BORNEO SURVEY 1969 by J.A.Thomson.

GOVERNMENT OF WESTERN AUSTRALIA

FORESTS DEPARTMENT

FOURTH FLOOR, RURAL AND INDUSTRIES BANK BUILDING
BARRACK STREET

Quote 274/68
RKR:MAE

PERTH, 6000, W.A. March 3, 1970.

Mr. J.A. Thomson,
88 King George Street,
SOUTH PERTH, W.A. 6151.

IF TELEPHONING OR CALLING WITH REFERENCE TO THIS LETTER PLEASE ASK FOR
Mr. REID

TELEPHONE: 23 2011

All correspondence to be addressed to:—
The Conservator of Forests,
Perth.

Dear Sir,

REPORT ON BORONIA SURVEY

I wish to thank you for your report on the Boronia survey carried out last year. This is considered to be a very valuable report and it will be submitted to the Hon. Minister for Forests for his information with a covering note referring to the main points.

Your recommendation that an area along the Denmark-Mount Barker Road be set aside as a Flora Reserve is being referred to the Reserves Advisory Council.

The setting aside of an area at Peaceful Bay is still under consideration.

Yours faithfully,

W. A. Wallace
CONSERVATOR OF FORESTS.

COMO

15th. December, 69

Conservator of Forests,

PERTH.

Boronia Survey, 1969.

Please find attached completed report.

I have sent one copy to Manjimup for perusal by Inspector Quain and D.F.O. B. White and retention in their office.

A spare report is also being sent under separate cover.

A plans folder with plans of the respective districts, showing known boronia areas accompanies the report.

It is suggested that you arrange for copies of each be prepared and sent to the various districts, so that further areas as discovered should be added.

J.A. Thomson.

JAT:ML.

Please refer -

1. Mr. W. Eastman.
2. Mr. J. van Noort.
3. Mr E. Budd.

BORONIA SURVEY, 1969

Introduction

The brown boronia, Boronia megastigma, is one of the most popular of the wildflowers indigenous to Western Australia. Since the beginning of the century this species, which occurs naturally in wetter areas of the extreme south west of the State, has been picked to supply a demand for decorative sprays, seeds for propagation and flowers for oil distillation.

Within recent years public concern has intimated that land alienation for agriculture, increased exploitation of ~~by~~ pickers and perhaps fires may be over using and threatening the resource. Private interests can also foresee an increased future demand with competition between the users of the floral material.

To assess the present situation with the boronia resource, it was arranged by the Forests Department for a survey to be carried out by Mr. J.A. Thomson, a retired forester with a long association with boronia exploitation and conservation in this State. This investigation ran from 1st July to 1st October, 1969.

On completion of the survey a comprehensive report, with maps of reserves, details of interviews and the results of plot yield studies, was submitted by Mr. Thomson. This is available for perusal in the Departmental library. The present summary outlines the major aspects of the survey and observations by Mr. Thomson.

Occurrence of the Species

Brown boronia frequents an area of approximately 10,000 square miles. It inhabits sheltered, wet sites occurring in small to large patches within the following regional boundaries (see map Appendix 1).

North	-	Mt. Ross.
East	-	From 6 miles east of Treesville, through Kulikup, Hartley, Unicup, Mt. Barker to the Kalgan River.
West	-	From Mt. Ross through Wellington Dam to Ludlow, Busselton, Margaret River and Augusta.
South	-	to near the coast.

Some 250 areas of brown boronia have been recorded in State Forest and it is estimated that these ~~reserves~~ comprise about 1,000 acres of boronia.

History of Exploitation

Major Lockyer who founded Albany in 1826 is said to have collected seed of brown boronia for despatch to Kew Gardens. Reports also indicate the sale of bunches of blossom for decorative purposes about 1900, while boronia seed was collected as early as 1909 for sale to Victoria at 5/- per ounce. At present, brown boronia is collected for sale as floral sprays, for seed sales and for oil distillation from the flowers.

.../2

The first Forest Produce License to gather boronia blossom for distillation appears to have been issued to Plaimar Ltd. in July, 1925, when areas 20 miles either side of the railway line between Cranbrook and Albany were involved. A similar license was issued to F.H. Faulding & Co. in 1926.

The quantity of boronia petals picked for distillation has fluctuated considerably. In the first year of operations (1926) 32,070 lbs. were picked. In 1950, 244 lbs. were used and in 1953 no material was picked. In recent years the quantities were :-

1965	-	6,788 lbs.
1966	-	4,322 "
1967	-	4,223 "
1968	-	6,569 "
1969	-	3292 "

It is estimated that the 1969 yield would be 25 percent lower than that in 1968. Since 1965, 42 percent of the yield has been obtained from Crown lands.

Sprays for decorative purposes are sold in the shops and streets of Perth and the larger towns during the short flowering season in early spring. In 1969 a total of 11,259 lbs. including containers (net weight of blossom estimated to be 5,500 lbs.) was consigned by rail for this purpose and it is probable that considerable quantities were also transported by road. Sales of floral sprays are expected to increase and compete with quantities available for oil distillation.

The annual demand for seed is of the order of 100 lbs. per annum. Most seed is exported to Victoria and New Zealand, but the local requirements are insignificant. Currently, 12 collectors are operating under Forest Produce licenses to collect wildflower seeds of all species, 13 are licensed for collection of boronia sprays and 4 have licenses to collect wildflowers in general.

For many years the oil distillate has found acceptance in Europe for perfumery use and continuation of this supply is essential to the trade.

Picking Operations

Flowers are available for a short period in late winter and early spring. It is usual for pickers to break sprays of blossom from the plants taking these home for cleaning. Provided the two bottom branches are left on the plant it appears that pruning by picking stimulates fresh, healthy growth in the following season. More selective picking of the younger growth near the ends of the branchlets results in stronger and more vigorous growth.

Assessments of several picked areas suggest that at least 25 percent of the buds (which are more difficult to pick) are left in the stand and remain as a source of seed supply for regeneration.

As far as can be ascertained, claims that boronia areas have been destroyed by overpicking are grossly exaggerated. Even uncontrolled picking for many decades does not cause a serious deterioration of boronia stands in natural habitats. At Lake Seppings, within the Albany townsite, boronia regeneration apparently has not deteriorated after 140 years of unrestrained picking. Following a severe fire two summers previously, 20 seedlings per square foot were found to be regenerating on this area.

.../3

Picking for seed purposes takes place later in the season, from mid October to mid November. Branch tips containing the seed pods are cut and taken home for extraction and cleaning. The best time to pick pods is from dawn to 10 a.m. or in late afternoon when the humidity is high. During the drier part of the day pods open readily if touched and scatter the seed onto the ground.

Yields

Results from 3 sample plots and 2 areas of private property (which have records) indicate that the best boronia stands can produce 100 to 200 lbs. of cleaned blossom per acre. At least 25 percent is left unpicked as buds. Poor patches probably yield to the order of 20 lbs. per acre and it is believed that yields of less than 70 lbs. per acre would not pay for collection.

By combing the flowers from samples of sprays, it was estimated that 1 lb. of flowers would produce at least 25,000 seeds. The best boronia stands would thus produce over 5 million seeds or about 200 oz. of seed per acre.

Present market values pay $0.75 per lb. of petals for distillation and $40.00 per lb. of seed. One hundred pounds of petals picked for oil distillation would yield $75.00 while 100 lbs. of flowers retained for seed production would yield $250.00.

Petal picking in mid winter, working in dense prickly undergrowth, sometimes knee deep in water, offers little return at $0.75 per lb.

The Growth Habit

Boronia megastigma requires a moist, sheltered habitat with acid soils. Heavy autumn rains are believed to promote a heavy flowering. The species is a prodigious annual seeder but requires fire for germination and plant establishment. The life of the plant is from 7 to 10 years, with suppression by competing vegetation occurring from 7 years onwards. Following fire, regeneration is dense with up to 40 plants per square foot being recorded.

Burning appears to be advantageous to both seed germination and establishment even in the absence of competition. On boronia reserve 18536, situated half a mile south of Mt. Barker, 40 plants per square foot were found following a severe fire three summers previously. Within three feet of the regeneration, the unburnt scrub was a dense thicket 6 feet high and only one small, weak boronia plant could be found on an area of about 20 square yards of this unburnt section.

The wet nature of most boronia sites would favour natural burning in late summer or autumn. These burning conditions, when seed is on the ground, appear to favour regeneration. A rotational burning system, with an autumn burn every 6 or 7 years to control the scrub competition appears most advantageous to boronia survival and production.

The plant may be propagated readily from cuttings and local nurserymen favour this procedure over the seedling.

Factors Affecting Survival

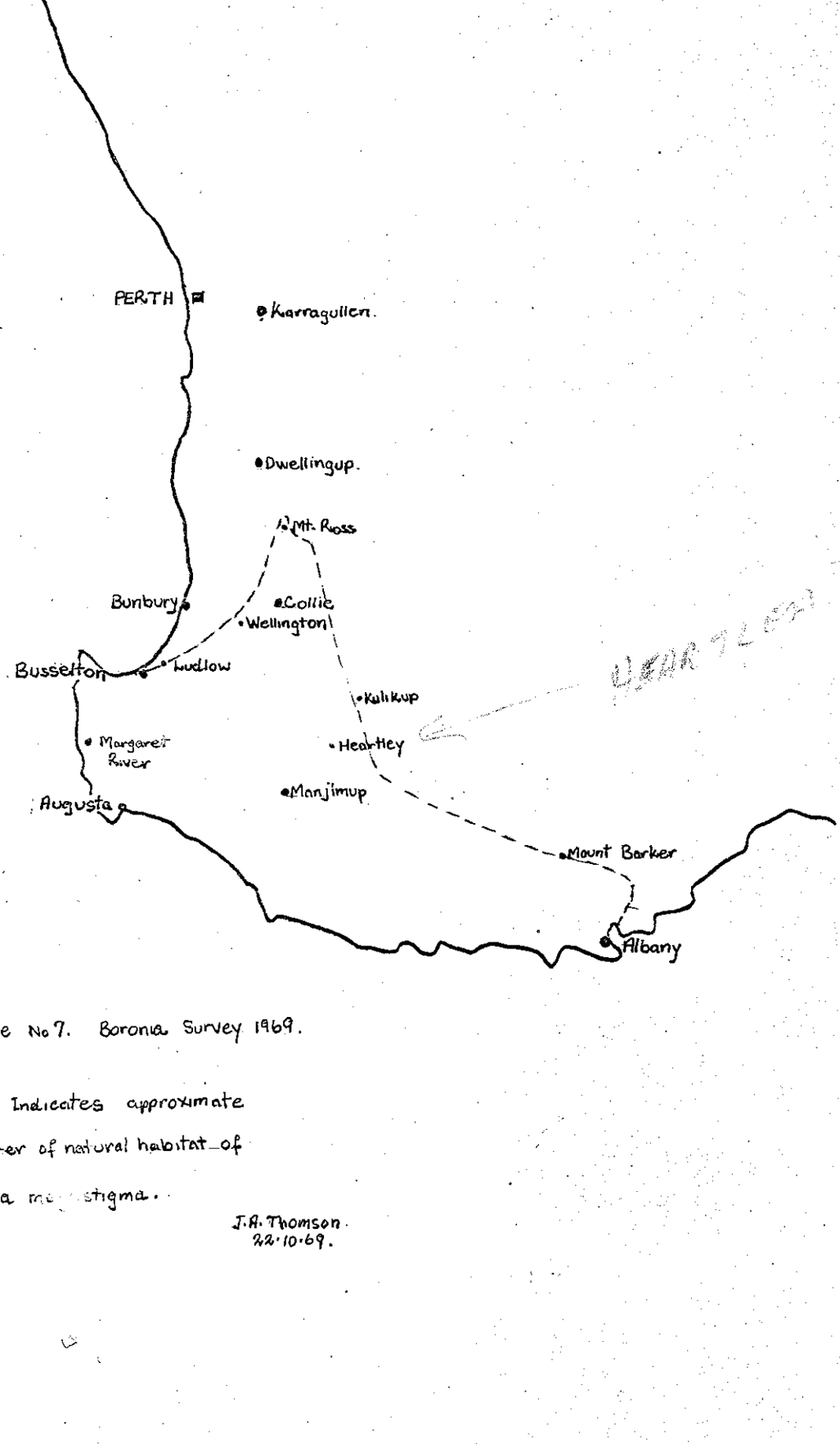
Agricultural development is probably the major factor influencing loss of boronia areas. The War Service Land Settlement Scheme in Rocky Gully, Unicup and Denbarker areas must have destroyed hundreds of acres of the best and most productive boronia sites.

.../4

Known areas on State Forest ensure that whilst many hundreds of acres have been lost through alienation, very considerable areas are permanently protected.

Picking does not threaten survival but, without burning, boronia has a life span of only 7 to 10 years before it is suppressed and finally disappears beneath longer lived and more vigorous scrub. Rotational burning ~~is~~ seems essential for the continued reproduction of the species.

Little is known of damage to the species by insects or fungal agencies but under natural conditions there appears to be no real problem.



Schedule No 7. Boronia Survey 1969.

---- Indicates approximate perimeter of natural habitat of Boronia megastigma.

J.A. Thomson.
22.10.69.

BORONIA SURVEY, 1969.

Introduction

The brown boronia, Boronia megastigma is one of the most popular of the wildflowers indigenous to Western Australia. Since the beginning of the century this species, which occurs naturally in wetter areas of the extreme south west of the State, has been picked to supply a demand for decorative sprays, seeds for propagation and, ~~more recently,~~ flowers for oil distillation.

Within recent years public concern has intimated that land alienation for agriculture, increased exploitation of pickers and perhaps fires may be over using and threatening the resource. Private interests can also forsee an increased future demand with competition between the users of the floral material.

To assess the present situation with the boronia resource, ~~a survey was conducted by the Forests Department in 1969.~~ it was arranged for by the Parks Department for a

~~The~~ survey ~~was~~ carried out, ~~under contract~~, by Mr. J.A. Thomson, a retired forester with a long association with boronia exploitation and conservation in this State. ~~The~~ investigation ran from July 1st to October 1st, 1969; ~~time being allocated to activities in the following order :~~

Interviews with Departmental employees and the public.	5%
Field inspection of reserves.	27%
Travelling time.	11%
Sample plot and picking studies	6%
Office research, collation and Administration.	51%

On completion of the survey a comprehensive report, with maps of reserves, details of interviews and the results of plot yield studies, was submitted by Mr. Thomson. This is available for perusal ~~and a copy will be made available to the public through~~ in the Departmental library. The present summary outlines the major aspects of the survey and ~~conveys recommendations suggested~~ and observations by Mr. Thomson.

The survey principally concerns brown boronia (Boronia megastigma) but has limited reference to red boronia (Boronia heterophylla) and yellow boronia (Boronia purdieana).

Occurrence of the Species.

Brown boronia frequents an area of approximately

10,000 square miles. It inhabits sheltered, wet sites occurring in small to large patches within the following regional boundaries (see map Appendix 1).

North	-	Mt. Ross.
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West	-	From Mt. Ross through Wellington Dam to Ludlow, Busselton, Margaret River and Augusta.
South	-	to near the coast.

Some 250 areas of brown boronia have been recorded in State Forest and it is estimated that these reserves comprise about 1000 acres of boronia.

Red boronia (B. heterophylla) is relatively rare and limited to two comparatively small ~~areas~~ localities.

(i) Mill Brook - a few miles north of Albany on Flora reserves 18739 (3,700 acres) and 23932 (100 acres). Remnants of an acre or so are said to occur on private property west of Narrikup and at Redmond Siding.

(ii) Several impressive areas occur along Northumberland Road between Walpole and Denmark. The largest of these is being considered as a Flora Reserve.

Yellow boronia (B. purdieana) has a relatively wide distribution on the deeply leached grey sands to the north of Perth. These sites are unsuited to pine planting and have little real value for agriculture. Several patches have been reserved within the Gnangara plantation complex.

History of Exploitation.

Major Lockyer founded Albany in 1826 ~~and~~ is said to have collected ~~seed of brown boronia for dispatch to Kew Gardens.~~ Boronia seed was collected as early as 1909, for sale to Victoria at 5/- per ounce. Reports ~~further~~ also ~~indicate the sale of bunches of blossom~~ for decorative purposes about 1900, while At present, brown boronia is collected for sale as floral sprays, for seed sales and for oil distillation from the ~~petals~~ flowers.

The first ~~permit~~ Forest Produce licence to gather boronia blossom for distillation appears to have been issued to Plaimar Ltd. in July, 1925, ~~when~~ Areas 20 miles either side of the railway line between Cranbrook and Albany were involved. A similar license was issued to F.H. Faulding and Co. in 1926

The quantity of boronia petals picked for distillation has fluctuated considerably. In the first year of

operations (1926) 32,070 lbs was picked. In 1950, 244 lbs was used and in 1953 no material was picked. In recent years the quantities ~~used~~ were :-

1965 - 6,788 lbs
1966 - 4,322 lbs
1967 - 4,223 lbs
1968 - 6,569 lbs

It is estimated that the 1969 yield would be 25 percent lower than that in 1968. Since 1965, 42 percent of the yield has been obtained from crown lands.

Sprays for decorative purposes are sold in the shops and streets of Perth and the larger towns during the short flowering season in early spring. In 1969 a total of 11,259 lbs, ~~gross weight~~ including containers (net weight of blossom estimated to be 5,500 lbs) was consigned by rail for this purpose, and it is also probable that considerable quantities were also transported by road ~~for sale in Perth and the larger towns~~. ~~It is expected that~~ Sales of floral sprays will increase and compete with quantities available for oil distillation.

~~An~~ The annual demand for seed ~~of all three species is estimated to be of the following order :-~~ of the order of 100 lbs per annum.

B. megastigma	100lb.
B. heterophylla	34 lb.
B. burdieana	6 lb.

Most seed is exported to Victoria and New Zealand, the local requirements ~~being~~ insignificant. Currently 12 collectors are operating under Forest Produce licenses to collect wildflower seeds of all species, 13 are licensed for collection of boronia sprays and 4 have licenses to collect wildflowers in general.

~~Correspondence received by the Forests Department indicates that~~ The oil distillate has found acceptance in Europe for perfumery use and ~~procedures to ensure a continued supply should be considered~~. continuation of this supply is essential to the trade

It is not possible to provide accurate details of the total amount of boronia picked. Departmental licenses must partly operate on an honour system and picking is a short term and widespread operation involving many small input operations. To date there has been little evidence to warrant an increase in Government control of the industry.

Picking Operations.

Flowers are available in ~~winter~~ early spring. It is usual for pickers to break sprays of blossom from the plants taking these home for cleaning. Provided the two bottom branches are left on the plant it appears that pruning by picking stimulates fresh, healthy growth in the following season. More selective picking of the younger growth near the ends of the branchlets results in stronger and more vigorous growth.

Assessments of several picked areas suggest that at least 25 percent of the buds (which are more difficult to pick) are left in the stand and remain as a source of seed supply for regeneration.

As far as can be ascertained, claims that boronia areas have been destroyed by overpicking are grossly exaggerated. Even uncontrolled picking for many decades does not cause a serious deterioration of boronia stands in natural habitats. At Lake Seppings, within the Albany townsite, boronia regeneration apparently has not deteriorated after 140 years of unrestricted picking. Following a severe fire two summers previously, 20 seedlings per square foot were found to be regenerating on this area.

Picking for seed purposes takes place later in the season : from mid October to mid November. Branch tips containing the seed pods are cut and taken home for extraction and cleaning. The best time to pick pods is from dawn to 10 a.m. or in late afternoon when the humidity is high. During the drier part of the day pods open readily if touched and scatter the seed onto the ground.

Yields.

Results from 3 sample plots and 2 areas of private property (which have records) indicate that the best boronia stands can produce 100 to 200 lbs of cleaned blossom per acre. At least 25 percent is left unpicked as buds. Poor patches probably yield to the order of 20 lb per acre and it is believed that yields of less than 70 lb. per acre would not pay for collection.

By combing the flowers from samples of sprays, it was estimated that 1 lb. of flowers would produce at least 25,000 seeds. The best boronia stands would thus produce over 5 million seeds or about 200 oz of seed per acre.

Present market values pay $0.75 per lb of petals for distillation and $40.00 per lb of seed. One hundred pound of petals picked for oil distillation would yield $75 while 100 lb of flowers retained for seed production would yield $250.

Petal picking in mid winter, working in dense prickly undergrowth, sometimes knee deep in water, offers little return at $0.75 per lb.

The Growth Habit.

Boronia megastigma requires a moist, sheltered habitat with acid soils. Heavy autumn rains are believed to promote a heavy flowering. The species is a prodigeous annual seeder which requires fire for germination and plant establishment. The life of a plant is from 7 to 10 years, the plant being suppressed by competing vegetation after 7 years onwards. Following fire, regeneration is dense, up to 40 plants per square foot being recorded.

