



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

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LEADER: Peter Bostock

Qld 4069. Tel. a/h: 07 32026983,

email: pbostock@ozemail.com.au

TREASURER: Dan Johnston,

Qld 4556. Tel 07 5445 6069,

email: dan.johnston@uqconnect.net

NEWSLETTER EDITOR: Dan Johnston, contact as above.

SPORE BANK:

From the Editor

Peter Hind has contributed an article on the mystery resurrection of *Asplenium parvum* in his greenhouse. Peter has also provided meeting notes on the reclassification of filmy ferns. From Kylie, we have detail on the identification, life cycle, and treatment of coconut or white fern scale - *Pinnaspis aspidistra*, which sounds like a nasty problem in the fernery. (Fortunately, I haven't encountered it.) Thanks also to Dot for her contributions to the Sydney area program and a meeting report and to Barry for his list of his spore bank. The life of Fred Johnston is remembered by Kyrill Taylor.

Program for South-east Queensland Region

Dan Johnston

Sunday, 4th March, 2012: Excursion to Upper Tallebudgera Creek. Rendezvous at 9:30am at Martin Sheil Park on Tallebudgera Creek almost under the motorway. UBD reference: Map 60, B16. Use exit 89.

Sunday, 1st April, 2012: Meet at 9:30am at Claire Shackel's place,
Subject: Fern Propagation.

Saturday, 5th May – Monday, 7th May, 2012. (Labour Day long weekend in Queensland). We intend to make another excursion to Tenterfield to further investigate Girraween and the area around Tenterfield. Some members intend to again stay at the Tenterfield Bowling Club Motor Inn in Molesworth St, Tenterfield, (corner of Scott St, one block west from the New England Highway). Please let Peter Bostock know if you are planning to attend this excursion.

Sunday, 3rd June, 2012: Meet at 9:30am at Kerry Rathie's new place,

Program for the Sydney Region

Dot Camp, Peter Hind

Saturday, 17th March, 2012: Meet from about 10 am at Govett's Leap Lookout via Blackheath, Blue Mountains. The views are spectacular from the Lookout. We plan to walk down to the base of the waterfall. There are several sets of steel steps descending the cliff. *Blechnum gregsonii* is present on the wet cliff face. Carry drinking water. The track is well graded but it is a fairly steep descent. The ascent is via the same track and is not suitable for those with heart conditions. Carry packed lunch or carry a snack & eat lunch back at the cars – decide on the day. If heavy rain is forecast consider it cancelled.

Saturday, 21st & Sunday 22nd April, 2012: Open garden at Margaret & Peter Olde's,
This includes garden tours, workshops, guest speakers and over 20 nurseries
selling native plants, including Kylie & Dwayne selling ferns.

Saturday, 28th April, 2012: Meet from 11am at the home of Steve Lamont,
For our study, we will look at Davallia species.

PLEASE NOTE: THIS DATE HAS BEEN CHANGED SINCE THE LAST NEWSLETTER.

Saturday, 19th May, 2012: Meet at 11am at Joseph Banks Reserve, Manooka Place, Kareela. Enjoy
a walk through this native plant reserve. Our group in the past helped supply and plant some of
the ferns here and did several weeding working bees.

Saturday, 16th June, 2012: Meet from about 11am at Minnamurra Falls, 345 Minnamurra Falls
Road, Jamberoo. This is a rich ferny area in a National Park with an elevated boardwalk
through lowland subtropical rainforest full of *Cyathea leichhardtiana*. There is a longer Falls
walk. This is the southern limit of *Crepidomanes vitiense*, an unusual small filmy fern. There
will be a N.P. entry fee.

Sydney Area Meeting Reports

November, 2011 Meeting

Dot Camp

The meeting was held at Kylie & Dwayne's home on the weekend of
17th/18th November, 2011.

It was very hot, but it did not deter us from exploring the gardens & admiring Dwayne's hard
work to create 2 lovely new garden areas complete with water feature. Dwayne has also completed
his huge 'filmy fern' tank growing a great range of ferns including small *Leptopteris moorei*, *L.*
wilkesiana, *L. fraseri* and *L. hymenophylloides*, *Trichomanes reniforme*, *Hymenophyllum*
flabellatum and *H. cupressiforme*, *Arthropteris beckeri*, *Asplenium capitis-york*, *Gleichenia*
rupestris, *Grammitis billardierei* and *Tmesipteris ovata*. More have been added after their recent
trip to Far North Queensland.

