

ASSOCIATION OF SOCIETIES FOR GROWING AUSTRALIAN PLANTS INC.

EPACRIS STUDY GROUP



Epacris navicularis

GROUP LEADER: *Ron Crowden*
SECRETARY/TREASURER: *Dick Burns*

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NEWSLETTER

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G,day again,

The majority of this newsletter comes from information and ideas supplied by members. As long as this exchange continues, then our newsletter and myself will be fulfilling our major function, as go-betweens. Some of the letters that have come to me, I have attempted to answer personally, but as I get to know you and your particular skills, I will start "farming out" the requests. And I'd expect that all members would feel free to contact other members directly, as needed. A membership list is attached.

Some of the points for discussion I raised in the last newsletter evoked response, and I have summarised them further on.

One idea that I would like to see started, an idea that will give all members a chance for direct involvement, is to start an EPACRIS HERBARIUM. I have prepared a herbarium sheet and included one A4 sheet that carries four copies. If you could duplicate it yourself - terrific - but I'll do more (and cut the sheets) for anyone.

We will need one herbarium sheet (don't worry if you can't complete all the details) for each specimen, and as well if you can't press your own specimens, I have a plant press. Send green material packed the same way as recommended for cutting exchange. I'll be using A4 sheets for the herbarium.

Ron Crowden has supplied us with an up-to-date list of Epacris species. It makes another attachment at the end of the newsletter. 'RKC' is Dr Ron Crowden, and YM is Yvonne Menadue, who is Ron's colleague in Epacridaceae at the University of Tasmania.

What have you been doing with epacrids since last newsletter? Down here in Epacrisland (or Tasmania for the notknowers) *Epacris impressa* has lit up the heathland and forest understoreys in whites and reds and pinks. A couple of weeks ago I was wandering among masses of *E.marginata* and *E.myrtifolia* on the way to Cape Pillar. I'm not completely one-eyed; in September I was around Sydney finding *E.longiflora* festooned around rocks in a natural gully in Earlwood, walking through groves of *E.pulchella* in full pink and white glory in Royal National Park, and relishing the perfume of *Woolisia pungens* everywhere I went.

FROM THE NEWSLETTERS AND CORRESPONDENCE

- from the Australian Cultivar Registration Authority:

The latest list I have is dated 21 January, 1993, and it includes 26 registered cultivars of *Anigozanthos*, 14 cultivars of *Chamelaucium uncinatum*, two and a half pages of you-know-what, but only one *Epacris*, and that is *Epacris impressa* 'Cranbourne Bells'.

- from *Danthonia*, the newsletter of the Australian Network for Plant Conservation (May '93):

Botanists from the Royal Botanic Gardens, Sydney, have located small populations of *Epacris sparsa*, a species that has not been seen for 180 years. It was described in 1810 by Robert Brown, who collected it in the Grose Valley a few years earlier. The newly found populations are on the banks of the Grose River, but are extremely precarious. Careful management will be required to maintain this exciting discovery.

- from the ASGAP Study Group Coordinator's newsletter (June '93):

Jan Sked has had to resign as Study Group Coordinator. Jan has had the responsibility for this rather difficult task for four years now, and has done the job most efficiently and enthusiastically. In the time Jan has actively helped many Study Groups, revived some that were lagging, and formed others, including this one.

It has been reported from the ASGAP Conference that at this stage, no-one took on the role of Study Group Coordinator.

- from the Wallum Study Group Newsletter No2 (Sept '93):

In describing the flowering of the Wallum (coastal Heathland) of South East Queensland during winter '93, no epacrids were mentioned.

from *Native Plants for NSW* vol28 no2 for June '93 on p34:

Following a well-researched article on the dangers of peat extraction to Australia's highland swamps, two alternatives to peat are discussed. The first, coconut fibre peat, is recommended by Neil Marriott who found it as good as top quality bog peat in cutting or seed raising mixes. The other alternative is treated rice husks. *Sunpeat* is described as "an organic, composted material, scientifically formulated as a Peat Moss Alternative". It is distributed by J C and A T Searle, from Newcastle to Cairns. No cost comparisons are given.

from *Threatened Australian Flora* published by the Australian Nature Conservation Agency, June '93:

Epacris hamiltonii and *E.stuartii* remain in the Endangered category. Listed as **Vulnerable** are the Tasmanians *E.apsleyensis*, *E.barbata*, *E.glabella*, *E.grandis*, *E.limbata* and a species described by Jarman as sp. **Alans Hill**.