Burning appears to be advantageous to both seed germination and establishment in the absence of competition. On boronia reserve 18536, situated half a mile south of Mt. Barker, 40 plants per square foot were found following a severe fire three summers previously. Within three feet of the regeneration, the unburnt scrub represented a dense thicket ~~to a height of~~ 6 feet and only one small, weak boronia plant could be found on an area of about 20 square yards of ~~the~~ unburnt ~~area~~ section.

The wet nature of most boronia sites would favour natural burning in late summer or autumn. These burning conditions, when seed is on the ground, appear to favour regeneration. ~~Spring burns would be rare and could damage the seed crop and hence detract from the future stand.~~ A rotational burning system, with an autumn burn every 6 or 7 years to control the scrub competition appears most advantageous to boronia survival and production.

The plant may be propogated readily from cuttings and local nurserymen favour this procedure over the seedling.

Boronia heterophylla is a more vigorous and stronger plant than B. megastigma. It appears to have a longer life span and to be better able to withstand competition. The older plants carry their foliage above the surrounding scrub with the branchlets confined to the top 2ft or 3ft of stem. Because of its shape and growth habit, B. heterophylla could be particularly vulnerable to spray pickers breaking off the whole head of flowers. This would seriously restrict further flowering.

Factors Effecting Survival.

~~(i) Alienation~~ - Agricultural development is probably the major factor influencing loss of boronia areas. The War Service Land Settlement Scheme in Rocky Gully, Unicup and Denbarker areas ~~would~~ must have destroyed hundreds of acres of the best and most productive boronia ~~areas~~ sites.

Known areas on State Forest ensure that whilst many hundreds of acres have been lost through alienation, very considerable areas are permanently protected.

Picking does not threaten survival but

~~(ii) Scrub Competition~~ - ~~Complete fire protection is unrealistic.~~ Without burning, boronia ~~only~~ has a life span of 7 to 10 years before it is supressed and finally disappears beneath longer lived and more vigorous scrub. Burning is essential ~~to maintain boronia production~~ for continued reproduction of the species.

Rotational burning is essential

Picking does not threaten survival but rotational burning is essential for continued reproduction of the species

(iii) Picking - As mentioned previously, there is no evidence to show that picking threatens survival. Any consideration of a rotational picking programme is secondary to a consideration of a burning programme.

(iv) Fire - Fire is essential to survival but it is possible that spring burning could be deleterious. Some concern was expressed, in one interview at Manjimup, to the extent that spring controlled burns by the Forests Department may prove a threat to some boronia areas.

(iv) Insects and Fungi. Little is known of damage to the species by insects or fungal agencies but. Under natural conditions there appears to be no real problem.

Recommendations.

(i) Assessment, Stocktaking and Experimental Plots. As the authority responsible for the protection and good management of the three boronia species of commercial value on State Forests and other Crown Lands, there is need for the Department to know -

(a) The location and existing area of each species.

(b) The life history, longevity and productive capacity in blossom and seeds etc.

- in short, the best management technique. This would require a research programme and experimental plot system of considerable scope and duration.

(ii) Rotational Picking. This has been suggested as one method of protecting boronia areas. The proposal is unlikely to be of benefit without a rotational controlled burning programme.

(iii) Erection of Notices. In the absence of more adequate patrols and controls, the suggested erection of notices, on prohibited picking areas, is of doubtful value. Such notices bring to the attention of unscrupulous poaches the fact that good boronia stands occur in particular localities.

(iv) Honorary Inspectors. Wilst well meaning public-spirited people should be encouraged to accept positions as Honorary Inspectors, they have proved of little value in the past. A quote from Forest Department files for 1966 notes that while 374 Honorary Inspectors have been appointed, it is surprising that no reports have been received from them concerning unauthorised picking.

(v) Forest Produce Licenses - To obtain more effective control over pickers it is suggested -

(a) Specific areas should be defined and allotted to each picker. Such areas should be bounded by roads and fire lines so as to come under regular observation.

The clause (e) of Pickers Order (issued 3/8/38) says - "The holder of this order shall, when called upon to do so, personally conduct and show any officer of the Forests Department the area from which any flowers have been obtained by him whether on Crown Land or private property." In practice, this clause has no real value. There is no way to identify material picked within a specific site.

(b) Simultaneous operations on Crown Land and private property should not be permitted. Under the present system there is no way of knowing whether the yield, obtained by a picker was obtained from Crown Land or private property.

(b) cont.

Licenses to seed pickers should only be issued from Divisional or District Offices, where selected areas are known and can be defined by field officers.

Licensed seed pickers should be obliged to advise the local forester within one week preceding as to when and where they intend to operate.

(c) Royalty - The royalty on boronia blossom for distillation was one penny per pound in 1926. Forty three years later it is only 3 cents per pound. Royalty rates for wildflowers of all species is 5 cents per ounce, irrespective of market value. It appears to be a reasonable proposition to increase royalties in order to cover a more realistic proportion of the cost of patrol and protection.

(vi) Boronia heterophylla. Prohibition of spray picking on Crown Land should be maintained. Picking of seed under license on Crown land should be considered.

(vii) Penalties under the Flora Act. Penalties are comparatively minor and of little, if any, practical value.

(viii) Cultivation of Boronia - If future demands are to be met, consideration of commercial plantations of B. megastigma, as in Victoria, is warranted.

SPARE COPY

15th Dec 1969.

The Conservator of Forests,
PERTH.

Boronia Survey 1969 - Summarised Report.

I present my report herewith under attached separate cover.

Species:

By far the greater part of my time was concerned with enquiries regarding Boronia megastigma, (because of its relative economic importance and extensive range - of an estimated 10,000 square miles), but "Red" Boronia - heterophylla was also investigated.

Time did not permit an investigation of Boronia purdieana, the natural habitat of which, is I believe, restricted to a relatively small area immediately north of Perth.

There appears to be evidence that serious inroads are being made into areas of this rather rare species by pine planting operations at Gnangara.

Period of Investigations:

The period of my investigation was from 1st. July to 23rd. October, 1969, less 3 weeks, 1st. to 20th. July spent in assisting with pine planting at Esperance.

Interim Reports:

Three interim reports were finished - 7th. July, 31st. July and 1st. September.

Time Allocation.

		Days	%
Interviews		3½	5
Travelling		7¼	11
Field Inspections		18¼	27
- Boronia Plots, Petal Picking etc.		4	6
Office & Administration			
Country	17 days		
Head Office	2 "		
Perth - enquiries	2 "		
Como - preparing final report	14 "	35	51
		68	100

A brief summary of the main report is as follows :-

SUMMARY OF REPORT:

The programme of operations as set out in your memo of 30.6.69 (Ref. 274/68) was as follows :-

Major Occurrences:

It became evident that Boronia megastigma occurs quite frequently (and probably over a much wider area than previously thought) so I endeavoured to obtain as much information as possible covering its whole habitat. It occurs over an area of about 10,000 sq. miles. There are about 250 known areas on State Forest.

A folder of plans covering the whole habitat, accompany the report, showing occurrences of known areas on State Forest, other Crown Lands and private property. These are supported by Schedules No....listing maps enclosed in folder, and No....listing locality references of such known areas.

2A Degree of Picking or Combing:

The 1969 crop is claimed to have been lighter or more difficult to pick than last season and amounts obtained by pickers for distillation are expected to be down - perhaps 25% on last years figures of 6,569 lbs.

Gross weight of sprays for floral decorations despatched by rail was 11,259 lbs. (estimated nett weight about 5,500 lbs.) consigned from 3 stations only viz: Mt. Barker, Albany and Collie. Deliveries by road are not known.

I did not try to obtain figures for previous years (for purposes of comparison) as I had to make special representations to the W.A.G.R. Commercial Agent to obtain details of consignments this year.

2B Quantities Produced:

Results from 3 sample plots and 2 areas of private property - 1 fenced 2½ acres and 1 unfenced bush paddock, of which records had been kept indicate that the best boronia stands produce from 100 - 200 lbs. of cleaned blossom per acre. In practice this means that not less than an estimated 25% is left unpicked as buds.

I doubt whether anything less than 70 or 80 lbs. per acre would be considered worth picking.

Poor patches I estimate would only produce perhaps 20 lbs. per acre.

2C Effect of Past Picking or Combing:

It is apparent that uncontrolled picking over many decades causes no serious deterioration.

B. megastigma is a prodigious annual seeder for most of its comparatively short life of 7 - 10 years. It disappears in competition with longer lived and more vigorous flora, but following burning (even the severest burn), regenerates apparently as thickly as ever - up to 40 plants per square foot.

2D Proposed Rotational Picking:

In view of remarks, particularly in previous paragraph, it will be agreed, no doubt, that rotational picking would serve no useful purpose.

Increased production is obviously bound up with a regular controlled (Autumn) burning programme; based I would say on a seven (7) year rotation.

2E Effect of Fire on Boronia Patches:

As with many other native species regeneration responds best to burning - and apparently the hotter the better. Examples - the spectacular wild flowers regrowth following the devastating fire at Dwellingup 1962, 1961 and Somerville Pine Plantation in Compt. 14 planted 1931 and destroyed by uncontrolled fire 1963. It is also evident on Boronia Reserve 18536, near "The Springs" Mt. Barker - Denmark Road.

2F Three Experimental Plots of ½ square chain (1/20th. acre) were marked out and picking carried out and results recorded.

Recommendations for establishment of further plots and desirable research are made in the report, after discussion with D.F.O. White at Manjimup.

3. Interviews:

I conferred mainly with officers of the Department but received a great deal of valuable information from several well experienced and reputable pickers in the industry.

I interviewed a total of 57 persons, including 20 Forests Department officers, all listed under Page 21 Schedule No. 10 Page A27. This includes 2 Honorary Flora Inspectors in Cranbrook district as well as the Shire Clerk, 1 Councillor and 1 ex Councillor who had been active in promoting complaints about alleged destruction of boronia areas.

In each case I was very well received and I am sure that in the latter case I satisfied all parties that there is no real danger of extermination.

A copy of the Index to the main report is attached hereto.

J.A. Thomson

JAT:ML.

J.A. Thomson.
15-12-69

Plane Copy.

BORONIA SURVEY 1969.

INDEX.

BORONIA SURVEY 1969.

INDEX continued.

BORONIA SURVEY 1969.

INDEX TO SCHEDULES.

REPORT OF BORONIA SURVEY (1969)

by J.A. Thomson.

1. HISTORICAL:

Major Lockyer, Founder of Albany 1826 is said to have collected seeds of Boronia megastigma (together with other local wildflowers) and sent them to Kew Botanic Gardens in England, but I have been unable to confirm this by reference to his papers in the Battye Library in Perth.

Seed Sales:

Mrs D. Medway now of 18 Hardy Street, South Perth born 1897, and one of the Muir family of "Forest Hill" (now Pardelup Prison Farm) states that she and her family collected Boronia seeds as early as about 1909 for sale to Law Somner Pty. Ltd. in Victoria.

The price was 5/- per ounce cleaned.

The pods were gathered into sugar bags from the back of a horse "There was acres of it about 6' high".

It was dried out on canvas tarpaulins and cleaned by rolling down a linen bedsheet.

Sprays for Decorations:

Mr. Ernie Gorman of Mt. Barker aged 84 recently told me he first collected boronia blossom for sale on the passenger train at Mt. Barker when he was about 12 years old. He recalls, happily, even after all this time "I once sold 42 bunches at 1/- per bunch" but they were pretty big bunches.

Apparently the railway was only completed from Albany to Mt. Barker at that time, when no doubt it was, at the same time, being built south from Wagin. Passengers included prospectors on their way to the goldfields, and probably crews on leave from ships which would spend 2 or 3 days in harbour. The novel and appealing fragrance of boronia would no doubt have made the sum of a shilling for a bunch, money well spent.

Mr. Gorman also stated that he and his family at that time also collected seeds of Boronia, Red Flowering Gum and Jarrah which were sold to Law Somner and Rossiter in the Eastern States.

Blossom for Distillation:

The first permit to gather boronia blossoms for distillation appears to have been issued to Messrs Plaimar Ltd. on 21st. July 1925 - Areas 20 miles either side of railway line between Cranbrook and Albany.

See H.O. file 310/65 - page 2.

Boronia Survey 1969 continued.

A similar license was apparently issued in 1926 to F.H. Faulding & Co - as well as Plaimar's.

See file 2/53 page 1.

2. BORONIA PRODUCTION:

A. General Comments

(1) Petals for Distillation:

Quantities of boronia petals for distillation have fluctuated considerably from 'nil' in 1953 (when no permit was issued), and 244 lbs. in 1950 to 32,078 lbs. in the first year of operations in 1926 (with two firms in the field).

There was an appreciable increase from and including 1965 as follows :-

1965 = 6,788 lbs.
1966 = 4,322 "
1967 = 4,223 "
1968 = 6,569 "
1969 = not known as yet but will be down about 25% from 1968.

Annual production for 1926, 1946 and 1949 to 1968 are given in Schedule 1 - pages A1-A2

B. Sprays for Floral Decorations:

This covers sales in streets and shops, not only in Perth but large country towns.

Railway consignments for this season total 11,259 lbs. gross weight (see Schedule No. 2 - pages A3-A4).

I estimate the nett weight of blossom sprays would be about 5,485 lbs.

It is usually packed in dump fruit cases (weight 10 lbs) which average 19½ lbs. gross.

In addition it is probable that not inconsiderable quantities are transported by road for sale in Perth and large country towns. Senior Forester H. Dawson informed me that street sales of B. megastigma commonly occur in Bunbury. He stated further that no Forest Produce Licenses have been issued from Busselton office - (the logical centre for Bunbury supply) so it is likely that supplies have been obtained illegally, as I doubt if any local private property supplies would be available.

It will be seen therefore that such sales for this most popular wildflower are considerable and it is reasonable to assume they will increase, thus posing serious competition for petal distillers.

Boronia Survey 1969 continued.

C. Seeds.

There appears to be an unsatisfied and probably increasing demand for seeds of all three species - B. megastigma, B. heterophylla and B. purdieana. (see Schedule No.3 pages v for list of seed merchants and their comments). A5 & A7 incl.

In order to gain some idea of the market seed requirements of above 3 species, a letter (dated 10th. Sept.) was sent to each of 30 seed merchants and nurserymen throughout Australia and New Zealand.

Results to date are as follows :-

Number of replies 15 (i.e. 50% of those written to)

Estimated annual requirements for the firms that replied i.e. 50% are - 50 lbs B. megastigma
17 lbs B. heterophylla
6 lbs B. purdieana.
73 lbs in all or 146 lbs. per annum. for the 100% of firms written to.

In addition telephonic enquiries were made to 16 of about 80 nurseries and seed suppliers in Metropolitan area (as listed in pink pages of telephone directory). These indicated their requirements are of a minor nature see Schedule No. 4. – pages A8-A9

Prices offered vary from $30.00 to $45.00 per lb. but one seed supplier told me that he believed a higher price is obtainable by hard bargaining! His policy was always to claim shortage of supply of any seeds of native species!

The current number of seed collectors operating under Forest Produce Licenses is (A) For wildflower seeds - all species 12 for 1410 ozs ($70 dollars royalty received) (B) Boronia blossom sprays - 13 (C) wildflowers - 4. For details see Schedule No. 5 page A10

Further investigation in seed prices might be warranted.

The cost of a Forest Produce License is based on a royalty of 5 cents per ounce of cleaned seed.

Their operations are, in the main quite uncontrolled and nothing is known for certain of the amounts finally collected.

Boronia Survey 1969 continued.

Suggestions for better control of their operations for all species of wildflower seeds including Boronia are offered under Section 9 "Recommendations" sub-section "E". Pages 18-19.

3. EFFECTS OF PICKING OF B. MEGASTIGMA.

Claims that boronia areas have been destroyed by picking, (so far as I can ascertain) are grossly exaggerated and based on poor observation.

Picking - even uncontrolled picking for many decades, does not cause any serious deterioration of boronia stands in their natural habitat. The classic example I think is Lake Seppings, within the Albany townsite.

The boronia regeneration there recently, following a fairly severe fire two summers ago, is apparently none the worse after 140 years of unrestricted picking (remembering that Major Lockyer founded the settlement in 1826) - I counted 20 seedling plants to the square foot.

So long as the 2 bottom laterals (always opposite) are partly left, and even though sprays are roughly torn off, picking appears to act as a form of pruning and stimulates fresh healthy growth in the following season.

Pressed specimens, as evidence are shown on Schedules No. 6 A, 6 B, & C pages A12, A13, & A14.

It will be noted that more selective and careful picking of the younger growth nearer the ends of the branchlets, seem to result in stronger and more vigorous growth.

Spray Picking is Usual Practice.

It is the usual practice, or at least very common, amongst petal pickers, to break sprays of blossom and take home for later combing and cleaning with sieves. This is understandable, when people travel up to 40 and 50 miles and more, and naturally want to pick as much as possible in the shortest possible time.

4. EFFECTS OF BURNING:

Regular burning of the site is necessary for germination of the seed, and very severe burning only seems to improve regeneration, e.g. Reserve 18936 "The Springs" - Plan Denmark 80 ref. JK-149.

Spring Burning - Continued spring burning could eventually seriously reduce boronia areas, although as stated elsewhere, the damper ground inhabited by boronia would not normally burn. There are occasions in spring under windy weather conditions, however, when the dense scrub in swamps and flats burn quite fiercely.

Boronia Survey 1969 continued.

Incidentally, Mrs D. Muir, Plaimar's agent in Manjimup, complained to me that much boronia country had been spring burnt by Forests Department operations last year.

5. NOTES ON PICKING: - Rates & Quantities - Petal Sprays and Seeds.

Below is given figures concerning petal production from the undermentioned :-

A. Sample Plot - 1/20th. acre located on Reserve No. 18536 near "The Springs" via Mt. Barker - Denmark Road.

B. Sample Plot - 1/20th. acre located North end Cowerup Swamp (north of Lake Muir).

C1, C2, C3 - Details supplied by F. Brookes of Mt. Barker.

D. Returns supplied by Mrs Keith Gorman of Mt. Barker.

E. Plaimar's 2½ acre (leased) plot on Sam Brentons Loc. 2096.

F. Mrs Les (Muriel) Brenton
(Happy Valley Road), Phone Golden Hill 223
½ square chain plot.

Petal Picking.

A. Sample Plot

Locality: Reserve No. 18536 "The Springs" via Denmark - Mt. Barker Road.

Area: 1 chain x ½ chain = 1/20th. acre

Pickers: F. Brooks and J.A. Thomson

Age of Plants: 2nd. year 12" - 24" high and extremely dense to 40 per square foot. (associated flora also very dense).

Total Quantity Picked = 4¾ lbs. (= 85 lbs. per acre)

Picking Method: = Spray picked by fingers, about 9" long and taken home for cleaning.

Time Taken - To pick
- To comb and sieve and clean of debris. } 4 man hours

B. Sample Plot - North Cowerup Swamp.

Area: 1 chain x ½ chain = 1/20th. acre

Pickers: F. Brooks and J.A. Thomson

Age of Plants: About 4 years - 2'6" - 4'0" high

Section 1 (Northern end)
½ chain x ½ chain = 1/40th. acre
Quantity picked = 4½ lbs. (cleaned)
= 180 lbs per acre
Picking method: - spray picked (and sprays taken home for cleaning)

Time - Picking	2	man hours
+ subsequent cleaning	1½	" "
Total	3½	" "

Section 2 (Southern end)
½ chain x ½ chain = 1/40th. acre
Total quantity picked = 4 1/16 lbs (cleaned)
= 160 lbs. per acre
Picking method - combed with fingers

Time - Picking	2½	man hours
+ subsequent cleaning	1	" "
Total	3½	" "

Comments:

We estimated (before making a bud-flower count - see below) that 25% of blossom representing buds were left unpicked (which will, of course, produce seed). Buds are normally left because they are more difficult and take longer to pick than full blossom remembering that the picker aims to pick it as clean as possible (i.e. least leaf matter).

A "bud-flower relationship count" resulted 412 buds (46%), and 490 flowers (54%). Due to smaller size of buds there is a tendency to under-estimate the proportion of buds.

The fact that some petals had already commenced to fall and immature seed was recovered, indicates that the plant can carry nearly half buds at the same time that seed is in process of maturing.

Boundaries of plots were marked with yellow plastic 1" ribbon.

Four bush cut pegs indicate the corners.

Petal Picking:

Fred Brooks of Mt. Barker was asked by me to keep a record of his picking times and he supplied the following information:

Boronia Survey 1969 continued.

C1. Date 23.8.69.

