trees). It is		
					co-dominant with M. argentea. A collection of 9 individuals.		

Root nodules were sampled from MM 431.

Work supervised by: M McDonald **Date:** 19 September 1987 **Total:** 2510 grams

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SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16155

Collection Locality: Mann River, 70.1 km E of the Goomadeer River, Arnhem Land, NT.

Latitude: 12° 22'S Longitude: 134° 08'E Altitude: 60 (m) Aspect: Riparian Slope: Banks

Climatic Zone: Wet-dry tropics Met. Station: Maningrida

Association includes: Melaleuca argentea (in full flower); Lophopetalum sp.; Pandanus spiralis; Syzygium nervosa; Calophyllum sp. Carallia sp.; Cupaniopsis anacardiodes.

Geology and Soil: Alluvium/yellow clay pH: 5.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 445	4	*	18	45	Spreading branches at 3m	150	
446	*		10	25	Straight bole to 5m; upright crown	180	
447	*	*	18	51	Straight bole to 5m; upright crown	45	
448	*		12	31	Straight bole to 3m; upright crown leaning 45°	95	
					(Above four represent 3.0 km along W side of River)		
					A collection of 4 individuals		
					Many specimens have shed seed and the opened pod remains and some also sterile		

Work supervised by: M McDonald Date: 20 September 1987 Total: 470 grams

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SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16156

Collection Locality: Yarunga Creek, 16.0km W of Ramingining, Arnhem Land, NT

Latitude: 12 • 18 'S **Longitude:** 134 • 48 'E **Altitude:** 50 (m) **Aspect:** Riparian **Slope:** Slight

Climatic Zone: Wet-dry tropics **Met. Station:** Maningrida

Association includes: Melaleuca leucodendra; M. viridiflora; Barringtonia sp.; Pandanus; Timonius timon; Terminalis sericocarpa; Syzygium nervosa; S. suborbiculare

Geology and Soil: Alluvium/black clay - with coarse sand/laterite rocks present **pH:** 6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 452	*	*	6-	15-	Most are trees of very good form with extended single-stemmed bole for about	265	
			25	90	10m branching tending to spreading rather than upright.		
					Specimens are at all stages of fruit development but nowhere are crops		
					plentiful. Many species are sterile, some were late flower, some have galls.		
					A BULK collection of 6 trees.		
					Root nodules were sampled.		

Work supervised by: _____ **Date:** _____ **Total:** 265 grams

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SEED DATA SHEET

Species: Acacia auriculiformis — Seedlot No. 16157

Collection Locality: 18.6km S of Ramingining, or 89.6km N of Emu Springs. (E side of road in remnant gully rainforest, near Old Arafura Station), Arnhem Land, NT

Latitude: 12 ° 28 'S Longitude: 134 ° 54 'E Altitude: ca. 80 (m) Aspect: Eastern head of gully Slope: 15° - 20°

Climatic Zone: Wet-dry tropics Met. Station: Maningrida

Association includes: Xanthostemon sp.; Gmelina sp.; Pandanus spiralis; Euodia elleryana; Hydriastele wendlandiana (palm)

Geology and Soil: Metamorphic?/loamy clay pH: 5.0-5.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 493	*	*	20	52	Clean bole to 4m then multiple leaders; crown very spreading to 10m either side of bole, the extremities of which are supported by associates. A very small rainforest remnant some 20 - 25m below top of scarp on small (flowing) soak/stream entering Arafura Swamp. One tree only (out of a total of two specimens only for entire population present). Tremendcus lateral crown development.	250	

Work supervised by: M McDonald Date: 4 October 1987 Total: 250 grams

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SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No:** 16158

Collection Locality: Gerowie Creek, 72.5km S of Cooinda T/O near Old Goodparla Station, NT.