NOTE: Endangered means that, unless we're careful, the species could disappear in ten to twenty years.

Vulnerable means the plant is still at risk but may take a longer time to become extinct.

From SGAP NSW we've received an invitation to mount a display on *Epacris* at their 1994 **Wildflower Show** at Rouse Hill in July. I had received an invitation to display at the ASGAP Sydney Conference but declined. Is there a Sydneysider in our Study Group interested in preparing a display to promote *Epacris*? I've got the details of the Flower Show.

from the minutes of a meeting of Study Group Leaders, held at the Sydney ASGAP Conference:

Among the items discussed was an invitation from the Sydney Royal Botanical Gardens, Mt Annan Annexe to join a cutting exchange program. To do this, the Study Group would need to sign a very binding legal document. I'd like to see more detail before we proceeded further.

FROM MEMBERS' LETTERS

Thank you all for the questionnaires. There is a mine of information contained within, it will be most useful as we proceed with the Study Group.

Bill and Doris Gunn of Ocean Grove (near Geelong), Victoria say this about their growing of *Epacris*.

"Our garden is around 600m from the ocean, with high sand dunes between. The soil is very sandy with lots of limestone. This *Epacris* do not seem to like, so we grow *Epacris* in containers. At present we have thriving pots of *E.longiflora*, *E.impressa* white, pink and red, *E.reclinata* (really showy), *E.microphylla* pink, (very floriferous) and *E.pulchella* (don't think it deserves its name when compared to other species)." Bill and Doris also outline their propagation technique (see below). They go on to say that at each potting on they add a little soil from a pot in which the species has done well. "We think, rightly or wrongly, that this may introduce the fungus necessary for the mycorrhizal association." Please read the Gunns' request, in that column.

Naomi Lawrence also sent an interesting letter which contained some points not covered in other sections of this newsletter.

Naomi completed an Honours thesis at the University of Tasmania, on epacrids including *Epacris impressa*. Naomi's summary of her work forms another attachment to this newsletter. She sent me a copy of the references used. Of the more than sixty references, many come from Australian Plants, many from State Newsletters. The majority are anecdotal and not based on systematic research. If you would like a copy, please contact me.

Naomi has since written a Recovery Plan (research phase) for *E. stuartii* for the National Parks and Wildlife Service of Tasmania. More on that one later. Her next task (*why do other people always get the good jobs?*) is to examine *E.barbata*.

Ron Crowden has been very involved with the Royal Tasmanian Botanical Gardens and sent us this report.

There are three recent programs at the RTBG in which the Epacridaceae feature with some prominence.

1. The Tasmanian Natives Garden (or A. P. May Memorial Garden). This area was opened officially in 1992. Although small, it provides a window to display Tasmania's plants to advantage. The garden was designed and landscaped by SGAP member Sib Corbett, and received good sponsorship (with both funds and plants) from SGAP Tasmania. The landscaping has an ecological theme, grouping species according to their habitat preferences. Epacrids are well represented throughout the garden.

2. Southeast Australian Section. This is a small area adjacent to the Tasmanian Natives Garden, which is presently being developed. Its theme will be to display (mainly) some of the more colourful heath plants of Southeast Australia. Obviously this display will feature epacrids to advantage.

3. Epacridaceae Garden. The next planned development featuring Australian species at the RTBG, is a small garden given over exclusively to epacrids. The RTBG has adopted

this family as one in which it will develop a specialised interest over the coming few years. It will concentrate efforts on problems of propagation and cultivation of these plants, with the hope that the future will see more epacrids introduced into public and private gardens.

COMMENTS on QUESTIONS raised last time

on a Site for our Living Collection:

A few ideas were proposed, but since there were only a few, Jeanette Closs' cautionary note that "... the maintenance of such has to be thoroughly considered. It needs a lot of time and dedication" should be our guide and we should hold the idea of a Living Collection for some time in the future.

on a Seed Bank: No-one could come up with any helpful suggestions, so the other option proposed looks like being the goer, at this stage.

on Cutting Exchange: A couple of members have already volunteered and I also have a few requests, so let's give this a go. The one request I cannot fill is from Sue Arnold of Euroka, who would like *E. impressa* var. *grandiflora*.