Weight of cleaned petals picked	=	12 lbs.
Time required to spray pick	=	2¾ hours
" " " comb (at home)	=	3¾ "
Travelling time	=	2 "
Total time		8 "
Distance travelled = 84 miles.		
Remuneration 12 lbs x 75 cents	=	$9.00
Less travelling costs 84 miles @ 6 cents	=	$5.00
Nett		$4.00

C2. Date 17.8.69.

Weight of cleaned petals	=	11 lbs.
Time required to pick	=	1¾ hours
" " " comb (at home) ("very easy combing")	=	1¾ "
Travelling time	=	2 "
		5½ "
Distance travelled = 82 miles.		
Remuneration 11 lbs @ 75 cents	=	$8.25
Less travelling 82 miles @ 6 cents	=	$4.96
Nett	=	$3.29

C3. His best day ever (in 1968) - (it must have been a long one!)

Weight of petals picked	=	50¾ lbs.
Time to spray pick	=	15 hours
" " comb (at home)	=	12 "
Travelling time 160 miles	=	4 "
Total time	=	31 "
Gross return 50¾ lbs x 75 cents	=	$38.06
Less travelling 160 miles x 6 cents	=	9.60
Nett return	=	$28.46

D. <u>Keith Gorman's Private Property.</u>

An area of approximately 4½ acres of boronia (my assessment) along 100 chains of creek through a bush paddock (in location 5701 Plan 451/80 Bl). Sheep have had access to it and the southern end of the area has been regularly poached over the years.

Boronia Survey 1969 continued

Mrs Corman said that for various reasons it has never been picked out to its fullest capacity.

She has kept records of blossoms supplied to Plaimar & Co. from 1964 as follows :-

1964	420 lbs	
*1965	900 "	= (200 lbs. per acre)
1966	201 "	
1967	147 "	
1968	180 "	
1969	48 "	- incomplete

*Extra good season and well picked over.

E. Sam Brenton's Private Boronia Plot

2½ acre plot on S. Brenton's loc. 2094, Happy Valley Road. See Plan Denmark 80 - JZ 132.
Information supplied by Mrs S. (Jean) Brenton, (Plaimar's agent at Parryville via Denmark. Telephone Golden Hill 212).
This plot has been fenced by Plaimar's and leased to them.
Area - 2½ acres (my measurement).
1968 Season - 290 lbs = 116 lbs per acre
1969 " - not available yet.

Mrs M. Brenton's Private Boronia Plot

F. Section 5

Sample Plot — 1/20th. acre - Mrs M. Brenton.

Area — 1 chain x ½ chain = 1/20th. acre
Indicated by sawn jarrah pegs 6' x 1" x 1" at each corner and boundaries with yellow 1" wide plastic ribbon.

Locality — Location 4227 - private property
Plan Denmark 80 - JU/130

Associated Flora

Paperbark trees - a few
Ground Flora - predominantly reeds and rushes to 2½' and Agonis sp. a few Acacia sp. and Hakea.

Soil — Grey brown silt

History — 1969 was the 3rd. successive season the area has been combed for petals by Mrs Brenton. The plot was burnt in 1963-64 summer.

Boronia Survey 1969 continued.

Weight of Petals obtained was -

3 lbs 14 ozs cleaned = 77 lbs. per acre.

Comments:

It was estimated that about 25% of the blossom (represented by buds) was left unpicked.

Picking Method - combed by fingers.

Pickers Mrs M. Brenton and J.A. Thomson

56. General Notes

Method of Seed Picking

F. Brooks advised me as follows :-

1. He cuts branch tips carrying pods of seeds (to take home to clean). This procedure minimises loss of seeds by popping from the pods, as often occurs when being stripped by hand from the plant.

2. Time of day is important as the pods open readily when touched in the latter part of the day. Best time is from dawn to about 10 a.m. and late afternoon to dark when, with the damper air less "popping" occurs compared with drier conditions of mid-day.

Seed Picking Season (B. megastigma)

I would think 2 or 3 weeks from mid or late October. More specific information will be available when report is received from Asst. For. Cooper of Mt. Barker following seed picking on 2 sample plots - 1/20th. acre each.

Boronia Growing

Drought Period. F. Brooks claims that in the summer drought period boronia plants in their natural habitat go into a more or less dormant state - the side roots die and deep tap roots develop. Side roots again develop with winter rains. The toughening of side roots co-incides with the forming of buds.

Acid Soils. Boronia likes an acid soil. The addition of sulphur to the soil creates acidity.

Tea Leaves. Used Tea Leaves: I have been told of numerous instances of boronia (generally bush transplants) being successfully grown in home gardens by the regular addition of used tea leaves to the soil. It seems doubtful that such would increase its acidity to any but a minor degree.

Growing from Slips. An inspection of back yard nursery of Mr. S. Bowra (Plaimar's Field Representative) at his home 4 Adelia Street, Bayswater, indicates the growing from slips is the best method of propogation.

Boronia Survey 1969 continued

I also inspected Plaisar's experimental plot near Kinninup Pool via Collie (as reported in detail 15.9.69) and plants grown from slips were generally much more healthy and vigorous than bush transplants.

Growing from slips, in preference to seeds, is a fairly popular method, as indicated by several commercial nurserymen - See Schedule 3 pages A5-A7

Wind Exposure

Adverse effect of wind and weather exposure has been noted in several areas in its native habitat.

Heavy Flowering and Autumn Rains

Heavy autumn rains are said to promote correspondingly heavy flowering, according to Mrs Jean Brenton of Parryville.

Comments:

Labour.

Petal picking for distillation, at 75 cents per lb. of cleaned petals, is one of the poorest ways I know, of earning that small amount of money.

It is a mid-winter job and entails working in dense wet prickly undergrowth, up to head height or more, in swamps, sometimes knee-deep in water.

Apparently much picking for pocket money is done by "Mum and the Kids" during school mid-winter holidays.

Mr. Fred Brooks claims that some of the best men pickers have been attracted away to the more lucrative (@ $1.50 per hour) and better working conditions of contract pruning of orchards.

6. FACTORS EFFECTING SURVIVAL:

A. Alienation:

The major factor in the loss of boronia areas is agricultural development. I made no very serious attempt to assess the possible area in view of the extensive areas on State Forest and consequent permanent protection.

Mrs J. Brenton of Parryville who has picked boronia for commercial pickers for 15 years in the area has provided a list (Schedule No. 6 page A11) which shows that within a few miles of her homestead about 80 acres of boronia on 17 locations has been, or probably will be cleared for pasture.

The War Service Land Settlement scheme in Rocky Gully, Unicup, Denbarker areas would have destroyed hundreds of acres in probably the best and most productive boronia areas.

Boronia Survey 1969 continued

It is claimed that a gully in which B. megastigma grew for 9 miles of its length was alienated on War Service Land Settlement, south along Northumberland Road commencing from Muir Highway.

As mentioned however, the known areas on State Forests, ensure that whilst many hundreds of acres have been lost by alienation, very considerable areas are permanently protected on State Forest.

B. Scrub Competition:

Boronia has a limited life of 7 - 10 years. It is suppressed and finally disappears by longer lived and more vigorous scrub only to re-appear after burning of the site. As shown under Section 7 page 12 , it is a prolific annual seeder and germination follows burning.

Examples:

1. Lake Seppings - Middleton Beach, Albany Townsite.

The northern part is covered by what is now known as Boronia Reserve 22058.

Thirty years ago, on 25/7/39, I inspected this area (Head Office file 2/53) and reported Area "A" (the north, west and southern portion)

"Brown boronia grows prolifically on section "A" of type map".

I recently inspected this same area (thirty years later) and could not find any boronia plants because of density of other scrub which hadn't been burnt for 6 or 7 years.

On the eastern side of the Lake (and south east of Reserve 22058) I found plentiful regrowth of young boronia plants to 12" (20 per square foot) where a burn had occurred two summers ago.

2. Boronia Reserve 18536, ½ mile south of Mt. Barker - Denmark Road (see Denmark "80" - Forests Department Plan ref. JJ & J.K). Last month, in company with Inspector Quain, I counted 40 plants per square foot following a very severe bush fire 3 summers previously. Within 3 feet of this dense regrowth of boronia plants, was a wall of extremely dense scrub (unburnt for probably 6 years or more) 6' or more in height. We carefully examined an area of about 20 square yards and could only find 1 weak struggling boronia plant.

Boronia Survey 1969 continued.

C. Picking:

Relatively unimportant. See Section 3 above-page 4.

D. Drought:

Of minor consequence. One instance seen (5th. August 1969) was at junction of McNab and Bevan Roads, south of Lake Muir. See Plan Shannon 80 ref. HX 97. More instances will probably occur in this exceptionally dry year, but most plants in damper ground will survive. Pressed specimens are shown in Schedule No. 6C, page A14

E. Disease:

1. Native Coccid or Scale Insect:

I found many boronia plants infested in one of the best stands of boronia seen, i.e. Cowerup Swamp.

Specimens were sent to C.F.H. Jenkins, Chief, Biological Services Division, Dept. of Agriculture whose comments are quoted below:-

"The boronia submitted by you was found to be infested with a native coccid or scale insect.

These insects are commonly found on all types of native flora, but it is doubtful if they would be responsible for large areas dying off. Native coccids are usually attacked by large numbers of natural parasites and predators and these tend to prevent a local outbreak spreading very far.

The association of this coccid to boronia has possibly been in existence for a very long time, and if the insect was the primary cause of death the boronia would have been wiped out long ago.

Should the control of this pest be warranted in your opinion a mixture of :-
Malathion 50 - two teaspoons, White Oil - tablespoons, water - one gallon will be effective if applied during the summer".

2. Phytophthora cinnamoni fungus:

Unfortnately I have mislaid details of 1 area said by Mrs Ellis Smith of Collie Burn to have succumbed in a jarrah die back area. On the other hand another boronia area was said (I think by Forester Mahoney of Kirup) to have survived on a die back plot, located on Kirup 80 Plan reference FF 45

Boronia Survey 1969 continued.

F. Fire:

Instances are quoted under section 6 B above to demonstrate that fire is a necessary factor in survival of boronia (in common with many other native species) for the reasons that -

(1) it germinates seeds
(2) it eliminates, temporarily at least, the suppressing effect of competing scrub
(3) destroys harmful insects, and other sources of disease.

The question of the results of continued successive spring burning is one that should be seriously considered in view of the fact, I understand, that most controlled burning is carried out by the department in the Spring.

I have suggested (section 9 page 17) that this be one of the purposes of experimental plots.

SEEDING CAPACITY.

On 25.8.69 from flowers combed from sprays (picked on Reserve 18536 near "The Springs" Mt. Barker - Denmark Road - Plan Denmark 80 - 149/JJ & J.K), I weighed one ounce of flowers and counted a total of 800. The flowers were comparatively large and well formed.

1 oz. = 800 flowers
1 lb. = 12,800 "

Each flower can produce 4 seeds, .*. 1 lb. of flowers on a conservative estimate of 2 seeds per flower should produce 25,000 seeds. So 100 lbs. of flowers should produce 2,500,000 seeds (on this basis 2,500,00 seeds @ estimated 25,000 per oz = 100 ozs = 6¼ lbs. @ $40 per lb = $250.00 per acre). The best boronia area on which I combed flowers on ¼ square chain area (i.e. 1/20th. acre produced 160 lbs of flowers plus an estimated 25% i.e. 40 lbs. left. (Cowerup Swamp north of Lake Muir).

It seems therefore that in the best boronia stands 1 acre of boronia can produce 5,000,000 or more seeds, or about 200 ozs. per acre.

Comparison Petal Picking v Seed Values.

100 lbs of petals @ *75 cents = $75.00
100 " " flowers can conservatively produce 100 ozs. of seeds, market value @ $40.00 per lb. = $250.

*$00.75 per lb. is price paid by Plaimar's to pickers.

It should be noted that above figures regarding seed production are estimates on the assumption of the production of 2 seeds per flower.

Boronia Survey 1969 continued.

From questioning regular seed pickers such as Rod Young of Albany and Fred Brooks of Mt. Barker seed productions varies according to locality. For instance Albany area is claimed to be poor as compared with Mt. Barker - Lake Muir area.

Note Added 3.10.69.

I had hoped to pick seed from ¼ square chain plots of B. megastigma on Reserve at "The Springs" Mt. Barker - Denmark Road and Cowerup Swamp (north of lake Muir) but seed was immature on my last visit 29th. September.

I have arranged through D.F.O. Mather of Manjimup for A/P Cooper of Mt. Barker to have seed picked and weighed in due course - copy of my letter of 30th. September to A/P Cooper sent to Head Office.

SECTION 8.

AREA OF NATURAL HABITAT:

Boronia megastigma

page A15

As indicated on attached plan (Schedule No. 7), the natural habitat covers an area of approximately 10,000 square miles (See also Schedules No. 8 "List of Maps", page A16 and No. 9 "List of Known Boronia Areas"), pages A17 - A26

It is roughly bounded :- in the north - by Mt. Ross (or possibly Hoffman's Mill).
(O/S Jack Feast of Como advises Brown Boronia found in streams feeding Murray and Harris Rivers but not in those feeding Harvey River). In the east - from about 6 miles east of Treesville (Harvey Plan 80, DU/83) through about Kulikup, Hartley, Unicup, Mt. Barker to Kalgan River (Albany District). It may also occur on several reserves (26385, 27139 and 15107 Plan 451/80 F3 - 4) 8 miles or so east of the Kalgan.

Incidentally Mr. G.E. Brockway (file 651/53 page 86, dated 15.10.54) refers to alleged "boronia patches in Many Peaks area, now cleared and all boronia destroyed".

Many Peaks is about 20 miles east of the Kalgan River.

Fred Brooks told me he had recently seen Boronia plants at edge of the Albany-Ayre Highway about 10 miles east of Many Peaks. He also stated that he had been informed that boronia occurred near the coast at Cape Riche.

Westerly - From Mt. Ross through about Wellington Dam to Ludlow - Busselton - Margaret River - Augusta.

South - to near the coast.

Boronia Survey 1969 continued.

Source of Information:

The above information is based on reports mostly from local Departmental officers and 3 other reliable persons engaged in the Boronia industry, namely - Fred Brooks of Mt. Barker, Mrs Joan Brenton of Parryville and Mrs Ellis-Smith of Collie.

Such information indicates that there are about 250 areas on State Forest (at a very rough guess I would say there could be 1,000 acres in all).

On some watercourses such as the Deep River (which drains into Lake Muir and is about 40 miles long) patches of boronia occur irregularly along its whole length.

No attempt has been made to inspect such areas - other than a comparative few, of which I give detailed reports under Section 13.

Detailed information to determine the best boronia areas throughout the natural habitat would require several seasons by Departmental officers for the reasonsthat :-

1. It is a time-consuming job.
2. It is most effectively done in the flowering season.
3. Each area needs to be inspected from 3 to 5 or 6 years after burning - that is in its best productive years.

As mentioned elsewhere, in older stands boronia plants become suppressed or reduced in population - eventually to the point of disappearance. Up to 2 years after a burn seeds may not have germinated and very young plants are not obvious.

It is noted that in a letter to the then Hon. Minister the Conservator 27th. July 1954 (H.O. file 651/63 - p.44) said -

"Officers of this Department engaged in assessment work in the lower South West are being instructed to note any outstanding areas of native flora which might be considered for reservation. This will naturally take into account outstanding Boronia areas".

I found no record of result if any ?

It is suggested that this matter be followed up to ascertain and record what additional areas may be known and plotted.

Boronia Survey 1969 continued.

List of Known Boronia Areas in Each District

A summarised list of the known Boronia areas indicated on each district plan, appears hereunder :-

B. megastigma

District or Plan	S.F.	Reserves	C/L	P.P. Existing	P.P. Destroyed
Nannup	17			2 +	2
Pemberton	16			- +	
Manjimup	39			2 +	
Shannon 80	48			1 +	
Perup 80	8			7 +	
Walpole 80	15	1			
Donnelly 80	2				
Denmark		3	22+	5 +	13
F.D. 415/80	-	1			
Kirup 80	9	1		4 +	
Grimwade	6 + A/F Crawford's list to come				
Harvey & Collie 80's	56				
Jarrahwood 80	4			1 +	
Vasse 80	20			2	
F.D. A.P.I. 173/40	1				
F.D. 415/80		1			
Karridale 80	3			1	
451/80		5		5	
	244+	12	22+	29 +	15

Boronia heterophylla

This rather rare and very popular species (both for floral decorations and seeds) is limited to two comparatively small areas :-

(1) Mill Brook - a few miles north of Albany on Flora Reserves 18739 (3,700 acres) and 23923 (100 acres). Remnants of an acre or so are said to occur on private property, Chrystal Brook west of Narrikup and on L. Male's farm, Redmond Siding.

Boronia Survey 1969 continued

(2) In recent years Forester J. Rate of Walpole has found several impressive areas along Northumberland Road, the largest of which he has recommended should be reserved for flora.

In view of its limited habitat and popularity I think such recommendation is well merited.

The known areas are shown hatched red on plan Denmark 80 reference squares JO-JP/118-119. see plan folder (separate cover) & Section 13, pages 34-35, & 28

Boronia purdieana

Time did not permit a survey of this species. Its habitat is immediately north of Perth

Section 9.

RECOMMENDATIONS.

A. Assessment, Stock-taking and Experimental Plots.

As the authority responsible for the protection and good management, particularly of the three boronia species of commercial value on State Forests and other Crown Lands (viz. B. megastigma, B. heterophylla, B. purdieana) there is a need for the Department to know :-

Firstly - the existing area of each species,

Secondly - the life history, longevity and productive capacity in blossom and seeds etc;

in short the best management technique.

This would require establishment of experimental plots and subsequent records.

I discussed this matter recently with D.F.O. White of Research Branch at Manjimup and he concurs with the idea that information should be sought under the following headings :-

Longevity of life span,
Effective flowering life
Production of blossom in lbs. per acre
" " seeds " " " "
Soil tests
(Boronia megastigma in particular likes acid soils)
Fertilising trials
Effect of Jarrah Die-back Fungus Phytophthora cinnamoni
" " native coccids or other disease
" " scrub competition
" " exposure to wind, sun, etc.
" " salinity
" " drought

Seed viability - at what age does it lose effective viability ?

Differences in seed production in ages and localities.

Management of Indigenous Areas -

controlled burning

time between rotational burns -

autumn burns -

spring burns -

winter burns -.

B. Rotational Picking

This has been suggested as one means of protecting boronia areas. I think this proposal is unlikely to be of benefit without a rotational controlled burning programme.

C. Erection of Notices

In the absence of more adequate patrols and control, the suggested erection of notices on prohibited picking areas, is of doubtful value. I think such notices bring to the attention of unscrupulous poachers the fact that probably good boronia stands occur in particular localities.

The law abiding person, I believe, represents the great majority of people, but I must stress the fact that otherwise good living people have been illegally picking boronia for decades because - reserves and other prohibited areas are generally neglected areas that no authority seems to concern themselves about, either in policing or controlled burning. The consequence is that often a major fire hazard is built up and such areas from time to time are swept by fire. Furthermore it is generally recognised that such always result in plentiful stands of boronia. If a few dollars can be earned by "retrieving" boronia blossom in such circumstances it is difficult to believe one is committing any moral if legal crime.

D. Honorary Inspectors

Whilst no doubt well meaning public-spirited people should be encouraged to accept positions as Honorary Inspectors, they have apparently proved of little value in the past.

I quote from file 651/63 page 177 date 15.12.66 - "--- 374 Honorary Inspectors have been appointed.

It is surprising that no reports are received from them concerning unauthorised picking ---".

They are not required to have any more, than perhaps a smattering of specialised knowledge on the subject. So long as they are people of good repute and express willingness to accept this voluntary position, they are acceptable.

Under the circumstances they cannot be expected to exert themselves to any particular extent or accept any real responsibility, especially if it means instigating action against their neighbours and friends.

E Forest Produce Licenses.

To obtain more effective control over pickers operations I suggest the following :-

(1.) Specific areas should be defined and allotted to each picker whether for boronia blossom for distillation or floral decorations or seeds. This should prevent a lot of poaching and each licensee should be more likely to police his own area.
Incidentally, it is of interest that there is one Forest (Boronia) Lease in existence - No. 752/40 issued to Rod Young of Albany for farming the seeds of B. megastigma, a condition being that fire-lines should be cleared and maintained.

I have not investigated this form of allotting boronia areas or whether conditions have been observed on this particular lease.

I would think it more desirable that any such areas should be bounded by Departmental roads and fire-lines and therefore coming under regular observation.
Clause (e) of Pickers Order (issued 3/8/38) says - "The holder of this order shall, when called upon to do so, personally conduct and show any officer of the Forests Department the area from which any flowers have been obtained by him whether on Crown land or private property".

