



Fabaceae Study Group

Leader : Jenny West

Welcome

Welcome to the first newsletter of the ASGAP Fabaceae Study Group. The study group was newly formed in 2005 and this newsletter is the first formal communication with members. As an introductory newsletter, it will present some of my ideas about what the study group might aspire to in future years.

Initiating a study group for such a large family of plants is an enormous task. Much of what can be achieved will be dependent on member interest and input. Whilst our initial membership is small, enthusiasm and organization by a small group can nonetheless produce rewarding results.

On the last page of this newsletter, I have provided a member survey which will help me assess what members would like to see this study group achieve. Please take the time to fill it in and return it to me. If you would prefer an electronic copy, just send me an email.

Here's to a long and rewarding journey together discovering our native peas.

Floral icon for this newsletter is:

Bossiaea ornata (Lindl.) Benth

Common Name: Broad Leaved Brown Pea

Location: WA (from Albany to north of Perth) in mallee shrublands and heaths.

Conservation status: not threatened

Described: Fl. Austral. 2:158-159 (1864)

Size: Erect, spreading perennial shrub, which can grow to 1.5m high but is usually less than 0.5m high.

Flowers: Win - Spr. About 2 cm across. Upper part of standard is yellow, lower part reddish/brown. The keel is reddish/brown. I love the way the flowers line up along the stem, just like sparrows on a power line.

Leaves: 2 - 5cm x 0.3 - 2 cm, broadest near base

Pods: hairy, 2 - 5cm x 0.5 cm

Images: Australian Plants (1983). Vol 12 p101; Encyclopaedia of Australian Plants by Elliott & Jones (1982) Vol 2 p360; and at the following websites: <http://florabase.calm.wa.gov.au>
<http://www.anu.edu.au/BoZo/Crisp/Mirbelieae/Bossiaea.html>

Does any-one have their own line drawings, photos, slides or digital images of this plant that they are prepared to offer to our photobank?

Propagation: Germinates readily from seed. I sowed ten seeds in May last year from a \$1 packet purchased from Nindethana. May in Gordon is cold and not an ideal time to sow seed but I was in a hurry to start collecting pea species. Six seeds germinated between 6 to 10 weeks after sowing, so I now have a few young plants to try in the ground. I'm certain germination would be much faster if sown at a warmer time of year. Has anyone tried this plant from cuttings?

Cultivation: *Bossiaea ornata* will most likely require a moist well-drained position with partial sun or dappled shade. Has anyone grown this plant successfully? Is it reliable? Is it hardy to frosts? Please let me know about your experiences with this plant so I can pass the information on to other members.

This plant is certainly a lovely little gem and being small could find a place in almost any garden.

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Where has our current knowledge of peas come from?

Our very earliest botanists were, of course, the first to discover Australia's wealth of pea plants. The task of classifying these peas into tribes, genera and species must have been enormous. The earliest classifications relied on visible plant characteristics (often floral structure) to separate species. The type (original) specimens of species are safely stored away to this day as pressed material. The information provided by these specimens is supported by botanical descriptions and illustrations.

The Fabaceae family is very large (more than 1200 species in Australia) and it's sometimes not clear cut as to where a plant belongs in the classification system. Our current botanists are now able to use DNA technology to help clarify the systematic classification of plants and their evolutionary relationships. This has benefited botanists enormously but has also resulted in a lot of new names for old species. While this is frustrating for the garden enthusiast, in the long term the system will be much more stable. I hope our newsletters can inform members of the recent revisions.

One Australian scientist who has devoted many years to research on pea plants is Professor Mike Crisp of the School of Botany and Zoology at the Australian National University in Canberra. His website, which includes wonderful colour photos of some of Australia's most beautiful pea plants is at <http://online.anu.edu.au/BoZo/Crisp/> and is very worthy of a visit.

Valuable information is also available in many issues of Australian Plants. Articles deserving a special mention include a series of comprehensive articles presented by Woolcock. (Vols 11 & 12), Wrigley (Vol 10) and Debenham (Vol 10).

A book entitled 'A Field Guide to Native Pea Flowers of Victoria and South Eastern Australian' by Dorothy Woolcock and illustrated by Colin Woolcock is also a very good read. The various volumes of Encyclopaedia of Australian Plants by Elliot & Jones, as always, provide a wealth of information on pea species.