Before we start requesting and sending material, we'll have to sort out some details. The most obvious one is when to send the cuttings. Another is how. Whenever I dispatch cutting material, I wrap the plant in moist newspaper, then seal it with some air in a plastic bag. I post or air-freight the package by the fastest, economical means.

At this stage, we would be best to pass our requests through the newsletter. If anyone can help Sue please let me know and Sue if you are going to be away for a long period in the near future, you'd better let me know, as well.

Bill Gunn would like cuttings of any species not mentioned by him in this newsletter.

REQUESTS FOR HELP

Jennie Lawrence of Burnie has been collecting her own herbarium for a number of years. She has the Tasmanian species *Epacris impressa*, *grandis*, *petrophila*, *obtusifolia*, *exserta*, *virgata*, *lanuginosa*, *barbata*, *serpyllifolia*, *tasmanica*, *gunnii*, *acuminata*, *curtisiae*, *apsleyensis*. Can anyone help her with other Tasmanian species?

Bill Gunn of Ocean Grove is interested in finding out if anyone else in the Study Group has done any work on mycorrhizal associations in epacrids either at home or on a scientific research basis. Would someone else like to start experimentation with the idea Bill outlined in his letter?

MORE ON PROPAGATION TECHNIQUES

In *Australian Plants* for Mar '93, there are two articles on general cutting propagation techniques (p50-51 and p79).

Marion Simmons of Legana, in talking about *E. impressa*, says it "seems to strike readily from tip cuttings about 5-6cm long taken when the plant is in flower. All flowers are taken off the cuttings before planting." Marion, like me, depends on flowering time to show the best colours and forms.

Bill Gunn says of particular species: *longiflora* - easily propagated, *impressa* - propagates not too readily and difficult to keep going, *reclinata* - fairly readily propagated, *microphylla* - not too easy to propagate, and *pulchella* - won't propagate. Bill's potting mix is 4 shovelfuls of scoria, 2 shovelfuls of normal potting mix, a handful of slow release very low phosphate Osmocote, a handful of slow release nitrogen and a spoonful of trace elements. Bill visited Tasmania earlier this year and has struck cuttings of *E. serpyllifolia* collected on the trip.

Ron Crowden has helped me with my growing on problems. As soon as he has potted on his struck cuttings, he puts them straight out in the open not in a shade house. I did that

with *E. sp Mt Cameron*, and I've got the healthiest plants I've ever had.

Naomi sent a detailed account of the technique used in her thesis work. For all species new wood, semi-hard tip cuttings 1.5cm to 5cm (depending on the species as listed in Naomi's summary of her thesis) were collected at approximately 2-3 month intervals. These were placed into a plastic bag and kept in a cool room until they could be dealt with. Due to time constraints no collection was made in late spring or summer. The bottom 1/3 of the leaves were stripped from the stem and any flower buds or large vegetative buds were removed. The ends of all cuttings were quickly dipped into a 10% (0.4% w/v available chlorine) solution of *Domestos* household bleach as a hygiene measure. The stems were then wounded by scraping away the outer periderm with a sharp knife. Those cuttings undergoing treatment with a rooting hormone were dipped in either *Clonex* for softwood cuttings (referred to as C1) or *Clonex* for hardwood cuttings (C2). The constituents of these dips are listed below. There were three treatments (no hormone, in C1 and in C2) with 12 cuttings per treatment. The cuttings were placed into a mixture of 1/3 peat, 1/3 coarse sand and 1/3 perlite in 13.5 x 8.5 cm punnets which had been thoroughly wetted and then dipped briefly in a 10% solution of *Domestos*. These were then placed in seedling trays and put into the misting house at the Royal Tasmanian Botanical Gardens, under intermittent mist on a sand bed heated to 18°C. The ambient temperature of the misting house was also 18°C. This propagating method is the same as that employed by the Botanical Gardens.