In practice this clause has no real value. Boronia bushes and sprays, unlike large trees and logs have no (or only microscopic) distinguishing features to easily recognise, and an officer could be taken to any picked-over area of boronia and would be none the wiser.

(2.) Simultaneous Operations on Crown land and private property (as now applies for boronia blossom) should <u>not</u> be permitted.

As it is, now Pickers Orders are issued to any individual on application, (often no proper address stated). The holder then proceeds on his undisclosed way and when the job is finished the Agent completes

the order by quoting "Crown Land" or "Private Property Location No....." on the unconfirmed statement of the holder of the Pickers Order.

Licenses to Seed Pickers, in my opinion should only be issued from Divisional or District Offices, where selected areas are known and can be defined by field officers. Otherwise such licenses should be issued from Head Office after advice from local officers. Furthermore I think the licensed seeds pickers should be obliged to advise the local forester within one week preceeding as to when and where they intend to operate. This particularly applies in far-flung districts like Kalgoorlie.

(3.) Royalty.

The royalty on boronia blossom for distillation, was one penny (1d) per lb. in 1926. The current rate is 3 cents per lb.— 43 years later.

Royalty rates for wildflowers of all species is 5 cents per ounce irrespective of market value.

In view of the increasing activities it seems that more and more seed collectors are coming in to the field - there being an unsatisfied demand; boronia blossoms for flora decorations are in such substantial demand (over 11,000 lbs. gross weight consigned to Perth by rail this season), and Plaimar's have an unknown and apparently unlimited market for boronia otto, it appears to be a reasonable proposition to increase royalties, in order to cover a more realistic proportion of the cost of patrol and protection.

Consideration, might, with advantage be given to compelling Licensed Seed Pickers to at least submit a Statutory Declaration regarding quantities of seeds obtained.

F. Boronia heterophylla

Spray picking on Crown land is not now permitted and it will be obvious that this policy should be permanently continued. Picking of seeds under license should be permitted on Crown land, and from time to time on reserves subject to specified areas being allotted to particular individuals.

G. Penalties under the Flora Act.

The comparatively minor penalties are little, if any deterrent to illegal operators and are certainly discouraging to Forestry officers in that convictions for small fines can entail days of investigations.

As is well known boronia is scattered over a wide area of about 10,000 square miles. Its flowering period lasts only a few weeks, in which there is widespread activity by many operators. Operators work in isolated and widespread areas, for a few hours at a time and make no noise and move about rapidly in light vehicles which leave not very noticeable tracks.

As previously pointed out picked boronia has no readily recognised distinguishing characteristics and therefore illegal operators generally have to be caught red-handed.

H. Liaison with W.A.G.R. Desirable.

An arrangement is desirable for the W.A.G.R. to advise this Department of railway consignments, particularly of boronia spray blossom for floral decorations which as shown above have grown to considerable proportions. A special authority had to be obtained for me to be supplied with such information, as, under Railway regulations it is regarded as confidential.

I. Cultivation of Boronia megastigma in Victoria.

Extensive cultivation for commercial purposes has apparently been practiced for decades.

It would be of interest to have information concerning area under cultivation, production and purpose - i.e. whether any used for distillation, market prices, problems with cultivation. I believe for instance that a certain species of fungi causes much damage.

Through the representations of Mr. Beggs some literature was obtained from Mr. Knowles, Forest Commissioner of Victoria but it only contained copy of their Wildflower Act, list of prohibited species etc. I was hoping it might contain information about the cultivation of Boronia megastigma commercially, production markets, whether used for distillation, insect, fungus diseases and so forth. Time did not permit me further enquiry.

SECTION 10:

PERSONAL INTERVIEWS:

I interviewed a total of 57 persons in the course of my investigations.

This number includes 20 Forests Department officers or ex officers and 37 others.

Names and centres are listed hereunder.

Boronia Survey 1969 continued.

Interviews:

Farmers: Jim Muir, "Padgee" via Perup
Basel Hannekamp, Lake Muir
J.A. Church, Hon. Sec. Denmark Farmers Union
Ed. Proctor, Rudgyard, Via Denmark
Mr. Les. Brenton, Denmark
Mr. Sam Brenton, Parryville
Mr. Bill Drage, Forrest Hill, via Mt. Barker ex picker
Mr. Keith Gorman, Mt. Barker

A. Albany Branch Wildflower Society: Hon. Sec. - Mrs Eileen Croxford
President - Mr. Harold Daniels (Snr. Inspector of Police)
Town Gardener - Mr. Bob Thomson
Reporter - David Naylor - "Albany Advertiser"

Tourist Association: Mrs Barbara Ridley - Secretary Denmark Association.

Boronia Industry:

Plaimar's Ltd: Dr. H. Anderson Asst. General Manager
Mr. C.T. Pullan Managing Director
Mr. Reg. Bowra Field Representative

Agents: Mt. Barker - Mr. W. (Bill) May

B. Pickers:
Parryville via Denmark - Mrs S. (Jean) Brenton
Manjimup - Mrs D. Muir
Warrikup - Syd. Lilford
Albany - Rod Young
Mt. Barker - Fred Brooks
" " - Ernie Gorman (retired) 84 years of age.
" " - Mr & Mrs W. Cassels (ex pickers)
Collie Burn - Mr & Mrs C.F. Ellis Smith

C. Buyer and Salesmen: Mr. Hewitt Aberdeen St.) who organise
Mr. John Lekias " ") all street sales in Perth.

Shire Clerk: Mr. Chown, Cranbrook
" Councillor: Mr. Graham Swiney
ex " " and pioneer Farmer: Mr. George Swiney of Frankland and father of Graham Swiney.

Mr. J. Caddy, Sec. Metro Markets, Perth.

Sawmillers: Arthur Apps, Manager, Tone River.

Businessmen: Mr. Bob Faulkner (now deceased) of Mt. Barker.

Honorary Inspectors: Mr. Alf Gillam (businessman) of Mt. Barker
Mr. Frank Smith (Farmer and Author of conservation booklet "Kiss of Life").

Boronia Survey 1969 continued.

SECTION 11 - PLAIMAR'S OPERATIONS.

A. Plaimar's Experimental Plots.

Plaimar's commenced 4 small experimental plots 3 or 4 years ago - one in Collie and three in the Parryville area via Denmark.

The late Mr. Kalonaski(?) (who unfortunately died last year) was responsible for the establishment of the plots. Records are either incomplete or non-existent but a few observations are worth noting I think.

I have inspected all four.

1. Collie Plot (Inspected 10th. September, 1969)

A detailed report by me was sent to Head Office (from Manjimup) 15.9.69.

Area - about 1½ acres and is divided into 8 plots containing 485 plants.

Treatment - Cleared (with the exception of 10 large jarrah and blackbutt trees) and cultivated apparently immediately before planting.

Age - Plants 1st and 2nd. years.

Comment - At time of inspection, there was a marked difference between plants transplanted from the bush (poor colour and unthrifty) and nursery transplants (apparently grown from "slips") generally good colour and vigorous growth.

2. Parryville Plots

Two are located about 20 chains east of the Boat Harbour Road and 10 to 20 chains south of the South West Highway respectively.

Southern Plot (20' x 18')

The most southerly (inspected 22nd. August 1969) is very small 20' x 18' and indicated by sawn jarrah pegs 3" x 2" x 1". It had been cultivated immediately prior to planting. It contained 12 Boronia megastigma plants plus another 23 within a 10' radius of the plot.

Mrs J. Brenton told me it was planted "about 1965" and that the plants were lifted from the adjoining areas.

Comments - At time of inspection the plants were unthrifty and 9" - 15" in height.

In my field book I noted relative position of all plants. Detailed sketch is not supplied because of the smallness of the plot.

Boronia Survey 1969 continued.

Northern Plot (Size about ¼ acre - 3 chains x ¼ chain)
Indicated by sawn jarrah pegs 3" x 2" x 1" with painted white tops.
Date of Inspection - 20th. August, 1969.
Location - Eastern side of scrubby flat about 20 chains east of Boat Harbour Road and 10 chains south of South West Highway.
Treatment - Cultivated by rotary hoe immediately prior to planting (about 1965).
Boronia plant population was nil.

There was a sparse regeneration of other flora, mostly Kunzea sp. 9" - 18" in height.

On adjoining scrub-covered area round boundary a count of a strip 6' in width showed -

South boundary		42 plants 1' - 2'
East	"	Nil
North	"	7
West	"	Nil
Total		49

It is not clear whether this plot was sown with seed or planted.

The Third Parryville Plot is located on Sam Brenton's Location 2094, at junction of Happy Valley Road and South West Highway. It is referred to under Section 5E above page 7.

It consists of 2½ acres of boronia growing under natural conditions and fenced off for boronia farming.

It receives no treatment other than being controlled burnt every 6 or 7 years.

Reg. Bowra's Experimental Propagation of Boronia by Slips.

Mr. Reg. Bowra - Plaimar's Field representative is endeavouring to interest his firm in establishing plantations of Boronia megastigma.

With this end in view he has commenced a back-yard nursery at his home. At his invitation I inspected his nursery on 24th. August last and hereunder is a copy of notes which I made immediately afterwards -

"Today I visited the home of R.N. (Reg.) Bowra of 4, Adelia Street, Bayswater, to inspect, at his invitation boronia plots grown from "slips".

He had about 500 plants growing in bottomless polythene tubes about 5" x 2" x 2" set in boxes about 18" x 10" x 6" deep. The tubes had been placed on granite chips

Boronia Survey 1969 continued.

for drainage. Each box contained 40 tubes and is described as under :-

History:

All of the slips were struck in May 1969, and were 4" - 6" in height on 24th. August, i.e. 3 months later. Many had produced a few flowers. The slips were planted (1 to each tube) immediately after being taken from the parent plant. The slips were all obtained from sturdy heavy crowned plants found growing with minimum wind protection from other flora. Boronia plants under natural conditions grow in generally wind-protected sites under paperbark or banksia trees and with reeds and rushes, Agonis sp. etc.

Box A. About 90% take and reasonably good colour and vigour in a mixture of ⅓rd clean washed sand, 1 part loam, 1 part peat moss + treatment with "Sirradex" hormone mixture (? powder or liquid).

Box B. Plants poor and unthrifty with only about 15% or 20% surviving.

These were set in a heavy clay type soil obtained from where the parent plants were growing in their natural habitat. Reg thought that these slips did badly after stocking because of wind action causing widening of the minute planting hole and thereby allowing air into the roots, whereas, in the looser sand-loam-peat moss mixture prepared by him, any opening caused by movement of the wind blown plant was automatically re-filled by the loose soil particles.

Box C. Plants thriving 4" - 5", good colour, vigorous and 100% "takes". Planted in his own soil mixture as in A above and brought home and cared for by him personally.

Box D. Plants poor colour and vigour and 50% or more deaths. These plants were planted at same time and place and soil as in Box C but were left in charge of another person in the Collie experimental plot and were obviously neglected. When Reg picked them up some weeks later the plants were covered with weeds and the soil quite dry.

Box E. Healthy vigorous slips 6" - 8", history unknown (planted in tins about 8" x 5").

Boronia Survey 1969 continued.

Section 11B

Copies of Correspondence September 1965 between Plaimar's Assistant General Manager and the Conservator is included (hereunder) as a guide when future policy may be considered.

COPY.

PLAIMAR LTD.
PERTH, WESTERN AUSTRALIA.

169, Havelock Street,
West Perth,
Western Australia.

HA/MEB

29th September, 1965.

Forests Department,
54-58 Barrack Street,
PERTH, W.A.

Dear Mr. Harris,

Attention : Mr. Harris

Although I have not had the pleasure of meeting you, your association with this company and with Industrial Extracts is such that I am taking the liberty of approaching you direct on the development of one our more recent ventures, namely the manufacture of Boronia Otto.

Our Managing Director, Mr. C.T. Pullan, has just spent some time in France where he found an intense interest in this perfume.

Unfortunately, although the leading perfume houses are enthusiastic over its qualities, they must be assured of adequate and guaranteed supplies. Once this is assured, it is quite obvious that we can build up a very substantial export trade.

In the season just concluding, we have collected a moderate quantity of blossom in South Western areas, but if boronia is to become a major and permanent feature in the hands of European perfumers, very much larger quantities must be made available.

We are already negotiating for the purchase or lease of one area on which we hope to cultivate boronia, but whatever we are able to do in this way over the next few years, we must also look to natural stands for much of our supply.

Last month, your officer at Harvey very kindly took two of our staff through areas adjacent to Dee Vee Road and Surface Flats and showed them several stands of boronia.

Our first request is for permission, next season, to take blossom from these areas. At the same time, we would appreciate your permission, assistance and advice to upgrade and if possible, enlarge these areas.

Secondly, we would value the assistance of your Department in locating, exploiting and improving other areas of boronia.

Although boronia has made erratic and minor appearances in the perfumery trade for many years, this is the first time, to our knowledge, that an opportunity has occurred to develop its use as a permanent component of high fashion overseas perfumes, and your co-operation in bringing this about would be greatly appreciated.

Yours faithfully,
PLAIMAR LIMITED.

Signed H. Anderson,
Assistant General M

COPY.

ACH.PH.

Mr. H. Anderson,
Assistant General Manager,
Plaimar Ltd.,
169 Havelock Street,
WEST PERTH W.A.

30th September, 1965

HARRIS

Dear Mr. Anderson,

Boronia

In view of the drive for preservation of wildflowers, the policy on Boronia picking, even under license, will need careful review before next year. The tendency has been to discourage further inroads into State Forest boronia areas, beyond licenses issued over certain areas.

In the long run, natural occurrences of Boronia would be insufficient to develop a reliable trade. Suitable areas might be improved by further planting, but this would require a lot of slow and painstaking work. The best approach may be to find suitable private land where it could be cultivated and irrigated.

A lot of interrogation of field staff will be necessary before the extent of suitable areas is known and any clear policy is laid down.

This will take some time. It is not considered likely that any considerable increase in boronia picking on State Forest will be possible or allowable.

Yours faithfully,

A.C.H.
CONSERVATOR OF FORESTS.

DISTRIBUTION:

Inspector J.B. Campbell, Harvey.

BORONIA SURVEY 1969.

SECTION 12. CYTOLOGICAL INVESTIGATIONS.

Ref. H.O. File 762/49.

18/8/49 Mr. T.N. Stoate had noted (for Mr. Harding)

"Mr. S. Smith White of the Botany School University of Sydney, was very interested in the low chromosome count in Boronia megastigma. I think he said it was about 4, and should be about 12.

He would be very interested to study B. heterophylla, B. purdieana, which I told him belonged to the same group".

18/8/49 Mr. Harding had noted :-

"The best way of studying the chromosome complement of the other two species of Boronia mentioned by you is for Mr. White to work on seedlings from which he could obtain root and stem material in the state required for cytological examination.

The only other suggestion I could make would be that we obtain bad (!) material for initials of anthers".

Seeds of the 3 species mentioned were posted 19th. September 1949 to:-

Mr. S. Smith White,
7, Merriwa Street,
Gordon, N.S.W.

There is no further correspondence on the matter on above file.

Attention is drawn to above in case it is considered worthwhile to follow up this matter.

J.A. Thomson.

JAT:ML.
Como.
14th. October, 1969.

BORONIA SURVEY 1969.

Section 13

I inspected a total of 10 reserves and other Crown land areas on which I noted occurrence and class of Boronia megastigma and B. heterophylla stands, estimated age since previously burnt, evidence of picking etc.

Detailed reports are appended ~~under Schedule No~~ hereunder — pages 27-35.

The areas referred to are as shown hereunder:-

No.	Plan	Locality
1. Flora Reserve 18536, 125 ac.	Denmark 80 Ref. JJ-JK 149	"The Springs".
2. Boronia Reserve A 10003, 260 ac.	451/80 B1	S.W. of Mt. Barker
3. Flora Reserve 14493, 835 ac.	451A/40 A-B1-2	Lake Barnes west of Narrikup.
4. Flora Reserve 15775, 160 ac.	451/80 B2	2 miles N.E. of Narrikup.
5. Flora Reserve A 19673 about 225 ac.	451/80 A3	About 8 miles W.N.W. of Redmond Sdg.
6. Flora Reserve 18741 about 993 ac.	451/80 A3	4½ miles W. N.W. Redmond Siding.
7. S.F. Deep River	Shannon 80 H X 94	North from Bevan Road.
8. Loc. 1422 (Crown)	Walpole 80 KC 116	Peaceful Bay
9. B. heterophylla near JO 120	Denmark 80 JO 119-120	Northumberland Road
10. B. heterophylla JO 119	Denmark 80 JO 119	" "

Boronia Survey 1969 continued.

SECTION 13

INSPECTION OF FLORA (BORONIA) RESERVES AND OTHER BORONIA AREAS.

Inspection of Flora (Boronia) Reserve 18536
¾ mile east of "The Springs"
Plan Denmark 80 JJ-JK 149

Date of Inspection - 30th. July, 1969.

Period since Burnt:

The eastern section was severely burnt in 1966-67 summer, leaving an "island" of extremely dense scrub about 6' high (and estimated to be 6 or 7 years since burnt) indicated by hatching on attached plan, about 20 chains upstream from track crossing creek.

Boronia Regeneration:

Boronia megastigma 2nd. year plants 12" - 24", occurs along both sides of creek but more prolifically on the northern side.

At the point where the "island"of old scrub occurs the regenerated 2nd. year Boronia plants are particularly dense. I counted 40 to the square foot. Within 2' or 3' of this dense stand of young plants and in adjoining area of old scrub I could only find one (1) struggling boronia plant in an area of 20 square yards, thus indicating that the more vigorous competing scrub suppresses and finally kills boronia plants. Boronia seeds apparently can lie in the damp peaty soil for years until competing scrub is removed and boronia seeds are germinated, by fire.

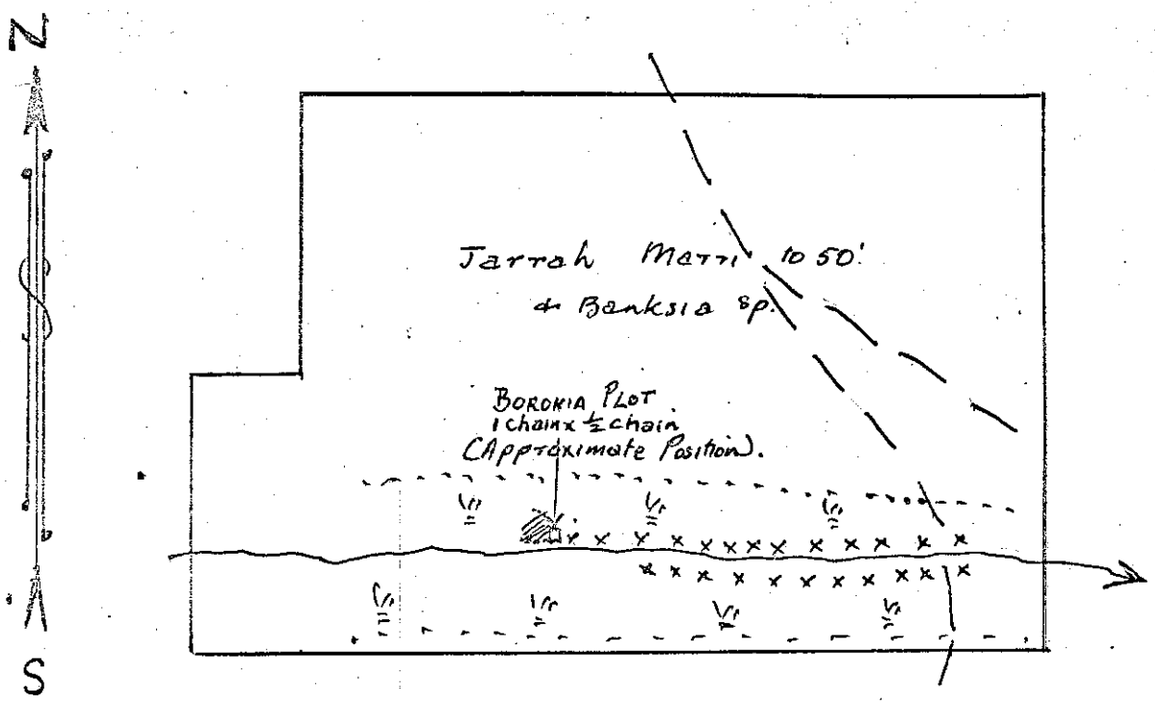
Boronia Observation Plots.

At the point referred to above I laid out two plots (1) 1 chain x ½ chain and picked and weighed petals - (2) and adjoining plot 1 chain x ½ chain on which seeds will be picked and weighed in due course. Results of petal picking is reported elsewhere.

Damage by Pickers:

I closely examined perhaps 100 plants and found only ½ dozen which had been recently lightly picked. The blossom at that stage was not sufficiently advanced to be attractive to pickers.