Kylie has an impressive variety of ferns on offer including many hard to find ferns such as
Cyathea howeana, *Doodia linearis* and *Sphenomeris chusana*. We all left with our car boots
bulging with our new purchases! You can find Kylie's ferns at www.verdigris.com.au (and a
limited range on eBay).

Notes for Sydney Area February, 2012 Meeting

Peter Hind

Hymenophyllaceae of Australia

Before DNA work on the phylogeny of filmy ferns (Hymenophyllaceae), several attempts at
classification have been applied. The main arguments being as to which genus each species belongs
to. The list of Australian Hymenophyllaceae presented here shows the current state of play. The
Flora of Australia list is based on a classification by K. Iwatsuki (1984). Since then Ebihara,
Iwatsuki and others have published a more thorough classification (2006). This new classification
of Hymenophyllaceae, consists of nine genera (*Hymenophyllum*, *Didymoglossum*, *Crepidomanes*,
Polyphlebium, *Vandenboschia*, *Abrodictyum*, *Trichomanes*, *Cephalomanes* and *Callistopteris*).
Further work was carried out by Ebihara & Iwatsuki on the Hymenophyllaceae of the Pacific area
(2007 & 2010). This has not changed the number of genera.

Earlier publications such as Australian Ferns & Fern Allies by D.L. Jones & S.C. Clemesha use
genera such as *Apteropteris*, *Gonocormus*, *Macroglena*, *Microgonium*, *Microtrichomanes*,
Pleuromanes, *Reediella*, *Selenodesmium* and *Sphaerocionium*, all of these genera have been
absorbed in the new classification. Others such as *Trichomanes johnstonense* have been moved to
Vandenboschia, leaving no *Trichomanes* species in Australia.

This is part of the Study notes for The Sydney Fern Group Meeting 18 Feb. 2012 by P.D. Hind

| Ebihara et al. 2006, 2007, 2010 | Flora of Australia 1998 vol. 48 + vol. 49 & 50 |
|---|---|
| <i>Abrodictyum caudatum</i> | <i>Cephalomanes caudatum</i> |
| " <i>brassii</i> | <i>C. brassii</i> |
| " <i>obscurum</i> | <i>C. obscurum</i> |
| <i>Callistopteris bauerianum</i> | <i>C. bauerianum</i> |
| <i>Cephalomanes atrovirens</i> | <i>C. atrovirens</i> |
| <i>Crepidomanes aphlebioides</i> | <i>Crepidomanes aphlebioides</i> |
| " <i>barnardianum</i> subsp. <i>barnardianum</i> | <i>C. barnardianum</i> subsp. <i>barnardianum</i> |
| " <i>bipunctatum</i> | <i>C. bipunctatum</i> |
| " <i>humile</i> | <i>C. humile</i> |
| " <i>kurzii</i> | <i>C. kurzii</i> |
| " <i>majoriae</i> | <i>C. majoriae</i> |
| " <i>proliferum</i> | <i>C. proliferum</i> |
| " <i>saxifragoides</i> | <i>C. saxifragoides</i> |
| " <i>vitiense</i> | <i>C. vitiense</i> |
| " <i>walleri</i> | <i>C. walleri</i> |
| <i>Didymoglossum bimarginatum</i> | <i>Trichomanes bimarginatum</i> |
| " <i>exiguum</i> | <i>T. exiguum</i> |
| " <i>mindorensis</i> | <i>T. mindorensis</i> |
| " <i>motleyi</i> | <i>T. motleyi</i> |
| " <i>tahitense</i> | <i>T. tahitense</i> |
| <i>Hymenophyllum applanatum</i> | <i>Sphaerocionium applanatum</i> |
| " <i>australe</i> | <i>Hymenophyllum australe</i> |
| " <i>baileyianum</i> | <i>H. baileyianum</i> |
| " <i>bivalve</i> | <i>H. bivalve</i> |
| " <i>cupressiforme</i> | <i>H. cupressiforme</i> |
| " <i>digitatum</i> | <i>Crepidomanes digitatum</i> |
| " <i>eboracense</i> | <i>H. eboracense</i> |
| " <i>flabellatum</i> | <i>H. flabellatum</i> |
| " <i>gracilescens</i> | <i>H. gracilescens</i> |
| " <i>holochilum</i> | <i>H. subdimidiatum</i> |
| " <i>javanicum</i> | <i>H. javanicum</i> & <i>H. samoense</i> |
| " <i>kerianum</i> comp. with <i>denticulata</i> | <i>H. kerianum</i> |
| " <i>lyallii</i> | <i>Sphaerocionium lyallii</i> |
| " <i>lobbii</i> | prob. mislabelled collection of this Bornean sp. |
| " <i>marginatum</i> | <i>Hymenophyllum marginatum</i> |
| " <i>moorei</i> comp. with <i>pumilum</i> | <i>H. moorei</i> |
| " <i>multifidum</i> | <i>H. howense</i> |
| " <i>pallidum</i> | <i>Crepidomanes pallidum</i> |
| " <i>peltatum</i> | <i>H. peltatum</i> & <i>H. falklandicum</i> auct. non Baker |
| " <i>pumilum</i> | <i>H. pumilum</i> |
| " <i>polyanthon</i> prob. not same as Jamaican type | <i>H. polyanthon</i> |
| " <i>rarum</i> | <i>H. rarum</i> |
| " <i>whitei</i> - not in Ebihara | <i>H. whitei</i> |
| " <i>walleri</i> - not in Ebihara | <i>H. walleri</i> |
| <i>Polyphlebium endlicherianum</i> | <i>Crepidomanes endlicherianum</i> |
| " <i>venosum</i> | <i>C. venosum</i> |
| <i>Vandenboschia johnstonensis</i> | <i>C. johnstonense</i> |