SUBSTANCE	C1: g/l	C2: g/l
IBA	3.0	8.0
Water soluble phosphate	0.1	0.1
Potassium	0.075	0.075
Calcium	0.075	0.075
Magnesium	0.025	0.025
Sulphur	0.025	0.025
Iron	0.0025	0.0025
Manganese	0.001	0.001
Boron	0.00025	0.00025
Copper	0.0001	0.0001
Molybdenum	0.0001	0.0001
Zinc	0.00025	0.00025

You'll have to wait till next issue for Naomi's results.

THIS NEWSLETTER'S SPECIES

I have featured only one species this time, mainly because of the amount of information that has come in about it.

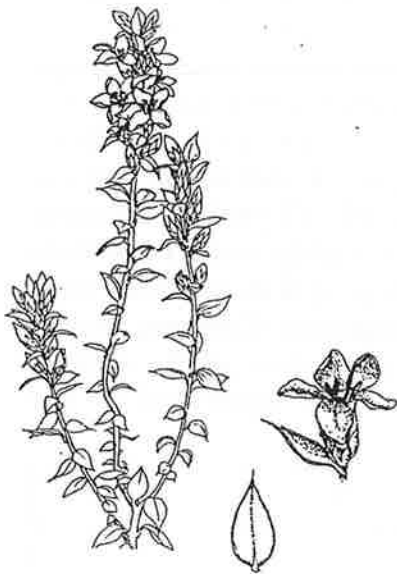
Epacris stuartii Stapf.

The species name commemorates Charles Stuart, who collected the type material last Century.

In *The Students' Flora*, Dr Curtis indicates that this collection was the only one. So most of what we know has been found out since 1963. *E.stuartii* is confined to one small

6.

area of Tasmania, at Southport Bluff, south of Hobart. Some locality guides say 'around the King George III Monument'. When I was planning my trip to see the plant, it was going to be easy to drive into Southport and look for the statue. But why would anyone in Tasmania wish to acknowledge the monarch who was responsible for transportation? KG3 was actually a ship that sunk off Southport Bluff.



Epacris stuartii, × .55

leaf and flower, × 1.1

E.stuartii grows in rock crevices and on very shallow sandy soil near the salt spray zone. The bedrock is dolerite, an igneous intrusive rock, similar chemically to basalt. The epacrid grows as a small shrub in the wild, growing with few erect branches. Its tiny white flowers may have pink sepals or bracts and make spectacular mass displays. Flowering time is listed as being autumn to early winter. I saw it at Easter.

Ron Crowden finds it quite easy to strike it from semi-hardwood cuttings, and describes it as a 'fairly robust garden plant, provided there is good drainage, a thin mulch of woodchips and bark and no added fertiliser.'

Jeanette Closs had a beautiful dense plant in her garden at Austins Ferry. In the garden, the branches tended to trail a bit, rather than being erect, perhaps because it was in the shade, on the southern side of the house. Jeanette's plant also had very good drainage. Jeanette has been unsuccessful at re-propagating the plant.

I struck cuttings from Jeanette's plant but lost them due to my mollycoddling.

Elliot and Jones (from which I borrowed the drawing) add that *E.stuartii* is salt and snow and frost hardy, will withstand pruning and is recorded as being one of the hardest of the genus.

The research objectives of Naomi's Recovery Plan for the species are to document the plant's ecology, its life history, propagation requirements and genetics or breeding. Such studies will help determine the species' conservation requirements (*remember it is Endangered*) as well as broadening our knowledge of its habitat, and of Epacridaceae in general.

Actions needed in the future, as recommended by Naomi are:

1. Record site characteristics, monitor the life cycle, record mortality and recruitment and factors involved with this (eg fire, disease, disturbance).
2. Collect vegetative and seed material and determine a propagation/cultivation strategy to establish an *ex-situ* holding for the purpose of experimentation and reintroduction.
3. Conduct Isozyme assays to assess genetic variation and controlled crossing experiments to determine the breeding system.
4. Analyse and document the research findings.

I have a copy of Naomi's Plan, and I could send full copies to anyone who wants one.

Well that's it folks. Happy New Year.

Dick Burns

**DON'T FORGET: THE HERBARIUM, THE NSW FLOWER SHOW, REQUESTS FOR HELP, CUTTING EXCHANGE.
DO YOU WANT COPIES OF: NAOMI LAWRENCE'S REFERENCES OR RECOVERY PLAN? HERBARIUM SHEETS?**

7.

