



A.N.P.S.A. Fern Study Group

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Program for South-east Queensland Region

Peter Bostock/Dan Johnston

Sunday 5th March, 2017. Excursion to Brisbane Koala Bushlands Reserve, Alperton Rd, Burbank. Meet at the usual 9:30 am at the Reserve car park, which is at the end of a well sign-posted short bitumen access road (on your left if driving south along Alperton Rd) about 1.3km S of Mt Cotton Rd.

Sunday 2nd April. Meet at 9:30 am at Claire Shackel's place, 19 Arafura St, Upper Mt Gravatt.

Sunday 7th May. Excursion to Tullawallal, near Binna Burra in Lamington National Park. Meet at 9:30 am at the carpark at the end of the road at Binna Burra. This walk climbs gently through rainforest for about 2.5 km to a peak with Antarctic beech forest on the top. The return is partly by a different route (the main border track), is again about 2.5 km, and is a gentle descent all the way. This is the excursion that was cancelled last year, due to inclement weather (that turned out to be not so inclement).

Sunday 4th June. Excursion to be confirmed!

Program for the Sydney Region

Peter Hind

Saturday 18th March, 2017. Meet from about 10.30 am for 11 am start, at Horseshoe Falls Reserve Picnic Area (no offstreet parking available last time we were here in April 2000). Take the Great Western Highway to the Blue mountains, pass Hazelbrook Railway Station and shops and then turn right into Oaklands Road at the lights. Follow this road to the entrance (pedestrian) to Horseshoe Falls Reserve on the right hand side of the road. Phone Peter on 02 9625 8705 to register your intentions.

Saturday 22nd April. **Note this is the fourth Saturday! to avoid Easter.** Meet from 12 noon at the home of Kylie & Dwayne Stocks at Verdigris Nursery, Western Distributor Road, Currowan Creek (25km inland from Batemans Bay). Travelling from Sydney, go into **Goulburn** & take the turn-off to **Braidwood**. Continue through Braidwood & travel for about 23km onto the **Kings Highway**, head down Clyde Mountain until just after you cross **Cabbage Tree Creek**. You will enter a 70km speed zone & watch out for the 23km marker to Batemans Bay. **Western Distributor Road** is just over the rise on the left. Turn down Western Distributor Road & travel for about 2.6 km. At the corner of Western Distributor & Pig Road you will see Kylie & Dwayne's new house with a green roof on the right. Phone Kylie & Dwayne on 02 4478 1311 closer to the event

Saturday 20th May. Meet from about 10.30 am for 11 am start at Steve Lamont's residence at 158 Deepwater Road, Castle Cove. Take Castle Cove Drive (to the East) off Eastern Valley Way—it's 3 mins off Eastern Valley Way. Study subject is 'What's that Fern'. Steve would like us to help verify the names on many of his ferns and perhaps identify some of those that haven't got one yet. If lost or need further directions or info phone Steve on (mobile) 0409 955 224.

Saturday 17th June. Adelina & other waterfalls. Meet near the Soldiers Memorial at Lawson by 10 am (just off the Great Western Highway, turn left at the shopping centre), for a 10.30 am start (we drive to the start of the track). We plan to do the walk in reverse as there is more off road parking at the Cataract Falls end of the track. Bring lunch, to eat when we get back to the cars, perhaps carry a snack if you wish or take lunch with you, certainly carry drinking water. The full circuit could take a

couple of hours. This is one of the best of the more accessible ferny areas in the Blue Mountains. Expect to find around 30 different species including *Blechnum gregsonii*. Enquiries to Peter 02 9625 8705.

Saturday 15th July. Meet about 10.30 am at the fernery in the Royal Botanic Gardens, Sydney. Bring picnic lunch if you wish and it's best to use public transport. Martin Place and St James are the nearest Railway stations. I will be leading us around the fern collection. Contact me, Peter Hind, on 02 9625 8705 if you need more information.

Sunday 20th August. Note this is the third Sunday. Alex has other commitments on Saturday. Meet from about 10.00 - 10.30 am at the home of Alex and Amanda Palmer, 126 Lyons Road, Drummoyne. No formal study. We get to look around their award winning garden of predominantly NSW south coast rainforest species, of course including many ferns. Phone Alex on 02 9181 5330 if lost or need directions or to let him know you are coming.

Expressions of interest, several days before any of the bushwalks should be given to whoever is leading the walk, by phone, email etc. If no positive indications are received, at least two days, where possible, before the event by the walk leader, the event will be cancelled.