An SGAP Fabaceae Study Group was formed many years ago (around 1971), along with the Hakea and Banksia Study Groups. The group produced a number of newsletters but discontinued after a few years. Many years have past and it is time once again to have a go at developing a group to study the "peas"

My Vision for the Study Group

I hope that the study group will become a valuable resource to members by providing information and opportunities to share experiences etc. I see my role as a coordinator. I'm a very flexible person and consider it important to accommodate the perspectives of members.

The Fabaceae family is so large that it will be impossible for such a small group to cover all species. I therefore propose that each newsletter should try to provide a comprehensive overview of just one genus (that's enough for about 25 years of newsletters at four newsletters each year). The format of this newsletter is a suggested outline of future newsletters. Please feel free to offer alternatives. I foresee several key areas:

Information resource

There is already a wealth of information available about 'pea plants'. Sometimes the information required is readily available, and sometimes it seems no matter how hard you look, you just can't find

- how big your plant will grow in your climatic conditions
- whether it is likely to grow in that dry, shady spot
- if it will grow from cuttings
- where you might obtain plants, seeds or cuttings
- a pretty picture so you can decide what other plants it will look good with, etc.

I have commenced a database to compile as much information as possible for every Australian Fabaceae species. This is an enormous undertaking and will probably take years to develop. It will, however, enable members to request specific information. I'll discuss this more in the next newsletter.

Newsletter

It is anticipated that 3-4 newsletters will be produced each year. Each newsletter will focus on a different genus, providing current information on systematics, listing all species and where possible how to identify them. I hope to include information on cultivation, and propagation and also provide images.

Each newsletter will also include a floral icon of special interest. Member contributions are an important way of learning more about pea plants, so please share your knowledge.

Living collections

I hope we can develop a database of pea species grown by members. If you would like to register your collection of pea plants (no matter how small), please send me a list. I will try to update the register each year or two.

It is easy to report on successes but knowing about failures is just as important. In both cases, it is useful to know the growing conditions eg wet/ dry, sun/shade, soil type, aspect and any other relevant information. From this information we can build a profile of the plant's needs.

Research

There are so many peas with outstanding potential yet many of them are never seen in cultivation. Is this

because they are not available, because they are too hard to grow or because their potential is not recognized? Over the years I have attempted to grow many 'peas' and while successful with some, others have been short lived or unreliable, dying suddenly for no apparent reason.

I would encourage members to recommend a few worthy species that could undergo some intensive research to try to develop more reliable forms etc

Studies could include development of superior forms for horticulture e.g selection of forms for frost or drought tolerance, selected growth habit, flower colour, etc

We could also investigate other propagation methods apart from seed eg. grafting, tissue culture, and also the possible need for special associations with microflora etc. Please let me know what you think.

Seedbank

Pea seeds can remain viable for many years. I have recently germinated many species from seeds that I collected more than 10 years ago.

I would like to see the study group have its own seed bank because seeds of many pea species are just not available commercially. I have purchased about 200 species from Nindethana and I'm slowly but surely growing these on to trial in the ground at Gordon.

If you have any excess seeds from your plants please label them and send them to me to get our seedbank started. It doesn't matter how common the species is, it will help to generate a stock for our members to select from. I hope as the group expands that some one will offer to be the seedbank curator. I also hope the study group can purchase bulk supplies of selected species when funds are available.

Until our seedbank is up and running a good selection of seed is available for purchase from:

Nindethana Seed Service Pty Ltd, PO Box 2121,
Albany, Western Australia 6331
Phone: (08) 9844 3533
Website: <http://www.nindethana.iinet.net.au/>

Imagebank

It would be great to develop a collection of images in digital format for use in newsletters and on the webpage and for members to use in displays, talks, etc. I have received some images from Paul Kennedy and Ross Priddle and I'm slowly converting my slide collection to digital format. I'm also taking photos of any peas that I come across.

Any images offered to the study group will be embedded with the photographer's name and species name (so easy to do these days on the computer).

Webpage development

Let's aim to have a webpage some time in the future. If you enjoy webpage development and are interested in designing a site from scratch, please let me know.

Why is it a pea?

The pea plant family Fabaceae has around 12,000 species world-wide. The word Fabaceae is derived from the Latin word "faba", meaning bean. The Fabaceae family is sometimes known as Papilionaceae, depending on the preferred classification of the botanist describing these plants. The derivation of Papilionaceae has its origins in the similarity of pea flowers to butterflies, with 'pappilo' being Latin for butterfly.