I examined it several times later in the season and no illegal picking had taken place, due in part I think to the plants being insufficiently matured and partly to my several inspections which would soon become known - my orange coloured 4 wheel drive motor vehicle being particularly noticeable.



FLORA (BORONIA) RESERVE 18536

¾ MILE EAST OF "THE SPRINGS", ½ MILE SOUTH OF NARRIPUP ROAD,

SCALE 10 CHAINS = 1 INCH

PLAN DENMARK 80, JJ & JK 149

INSPECTED BY J. A. THOMSON

DATE 30th JULY 1969

xxxx Indicates Boronia megastigma

/// " Old Scrub

J. A. Thomson

Boronia Survey 1969 continued.

Section 13

Inspection of Boronia heterophylla Area. Adjacent to Northumberland Road.

Plan Denmark 80 Ref. JL.119

Date of inspection 24th. September, 1969.

As indicated on attached plan an area of Boronia heterophylla occurs along a paperbark flat.

It extends for about 40 chains x 1 to 2 chains in width.

It is fairly dense with plants 3' to 6' high their maroon red tops standing above the level of the surrounding scrub.

An occasional B. megastigma plant was seen.

The area was last burnt about 1964-65.

Inspection of Lake Barnes Flora Reserve 14493.

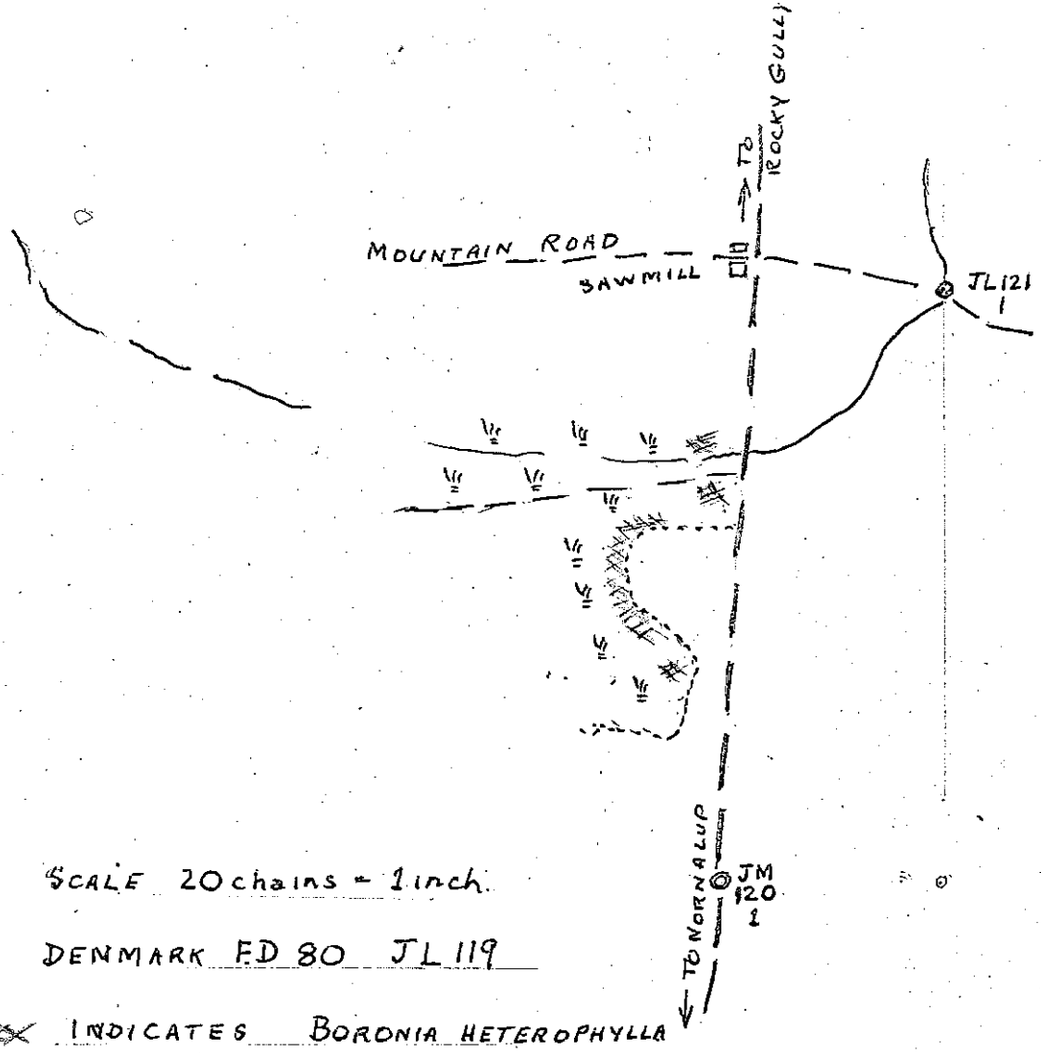
Plan 451^{A}/40 A-B/1-2

A very inadequate inspection in vicinity of 6042 as indicated on attached plan.

Date of inspection 7th. August, 1969.

I found evidence of picking in previous season, and plants had suffered no apparent harm.

Some burning last year had taken place in a "dirty" section of the swamp last burnt perhaps 10 years ago.



SCALE 20 chains = 1 inch.

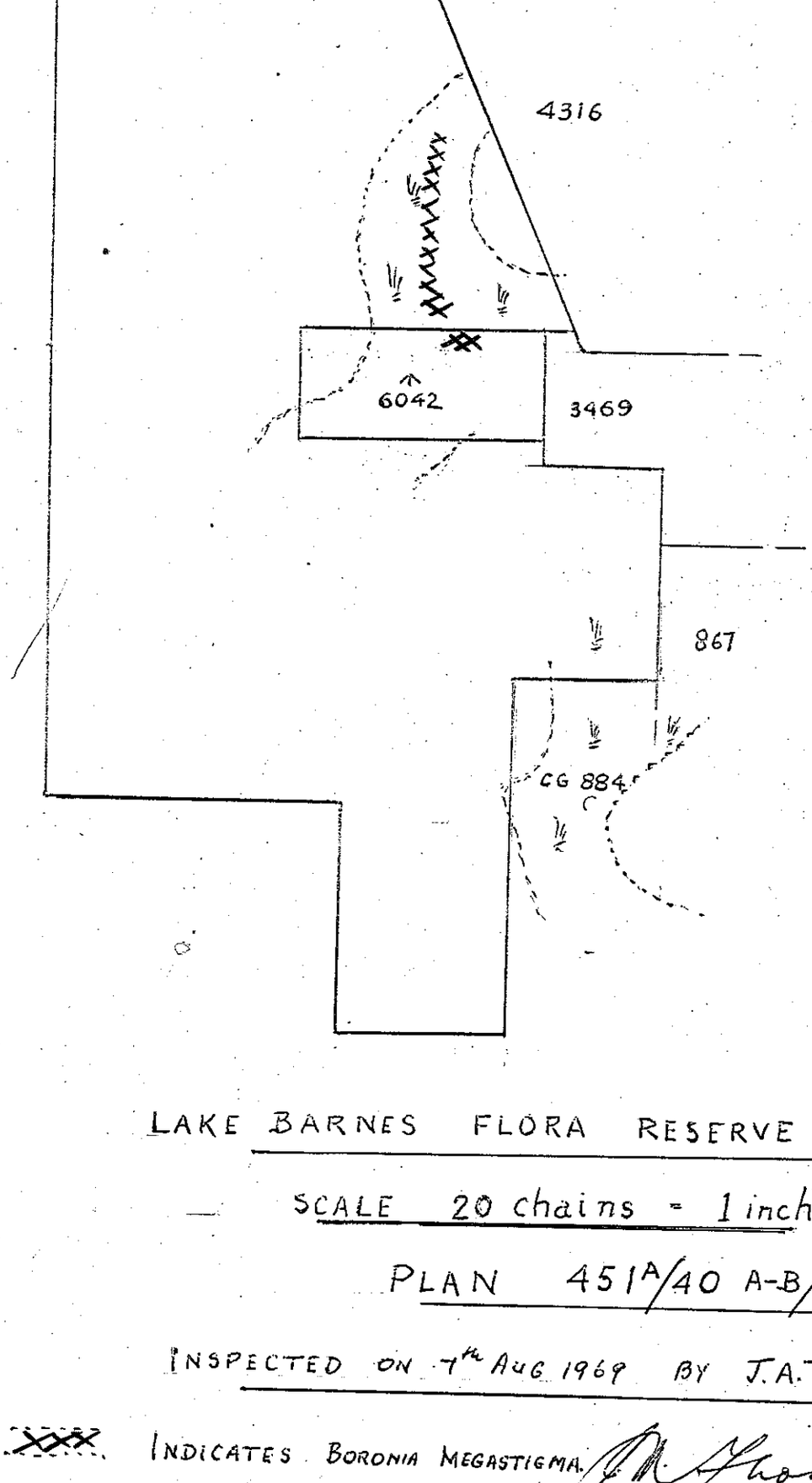
PLAN DENMARK FD 80 JL 119

XXXX INDICATES BORONIA HETEROPHYLLA

INSPECTED 24th SEPT. 1969

J.R. Thomson

24-11-69.



LAKE BARNES FLORA RESERVE 14493

SCALE 20 chains = 1 inch.

PLAN 451A/40 A-B/1-2

INSPECTED ON 7th AUG 1969 BY J.A. THOMSON

XXXX INDICATES BORONIA MEGASTIGMA.

J.A. Thomson
21-11-69.

Boronia Survey 1969 continued.

Section 13

Inspection of Flora Reserve 15775 2 miles N.E. of Narrikup. Plan 451/80 B2

Date inspected 7th. August, 1969.

Although I searched carefully, I failed to find any Boronia megastigma, although suitable conditions were present in the peaty sand of the paperbark swamp.

As shown on attached plan the swamp was drained with a trench 4' or 5' wide and 3' or more in depth, many years ago - probably 40 or 50 years. This may or may not have affected B. megastigma if it ever existed.

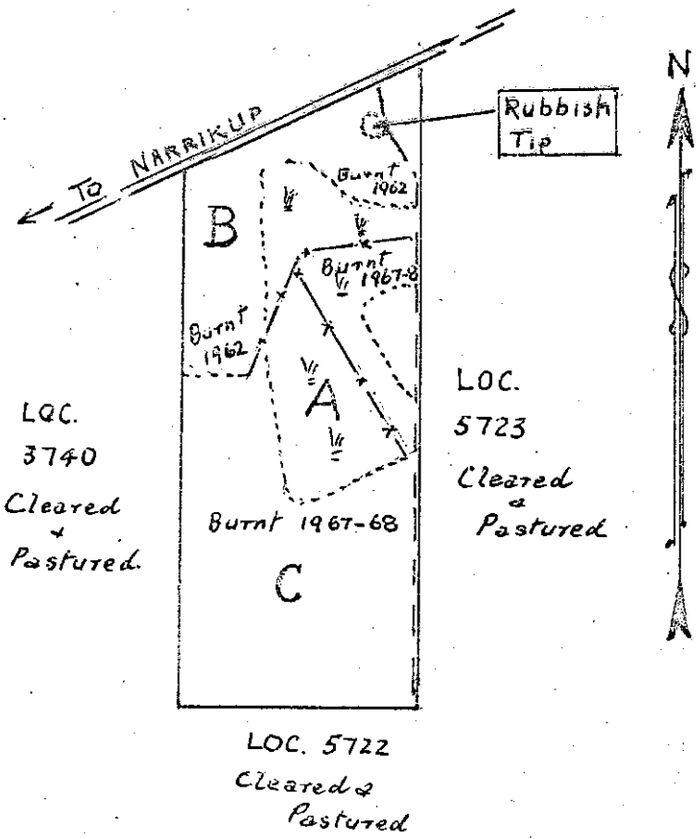
Three forest and vegetation types are described as under :-

A. Paperbark swamp (peaty sand)
Agonis parviceps

B. Jarrah-Marri to 50' (sand and laterite) with understorey of Banksia littoralis, Banksia grandis Blackboys, Agonis parviceps, Isopogon sp. Hibbertia sp.

C. Euc. staeri (sand over clay-shallow)
Kingia australis, Huytsia floribunda - poor specimens. Burtonia scabra, Hakea spp. Casuarina sp. Dampiera sp. Cuneata sp. Star of Bethlehem, with a few small patches of Red leschenaultia.

The flora is generally typical of this type of low-lying country.



FLORA RESERVE 15775 — 2 miles N.E. Narrikup.

SCALE 20 chains = 1 inch

PLAN 451/80 B2

INSPECTED BY J.A. THOMSON ON 7th AUG. 1969

"A" INDICATES PAPERBARK TEA TREE SWAMP

"B" " JARRAH - MARRI TO 50'

"C" " EUC. STAERI, BANKSIA GRANDIS (STUNTED), BLACKBOYS

←—×—×—× " DRAIN - old 40-50 years, 4' x 3'

— — — " PLOWED FIRE LINE

J.A. Thomson

21-11-69.

Boronia Survey 1969 continued.

SECTION 13.

Inspection of Flora Reserve A 19673 about 8 miles W.N.W. of Redmond. Plan 451/80 A3

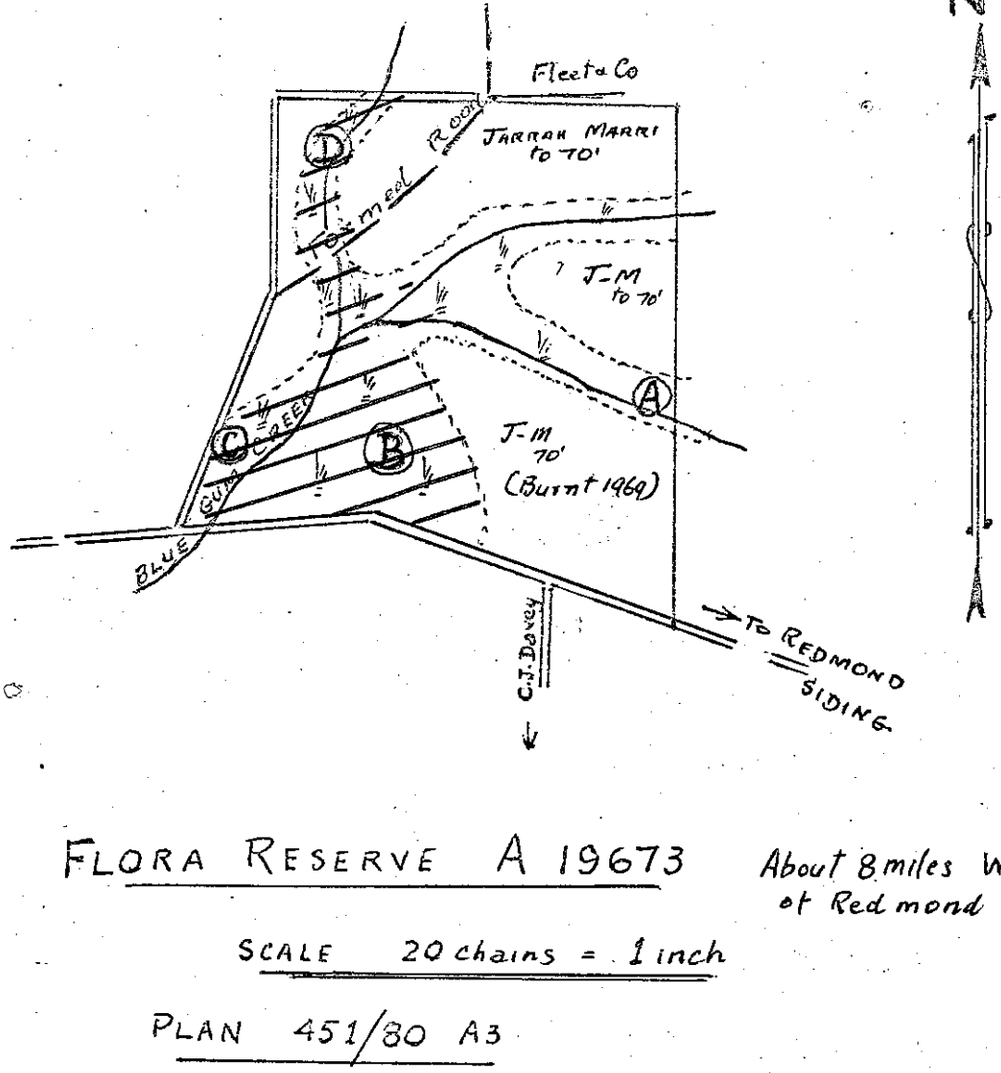
The attached type map and notes shows this to be a particularly good boronia area and further inspection will probably show that boronia occurs along all the creeks shown. Other than the point marked A on map I did not inspect the two creek branches in the eastern half of the area.

There is evidence of illegal picking in previous year - in at least one instance - area C, quite careful and selective picking, indicating that it is picked over each season probably by at least one regular picker.

Again it is an instance of a boronia area probably having been picked over for very many years - probably 50 years or more, without any serious deterioration.

The jarrah-marri area between A and B on plan was burnt last season.

The rest of the reserve varies from 4 to probably 10 years since burnt.



FLORA RESERVE A 19673

About 8 miles W.N.W of Redmond Siding

SCALE 20 chains = 1 inch

PLAN 451/80 A3

(A) INDICATES - Boronia megastigma (odd bushes to 6') in dense scrub of Paperbarks, unburnt for perhaps 10 years (Boronia probably suppressed by competing scrub

(B) " Boronia megastigma fairly plentiful in patches. Unburnt for 4 to 7 years. Evidence of small amount of previous season's picking.

(C) " Boronia megastigma. Burnt about 1960. Some good boronia bushes to 6' carrying excellent blossom Evidence of (previous year's) careful picking at small end of branchlets

(D) " Boronia megastigma. Burnt about 1964. Fairly dense bushes 3'-5'. Evidence of picking last season & light picking 1 week previously.

INSPECTED BY J. A. THOMSON 13th AUG. 1969

J.A. Thomson

21-11-69.

Boronia Survey 1969 continued.

SECTION 13.

Inspection of Boronia Reserve A 10003 3½ miles South East of Mt. Barker - Plan 451/80 B1

Date of Inspection - 1st. August, 1969.
Last burnt - about 1965-66.

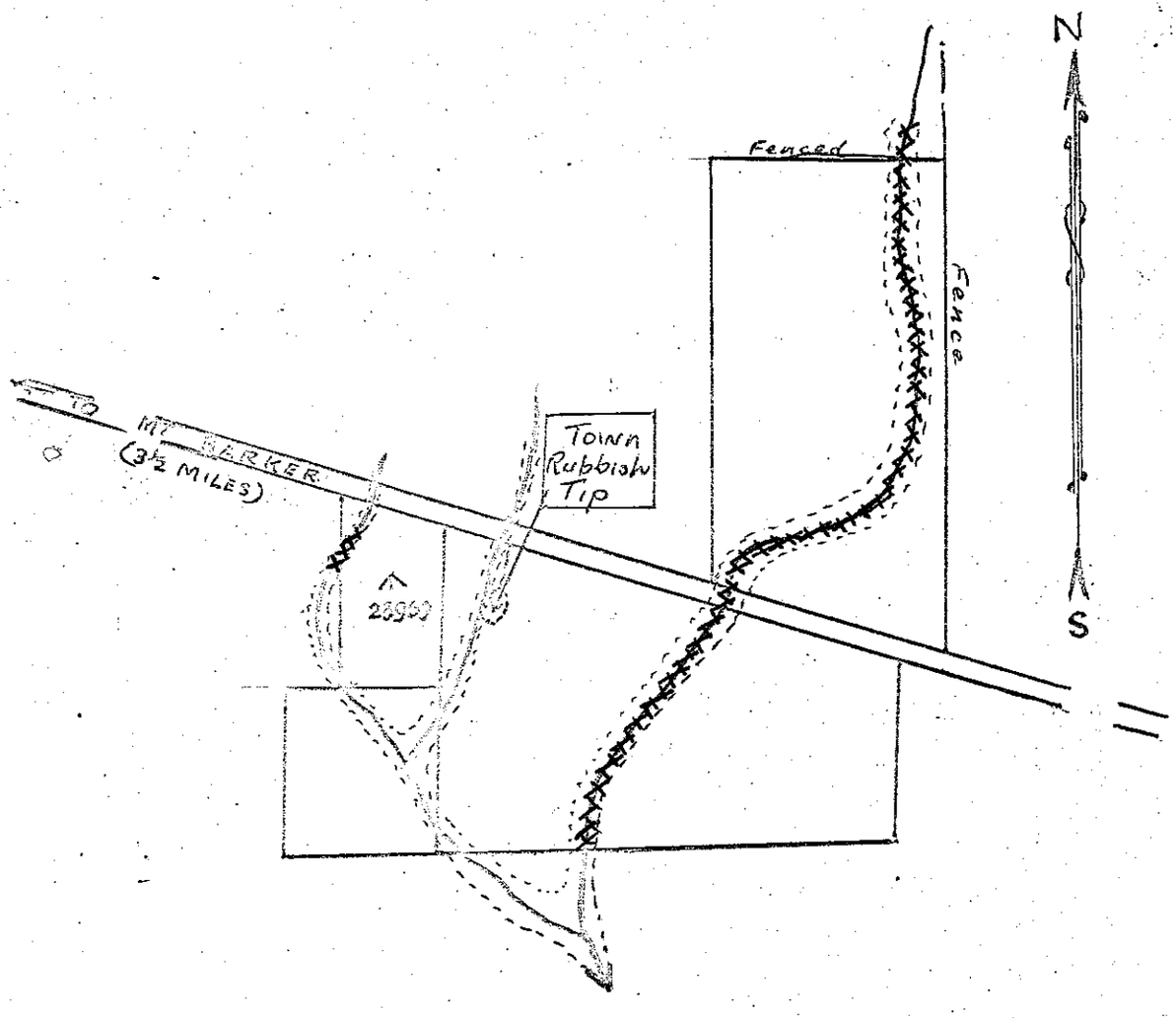
Boronia megastigma

As indicated on attached plan boronia, in association with paperbark, Agonis parviceps, occurs fairly plentifully along the whole length of the creek about 1 to 2 chains width.