Of course if the weather is bad or there is any possibility of danger, such as bushfire please do not turn up. If personal events change your plans, please let the leader know or send apologies via someone who is planning to go, so that we don't wait for you.

All outings are subject to weather conditions being favourable.

Excursion and General Reports

Taenitis pinnata—Morse fern

Claire Shackel

On a trip up Cape York in 2011, morning tea was taken by a stream where there was a fern with a strange spore pattern with mature spore. A leaflet was collected and spore planted on a propagating mix in a punnet, which was placed in a 2.4l juice bottle cut into two pieces and pushed together to enclose the punnet. This mini hothouse was then placed in a well lit bush house. The spore germinated and there was a nice covering of "green moss". In winter the moss lost its chlorophyll which was not surprising considering its natural habitat but I did not discard the punnet. Summer came and to my surprise the moss went green again but no fern plants developed. Brown again in winter and green in summer so I decided to take small plugs and replant on punnets in mini hot houses to see if it could be persuaded to make some plantlets.

Small plantlets developed around the very edge of the plugs only and none in the original tray even from where the plugs had been removed. This has been observed to happen with other ferns when there is over crowding but plantlets develop both on the plugs taken out and where they have been removed from on the original tray. The plantlets were introduced to the real world in 2015 and one survived. In 2016 it was not happy during winter but is now growing slowly and it appears as if it will be a long time before there will be any chance of the next generation.

There is a somewhat similar story with *Tectaria devexa*. The spore was collected from small plants grown by Heaton's Nursery in Nambour (latter under a Qld Government Recovery Plan). Most of the young plants were sent to Rockhampton for replanting at Olsens (Capricorn) Caves. The plants sent south were distributed among Brisbane members but ultimately none survived; fortunately the spore collected from them was viable and germinated. A number of plantlets grew but only one is flourishing and is now a nice pot plant. So now the next generation is on its way and I hope they will be more tolerant of normal bush house conditions. In Australia, *Tectaria devexa* is only found in the limestone caves near Mt Etna but is widespread, though confined to limestones, in Asia and on Christmas Island. Lime does not appear to be essential for satisfactory growth in cultivation, although egg shells have been added to the recent potting mix.

So what's so exciting about *Asplenium bulbiferum*?

Steve Lamont

The Sydney group visited Mt Wilson on 15 October 2016. We've been there before. The parking and picnic area is nice. The walks are very attractive – lots of *Blechnum nudum* and *Doodia aspera* forming carpets; lots of *Microsorium scandens*, *M. pustulatum* and *Polyphlebium venosum* climbing

Dicksonia trunks; two pretty waterfalls and nice, open-pit dunnies (they actually are surprisingly well-constructed and not unattractive).

Mt Wilson is lovely but I wasn't too excited because I've seen it all before. But it turns out that I hadn't really been looking before. We found *Asplenium bulbiferum*.

So what's so exciting about *Asplenium bulbiferum*? What's so exciting is that I don't think I've ever seen it before.

Almost all (if not all) the plants labelled *Asplenium bulbiferum* in nurseries are *Asplenium ×lucrosum*—a dimorphic cross between the real *Asplenium bulbiferum* and *Asplenium dimorphum* (as named by Leon Perrie and others—*lucrosum* means 'profitable' because the nursery trade have made lots of money out of an attractive plant that reproduces like crazy).

The real thing is (I think) much prettier than the imposter because it doesn't have all those daggy bulbils all over it and the monomorphic fronds are uniformly finely-cut. Out of the six or seven mature plants we saw on the day, we only saw three bulbils and two of those were almost microscopic.

On Mt Wilson, the real *Asplenium bulbiferum* grows right on the edge of rock ledges near water. (We couldn't work out whether that's where it likes to live or whether it was only in those spots because someone had pinched all the rest and just couldn't reach the remaining ones.)



Some of the other exciting things we saw were:

Sticherus lobatus – our earlier lists only included *Sticherus flabellatus* (which we didn't see this time, so the earlier listing might have been an error);

Asplenium flaccidum – see the photo at left (George saw this one and didn't scream like a chicken so that we could all come to see it; he just photographed it and mentioned it later); and

Leptopteris fraseri, *Todea barbara* and *Tmesipteris obliqua* were seen around the waterfalls.

Figure 1. *Asplenium bulbiferum* var. *gracillimum* on Mt Wilson—photo collage by Paul Gadsby.