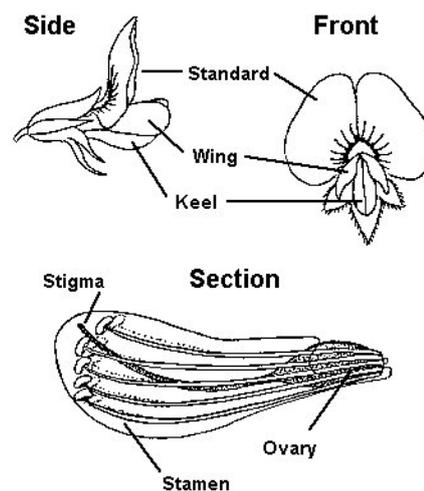
There are about 1200 species of peas in Australia. I currently have about 700 in our database, so there are still a few more to add.

Australian peas are widespread in temperate, semi-arid and tropical regions and include annuals, shrubs, climbers, twiners and trees.

Non-Australian members of the Fabaceae family include some of the world's most important food crops including peas, beans, peanuts etc as well as fodder crops, ornamentals, timber species and weeds.

Australia wide, the Bossiaeeae and Mirbelieae tribes dominate with more than 700 species. Western Australia is blessed with around 90 Fabaceae genera and 650 species.

Pea plants are identified according to the structure of their flowers. A 'pea' flower (Fig 1) has five petals, of which three are free and two are united. The posterior petal (called the 'standard') is usually the largest. The two lateral petals are called 'wings' and the two anterior petals are united along their upper edge to form a boat-shaped structure called the 'keel'. The keel encloses the stamens and the carpel.



A typical "pea" flower

Figure from article by Woolcock, Australian Plants Vol 12 p95

How to tell one genus from another

There are more than 120 genera of Australian peas and they all have similar floral structures, so how do you tell them apart? As I mentioned on page 2, the Fabaceae family is still undergoing considerable revision. For the purposes of this newsletter, there is little point in giving detailed explanations on why a *Chorizema* is in one tribe and *Templetonia* is in another. I hope to provide some simple explanations about classification as each genus is reviewed in future newsletters.

For this newsletter I have chosen to refer to a relatively simple method described by Dorothy Woolcock in *Australian Plants* Vol 11 p47.

Woolcock presented a simple way to sort peas into 10 different tribes (which are similar to the 11 tribes classified by Bentham in 1864). The classification is based on various arrangements within the floral structure (see Table below for details). Genera shown in blue were not included in Woolcock's original article. I have added these genera to the appropriate Tribes (I hope I got them right).

Identifying characteristics	Tribe	Genera in each group
flowers with all 10 stamens free	Mirbelieae (syn. Podalyrieae Benth.)	<i>Almaleea</i> , <i>Aotus</i> , <i>Brachysema</i> , <i>Burtonia</i> , <i>Callistachys</i> , <i>Chorizema</i> , <i>Cupulanthus</i> , <i>Daviesia</i> , <i>Dillwynia</i> , <i>Erichsenia</i> , <i>Euchilopsis</i> , <i>Eutaxia</i> , <i>Gastrolobium</i> , <i>Gompholobium</i> , <i>Isotropis</i> , <i>Jacksonia</i> , <i>Jansonia</i> , <i>Latrobea</i> , <i>Leptosema</i> , <i>Mirbelia</i> , <i>Nemcia</i> , <i>Oxylobium</i> , <i>Phyllota</i> , <i>Podolobium</i> , <i>Pultenaea</i> , <i>Sphaerolobium</i> , <i>Viminaria</i> . <i>Urodon</i>
	Sophoreae (trees and woody climbers)	<i>Castanospermum</i> <i>Sophora</i>
all 10 stamens joined in a sheath open above, or in a close tube	Bossiaeeae	<i>Aenictophyton</i> , <i>Bossiaea</i> , <i>Goodia</i> , <i>Hovea</i> , <i>Lamprolobium</i> , <i>Muelleranthus</i> , <i>Plagiocarpus</i> , <i>Platylobium</i> , <i>Ptychosema</i> , <i>Rothia</i> , <i>Templetonia</i> .
(9) + 1 groups 9 of the 10 stamens fused with the upper stamen free	Trifolieae (Clovers & Medics)	<i>Trigonella</i> <i>Trifolium</i>
	Loteae (True Lotus)	<i>Lotus</i>
	Galegeae (Pinnate-leafed shrubby peas)	<i>Indigofera</i> , <i>Psoralea</i> , <i>Swainsona</i> <i>Glycyrrhiza</i>
	Viceae (Peas & vetches with pinnate leaves)	No Aust ssp. but some naturalised e.g. <i>Vicia</i>
	Phaseoleae (Climbers & twiners)	<i>Glycine</i> , <i>Hardenbergia</i> , <i>Kennedia</i> , <i>Vigna</i> , <i>Austrodolichos</i> , <i>Canavalia</i> <i>Erythrina</i> <i>Mucuna</i> <i>Vandasia</i> <i>Phaseoleae</i>
Stamens all joined in a tube or sheath open above; or with (5) + (5) in a tube split along the bottom as well as the top	Hedysareae	<i>Desmodium</i> , <i>Zornia</i>
	Dalbergieae	<i>Derris</i> , <i>Lonchocarpus</i>