Illegal Picking - there was evidence of picking last year but such plants have stooled well and are in healthy condition. I have been told that this is a popular boronia picking spot being so close to Mt. Barker.

Plantaganet Council Rubbish Tip appears to be located on north western corner of the Flora Reserve - and off the Sanitary Reserve.

From later local enquiries the creeks for several miles to the eastward and running south appear to have carried Brown boronia, but have been alienated.



BORONIA RESERVE A 10003

SCALE 20 chains = 1 inch.

PLAN 451/80 B1

..... INDICATES BORONIA MEGASTIGMA

INSPECTED BY J.A. THOMSON

DATE 1st AUG. 1969

J.A. Thomson

SECTION 13.

Inspection of Flora Reserve 18741 - 4½ miles N.N.W. of Redmond. Plan 451/80 A3.

Date of Inspection - 13th. August, 1969.

Inspection was made only at points A, B and C shown on attached type map as described below :-

A. Last burnt in creek - about 1960, in adjoining area about 1964-65. Fair quantity of Boronia megastigma 3' - 5' high.

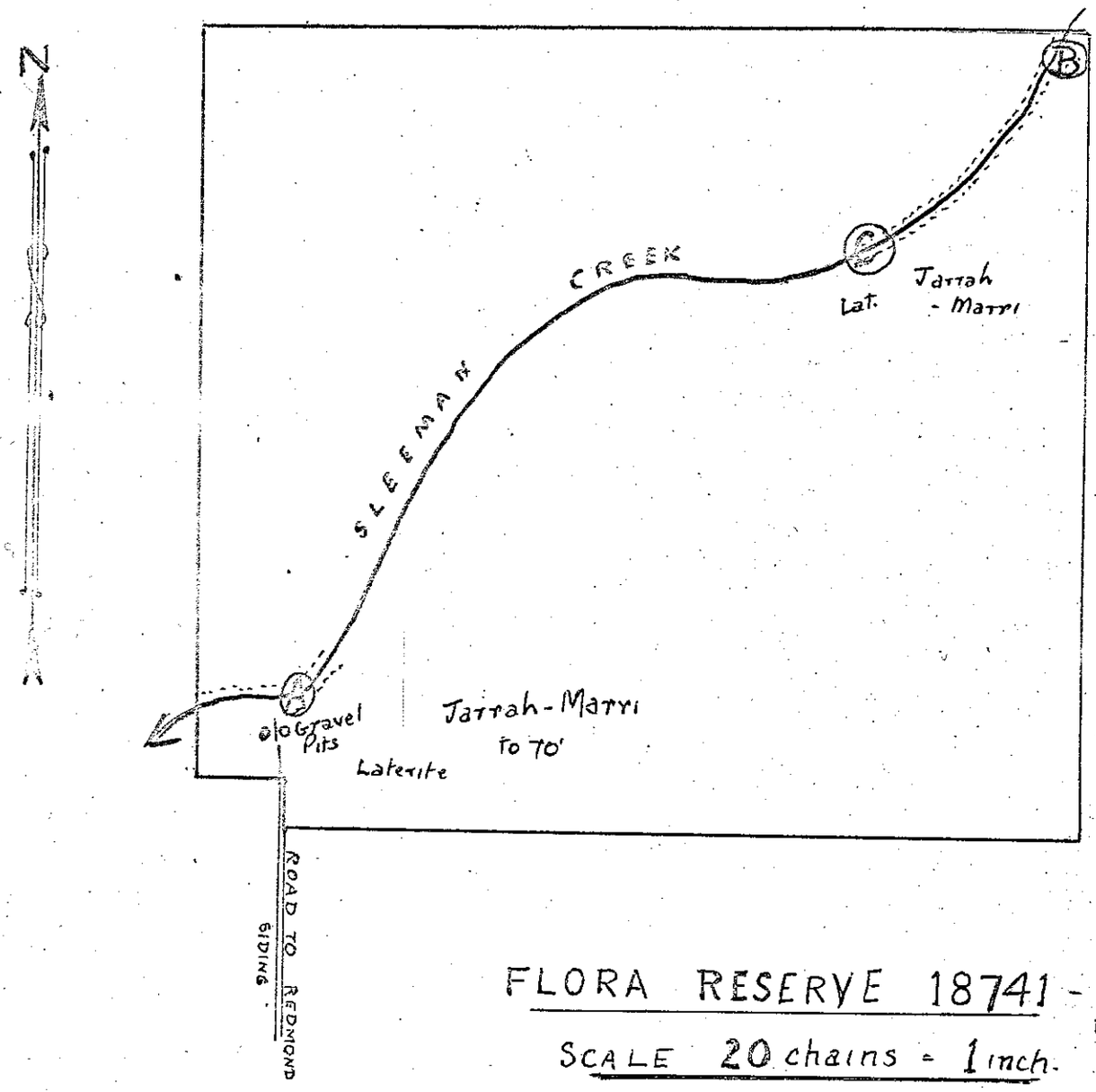
Evidence of picking in previous season and last week.

B. Small area of B. megastigma (about 5 chains x 1 chain) on east side of creek - last burnt about 1965.

Recent very light illegal picking and evidence of picking last season.

No more B. megastigma seen until about 40 chains down stream at point "C".

C. Fairly dense patch of B. megastigma seedlings 6" 0 9" high, following burn last season.



FLORA RESERVE 18741 - 4½ miles WNW Redmond.

SCALE 20 chains = 1 inch.

PLAN 451/80 A3

(A) INDICATES - Boronia megastigma. Fairly good stand, 3'-5'. Burnt last, in creek about 1960 & adjoining area about 1964. Evidence of picking last year & last week.

(B) " Boronia megastigma - small area (5 chains x 1 chain) on east side of creek, fairly dense stand, last burnt about 1965. Recent (1 week) picking, very light. No more boronia seen for 35 chains to point (C)

(C) " Boronia megastigma - fairly dense seedlings 6"-9" following 1968 burn.

Inspection only at points (A), (B) & (C)

INSPECTED. BY J.A. THOMSON, 13th AUG. 1969.

Boronia Survey 1969.

SECTION 13.

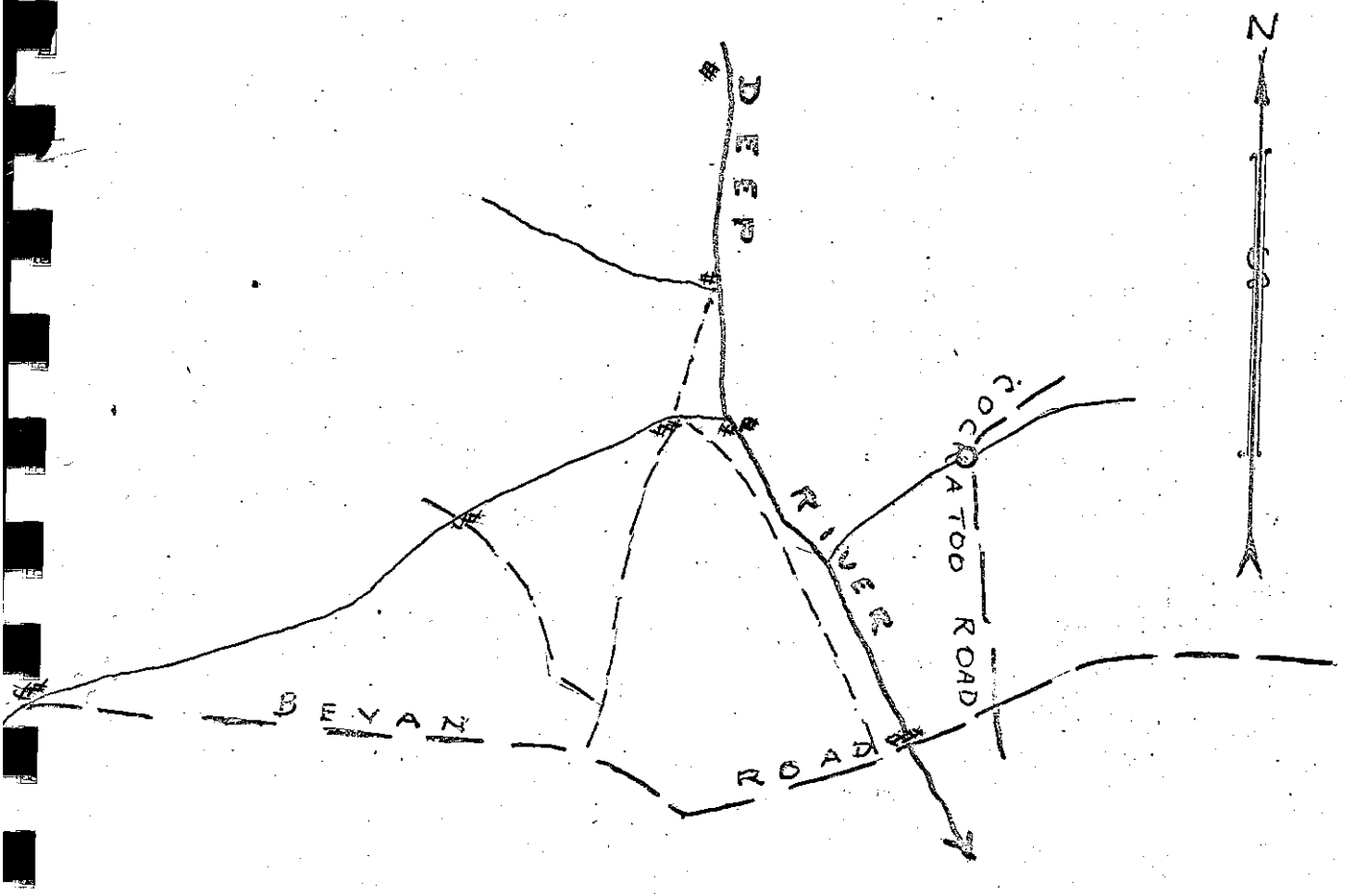
Inspection of Deep River for 80 chains Upstream from Bevan Road. Plan Shannon 80 - HX 94.

Date of Inspection 17th. September, 1969.

There is a good area of boronia where Bevan Road crosses the Deep River and I traversed the river upstream for 80 chains to find evidence of more Boronia megastigma and found 4 areas as shown on attached plan.

The area adjacent to the River was aerial burnt 3 - 4 years ago, but results were variable leaving areas now 7 years to 10 years unburnt - particularly along the River.

It could be that following an autumn controlled burn along the River, Boronia megastigma could be found all along its length.



SCALE 20 chains = 1 inch

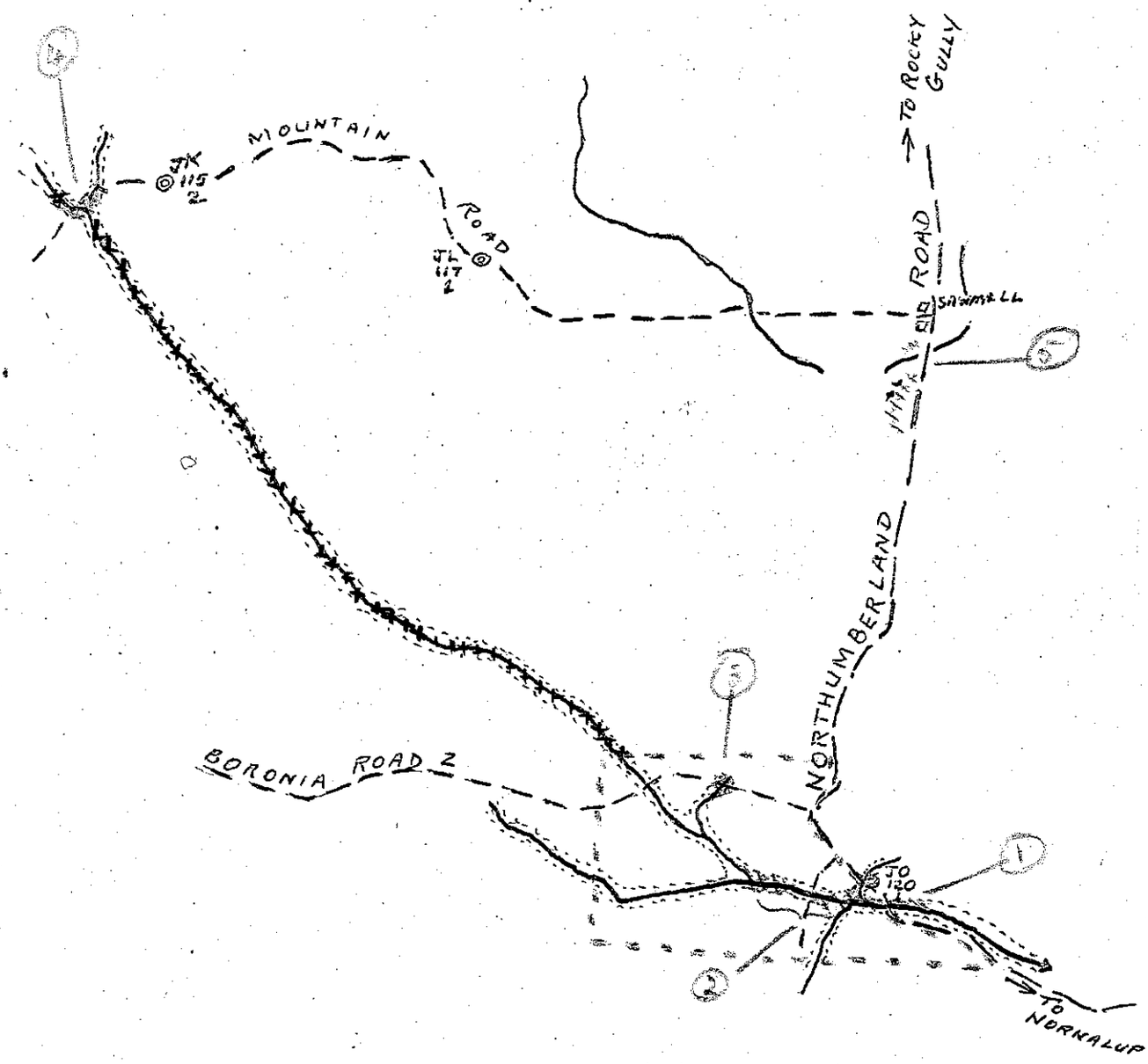
PLAN F.D. SHANNON 80 HX94

~~~~ INDICATES BORONIA MEGASTIGMA

INSPECTED 17th SEPT. 1969 BY J.A. THOMSON

J.A. Thomson

24-11-69
~~~~



COPY FROM PLAN DENMARK (F.D.) 80

XXXXX INDICATES BORONIA HETEROPHYLLA

XXXXX " " MEGASTIGMA

- - - - " BOUNDARY OF PROPOSED FLORA RESERVE

INSPECTED 24th SEPT. 1969

J. M. Thomson

24-11-69

BORONIA SURVEY - 1969. (Cont.)

SECTION 13.

Inspection of Areas of B.heterophylla via Northumberland Road and Mountain and Boronia Roads and Proposed Flora Reserve.

Plan Denmark F.D.80

The attached plan shows 5 points (numbered 1 - 5 in red) where I inspected areas of Boronia heterophylla.

These include the proposed flora reserve (shown with broken red line) as recommended by Forester Rate.

I did not traverse that section of the creek (shown with brown hatching indicative of Boronia megastigma) below point (4) and above point (3) Forester Rate informed me that B. megastigma occurs throughout this section of the creek.

Boronia heterophylla areas, as shown on attached plan are described as hereunder:-

Point (1)

B. heterophylla extends for 20 chains by 1/2 chain in width (although the paperbark flat in which it is found is about 10 chains wide) along the northern bank of creek.

The first 5 chains downstream from Northumberland Road is growing in 8 to 10 years old Agonis parviceps and Spearwood to 10' high with B. heterophylla blossoming above the competing scrub.

From there on, downstream, it is about 4 years since last burnt and B heterophylla plants are 1' - 3' high and grow-in association with a "Pink"boronia - B.alata, I think!

Point(2)

B. heterophylla spreads out over the flat for a width of about 10 chains.

It was present in the unburnt scrub to a fireline across the flat, at about 25 chains above the Northumberland Road Crossing. Above the fire-line the flat had been burnt (1969 summer) for 10 to 15 chains, but B. heterophylla re-appeared again for 20 chains or so in 2 to 3 years old scrub.

I did not traverse upstream any further. In view of its occurrence at other points (3) (4) and (5) it probably grows at other spots along the main creek and its feeders.

Point (3)

In creek on Boronia Road 2, crossing, some good plants seen 6' to 10' high in old scrub.

Point (4)

Areas of scrub at the junction of 2 creeks have not been

Boronia Survey 1969 (continued).

burnt for 5 or 6 years or more, and B. heterophylla is growing fairly plentifully.

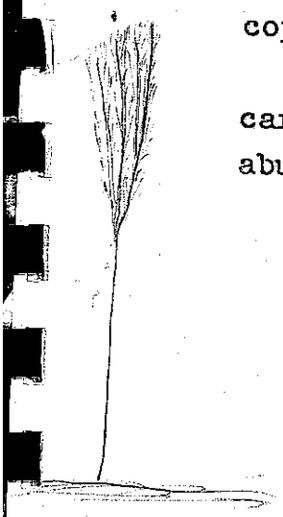
I also noticed an occasional B. megastigma plant in this locality.

Point (5) - See special report with plan.— pages 3 5

Comments:

B. heterophylla is a much more vigorous and stronger plant than B. megastigma. It appears also to have a longer life span and is therefore better able to cope successfully with competition.

The older plants (say from about 4 years of age) carry their foliage above the surrounding scrub with abundance of showy dark crimson heads when in flower. Such plants have their branchlets confined to the top 2' or 3' of stem - the lower branchlets apparently die with shade and competition. Young 2 - 3 years old plants on the other hand are rather hard to see even in flower.



Because of its shape and habit of growth as illustrated above, B. heterophylla could be particularly vulnerable to greedy spray pickers breaking off the whole head of flowers. If thus broken off below the bottom lateral branches I think it would be unable to shoot again and so die.

The 2' to 3' long stems together with its spectacular show of flowers make it particularly attractive for floral decorations.

The above mentioned must be the most extensive area of B. heterophylla in its very limited habitat. As such it should be fully protected. It is an invaluable source of seed supply, which should, in my opinion, be collected and controlled by the Department. I would strongly support Forester Rate's recommendation for flora reserves as indicated on plan.

A1

BORONIA SURVEY 1969.

Schedule No. 1.

Boronie Production for distillation.