Other Articles

***Pinnaspis aspidistrae* (Signoret) — Coconut/White Fern Scale**

Kylie Stocks

It is the fern lover's nightmare – you go to have a look at your precious babies, and lo and behold – they look strangely unwell, possibly mottled in appearance. You think to yourself – that's not right! Turn over the frond, and – oh no! – it is covered in sticky white things that look a bit like desiccated coconut. What is this mysterious stuff, and how do you make it go away?

- You are the proud owner of an infestation of *Pinnaspis aspidistrae* (also known as coconut scale, white scale, white fern louse, and a few other expletives deleted)
- This nasty little pest is a member of the scale family of insects. It has various life stages which include egg, crawler, nymph and adult.
- The first life stage is the egg stage. The adult female lays her eggs underneath a hard casing, and dies. The eggs then hatch into crawlers. Once large enough, the crawlers escape from under the casing, and search for somewhere suitable to establish base. They can remain under the cover of the armour until conditions are just right (mainly temperature and humidity).
- The crawlers wander around until they find a suitable base, whereupon they flatten out and begin to lay down their armour. They may wander for minutes or days. Once covered, they moult, metamorphose into a nymph and start to feed. The nymphs feed by inserting sap sucking mouthparts deep into the plant tissue to remove nutrients. This is what causes the characteristic mottling seen in an infestation.
- Finally, the insects metamorphose into their adult stage. Males emerge from their second stage armour as tiny, gnatlike insects that crawl or fly to female scales to mate. The female scales remain under their armour throughout their life. They then lay their eggs, and the cycle begins again. The armour remains on the plant long after the insect either leaves it (male) or dies inside (female).



Female armour is slightly different in appearance to that of the male. It is pearl or oyster shaped and brown in colour. The male armour is more noticeable, as it is characteristically white (see images above).

Treatment

Obviously the ideal is that you don't purchase infected stock, and cull any infected plants. But it isn't always easy to slash and burn your rare, one of a kind fern that you bought twenty years ago and cannot replace. Plants tend to be more susceptible to pests and diseases when they are stressed, so ideally make sure your plants are healthy and well-nourished to avoid re-infection.

First and foremost, infected plants should be quarantined to prevent the movement of insects to uninfected plants. Whilst the males can fly, they can only travel short distances, so ensure plenty of

space between plants. Pruning plants prior to any treatment also maximises the effectiveness of the treatment.

Scale infestations can be quite difficult to treat. The use of pest oil such as neem, petroleum or white oil can be phytotoxic to sensitive ferns, so do a test first to avoid damage to precious specimens. Cultural methods such as washing plants with weak detergent solution can physically remove scales, and is useful with small infestations.

Biological controls such as predators and parasites are available, although these are primarily used for commercial food production, and are not necessarily aimed at fern scale. Still, if you are keen (or have a large infestation and many, many plants) *Aphytis linganensis* is a commercially produced scale parasite (wasp) which specifically targets armoured scale insects and is definitely worth a try (see <http://www.bugsforbugs.com.au/product/24>).

