AUSTRALIAN NATIVE PLANTS ASSOCIATION (AUST)

Isopogon & Petrophile Study Group

Newsletter No. 21 **November 2017**

ISSN 1445-9493 Website http://anpsa.org.au/iso-petSG/

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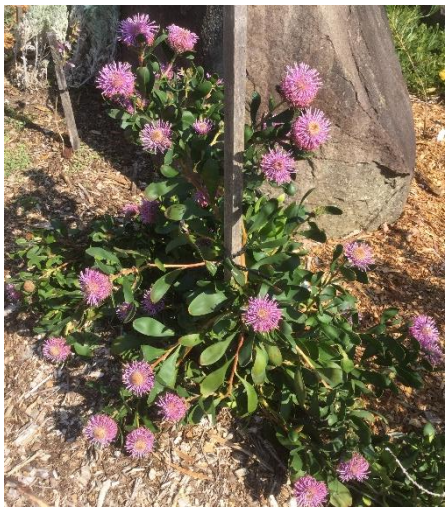
Isopogon gardneri, North Jitarning Nature Reserve WA, October 2017.
See page 8 for our profile of this species.

Back issues of the Isopogon and Petrophile Study Group Newsletter are available at http://anpsa.org.au/iso-petSG/IPSG-news.html

In this issue

Welcome to our fifth newsletter.

This season we had a great I&P display in the garden. After a drenching in March of almost 500mm which came gradually and not all at once as is usual here on the coast, we had very little rain for about six months. The paddocks around here, usually luxuriantly green, were going brown until recent rain came to the rescue. However, our I&Ps were unscathed. We had eight species flowering (western and eastern) to take along to our September talk on I&Ps to the South East APS Group, and in November we still managed to rustle up seven species in flower to display for our talk to the Nowra APS Group.



We have been very pleased with the performance of our grafted *I. formosus* plant (the only one Phil has ever managed to graft, he has found this species difficult) which was covered with inflorescences. A thrill was a grafted *I. fletcheri* flowering for the first time after several years' wait, and a dwarf form of *I. cuneatus* (see photo, left) which flowered well only two years after being grafted. It was fascinating to watch the gradual development of the *I. fletcheri* inflorescences, with lovely geometric patterns emerging in brown, beige, green and cream colours. Another species flowering for the first time in our garden was *I. scabriusculus ssp. stenophyllus* – examination of its small flower heads under the eye glass revealed an eye-popping display of pinks, whites, maroon and orange.

A dwarf form of *I. anethifolius* has budded up for the first time, much later than the usual form, and it will be interesting to see its flowers. We have lost a few *I. anethifolius* in the last 18 months for reasons unknown so Phil is still searching for a tougher form of this species. With the help of Tony Henderson we have recently added many new western species to the garden (all grafted) so in the future we hope to have even more opportunities for observation and education. The eastern petrophiles are still coming on so we have more flowers to look forward to here at home.

Further afield, we recently had a whirlwind study trip to south west Western Australia. After last year's spectacular wildflower season in the west reported by our members we were not expecting a repeat, but found a great display with excellent isopogons and petrophiles. We joined Margaret Pieroni for part of the

trip, who, with decades of experience observing wildflowers in the WA bush, noted that in many ways this year was just as good as last year, and for some genera/species (e.g. kunzeas, stylidiums, verticordias, some dryandras and hakeas), even better. See our report on p. 11.

In contrast our visit to Kings Park in Perth was somewhat disappointing as there were so few isopogons or petrophiles in evidence there. Tourists flocked around the stunning displays near the entrance where the only proteaceae were many *B. pilostylis* plants. With a bit of detective work we found around half a dozen species in the older beds further in, of which only *I. trilobus* and *P. filifolia* were flowering well. We were amazed that, despite using a *I. latifolius* in its signage, there was no evidence of either *I. latifolius* or *I. cuneatus*, two of the most spectacular flowering species. While it is notoriously difficult to grow even the WA proteaceae in Perth, we would expect the Kings Park horticulturists to be able to do so. It was encouraging to see *P. latericola* (previously included with *P. brevifolia*) included in the endangered species garden, and about to flower.

Since our return we have been very hard at work dealing with large numbers of plant specimens and photographs from the trip, with accompanying documentation and identification matters taking up quite a bit of time. Although somewhat spur of the moment, the trip was well worth the time and added greatly to our knowledge of the genera. Many thanks to local members Kevin Collins and Margaret Pieroni who took us to some great I&P spots.