My honours thesis

I will impart to you for general information interesting things I have found out about *Epacris impressa*. The site I collected from was Pelham Tier which is behind Mt Dromedary thus flowering times etc. are probably only relevant to this population.

I found that this species is heavily grazed by native animals. Those plants grazed, form nice compact bushes and not the leggy straggly habit which characterises this species. Thus it can obviously cope with heavy pruning and for a garden situation this results in a more attractive plant.

I established that the seed of *Epacris impressa* (as did all the other species I worked on) has an embryo dormancy. Unfortunately it is this type of dormancy which is most difficult to break. I tried numerous treatments which included vernalisation for 4 and 8 weeks, unripe and ripe seed, seed after ripened for 6 months and heat treated seed. I also tried to germinate embryos in tissue culture. All to no avail. I did get *Epacris tasmanica* to germinate without any treatment as a test to see if there was something about the media I was using (filter paper and distilled water) which was affecting the germination response. However this germination was very sporadic. I began to suspect after I had no success germinating any seed of any of the species I was working on (except *Prionotes* which has a fertility problem) that the Ph of the media upon which seed are germinated may be important. However I did not have time to test my theory

Adult *Epacris impressa* plants appear to have the ability to resprout after fire as long as there is some above ground parts left which have not been severely burnt. It has also been reported that fire stimulates germination of the seed. The failure of my heat treatment to induce germination casts some doubt on this assumption.

I recently went for a walk along the Alum Cliffs track which was burnt out 2 years ago. Along the track literally hundreds of *Epacris impressa* seedlings had sprouted up. However the interesting thing is that these seedlings were of varying ages suggesting again sporadic germination. This would imply to me that it is not the fire (heat event) which is the initial stimulus to germination. If it was, one would expect a flush of germination resulting in a stand of relatively even aged seedlings. Perhaps the Charcoal bed created by the fire, the removal of competition and other factors (as yet unknown) all create ideal conditions for the seed to germinate and dormancy is broken by some other environmental condition.

I also did experiments where I collected cuttings at different times of the year to see if there was a seasonal effect on rooting response and whether rooting hormones helped to promote rooting. I have enclosed the cutting method which I used. I found that there was a seasonal effect on rooting and I achieved the best rooting percentage with cuttings collected in late summer. This response was enhanced by the use of Clonex which increased the rooting percentage from 25% up to a maximum of 41%. I have no result for early summer or spring but for early autumn to mid winter very low rooting percentages (between 3-8%) were achieved and this occurred only where Clonex had been used. In late winter none of the cuttings rooted. See the enclosed graph etc.

I also tried tissue culturing *Epacris impressa*. My first and biggest problem was getting the plant material totally sterile. I managed to do this quite effectively and some of the explants began to expand lateral buds. At this stage I ran out of time. I had more success with *Prionotes* which I have in culture and will be doing a little work on in the coming years.

Unfortunately because of my present work which keeps me very busy I will not be able to pursue the study on *Epacris impressa* or any of the other species (except perhaps *Prionotes*). But hopefully I have established some groundwork from which it should be a little easier for people to conduct further studies on this family.

I hope you find this information useful

The Genus *Epacris* Epacridaceae.

List of known and named taxa. The following list represents current thoughts on *Epacris* according to RKC and YM, whose taxonomic revision of the genus is nearing completion. Some views may change slightly by the time the work is finished (hopefully by the end of 1993), as additional material becomes available and other specimens are re-examined. The list includes 42 named species and 9 taxa which are awaiting final decisions regarding their status and nomenclature. These latter are listed according to location or some other trivial identifier and are marked by *. Updated information will be provided in future newsletters. If anyone notices any errors or omissions or can provide additional comments or opinions, I should be most grateful to hear from you.