Chemical control is the most difficult, as scale armour protects the insect at every stage except the adult male and crawler phase. Crawlers can be targeted by contact insecticides, but the plant must be treated while the crawlers are out and about. The length of the life cycle is heavily dependent on temperature, humidity and rainfall, but averages about 30 days, so two treatments of about 15 days apart should make a pretty big dent in an infestation. Systemic insecticides such as Confidor and Folimat will target adult females and feeding nymphs.

The use of chemicals may also affect the populations of other insects, and not always in a good way if their natural predators are killed as part of the exercise. In addition, insects can develop a resistance to insecticide, so this should ideally be used as a last resort, or only in areas of severe infestation. According to Hanson (*et al.* 1992) dipping in a soap-pyrethroid solution for five minutes is only 70% effective against adult insects and nymphs, and will not remove the unsightly armour.

In conclusion, *Pinnaspis aspidistrae* is a stubborn and unsightly pest. But it can be controlled with persistence using various effective treatment regimes.

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***Asplenium parvum* — Resurrected**

Peter Hind

In August 1978 a small plant of *Selenodesmium elongatum* (now *Abrodictyum obscurum*) was collected on Mt Lewis, N. Qld from an unnamed small western flowing creek, which I christened at the time “Didymocarpus Creek” in allusion to the white flowered gesneriad, locally abundant on the large granite rock faces on this creek. *Didymocarpus kinneari* has since been described as *Boea kinneari*.

The *Selenodesmium* with adherent moss has been kept moist in a pot enclosed in a polyethylene bag and put under the bench in my glasshouse until late 2010. I managed to grow several filmy ferns this way, but over the years the plastic bags break down often with disastrous results to the contents, such as flooding or drying out. Along with a few surviving pots of *Macroglena* (now *Abrodictyum*) *brassii*, the pot of with a dead looking *Selenodesmium* plant were moved into a glass tank in the bush house, hoping for a miracle to resurrect it – it does happen with near dead ferns sometimes!



Over the last year something did grow in this pot, but until now (Dec 2011) was too small to accurately identify, it looked a bit like young *Asplenium polyodon* plants, which seemed reasonable as I have this species growing in nearby hanging baskets. On 20 Dec 2011 I was able to determine the largest of the still infertile plants as *Asplenium parvum*, due to the presence on rachis and stipes of abundant small glandular hairs, a characteristic not shared by any other Australian *Asplenium* species.

Asplenium parvum has not been in my collection since about 1980,

voucher PDH 2780 NSW195290. The last time I collected this species was for the Mt Annan Botanic Garden PDH 6178 from Mt Windsor Tableland in 1990. This was a small amount in a fallen epiphyte mass and was insufficient to prepare a voucher, much less be able to take a piece to grow at home. This leaves one with the question. Where did my current plants come from? It's vaguely possible a small amount of *A. parvum* rhizome was present in the initial collection. My money is on the spore of *A. parvum* being rather long lived, lying dormant until perhaps the right light levels being present for germination.

Asplenium parvum has a rather interesting history. The undated holotype held at the NSW Herbarium, NSW 683939, is from a plant cultivated at Gladesville NSW by the Reverend W.W. Watts who resided at the Manse of the Presbyterian church of St Andrew between 1911 and 1916. The plant was found on a tuft of *Polypodium* [*Goniophlebium*] *subauriculatum*, originally collected in the Cairns district, North Qld. W.W. Watts in a letter to Brotherus dated Aug 26 1913 [on his return from a seven week trip to N. Qld] stated “I had a whole month in the Cairns district”. The description of *Asplenium parvum* was published by W.W. Watts in Proc. Linn. Soc. New South Wales 39: 784, t 87 fig. 7 1914.

As stated in Flora of Australia vol. 48 *Asplenium parvum* is readily recognised by its resemblance to *A. polyodon*, but unlike *A. polyodon* which has sparsely scaly stipes and rachises, *A. parvum* stipes and rachises are covered with glandular hairs. This is not found in any other Australian *Asplenium* spp.

Historical data cited for W.W. Watts was gleaned from a paper in Taxon vol. 29 no. 4 page 456 (1980) by Helen P. Ramsay.

Vale Fred Johnston

Kyrill Taylor

Fred was a gentle man in every respect—he had a genuine interest in Australian plants, but his interest in native ferns was enormous.