File	F/P Lic.	Year	Locality	Lbs. Weight Crown Lands	Private Property	Total	Grand Total
/53	F.H. Faulding	1926	?	7171	6584	13,755	
	Plaimar	"	?	11174	7149	18,323	
				18345	13733	32,078	
	No records from 1927 to 1946						
260/46	6/46	1946	Manjimup	44	53	97	
			Mt. Barker	80	150	230	327
				124	203	327	
	1947 and 1948 - No records						
1260/46	1018	1949	Mt. Barker - Albany	685	119	804	
"	"	1950	"	216	28	244	
"	3552	1951	"	944	128	1,072	
"	3570	1952	"	3223	303	3,526	
	No permit issued for 1953						
"	5992	1954	Manjimup	Nil	Nil	Nil	
"	5991	"	Mt. Barker	1364	40	1,404	
"	6430	1955	"	255	125	280	
"	6445	1956	"	294	86	380	
"	10179	1957	Manjimup	259	119	378)	
"	10177	"	Mt. Barker	701	Nil	701)	1,079
"	10184	1958	" "	1256	133	1,389)	
"	10183	"	Manjimup -Bridgetown	292	160	452)	1,841
"	10187	1959	Mt. Barker	779	980	1,759	
		1960	"	2834	2687	5,521)	
		"	Manjimup	509	168	677)	6,198
"	16628	1961	"	60	179	239)	
"	16627	"	Mt. Barker	756	323	1,079)	1,318
"	16631	1962	Manjimup	34	-	34)	
"	16630	"	Mt. Barker	144	348	592)	626
"	16636	1963	Manjimup	44	74	118)	
"	16637	"	Mt. Barker	468	2562	3,030)	3,148
"	16647	1964	"	171	1073	1,244)	
"	16648	"	Manjimup	31	-	31)	1,275
"		1965	Mt. Barker	2644	3920	6,564)	
		"	Manjimup	119	105	224)	6,788
		1966	"	80	73	153)	
		"	Mt. Barker	1798	2371	4,169)	4,322

BORONIA SURVEY 1969.

Production - Distillation (continued).

F/P Lic.	Year	Locality	Lbs. Weight Crown Lands	Private Property	Total	Grand Total
	1967	Mt. Barker	2606	1562	4,168)	4,223
		Manjimup	-	55	55)	
	1968		1836	4733	6,569	
	1969 - Final figures not available as at 14/10/69, but will definitely be appreciably below last years returns (probably 25% under).					

Sub-Total 4788

J.M. Thomson
14-10-69

439

700

75

Sub-Total 1214

707

3513

Sub-Total Carried Forward 10222

BORONIA SURVEY - 1969

SCHEDULE No: 2

BORONIA CONSIGNMENTS Ex W.A.G.R. (SPRAYS FOR FLORAL DECORATIONS)

STATION FROM	DATE	CONSIGNOR	CONSIGNEE	No.	No.of Boxes	Pounds Weight (Gross)	Total Weigh t
t. Barker	1/7/69	H.J. O'Neil	Hewitt-Perth	11	81	1505	
" "	to	I. Velvett	" "	1	5	80	
	24.8.69	B. Wilson	" "	6	43	880	
" "	"	*M. Wilson	" "	4	41	863	
" "	"	W. Crane	" "	2	53	1060	
arrikup	"	S. Lilford	" "	5	20	400	
		Sub-Total		29	243		4788
lbany	5/8/69	R. Young	Boans Ltd.Perth	4		215	
	to	" "	Roseleigh.Perth	2		56	
	1/9/69	" "	Delilah "	3		84	
	"	" "	Quo Vides "	3		84	439
	3/8/69	Adler	Hewitt "	4		700	700
	to 17.8.69						
	4/8/69	R.J.Williams	Produce Market	1		75	75
		Sub-Total					1214
ollie	12/8/69	Chester	Woolworths, Fremantle	3		335	
	to 2/9/69	"	Richardson & Cooper C/- Batemans.	1		2	
		"	Woolworths - Midland	2		156	
		"	Woolworths - Victoria Park	1		15	
		" "	Woolworths - Rivervale	1		49	
		" "	Woolworths - Geraldton	3		150	
"	18/8/69 to 11/9/69	*Ellis-Smith	Hewitt-Perth	15		3513	707
							3513
		Sub-Total Carried Forward					10222

BORONIA SURVEY - 1969 (Cont.)

Station FROM	DATE	CONSIGNOR	CONSIGNEE	No.	No.of Boxes	Pounds Weight (Gross)	Total Weight
			Carried Forward:				10222
Collie	12/8/69 to 8/9/69	E. Jones	Abelia Florist Bayswater	11		654	
			Sub-Total				654
"	21/8/69 to 5/9/59	D. Frazer	Woolcock,Bayswater	2		112	
		"	Woolcock,Maylands	4		271	383
			GRAND TOTAL				11259

* Picking under F.P. License

DRY ART MATERIAL - BANKSIA NUTS & FLOWERS

t. Barker		T.D. Henson of Redmond Siding	Mc Imms, Perth.	2	23	672.	672.

J.M. Thomson
8-10-69

BORONIA SURVEY.

SCHEDULE NO...3.....SEED MARKET POTENTIAL.

List of Seed Merchants and Nursery Annual Requirements - Boronia Seed.

	Name & Address	Comments	Pounds Weight		
			B. mega stigma	B. hetero phylla	B. purd-iana
	Peter B. Dow P.O. Box 696 Gisborne, New Zealand.	"Annual requirements if available"	10	5	2
2	Telopea Valley Nursery 69, Cumberland Avenue, Collaroy, N.S.W.	"2 pks seed only (from King's Park) Most plants grown from cuttings"	-	-	-
	Arthur Yates & Co. Pty. Ltd., P.O. Box 72, Revesby, N.S.W. 2212	Seeds obtained from "2 or 3 West Australian sources."	10	2	
4	F. Cooper Ltd., 109-115, Dixon Street, Wellington C.1. New Zealand.	Request confidential "with regard to B. heterophylla---. Our understanding is that little or no seed has been available from W.A.".	4 (also ½ lb. B. denti-culata).	1	½
	J.L. & P.J. Freeman, "Garamina", Merimbula, 2548	"All boronia stocks grown from cuttings".	Nil	Nil	Nil
	Austraflora Nursery, Belfast Road, Montrose, 3765.	"No need of seed supplies of the Boronia species mentioned".	Nil	Nil	Nil
7	Western Wildlife Supply, Gilgandra, 2827.	"My needs are met from plants grown here in my own seed orchards. It is suggested, that you may think it worthwhile to consider the possibility of establishing your own seed orchards for the production of your annual needs. It is felt that it is hardly necessary to point out the advantages of this method of production over that of collecting from native habitat."	Nil	Nil	Nil
8	Forests Department, Seed Store, Como.	"Wildflower seed sales handed over to King's Park Bot, Garden in Aug. 1968. B.heterophylla most in demand and greater sales possible but supplies insufficient".	1965 1¾/16 1966 1¾/16 1967 2⅛	6½/16 ½/16 ½/16	½/16 Nil Nil

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Boronia Survey (continued).

Name & Address	Comments	Pounds Weight B. mega stigma	B. hetero phylla	B. purd-ieana
Australian Seed Co. Robertson, N.S.W. 2577.	"We prefer to refer our enquirers for the three species mentioned to suppliers or collectors in your State direct. The enquiry is, however very small.	?	?	?
10. Belbra Nursery, Box 12, Hall's Gap, Vic. 3381.	"we do the majority of our Boronias from cuttings. We have found that this method is almost 100%, whereas in the past we have had a lot of failures from seeds".	Nil	Nil	Nil
11. Nindethana Seed Service, Dripstone, N.S.W. 2742.	"My supplies of B. mega-stigma, heterophylla and purdieana have been obtained almost solely from Mr. R. Young of Albany, who grows the bulk on his property. He has had considerable trouble in recent years with poachers who quite often destroy the plants in their greed to get seed and, or, flower petals. My usual requirements are (as shown) and smaller quantities of B. cymosa and B. elatior. My requirements are never met in full. I think it is high time that a system of licensing of collectors and growers should be instituted as the present system has too many loopholes and the wiping out of the species in demand, is quite on the cards if the present trend continues."	5	3½	1
12. H.G. Kershaw (Seed Collector) P.O. Box 88, Mona Vale, N.S.W. 2103.	"----- It has been many years since we have been able to satisfy the demand for this seed".	9	5	2
13. Forestry Commission of N.S.W. 44, Margaret Street, Sydney, 2001.	"We wish to advise that this Commission's require-ments of Boronia seed are nil.	Nil	Nil	Nil
14. Law Somner Pty, Ltd. Seed Merchants, Dandenong Road, Clayton, Vic. 3168.	"Our requirements would be" → (no other comments).	10	½	½

A7

Boronia Survey (continued).

	Name & Address	Comments	Pounds Weight B. mega stigma	B. hetero phylla	B. purd-ieana
15.	Dawson's Garden Centre, 122-124, Barrack St. Perth, 6000.	"--- we appreciate your concern and hope that steps will be taken to preserve the species in question. Our requirements are small namely one ounce, but for export to New Zealand we could do with a further 2 lbs, B. mega-stigma annually."	2	-	-
		Totals to 8.10.69	50	17	6

J.A. Thomson.

J.A. Thomson.

9-10-69.

SCHEDULE NO. 4.

Seed Supplies — BORONIA MEGASTIGMA — BORONIA HETEROPHYLLA — BORO

Nursery	Address	Seeds Sold	No. of plants Sold
Ackers D.M. Dots Garden Centre	265, Walcott Street, Mt. Lawley.	52 pkts year (Megastigma)	50 year
Applecross Garden Centre	793, Canning Hy, Applecross	20 pkts year (Megastigma)	100 year
Barnes E.	Bennett Street, Caversham.	Nil	Deals mainly in roses
Adrians Nursery	Thomas Street, Jandakot.	No seeds sold	500 year
Dawson's Garden Centre		One ounce	--
Symonds Seed	84, James Street, Perth.	5 lbs.	-
Hubble L.G.	64, McDonald Street, Osborne Park	-	-
Wanneroo Wildflower Nursery	Wanneroo	No seeds sold	1,000
Waldeck Nurseries	Hamilton Street, Osborne Park.	Some packets of seed sold (megastigma)	100 year
Yilgarnia Wildflowers	1439, Albany Hy. Cannington	50 packets (megastigma)	500
Wyemando Wildflower Nursery	454, Gt. Eastern Hy. East Guildford.	No seeds sold (megastigma)	150
Grove Nurseries	Hale Road Wattle Grove	No seeds sold (megastigma)	100

EROPHYLLA BORONIA FURDIANA

No. of plants Sold	Source	Remarks
50 year	Dawsons	
100 year	Blue Cross Products Lot 60, Collingwood St. Osborne Park. also Wanneroo Wildflower Nursery	
Deals mainly in roses		
500 year	Own propagation facilities.	
--	Advised by Dawson's that their seed s are packed by Yates in the Eastern States	It is understood that Yates in turn do obtain some seeds from Rod Young of Albany Mr. Young collects the seeds
-	Rod Young, Albany (but none from this source last year). Mr. F.A. Brookes (Collector) Box 163 P.O. Mt. Barker.	
-		Bought one ounce from a firm in the Eastern States however the seeds did not germinate.
1,000	From cuttings. Seeds originally purchased from King's Park.	Mostly megastigma.
100 year a)	Seeds were obtained from Dawson's.	
500	From cuttings, also Nindethana Seed Service Dripstone, N.S.W.	
150	They obtain their seed from King's Park also from a farm at Rocky Gully.	
100	Farm at Albany	

No. 4 Continued.

Seed Supplies — BORONIA MEGASTIGMA — BORONIA HETEROPHYLLA — BOR

Nursery	Address	Seeds Sold	No. of plants Sold
Hoops Bros.	Anderson Road, Forrestfield	No seeds sold	1,500 (megastigma)
Henderson's Bicton Nurseries	280, Canning Hy. Bicton.	No seeds sold	100 (megastigma)
Highway Nurseries	1915, Albany Hy, Maddington	50 packets (megastigma)	100

YLLA BORONIA PURDIEANA

o. of plants Sold	Source	Remarks
,500 megastigma)	Cuttings	
100 megastigma)	Adrian's Jandakot.	
100	Some from Adrian's but also do their own propagation.	

BORONIA SURVEY.

SCHEDULE NO. 5

List of Forest Produce Licenses Issued in One Year Ended 31st. July, 1969.

Issued by	License No.	Name	District	Royalty Value @ 5c per oz.	Quantity in Ounces
	Native Seeds (All species)				
H.O.	7626	R. Young	Albany	$5.00	100
	7627	F.A. Brookes	Mt. Barker	$10.00	200
	7628	D.M. Wilson	Darlington	$10.00	200
	7630	E.J. Crawford	Albany	$5.00	100
	7633	D.E. Perkin	Wanneroo	$5.00	100
	7634	G. Coleman	Nollamara	$2.00	40
	7635	R. Young	Albany	$5.00	100
	7636	F.A. Brookes	Mt. Barker	$10.00	200
	7637	D.M. Wilson	Darlington	$10.00	200
	7640	R.K. Shoosmith	Armadale	$1.50	30
	7641	M.E. Huisman	Mt. Barker	$2.00	40
	7643	R.A. Nichols	Armadale	$5.00	100
				$70-00	1410
	Boronia Blossom				
H.O.	7642	C. Hutchinson	Harvey		
Collie	10727	E. Jones	Collie		
	8096	C.F. Ellis-Smith	"		
	8095	A. Chester	"		
	10735	A. Chester	"	$10.00	
	10733	J. Ellis-Smith	"	$10.00	
	10732	C.F. Ellis-Smith	"	$10.00	
Harvey	8237	D.J. Gillespie	Harvey		
	8230	W. Hewitt & J. Lekias	"		
	8227	D.A. Fraser	"		
	10010	L. Miller	"		
Shannon River	8032	C.W. Hutchinson	Shannon		
	8341	E. Holley	Manjimup		
	Wildflowers				
H.O.	7639	P.E. Hobson	Wanneroo		
	7631	A & T Woolcock	"		
	7638	"	"		
	7632	M. McDonald Smith	"		(Stirlingia Pala fronds)

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BORONIA SURVEY 1969.

SCHEDULE NO. 6

List of Boronia Areas on Private Property in Parryville Area.

As supplied by Mrs J. Brenton, Plaimar's representative, Parryville, 25.9.69. (15 years experience in this area).

PLAN - DENMARK 80.

1. W.J. Tame & Sons (JZ 132-3) — Plantagenet Location 2062 (JZ 132-3) about twenty acres of 1st class boronia put under pasture 1967-68.

2. S. Brenton — Plantagenet Location 2094 (KA 131-2) approx. 10 acres scattered patches put under pasture 1965-66.

3. B. Gairdiner — Loc. 5416 (KA 131) approx. 1 acre boronia under pasture 1969.
Loc. 4221 (JZ 131) approx. 5 acres boronia under pasture about 1959.
Loc. 2468 (JZ 130) area of boronia unknown, would appear about 5 acres under pasture approx. 1963.
Loc. 4218 (JZ 129) small patches boronia under pasture 1968.
Loc. 5414 (KA 129-130) about 3 acres (in 2 separate patches) under pasture 1967.

4. W. Middleton KA-KB/129 — Loc. 2359 (KA-KB/129) not seen by writer but owner claims there was approx. 8 acres of boronia put under pasture about 1966).

5. W. Plozza — Loc. 5214 numerous small patches under pasture 1967-68 another excellent small patch of approx. ½ acre going under pasture 1969-70.

6. D. Tucker — Loc. 4972 several patches amounting to 10 acres or more gone under pasture 1966-67. Some areas kept for boronia but not fenced from stock.

7. T. Wolfe — Loc's 5417 and 1976 (KA 131) several small patches amounting to about 4 - 5 acres in all. Nearly all gone under pasture by 1969.

8. J.F. Ricketts — Loc. 5415 (KA 130-131) several patches some good some scattered about 5 - 6 acres in all, last to go under pasture about 1968-69.

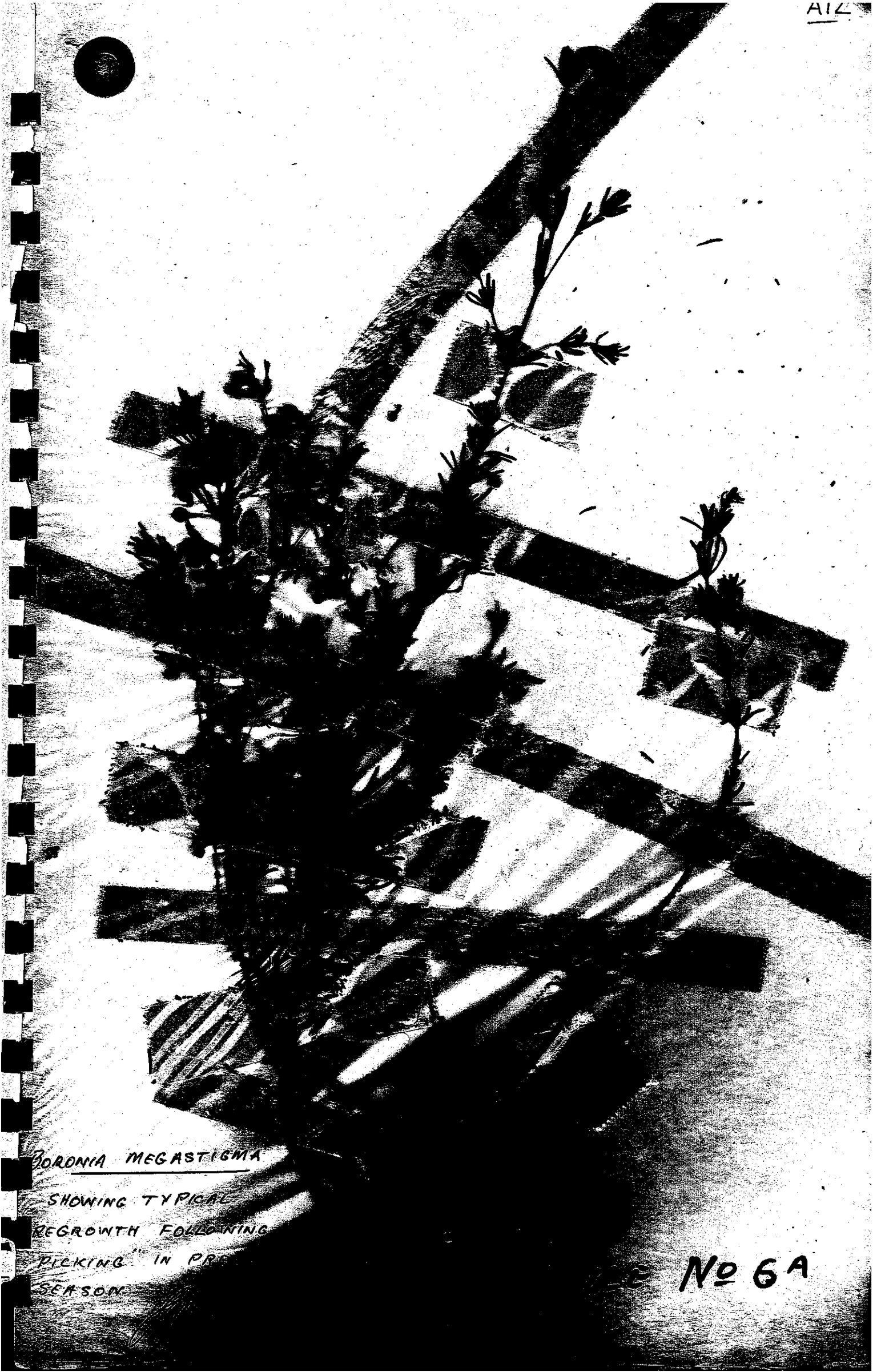
9. C. Plozza — Loc. 5459 1 good patch several smaller all under pasture between 1960 and 1969.