Latitude: 13 • 29 'S **Longitude:** 132 • 15 'E **Altitude:** 100 (m) **Aspect:** Riparian **Slope:** Banks of creek edge

Climatic Zone: Wet-dry tropics **Met. Station:** Oenpelli

Association includes: Melaleuca leucodendra; Pandanus spiralis; Maranthes corymbosa; Nauclea orientalis; Terminalia sp.; + relict Rf.ssp.; Lophopetalum arnhemicum; Carallia brachiata

Geology and Soil: Alluvium/sandy silty clay **pH:** 5.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	12 Individuals — Tree Description	Seed wt (g)	No. viable seed/10g
MM 498	*		12	25	Single stem to 4m; upright branching; 4/5 crown.	85	
499			14	45	" " " 3m; " and spreading branching.	75	
500	*		9	20	" " " 3m; " branches; 2/3 crown.	50	
501	*		10	35	" " " 3m; " " ; 3/4 crown.	125	
502			12	40	" " " 3m; " /lateral branching; 2/3 crown	115	
503	*		10	30	" " " 3.5m; " branches; 2/3 crown	105	
504			12	42	" " " 2m; Multiple leaders; spreading crown.	500	
505		*	12	35	" " " 4m; multiple leaders; upright crown	100	
506	*		13	40	" " " 3m; double leaders; upright crown	185	
507	half lst	dead leader	9 lives	37	" " " 1.5m; triple leaders; upright crown.	63	
508	*		14	36	" " " 3m; double leaders; upright crown.	135	
509			13	38	" " " 3m; multiple leaders; very upright crown.	40	

* *

Work supervised by: M McDonald **Date:** 7 October 1987 **Total:** 1578 grams

Several dead specimens sighted; 52cm dbh on the bulk tree

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SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16159

Collection Locality: Gerowie Creek, 72.5km S of Cooinda, (near Old Goodparla Station) NT.

Latitude: 13 • 29 'S Longitude: 132 • 15 'E Altitude: 100 (m) Aspect: Riparian Slope: Banks of creek edge

Climatic Zone: Wet-dry tropics Met. Station: Jenpelli

Association includes: Melaleuca leucodendra; Pandanus spiralis; Maranthes corymbosa; Nauclea orientalis; Terminalia sp.; + relict RF. ssp.; Lophopetalum arnhemicum; Carallia brachiata

Geology and Soil: Alluvium/sandy silty clay pH: 5.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description A Bulk of 10 trees	Seed wt (g)	No. viable seed/10g
MM 510	*		9 to 14	20 to 45	Most are single stemmed 1.5 - 4 m with upright branching double-triple-multiple leaders.	425	

Work supervised by: M. McDonald Date: 7 October 1987 Total: 425 grams

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SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16160

Collection Locality: South Alligator River, 26.5km N along Old Darwin - Jim Jim Road, NT

Latitude: 13 ° 03 'S Longitude: 132 ° 19 'E Altitude: 40 (m) Aspect: Riparian Slope: Clay edges of river bank

Climatic Zone: Wet/dry tropics Met. Station: Darwin - Jabiru

Association includes: Melaleuca argentea; Barringtonia acutangula; Ficus virens; Bambusa arnhemica; Elaeocarpus sp.; Carallia brachiata.

Geology and Soil: Alluvium/sandy silty clay pH: 4.5-5.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 511			8	25	Bole 2m; 3/4 crown; upright broad crown	55	
512			10	32	Bole 4m; 2/3 crown; upright - spreading crown	80	
513	*	*	16	51	Bole 3.5m; 2/3 crown double leaders at 3.5m	1030	
514	*		11	50	Bole 3m; 4/5 crown spreading crown	555	
515	*	*	14	46	Bole 4m; 2/3 crown spreading crown.	280	
516			9	27	Bole 2m; 2/3 crown; upright and spreading branches	30	
517	*		6	31	Bole 1.5m; 1/2 crown; dieback apparent; formerly 12m	65	
					A collection of 7 individual trees (to be added to MM 399-401 to make		
					10 tree collection).		