Fred was the ultimate photographer, accompanying the fern group on any and every walk, no matter how arduous the ‘walk’. He would be there with camera & tripod collecting all the ‘shots’ which others were not equipped to catch.

A quiet talk/yarn with Fred was full of value - human value - and I always felt more complete having had the pleasure of such a chat with him.

His ‘passing’ on the 12th February, 2012 was a loss to the Australian Plants Group and those who enjoyed his presence over many years in the Fern Study Group.

Spore List - January 2012

Barry White

| | |
|--|---|
| <i>Acrostichum speciosum</i> 4/09 | <i>Diplazium dilatatum</i> × <i>Deparia petersenii</i> var. |
| <i>Adiantum formosum</i> 1/12 | <i>congrua</i> 3/11 |
| <i>Amphineuron opulentum</i> 4/10 | <i>Doodia australis</i> 1/12 |
| <i>Angiopteris evecta</i> 11/09 | <i>Dryopteris sparsa</i> 5/11 |
| <i>Asplenium milnei</i> 10/10 | <i>Histiopteris incisa</i> 12/11 |
| <i>Asplenium nidus</i> 5/08 | <i>Hypolepis glandulifera</i> 1/12 |
| <i>Asplenium nidus</i> cv.5/08 | <i>Lastreopsis acuminata</i> 4/11 |
| <i>Asplenium pellucidum</i> 3/11 | <i>Lastreopsis decomposita</i> 1/12 |
| <i>Blechnum ambiguum</i> 1/08 | <i>Lastreopsis marginans</i> 5/11 |
| <i>Blechnum chambersii</i> 9/11 | <i>Lastreopsis microsora</i> 6/10 |
| <i>Blechnum discolor</i> 8/11 | <i>Lastreopsis nephrodioides</i> 10/10 |
| <i>Blechnum fluviatile</i> 9/11 | <i>Lastreopsis rufescens</i> 3/11 |
| <i>Blechnum patersonii</i> 4/11 | <i>Lastreopsis tenera</i> 3/11 |
| <i>Blechnum watsii</i> 9/11 | <i>Macrothelypteris polypodioides</i> 1/11 |
| <i>Blechnum wurunurum</i> 7/11 | <i>Macrothelypteris torresiana</i> 6/10 |
| <i>Chingia australis</i> 6/11 | <i>Microsorium punctatum</i> 1/09 |
| <i>Christella hispidula</i> /09 | <i>Ophioglossum pendulum</i> 7/08 |
| <i>Christella parasitica</i> 5/11 | <i>Pellaea falcata</i> 1/11 |
| <i>Christella subpubescens</i> 12/08 | <i>Platycterium bifurcatum</i> 4/11 |
| <i>Cyathea australis</i> 9/10 | <i>Platycterium superbum</i> 4/08 |
| <i>Cyathea baileyana</i> 3/11 | <i>Platycterium veitchii</i> 1/11 |
| <i>Cyathea cooperi</i> 1/12 | <i>Pleisioneuron tuberculatum</i> 1/11 |
| <i>Cyathea cooperi</i> (Blue Stipe) 1/11 | <i>Pneumatopteris sogerensis</i> 12/08 |
| <i>Cyathea cooperi</i> 'Brentwood' 3/08 | <i>Pneumatopteris costata</i> 6/11 |
| <i>Cyathea cooperi</i> 'Cinnamon' 4/11 | <i>Polystichum australiense</i> 2/12 |
| <i>Cyathea exilis</i> 6/11 | <i>Polystichum formosum</i> 2/12 |
| <i>Cyathea felina</i> 10/08 | <i>Polystichum proliferum</i> 12/10 |
| <i>Cyathea howeana</i> 10/10 | <i>Polystichum whiteleggei</i> 10/10 |
| <i>Cyathea macarthuri</i> 10/10 | <i>Pronephrium asperum</i> 1/11 |
| <i>Cyathea robusta</i> 9/10 | <i>Pteris pacifica</i> 6/10 |
| <i>Cyathea rebecca</i> (crested) 9/10 | <i>Pteris tremula</i> 11/10 |
| <i>Dicksonia antarctica</i> 9/10 | <i>Pteris umbrosa</i> 1/12 |
| <i>Diplazium australe</i> 5/10 | <i>Revwattsii fragile</i> 3/11 |
| <i>Diplazium assimile</i> 6/09 | <i>Sphaerostephanos heterocarpus</i> 7/08 |
| <i>Diplazium dilatatum</i> 12/10 | |

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