Figure 2. *Asplenium flaccidum*





Figure 3. *Tmesipteris obliqua* on *Dicksonia*—photo by Peter Hind from an earlier walk at Mt Wilson in February 1980

Editor: According to the work by Perrie, Shepherd & Brownsey noted below, the Australian plants of *A. bulbiferum* subsp. *gracillimum* are octoploid (having 8 times the ‘normal’ diploid chromosome complement) while the type species (= subsp. *bulbiferum*) is tetraploid ($4 \times$ diploid chromosomes). The current name for the former is *Asplenium gracillimum* [see reference below], the subspecies having been accepted as a true species. Evidence for this separation includes the fact that genetically *A. gracillimum* appears to be a chromosome-doubled hybrid between true *Asplenium bulbiferum* and *A. hookerianum*. Hence the ‘real’ *Asplenium bulbiferum* is a New Zealand endemic and our *A. gracillimum* is considered to occur in south-eastern Australia and Tasmania as well as New Zealand.

Reference: L. R. Perrie, L. D. Shepherd & P. J. Brownsey (2005), *Asplenium* \times *lucrosus* *nothosp. nov.*: a sterile hybrid widely and erroneously cultivated as “*Asplenium bulbiferum*”, *Plant Systematics & Evolution* 205(3–4): 243–257.

Recent Fern Literature

Peter Bostock

Brownsey, P.J. & Perrie, L.R. (2016). *Asplenium decurrens* Willd., an earlier name for *A. northlandicum* (Brownsey) Ogle. *New Zealand Journal of Botany* 54(4): 515–519.

In Flora of Australia vol. 48, *Ferns, Gymnosperms and Allied Groups* (1998), *Asplenium decurrens* was treated as a synonym of *Asplenium obtusatum* subsp. *northlandicum* Brownsey; the latter was subsequently renamed as a species, *A. northlandicum* (Brownsey) Ogle. *Asplenium decurrens* occurs in Australia (coastal regions south from Kiama, NSW into Victoria and Tasmania) and New Zealand, and probably some Pacific islands. True *Asplenium obtusatum* occurs in New Zealand and Tristan da Cunha, and also probably in southern South America and islands in the Southern Ocean. The image of *Asplenium decurrens* below is from the walls of Remarkable Cave (a partly open sea cave at base of Basket Bay), Tasman Peninsula, Tasmania (photo Peter Bostock).



Almeida, T.E., Hennequin, S., Schneider, H., Smith, A.R., Batista, J.A.N., Ramalho, A.J., Proite, K. & Salino, A. (2016). Towards a phylogenetic generic classification of Thelypteridaceae: Additional sampling suggests alterations of neotropical taxa and further study of paleotropical genera. *Molecular Phylogenetics and Evolution* 94: 688–700.

This paper examines the phylogeny of Thelypteridaceae, albeit from a mostly New World perspective. The authors agree with earlier studies that the family itself is a coherent grouping (clade) and further find that most of the genera themselves are monophyletic (i.e. each genus consists of descendants of a single common ancestor). However, there is a strong likelihood that some genera, e.g. *Pronephrium*, may consist of more than one clade, and therefore may eventually be split into their segregate parts. The very extensive Old World (including Australia) christelloid clade including genera such as *Amphineuron*, *Christella*, *Chingia*, *Pneumatopteris*, *Pronephrium* and *Sphaerostephanos* are undersampled in this study and much more work is required to determine their phylogenetic relationships.

Gasper, A.L. de, Almeida, T.E., Dittrich, V.A.O., Smith, A.R. & Salino, A. (2016) Molecular phylogeny of the fern family Blechnaceae (Polypodiales) with a revised genus-level treatment. *Cladistics* (online preview, 2016): 1–18.

Gasper, A.L. de, Dittrich, V.A.O., Smith, A.R. & Salino, A. (2016). A classification for Blechnaceae (Polypodiales: Polypodiopsida): New genera, resurrected names, and combinations. *Phytotaxa* 275 (3): 191–227.

Previously (FSG Newsletter 132, Jan 2013), I referred to some new names in Blechnaceae, with species of *Pteridoblechnum* being transferred to *Blechnum*, and *Blechnum indicum* and *B. serrulatum* transferred to the new genus *Telmatoblechnum* (Perrie *et al.* 2014, see below). In addition, proposals were made to subsume *Doodia* into *Blechnum*. At the time, this latter proposal was not generally well-received, the majority of us preferring to wait until further studies on the family were completed. Now a new study (two papers above) has proposed splitting Blechnaceae (in particular *Blechnum*) into numerous smaller genera, albeit retaining *Doodia* in its current form! This would take the current 8 to 10 genera (most except *Blechnum* quite small in numbers) to 24 genera. Significant changes to Australian genera and species will result if this proposal is accepted. In the next newsletter I hope to expand on this with a list of new and reinstated genera and species in Australia.