Work supervised by: M McDonald Date: 8 October 1987 Sub-Total: 2095 grams

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SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16160

Collection Locality: South Alligator River, 33.9 km NE along T/O to Jabiru on the Kakadu Highway, NT.

Latitude: 13° 16 'S Longitude: 132° 19 'E Altitude: 100 (m) Aspect: Riparian Slope: Nearly vertical river bank to 45°

Climatic Zone: Wet/dry tropics Met. Station: Pine Creek - Jabiru

Association includes: Melaleuca argentea; Bambusa arnhemica; Ficus racemosa

Geology and Soil: Alluvial/sand over clay (extensive sandy levees present) pH: 5.0-6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (c.)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 399	*	*	7	15	Single stem to less than 1m; 4/5 crown; upright double leaders	45	
400		*	21	80	Single stem to 5m; 2/3 crown; 1/3 bole; lateral branching	25	
401	*		6	15	Single stem to 1.5m, 3/4m crown; upright branching	25	
					A collection of 3 individuals		
					A population of extremely scattered individuals that occur where clay banks		
					outcrop on river bed.		

Work supervised by: M McDonald Date: 10 September 1987 Sub = 95 grams
" Total: 2190

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SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16161

Collection Locality: Howard Springs, 6.5km along T/O on Stuart Highway and 15km S of Darwin, NT

Latitude: 12 • 27 'S Longitude: 131 • 03 'E Altitude: 70 (m) Aspect: Riparian Slope: slight

Climatic Zone: Wet/dry tropics Met Station: Darwin

Association includes: Adenanthera pavonina; Nauclea orientalis; + other Rf. ssp. (many); Myristica insipida; Carpentaria acuminata

Geology and Soil: Alluvium/clay at depth, sand overlain on upstream side pH: 5.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 519	*	*	8-	15-	Most are single-stemmed with very upright branching, dense crown, multiple	275	
			12	35	leaders at ca. 1 - 2m.		
					A BULK of 12 trees		
					Some with bud still on.		
					Root nodules were sampled.		

Work supervised by: M McDonald Date: 13 October 1987 Total: 275 grams

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SEED DATA SHEET

Species: Acacia auriculiformis — Seedlot No. 16162

Collection Locality: Reynolds River/Flood plain, 37.8km W along T/O to Daly River (town), NT

Latitude: 13 ° 32 'S Longitude: 130 ° 52 'E Altitude: 150 (m) Aspect: - Slope: Riparian to flood plain

Climatic Zone: Wet-dry tropics Met. Station: Pine Creek

Association includes: Melaleuca leucodendra; Pandanus spiralis; Terminalis sp.; Mel. cadjeputi; Syzygium eucalyptoides ssp. eucalyptoides; Eucalyptus papuana

Geology and Soil: Alluvium/fine sand silty clay (black) pH: 5.0-6.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 521	*		11	28	Bole 2m; multiple leaders; upright branching)	355	
522			12	32	Bole 1.5m; double leaders; very upright branching)	300	
523	*	*	14	35	Bole 7m; multiple leaders; upright branching) Riparian	200	
524			10	30	Bole 2.5m; multiple leaders; very upright branching)	260	
525	*		8	40	Bole 1.5m; double leaders; upright broad dense crown)	80	
526			9	32	Bole 3m; double leaders; very upright crown)	335	
527		*	8	36	Leaning bole 2.5m; double leaders; dense spreading crown, browsed)	495	
528			7	22	Bole 1m; multiple leaders; very upright crown) Flood plain	70	
529	*		10	37	Bole 2m; double leaders; upright crown)	60	
530			13	45	Bole 3m; double leaders; upright crown)	600	
					A collection of 10 individuals		
					Population has riparian and flood plain distribution		

Work supervised by: M McDonald Date: 14 October 1987 Total: 2755 grams

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SEED DATA SHEET

Species: Acacia auriculiformis Seedlot No. 16163

Collection Locality: Elizabeth River, 3.5km N of Noonamah, along the Stuart Highway, 40km S of Darwin, NT