<i>E. acuminata.</i>	Tas.
<i>alpina.</i>	N.Z.
<i>apsleyensis.</i>	Tas.
<i> barbata.</i>	Tas.
*Bedford Rd. (aff. <i>E. crassifolia</i>).	NSW.
<i>breviflora.</i>	Vic., NSW., Qld.
<i>calvertiana</i> ssp. <i>calvertiana</i> .	NSW.
" ssp. <i>versicolor</i> .	NSW.
<i>coriacea.</i>	NSW
<i>corymbiflora.</i>	Tas.
<i>crassifolia.</i> (may be 2 ssp.).	NSW.
<i>curtisiae.</i>	Tas.
<i>exserta.</i>	Tas.
*Falls Ck. (aff. <i>E. petrophila</i>).	Vic., NSW.
<i>franklinii.</i>	Tas.
*Flinders. (aff. <i>E.tasmanica</i>).	Tas.
<i>glabella.</i>	Tas.
<i>glacialis.</i>	Vic., NSW..
*Gog. (aff. <i>E. exserta</i>).	Tas.
<i>grandis.</i>	Tas.
<i>gunnii.</i>	Tas., Vic., NSW..
<i>hamiltonii.</i>	NSW.
<i>heteronema.</i>	Tas.
<i>impressa.</i> (may be 2 ssp.).	Tas.,Vic.,S.A., NSW.
<i>lanuginosa.</i>	Tas., Vic.
*Leura. (aff. <i>E. crassifolia</i>).	NSW,
<i>limbata.</i>	Tas.
<i>longiflora.</i>	NSW.
<i>marginata.</i>	Tas.

<i>microphylla</i> ssp. <i>microphylla.</i>	Vic., NSW.
" ssp. <i>rhombifolia.</i>	Vic., NSW.
* " ssp. <i>pedicellata.</i>	NSW.
*Mt. Cameron. (aff. <i>E. virgata</i>).	Tas.
<i>mucronulata.</i>	Tas.
<i>muelleri.</i>	NSW.
<i>myrtifolia.</i>	Tas.
<i>navicularis.</i>	Tas.
<i>obtusifolia.</i>	Tas., Vic., S.A., NSW., Qld.
<i>paludosa.</i>	Vic., NSW.
<i>pauciflora.</i>	N.Z., New Cal.
<i>petrophila.</i>	Tas., Vic., NSW.
<i>pulchella.</i>	NSW.
<i>purpurascens</i> ssp. <i>purpurascens.</i>	NSW.
" ssp. <i>ononosmiflora.</i>	NSW.
<i>reclinata.</i>	NSW.
<i>rigida.</i>	NSW.
<i>robusta.</i>	NSW.
<i>serpyllifolia.</i>	Tas.
<i>sparsa.</i>	NSW.
<i>stuartii.</i>	Tas.
<i>tasmanica.</i>	Tas.
*Tumbledown. (aff. <i>E.serpyllifolia</i>).	Tas.
*Union Bridge. (aff. <i>E. mucronulata</i>).	Tas.
<i>virgata.</i>	Tas.

R.K.C. June 1993.

EPACRIS STUDY GROUP HERBARIUM
Some Useful Words

Location reference: Be as precise as possible, preferably give either grid reference or latitude/longitude.

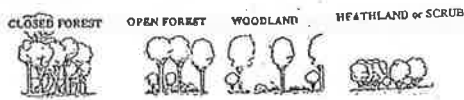
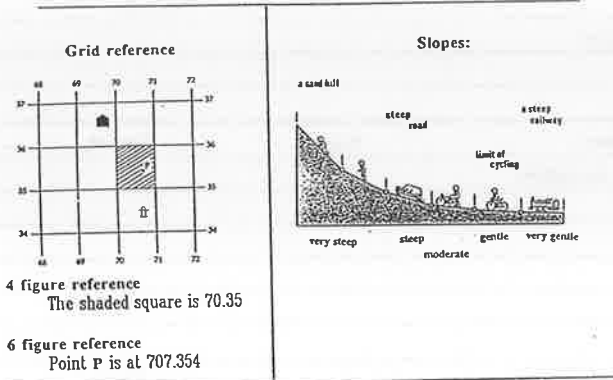
Topography: valley, hilltop, cliff, slope (see diagram), flat, waterway, etc.

Substrate: describing soil - sand, clay, loam, silt, or combinations thereof.
colour, wetness
skeletal, shallow (<30cm), deep (>30cm), gravelly, littered, etc.

Vegetation: basic types - closed forest, open forest, woodland, heathland or scrub (coastal, alpine), grassland.

Abundance: dominant, common, frequent, occasional, rare.
OR
extensive/large/medium/small clumps.