10. Sattler — Loc. 5550 (or thereabouts - one of new Owingap blocks) about 10 acres good boronia under pasture 1967-68.

11. R. Kingdon KA 130 — Loc. 6887 approx. 3 - 4 acres in scattered patches.

12. J. Barrow — Loc. 689 don't know how much under pasture, but whole of foreshore grew boronia prior to 1960.

13. A. Robinson — Loc. 1245 (not sure of No. or thereabots) approx. 3 acres of good boronia under pasture about 1960. Possibly other areas on this block unknown to writer, whole area of some 700 acres ~~grown to pasture.~~



BORONIA MEGASTIGMA

SHOWING TYPICAL

REGROWTH FOLLOWING

PICKING IN PR

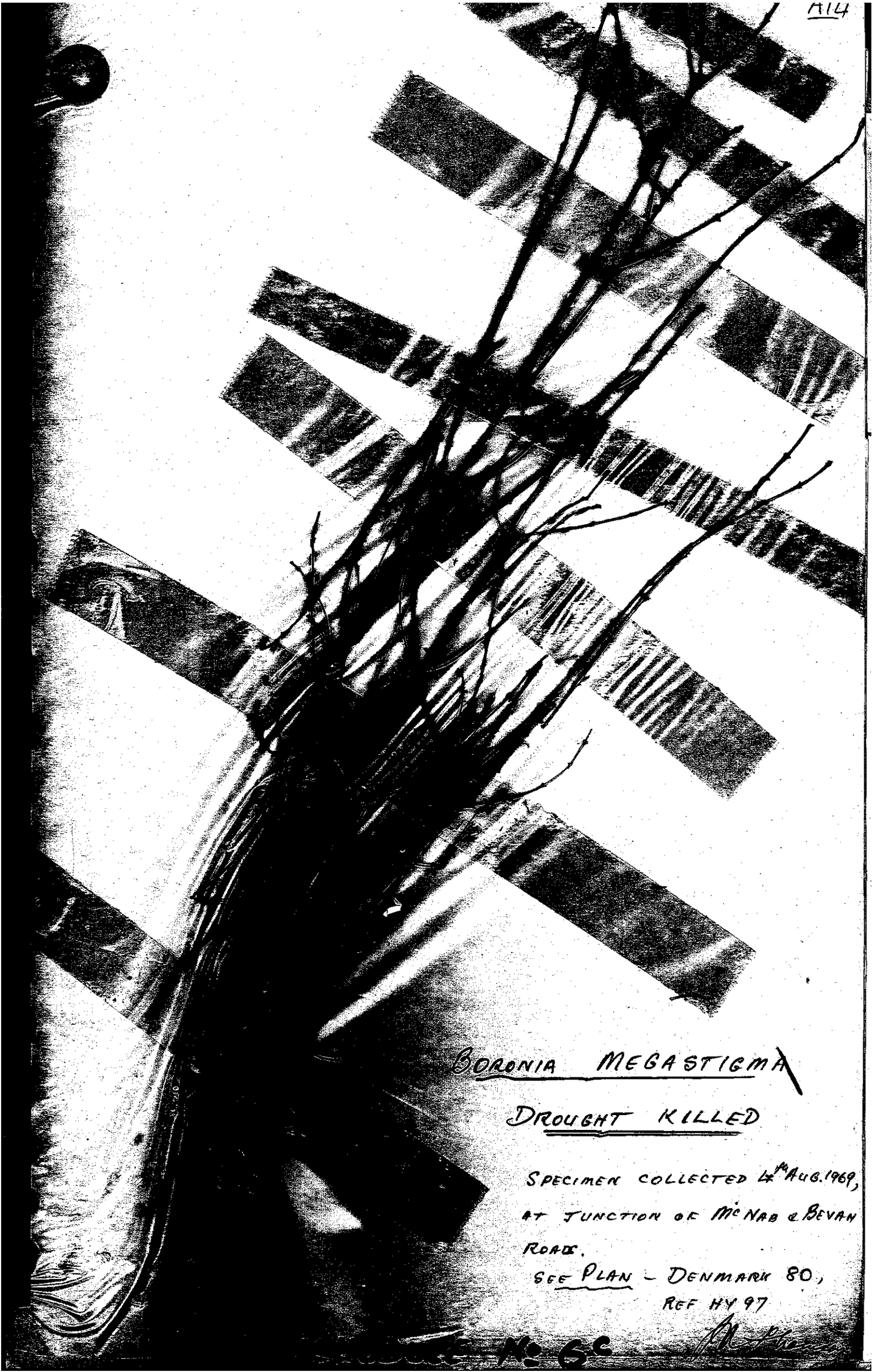
SEASON.

No 6A

BORONIA MEGASTIGMA

SHOWING TYPICAL REGROWTH & EVIDENCE OF MORE SELECTIVE & CAREFUL PICKING IN PREVIOUS SEASON.

J.M. Thomson
13-8-69



BORONIA MEGASTIGMA

DROUGHT KILLED

SPECIMEN COLLECTED 4th AUG. 1969,
AT JUNCTION OF McNAB & BEVAN
ROADS.
SEE PLAN - DENMARK 80,
REF HY 97

FIGURE No. 6C

A15

BORONIA SURVEY 1969.

SCHEDULE NO. 8

List of Plans Enclosed in Accompanying Folder.

1. Vasse 80 (Sept. 1967)
2. Karridale 80 (Sept. 1967)
3. Jarrahwood 80 (October 1966)
4. Kirup 80 (October 1961)
5. Harvey 80 (October 1964)
6. Collie 80 (Sept. 1968)
7. Grimwade 80 (July 1965)
8. Manjimup 80 (October 1964)
9. Donnelly 80 (July 1957)
10. Pemberton 80 (December 1965)
11. Perup 80 (April 1967)
12. Shannon 80 (November 1964)
13. Walpole 80 (Sept. 1965)
14. Denmark 80 (July 1963)
15. 444/80 - Lands Department litho.
16. 451/80 " " "
17. 445/80 " " "
18. 457/80 " " "

Schedule No. 9

KNOWN BORONIA AREAS.

Boronia megastigma

Donnelly 80 District

State Forests	Private Property in existence	Private Property areas destroyed.
1. GK 55	Loc. 8637 GJ46 Bush Paddock	Loc. 10416 GQ 48
2. GK 53		
3. GB-GC 48	Loc. 5300 GR49	Loc. 10458 GJ 42
4. GM 48		
5. GN 48		
6. GQ 48		
7. GM57		
8. GR 48		
9. GH 37-38		
10. GK 43		
11 GJ 42		
12. (1) GW 35		
13. (2) GW 35		
14. GZ 48		

Jarrahwood 80

HC 40 - 48

15. GD 57
16. GO 55
17. GE 55 (inspected)

Red Boronia (Red hatching on Plan Donnelly 80)

1. GJ-K 53 & 54
2. GJ-GK-GL 55-56
3. GL 57
4. GJ-K 58
5. GH 53

Pemberton Plan 80.

1. Ref. Plan Manjimup 80, Pemberton 80
2. HJ 50
3. HN 50
4. HR 52
5. JA 62
6. JB 64
7. JB 64-65
8. JB 65 (2 areas)
9 JC 69
10. JB 70
11. HZ 70
12. HZ 73
13. JA 80 (2) Shannon 80
14. JB 80
15. HM 82 16. HM 81

Schedule No. 9 continued.

State Forests	Private Property in existence	Private Property areas destroyed.
Manjimup "80"		
1. GR 51		
2. GQ 54		
3. GW 56		
4. GQ-GR/60		
5. GS-GT/60		
6. GU 60		
7. GT 61		
8. GT-GU/61		
9. GR 62		
10. GR-GS/62-63		
11. GQ 62		
12. GO 62		
13. GP 61-62		
14. GO 61		
15. GN 61-62		
16. GO-GP/63		
17. GO 62-63		
18. GN-GO/63-64		
19. GM 63		
20. GM-GN/62-63		
21. GP 64		
22. GP 64-65		
23. GP 66		
24. GN-GO/64-65		
25. GN 65		
26. GQ-GR/64		
27. GQ 66		
28. GQ-GR/66-67		
29. GR 67		
30. GP-GQ/68		
31. GT 67		
32. GT 68		
33. GT-GV/65-66		
34. GU 66		
35. GU-GV/66		
36. GU/66-67		
37. GT/65		
38. GT-GU/64		
39. GP 77	GU 69 (Loc. 9756-7 Palgarup) GY 71 Palgarup	

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Schedule No. 9 continued Known Boronia Areas

State Forests	Private Property in existence	Private Property areas destroyed
Shannon 80		
1. HU-HV/104	1. HR 98 Loc. 6104	
2. HU-HV/105		
3. HM-HN/99-100 *		
4. HX 97 *		
5. HV-HW/94-95 * Cockatop Rd (F.B's)		
6. HV-HW/103-104		
7. HV 99		
8. HV 97-98		
9. HX 98		
10. HU 97		
11. HU 94		
12. HT 94		
13. HW 93		
14. HW 94		
15. HX 94		
16. HX 93		
17. HZ 95		
18. JB 97 (best Les Robson knows "Deep River") Manjimup		
19. JX-JW/97-98 Mornalup Rd.		
20. JV 97		
21. JV 96		
22. JQ 94		
23. JK 91 Manji-Mornalup Rd.		
24. JH 91		
25. JH 92		
26. HX 91		
27. HX 92		
28. HX 90		
29. HX 89		
30. HW 91		
31. HT 88-89		
32. HZ 88		
33. HY 87		
34. HX 86		
35. HX 82		
36. HM 82		
37. HM 81		
38. HL 80		

* Means inspected by J.A.T.

Schedule No. 9 continued — Known Boronia Areas

State Forests	Private Property in existence	Private Property areas destroyed
39. JB 86		
40. JC 87		
41. JC 86 (2)		
42. JC 85		
43. JD 86		
44. JF 88		
45. JG 87		
46. HK 102 Road Reserve		
47. HH 103 " "		
48. JH 103		
Perup Plan 80.		
1. GR 82	HA 94 Loc.2038)	
2. GZ 85	HJ 104 " 12674	
3. HA 82	HJ 105 " 12675	
4. HH 84	HJ 106 " 12677	
5. HH 83-84	HG 110 " 12657)	
6. HA 83	HH 110 " 12656	
7. HC 93-94	HJ 110 " 12653)	
8. HG-HH/98-99		
Walpole 80.		
1. JL 114-115		
2. JM 115-116		
3. JN 116-117		
4. JS 112		
5. JS 117		
6. JO 118		
7. JL 118-119		
8. JU 120		
9. JP 121		
10. JQ 122		
11. JX 97		
12. JV 96		
13. JZ 104		
14. JR 104		
15. JR 105		
	Reserves	
	1. JY 105 27104	
BONNELLY 80		
1. GW 48		
2. GT 48		

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Schedule No. 2 continued Known Boronia Areas

State Forests	Private Property in existence	Private Property areas destroyed
Denmark 80		
1. JM 117-118	1. JK 141 Loc. 2184	
2. JO 118	2. JH 141 " 2186	
3. JL 119	3. JH 148 " 2191	
4. JL 120	4. JH 149 " 2192	
5. JP 121	5. JH 150 " 2193	
6. JQ 122	(Plus Parryville See Mrs Jean Brenton's List)	
7. JZ 117	JH 138 Loc. 2182	
8. JZ 118		
9. KB 129	Reserves	
10. JO 130 (Les Brenton)	JO 143 19092 Denmark-Mt. Barker Rd.	
11. JO 140	JK 149 "The Springs"	
12. JP 143 (C/L)	JB 142 22841	
13. JL 147 (C/L)		
14. JO 142 "		*W.J. Tame & Sons Loc. 2062 KA 132-3
15. JO 143 "		*S. Brenton Loc. 2094 KA 131-2
16. JO 144 "		*E. Gairdiner Loc. 5416 KA 131
17. JL 145 "		*Loc 4221
18. JP 150 "		* " 2408
19. JH 138 " Loc. 2182		* " 4218
20 JQ 140 (Les Brenton)		* " 5414
JK 139 (A/F Cooper)		*W. Middleton Loc. 16974
JO 130 (Les Brenton)		*W. Plozza Loc 5214
J3 117		*D.Tucker Loc. 4972
JL-JO/114-118		*T. Wolfe Loc. 5417 * " 1976
		*J.F. Rickett Loc. 5415
		*C. Plozza Loc. 5459
		*Sattler Loc. 5550
		*R. Kingdon Parryville Flts between Loc's 5420 & 5414
		*J. Barrow Loc. 689

*Indicates destroyed for pasture.

Schedule No. 9 continued

State Forests	Private Property in existence	Private Property areas destroyed.
Denmark 80 F.D. 415/80		
1. 2388 FG	Loc. 5163 - JW-JX/130 Les Brenton. Loc 4292-3 JV 127 Les Brenton Loc 4223 JU 130 } E. Ellis } Loc 4344 } Les Brenton	
Kirup 80 1964		
1. FN-FO/45	Loc. 1995 FV 46	
2. FQ 44	" 2674 FP 54	
3. FR-FS/47 (2)	" 2215 FP 54	
4. FR 49	" 3485 FV 45	
5. 10986 FV 45		
6. FQ 48		
7. FM-FN/44		
8. FO-FP/53		
9. 7703 FO 54		
Note 5.10.69. See also Kirup 80 1961 re Jwd, Harrington for plotting above	Upper Capel.	
10. FO 45		
1 - 9 supplied by For. J. Mahoney.		
F.D. A.P.I. Map No. 173/46		
1. FN 45 in Jarrah dieback area		
Grimwade 80		
1. FX 74	Loc 7794 FQ 56	
2. FP 69 - FT 75		
3. FU 74-75		
4. FR 66 Planted by J. Firth Farmers, property reverted to Crown		
5. FV-FW/62-63 (Being destroyed by tin mining operations).		
6. FQ 56		
Harvey 80 (1956) and Collie 80 (Mrs Ellis Smith)		
Mrs Ellis Smith		
1. DW 80-81		
2. DV 80-81		
3. DU-DV/82 Red dots		
4. DU 82		
5. DU 82-3		
6. ED-EE/82-78, old Kelly's 10,000ac. said to be about 300 acres boronia - Hayden Smith bulldozer driver for Bernie Smith Contractor - Collie		

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Schedule No. 9 continued — Known Boronia Areas

State Forests	Private Property in existence	Private Property areas destroyed

Harvey 80 (1956) and Collie 80 contd.

7. EC 74
8. EA 75
9. EA 79 (2)
10. EC 77
11. DY 71 (3)
    Treeville Rd to Dee Vee Rd
    along Jura formation
    6 miles of boronia
12. DV 73-74
    Chalk Brook Rd from DV 72
    to Dee Vee Road,
    DV/DW - DV
13. DV 77 at Plonk hole
    Good boronia in
14. FA-FB/76-77 and
15. FA 76 (Mrs E S)
16. Harts formation
    about EZ73
17. about EX 71
18. ET 71
19. EW 71
20. EV 70
21. EV 74
22. EW 69
23. EU 69
24. *EU 74-75 (Seen)
25. EU 73
26. EV 79 (old plan)
27. EU 78 " "
28. EY 81 " "
29. ER 74-75
30. ET 67
31. ER 67
32. EU 74
33. EV 74
34. EU 73
35. ET 71

* EU and EY 80 killed by dieback
1 other area known by Mrs Ellis Smith as "The Boomer" patch

*south eastern end banksia dying with Die-back, but boronia apparently not affected as yet.

Schedule No 8 continued Known Boronia Areas

State Forests	Private Property in existence	Private Property areas destroyed

Harvey 80

36. EC 76 Mrs E. Smith
F/R Belton

38. DU 82 F/R Belton

39. DY 81 F/R Belton
& E. Smith

40. DY 71 F/R Belton

41. DX 71 Ellis Smith

42. DX 71 "

43. DX 72 "

44. DX 72 "

45. *DU 70-71 F/R Belton - 160 x 3 chns = 48 ac
3 - 7 years about 20 - 80 lbs.
petals p.a.
(e) At Sept '69 appeared at its peak
2 - 3 weeks later than Mt. Barker.

46. *DY 70 (F/R Belton) 20 x 3 chns = 6 ac
3 to 7 years 50 lbs per ac (E)

47. *DU 71-71 (F/R Belton) 100 x 3 chns = 30 ac.
6 - 7 years 30 lbs. per ac.

48. DY 73 F/R Belton.

49. DX 72

50. DW 72

51. DZ 77 F/R Belton

52. DY 81 "

53. DV 69 "

54. DT 71(2) "

55. DT 74 "

56. DS 70 " Most northerly
According to
Mrs Ellis Smith
1 area near Hoffman's
Mill.

* inspected by J.A. Thomson.

Schedule No. 9 continued Known Boronia Areas.

State Forests	Private Property in existence	Private Property areas destroyed
Jarrahwood 80		
1. GW 35	1. FV 44	
2. GW 35		
3. GK 43		
4. GJ 42		
Vasse 80		
1. FK 40 (S/F Dawson)	1. FQ 10 (L.N. Weston)	
2. FK 40 " "	GC 15 "	
3. FL 44 (next plan)		
4. FM 37 (S/F Dawson)		
5. FN 37 "		
6. FN 36 "		
7. FZ 38-39 "		
8. FZ 36 "		
9. GA 31 (L.N. Weston)		
10. GC 31 "		
11. GC 31 "		
12 FX 28 "		
13. FW 28 "		
14. FT 9		
15. GA 33		
16. GD 12		
17. GD 12		
18. GD 11		
19. FZ 14		
FP 35 S/F Dawson or For. G. Styles		

Known areas of Boronia heterophylla
Vasse 80 F.D. 28

Denmark 80
JO-JP/118-119 - Proposed
JL 119/120 - 30 x 2 chns = 6 ac (5 years Sept. 1969)
JL 114

Southern Cross
Vasse 80 F.D. 37 (Mt. Seaview Tower) (L.N. Weston)

Crowea
FU 25 Vasse 80 - about 10 miles south of Busselton L.N. Weston

Pitcher Plants
Vasse 80 FQ 10 Loc. 4189 (L.N. Weston)
F.D. A.P.I. Map No. 173/40
FN 45 (?For. Mahoney)

Schedule No. 9 continued Known Boronia Areas.

State Forests	Private Property in existence	Private Property areas destroyed
F.D. 415/80 Boyup Brook - Dinninup	-	Kulikup
23886 PG 93 (D.F.O. Eric Jenkins)		
Karridale 80		
1. GH 38 Fr. G. Styles	1 Loc.3681 GK 21 Fr. Styles.	
2. GH 26 Extra good rec'd by Gordon Styles.		
3. GK 26 Fr. Styles		
4. GK 26 "		
Plan 451/80		
Reserves		
1 A 10003 B1* "Rubbish Tip"	1 Loc. 1402 - B1*	
2. 14493 A1 Lake Barnes*	2. " 5939 - A1*	
3. 19673 A1*	3. " 6579 - A2 Ref owner Fred Duckett.	
4. 18741 A2*	4. " 5701 - 4½ ac. E. Gorman owner.	
5. Loc.5973 4 - 5 ac. being acquired by W.P. board for Tourists.	5. " 5702 - Carratti	

* Inspected by J.A. Thomson.

SCHEDULE NO. (C

BORONIA SURVEY 1969.

PERSONAL INTERVIEWS.

Forests Department Officers:

Manjimup	-	Inspector S. Quain D.F.O. White D/F W. Forrest
Shannon	-	A/D.F.O. Ashcroft A/F Les. Robson O/S David Osborne
Mt. Barker	-	A/F E. Cooper
Harvey	-	Inspector Bevan Campbell F/R Neville Belton
Collie	-	F/R D. O'Leary
Ludlow	-	Forester Gordon Styles
Busselton	-	D.F.O. D. Keene S/F H. Dawson ex S.T.I. - L.N. Weston (Retired)
Margaret River	-	A.D.F.O. G. Journeaux F/R _ _ _ _
Nannup	-	F/O Peter Richmond F/R H.W. Pears
Kirup	-	D.F.O. Jenkins Forester J. Mahoney
Grimwade	-	Forester Dearle

SCHEDULE No. 11 COPY.

[illegible] Form F.P. 165

WESTERN AUSTRALIA

FOREST PRODUCE LICENSE No.

istrict..............................

THIS IS TO CERTIFY that...

f............................is hereby licensed to cut and remove

uring the period from................to................green/dead......timber

ufficient to produce............................on and from the area nd subject to the conditions described hereunder, and to the rovisions of the Forests Act, 1918, and the Regulations thereunder n force for the time being and to the prepayment of royalty at he rates set out hereunder:-

Description of Area	Class of Forest Produce	Rate	Total Royalty

[illegible]

1. That no person shall be employed by the licensee in the exercise f the privileges conferred by this license unless the name and address f such person are endorsed on the back hereof, and initialed by the ssuer of the license.

2. The licensee is hereby authorised to cut and remove such forest roduce as herein provided on pastoral or other leases or holdings ithin the said license area which do not confer on the lessees or olders, the right to forest produce with full and free liberty to he licensee, his servants, workmen, and agents, with or without horses, arts and other conveyances, at all reasonable times to enter upon, epart from and pass over such pastoral or other leases or holdings or such purpose; provided always that the authority hereby given shall ot relieve or be deemed to relieve the licensee from liability to essees or holders in respect of any actionable damage caused by the icensee, his servants, workmen, or agents upon such pastoral or other eases or holdings aforesaid.

3. This license shall not be construed as authorising the licensee o cut through, break down or otherwise interfere with any fencing r other improvements erected upon or adjacent to the license area.

4. The licensee shall keep closed all gates used by him and shall ake all necessary action to prevent the ingress or egress of stock nto or from any area within the license area enclosed by fences which ay have been damaged as a result of his operations.

5. The licensee shall at his own expense and without delay -

(a) remove from all roads and tracks through or adjacent to the license area or from any land the property of an adjoining owner, all logs and other debris of any description; and

(b) make good any damage to fences or other improvements esulting directly or indirectly from his operations.

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Copy of Forest Produce License (continued).

6. This license shall be produced on demand to the owners of any pasnoral or other leases or holdings (or their representatives) on which the licensee may be operating.

IN A BREACH OF ANY OF THE FOREGOING CONDITIONS THIS LICENSE SHALL BE LIABLE TO FORFEITURE.

Received the sum of.....pounds.....shillings and .....pence in prepayment of royalty.

: :

dated at.....this.....day of.....19...

.....
Conservator of Forests.