Latitude: 12 ° 36 'S Longitude: 131 ° 04 'E Altitude: 40 (m) Aspect: Riparian Slope: Slight

Climatic Zone: Wet-dry tropics Met. Station: Darwin

Association includes: Melaleuca argentea; Barringtonia acutangula; Lophostemon grandiflora ssp. riparious; A. leptocarpa; A. auriculiformis x leptocarpa

Geology and Soil: Alluvium/sandy levees over clay (yellow) pH: 5.5-6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 531	*		7	15	Single stem, upright crown	335	
532	*	*	12	30	Single stem to 2m; upright crown	165	
533	*		8	12	Single stem; dense upright crown	470	
534			9	16	Single stem; dense upright crown	190	
535			7	12	Single stem; upright crown	330	
536	*		8	13	Single stem to 2m; upright crown	250	
537	*	*	9	55	Single stem to 2m; triple leaders; crown very spreading (x15m)	80	
538			9	18	Single stem to 4m; triple leaders; upright crown	205	
539			10	13	Single stem to 3m; triple leaders; upright crown	150	
540	*		11	15	Single stem to 2.5m; double leaders; upright crown	290	
					A 10 individual collection		

Work supervised by: M McDonald Date: 15 October 1987 Total: 2465 grams

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Canberra, A.C.T. 2600, Australia.

SEED DATA SHEET

Species: Acacia auriculiformis x leptocarpa Seedlot No. 16164

Collection Locality: Elizabeth River, 3.5km N of Noonamah, along the Stuart Highway, 40km S of Darwin, NT

Latitude: 12° 36 'S Longitude: 131° 04 'E Altitude: 40 (m) Aspect: Riparian sand levee Slope: 2° - 5°

Climatic Zone: Wet-dry tropics Met. Station: Darwin

Association includes: A. auriculiformis; A. leptocarpa; Melaleuca argentea; Barringtonia acutangula

Geology and Soil: Alluvium/sand over clay (yellow) (sand bar/levee) pH: 5.5-6.0

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
MM 541	*	*	9	25	Straight bole to 2m; dense upright spreading crown; ca. 3/4 crown - 1/4 bole	12	
					1 tree only present		
					Several A. leptocarpa on upper bank of river present		

Work supervised by: M McDonald Date: 14 October 1987 Total: 12 grams

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SEED DATA SHEET

Species: Acacia auriculiformis **Seedlot No.** 16187

Collection Locality: Cape Gambier, Melville Island. (25km SE of Pickertaramoor). N.T.

Latitude: 11 ° 55 'S **Longitude:** 130 ° 50 'E **Altitude:** ca. 1 (m) **Aspect:** – **Slope:** –

Climatic Zone: Wet/dry tropics **Met. Station:** Darwin

Association includes: Canarium australianum; Sterculia quadrifida; Scaevola sericea; Pandanus spiralis; Ficus virens; Mangrove spp.

Geology and Soil: Relict sand-dune; coastal foredune; verge of floodplain/Sandy soil. pH 6.0 - 6.5

Collection No.	Bot. spec.	Photo No.	Ht (m)	dbh (cm)	Tree Description	Seed wt (g)	No. viable seed/10g
~~GRB 1~~		24	4	15	Windswept low tree; sparse branches.	40	318
" 2		25	8	30	Stunted tree, branching from base, dense canopy.	35	444
" 3		26	7	10	Branching at base, small stunted tree, sparse canopy.	20	412
" 4		27	5	8	Erect small tree, branching 1m from ground, sparse canopy.	30	363
" 5		28	6	10	" " " , " 1-2m from ground, sparse canopy.	25	292
" 6		29	5	8	Stunted small tree, branching from base.	240	387
" 7		31	10	15	Large erect tree, branching from base, dense canopy.	70	350

Work supervised by: Graham Barnes **Date:** 22 October 1987 **Total:** 460 grams