In addition, there are a number of Tribes that I have not yet incorporated into the Table above. These include Tribe Abreae (genus *Abrus*); Tribe Aeschynomeneae (genus *Aeschynomene*); Tribe Cajaninae (genera *Cajanus*, *Dunbaria*, *Eriosema*, *Flemingia*, *Rhynchosia*); Tribe Cercideae (genus *Barklya*); Tribe Millettieae (genus *Callerya*, *Tephrosia*); Tribe Crotalariaeae (genus *Crotalaria*); Tribe Psoraleeae (genus *Cullen*); Tribe Desmodieae (genus *Desmodium*); Tribe Robinieae (genus *Sesbania*); Tribe Sophoreae (genus *Sophora*).

The information above is by no means complete and will be revised in a future newsletter. Please help me add to this table. I was astounded to discover that the Fabaceae family contains so many genera that I have never heard of.

Aims of the Fabaceae Study Group

- further our knowledge about the cultivation, propagation and conservation of Australian pea plants
- establish living collections of Australian pea species
- promote the use of pea plants and inform others about their cultivation
- conduct research on the cultivation and propagation of pea plants
- report on the latest classification or name changes etc.
- endeavour to produce 3-4 newsletters per year

Member Profile

Australia is a very big country and many members may never meet in person. I would love to know a little about each of you: what climatic zones you live in, which "peas" you find most appealing, what your soils are like. Are you a newcomer to native plants or maybe a seasoned veteran? How would you like the study group to assist you and how can you assist the study group?

For those of you who are happy to do so, I would like to include a few member profiles in each newsletter so that we have a chance to get to know each other.

If I'm going to ask members to bare their souls in this way, I guess I'd better tell you about myself.

Who is Jenny West?

Well I must be crazy to be taking on the task of coordinating a study group on such a large and diverse family of plants. Well, it will keep life interesting.

I first became interested in Australian plants way back in 1980 when I had two very small children and a very large ten acres at Balliang East, Victoria. The property was a grassland with only two very old *Pinus radiata* trees. I couldn't afford, at the time, to buy the hundreds of plants necessary to establish a garden, so I joined Werribee SGAP to learn about propagating my own plants. Everything mushroomed from there and throughout the 1990's, I established several acres of garden and eventually a small nursery and tissue culture laboratory using the laboratory skills I had gleaned from my earlier career.

The conditions at Balliang East were harsh (dry, rocky and exposed) but the volcanic-derived soils were well-drained loams suited to growing many of the West Australian wildflowers, which thrived there. I was

extremely keen on Eremophilas, growing & propagating around 100 species.

In 1990, I decided to return to study, undertaking a Biological Science degree to further my interest in Botany. I became a little diverted along the way and eventually majored in both Botany and Biochemistry. After completing Honours and a PhD in Biochemistry, I launched into a career in cancer research, far from my original intention of becoming a botanist.

Throughout my years of study (about 10 in all), I never lost my great love Australian plants. I would retreat to my garden to find a nice quiet haven in which to study and I also used my garden as a place to escape from study.

Two and a bit years ago, I moved from my home and garden of 26 years to a totally different clime. My current home in Gordon is a short drive from Ballarat, which has a much maligned reputation for being cold and wet. Gordon has an elevation of 620 metres. The annual rainfall of 700 - 800 mm is twice that of my Balliang East property which lay within the rain-shadow of the Brisbane Ranges. Gordon has regular heavy frosts and the occasional snow.

My property is on a steep, south facing slope with lots of shade. The soils, being derived from Ordovician slates and sandstones, are mostly deep heavy clay loams on the lower slopes with areas of exposed bedrock at the top.

Establishing a new garden here is proving quite a challenge but I undertake this task with a lot more knowledge than I had when I started my first garden.