Further references:

Perrie, L.R., Wilson, R.K., Shepherd, L.D., Ohlsen, D.J., Batty, E.L., Brownsey, P.J. & Bayly, M.J. (2014). Molecular phylogenetics and generic taxonomy of Blechnaceae ferns *Taxon* 63(4): 745–758.

PPG I (2016). A community-derived classification for extant lycophytes and ferns. *Journal of Systematics and Evolution* 54(6): 563–603. [with 26 authors and further contributions by c. 68 fern researchers].

“**Abstract:** Phylogeny has long informed pteridophyte classification. As our ability to infer evolutionary trees has improved, classifications aimed at recognizing natural groups have become increasingly predictive and stable. Here, we provide a modern, comprehensive classification for lycophytes and ferns, down to the genus level, utilizing a community-based approach. We use monophyly as the primary criterion for the recognition of taxa, but also aim to preserve existing taxa and circumscriptions that are both widely accepted and consistent with our understanding of pteridophyte phylogeny. In total, this classification treats an estimated 11,916 species in 337 genera, 51 families, 14 orders, and two classes. This classification is not intended as the final word on lycophyte and fern taxonomy, but rather a summary statement of current hypotheses, derived from the best available data and shaped by those most familiar with the plants in question. We hope that it will serve as a resource for those wanting references to the recent literature on pteridophyte phylogeny and classification, a framework for guiding future investigations, and a stimulus to further discourse.”

This treatment parallels a project called the Angiosperm Phylogeny Group (most recent version is known as APG IV, published in 2016*) which for the past few years has drawn together the latest

research on genera and families of flowering plants. The Pteridophyte Phylogeny Group classification expands on previous proposals by extending the treatment to the level of genus. At this level, classifications are not always equal – some are more conservative with regard to the number of genera e.g. Aspleniaceae, preferring to lump into one or more larger genera, while others split the genera in an attempt to maintain monophyly (see definition previous page), for example in Hymenophyllaceae, Thelypteridaceae and the newly proposed generic classification in Blechnaceae. There is no doubt that fern classification will undergo changes as more advanced tools are brought to bear on the phylogenetic studies. In the meantime, this attempt seems to be an acceptable first pass via the community approach it takes.

* Angiosperm Phylogeny Group (2016), An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV, *Botanical Journal of the Linnean Society*, **181** (1): 1–20.

An update to ‘Some shortcuts in the identification of ferns in Australia’

(FSG Newsletter 131, page 6, August 2014)

Peter Bostock

In this article, I made a bold statement that all Australian maidenhair ferns (*Adiantum* spp.) could be determined by their venation, specifically that in **native** ferns, the veins that end at the pinnule margin do so at the apex of marginal teeth (Δ) (where present) and in **non-native** species cultivated in Australia, veins end at the base of the V-shape sinus between teeth.

Unfortunately, I’ve now found an exception to that rule! At the SEQ Group February 2017 meeting, Helen Jeremy brought along a weedy maidenhair fern for identification. I’m fairly certain that it was a young plant of *Adiantum trapeziforme*, with characteristic asymmetric more or less 4-sided pinnules, with coarsely scalloped and minutely toothed outer margins. And of course, the veins end at the apex of these teeth! So now I have to add a codicil to my shortcut viz. “except when pinnules are large (3 to 6 cm in length), asymmetric and occur on fronds that may reach 2 metres in length”!



The largest incision in the image (above right) is part of the coarse scalloping, hence there are no veins joining the base of that incision; the scalloped lobes are 5–10 mm wide, while the minute teeth terminating veins are about 0.5 mm apart.

At left is a representative pinnule from the admittedly very young plant, 4 cm long from base of leaf (at junction with stalk) to apex.

Editor: The following is a draft ‘application form’ that I’m considering for the ANPSA web site and for handing out to prospective new members—it is not a call for subscriptions for current members—but comments would be appreciated!

ANPSA Fern Study Group Fees

Dan Johnston, Treasurer

The annual subscription to the Fern Study Group is \$5 for per household receiving a single copy of the Fern Group Newsletter and is due on 1st July. Please note also that membership of an ANPSA affiliated body, such as Native Plants Queensland, is a necessary prerequisite for study group membership.

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