Habit description: shrub; open, diffuse, dense, crooked, etc
erect, ascending, sprawling, prostrate, etc.
many/few/long/short stemmed.
wind pruned, browsed, etc.



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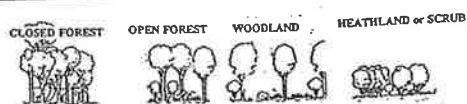
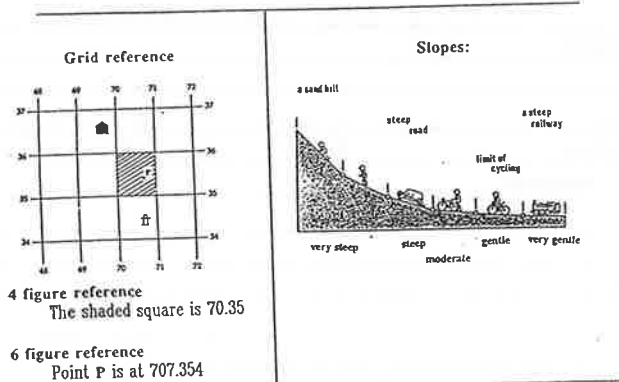
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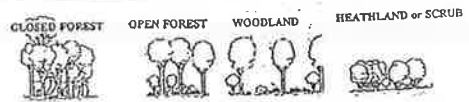
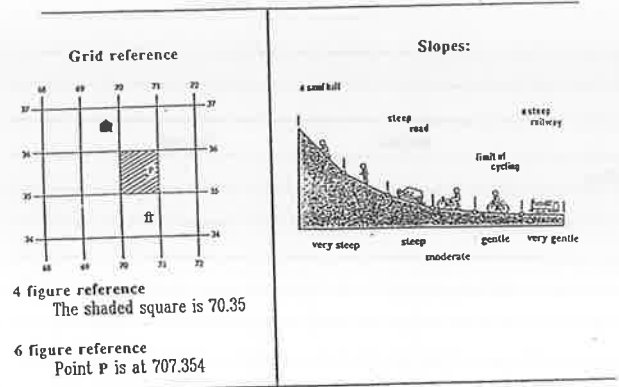
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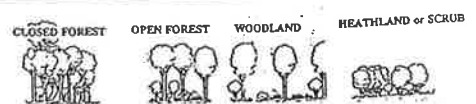
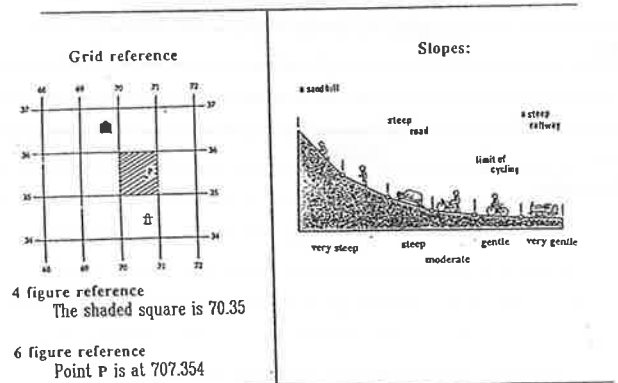
Topography: valley, hilltop, cliff, slope (see diagram), flat, waterway, etc.

Substrate: describing soil - sand, clay, loam, silt, or combinations thereof.
colour, wetness
skeletal, shallow (<30cm), deep (>30cm), gravelly, littered, etc.

Vegetation: basic types - closed forest, open forest, woodland, heathland or scrub (coastal, alpine), grassland.

Abundance: dominant, common, frequent, occasional, rare.
OR
extensive/large/medium/small clumps.

Habit description: shrub; open, diffuse, dense, crooked, etc
erect, ascending, sprawling, prostrate, etc.
many/few/long/short stemmed.
wind pruned, browsed, etc.



EPACRIS STUDY GROUP HERBARIUM

Field name: Epacris
 Determined name: Epacris
 Determined by:
 State & District: map: scale: 1:
 Location reference: grid: or: lat: ° ' " long: 1 ° ' " >
 Location description:
 altitude:
 Topography: aspect:
 Substrate: bedrock:
 Vegetation:
 Abundance: Height: Spread:
 Habit description:
 Notes:
 Collector: Date:

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