As you might expect, my new garden does not favour Eremophilas (though I'm still trying them to see how they fare). That's where the interest in pea plants stems from. Many peas are understory plants preferring dappled shade or partial sun. I hope to feature as many pea plants as I can in this new garden. I have been madly propagating plants, so most week-ends are spent potting up, preparing garden beds or planting out. Progress is much slower than I would like but I'm taking all those "before" photos, so that one day I can marvel at the "after".

I undertake the challenge of co-ordinating the Fabaceae study group as a long term commitment. I am not an expert in this field but am learning rapidly. I hope to make many excursions throughout Australia in the coming years and look forward to meeting pea plant enthusiasts in my travels.

Next newsletter

Proposed date of completion May – June.

- Genus of the issue

I have selected [Hovea](#) as the first genus to focus on. This genus has many spectacular species, some of which are very amenable to cultivation, while others are quite difficult to grow and hence not readily available. Hoveas are represented in every state, with species ranging from cold montane areas through to semi-arid conditions. The Eastern states Hoveas have recently undergone a complete revision with divisions within species and many new names. I'll try to give you an overview of this revision and a brief inventory of Hovea species. I would love to receive any articles on your attempts to grow Hoveas – what worked, what didn't etc. Images would be great too (for both the newsletter and our imagebank). And perhaps a list of the Hoveas growing in your garden or the local bush land. Do you have any excess Hovea seed to share? – it germinates readily.

- Floral icon

I would like the 'floral icon' for each newsletter to be from a different genus to the one under discussion. It would be useful to feature a species that is of special interest, perhaps because of its outstanding beauty or because it is rarely grown or endangered etc. If you have any suggestions for our next icon, let me know. There are certainly plenty of worthy Fabaceae species to choose from.

It would also be useful for members to have a chance to comment on the floral icon featured in the previous newsletter, so if you have had any experience with *Bossiaea ornata* your thoughts will be greatly valued (even if it's just a line or two).

- Member profiles

Let's get to know each other. Please send me a profile to include in future newsletters.

- Member contributions

I have had two very kind offers of articles for future newsletters. Don & Jean Wehbury have offered to describe the wonderful pea collection they left behind on their Greendale property in Victoria. And Tim Hayes from Goulburn, on the Southern Tablelands of NSW has agreed to tell us about his exciting discovery of a new species, now named *Dillwynia glaucuala*. I guess many enthusiasts, myself included, dream of discovering a plant that no-one has identified before. Tim, you must have a very keen eye.

Any other contributions would be most welcome. If you are on-line, it would be great to receive articles by email, so I can just cut & paste.

- Results of member survey

If you return the member survey, I'll let you know what members hope to see this Study Group achieve.

Til' next time, happy gardening, *Jenny*

Member Survey

Please help me to establish this study group so that it fulfils members needs. Could you please tick the boxes of any areas that are of interest to you and then return the form to: **Jenny West, 38 Gleeson Cr, Gordon, Victoria 3345**

Or you can email me at: jawest@austarnet.com.au and I will send an electronic copy for you to return by email. Would you accept your newsletters by email (in .pdf format) to save on postage and obtain full colour images Y / N If yes, please send me an email.

In the garden and glasshouse

- Members experiences
- Cultivation notes (especially for those hard to grow plants)
- Propagation tips
- Seed lists
- List of members willing to share material for propagation
- List of living pea plant collections (in private & public gardens)

Identification

- Botanical revisions (new names for old species)
- Detailed botanical descriptions
- Keys (or notes on how to identify species)
- Scientific abstracts of recent publications

Spreading the word

- Species information database
- Photobank
- Information for speakers promoting pea plants
- Promotion of selected outstanding species or cultivars
- Perhaps in years to come, a book

Conservation

- Conservation of threatened pea plants
- Propagation of threatened species to conserve gene-pool

Getting to know you

- Member profiles
- Occasional member gatherings (perhaps as satellite meetings to other ASGAP or regional meetings)

Research projects

- Specific projects to improve our understanding of selected species eg: to prolong survival, improve propagation etc

ARE YOU INTERESTED IN CONTRIBUTING IN SOME WAY?

- Newsletter editor
- Seedbank curator
- Speaker to local groups
- Do you have the skills to prepare some simple line drawings for newsletters or talks? (I really fail here!!!)
- Webmaster
- Membership officer &/ or Treasurer
- Showing other members the peas in your garden or your local bushland
- Coordinator of a sub-group eg a genus that you really like
- Other

Please jot down on the back of this form, any other suggestions you might have about our study group. Your comments at this formative stage are encouraged, as it will help develop a solid framework for our future expansion.