As usual, we had great difficulty identifying certain species, especially petrophiles. We learned to take special notice of pollen presenters, involucral bracts and perianth segments. Hairiness or smoothness is no longer just a matter of fashion! Although we mostly resolved mysteries, there certainly is a lack of taxonomic clarity in this area. Foreman's 1995 revision of both genera for Flora of Australia was incomplete, with many areas flagged as requiring further investigation. Since then, more have been identified, and while some issues have been or are being addressed, many remain, and new issues are being identified.

In this issue we profile one of our favourite isopogons, *I. gardneri*, and a petrophile not commonly known, *P. anceps*. *I. gardneri* has been well known for decades but was only given this name in 1995, making older references still in use incorrect. Phil reports on recent botanical changes to the nodding coneflowers, and provides an update on grafting activities. We report on our WA trip, track down isopogons in SA and even in Europe, and we also have some encouraging propagation success stories from WA – Keith Alcock with seed and Kevin Collins with cuttings.

It's been a mixed result for members lately, with plenty of frustrations as usual, some losses, but also some successes. Thanks to all those members who provided input to this newsletter – by sharing our experiences we can all learn. Don't forget about our seed and cutting exchange program to help members get into propagation.

We will be at the ANPSA Conference in Hobart in January, and hope to see some of you there. We will give a short presentation and have a display, and plan to hold a Study Group meeting.

Catriona & Phil

From our members

Mark & Carolyn Noake, Moruya, NSW

Mark sent a photo of their stunning P. teretifolia plant (see right).

Paul Kennedy, Elliminyt (Colac) VIC

I heard you were in the "west" and guessed what you were maybe looking at. John and Sue Knight called in on their way home [from WA] and I showed him the Isopogons in flower. Latifolius, cuneatus, Stucky's Hybrid (not a pretty colour, pale pink) and formosus have all flowered very well despite 140mm of rain in September. Trilobus will be out in a few days. I think John took some photos. October has been a relatively dry month, so the ground has been able to dry out.

Ros & Ben Walcott, Canberra

I. formosus – a happy survivor

I wish I had a better tale to tell. We had our worst winter this year since we arrived in Canberra in 2003. Just one frost after another and down to –8 deg on several occasions. Also incredibly dry – driest June on record with only 2.4mm of rain recorded.

A total of 68.6 mm fell at Canberra Airport during winter 2017, almost 200 mm less than winter 2016 and Canberra's driest winter since 1994. The result is that we had some losses. Both I. cuneatus and I. anethifolius suffered in the conditions, some plants died and others are struggling. [*Two ungrafted I. cuneatus died but the grafted one survived*.] Three I. 'Candy Cones', which had been our best performer, all died this winter. However I. formosus is blooming really well at the moment and I. 'Pink Sparkler' is blooming despite losing most of its leaves over winter. I. 'Sunshine', which we have in a large pot, is also flowering well. We have tried some others in the past, e.g. I. dawsoni and I. latifolius, without success. This year, thanks to Phil's grafted specimens, we are adding to our I. anethifolius plants and trying I. mnoraifolius. If we could get some better weather, maybe I could report more positively.

Patrick Laher, Uralla NSW

This winter in Uralla has been in stark contrast to last year when we had winter rain and mild frosts. This year we had a dry winter and 10 consecutive days of frost varying between -3 and -7. The result was a loss of two out of four established I.formosus plants and severely reduced flowering in the remaining two plants. As previously mentioned in the last Newsletter, my winners are I. mnoraifolius and petiolaris. I had similar losses with P. biloba, but the two plants of P. teretifolia have been survivors even though they didn't flower this year. My grafted Stuckeys Hybrid survived in a protected position but did not flower. It takes a long time to develop overhead protection and micro climate which is essential in being able to grow a range of WA flora.

I wonder if other terete leaved Western Isopogon and Petrophile are less prone to frost damage?

Karlo Taliano, Georges Hall, Sydney

I hope you had a great recent trip in WA. I arrived back myself from in and around Fitz R NP by the beginning of October ...and had a chance to catch up with Kev Collins (..and through him already knew that you were on your way to Tozer's Bush Camp), so I know you would have taken in some exciting plants.

I've attached some pics from my trip for the Newsletter. [Karlo found *I. formosus* on West Mt Barren, *I. teretifolius* at Bremer Bay, *I. trilobus* and *P. prostrata* (photo below) at Quaalup Ridge Top walk, *P. diversifolia* at Gull Rock NP, *P. longifolia* at Gull Rock NP and *P. seminuda* at Tozer's Bush Camp, Bremer Bay.]

Attached also are a couple of pics of my grafted *Isopogon latifolius* at home which had its best year of flowering so far…

Mike Beamish, Boolarra VIC

Not much to report on the I&P front, all my planted Isopogon specimens have died and the only remaining species I have is *I. buxifolius*. This one was in an 8" pot and I have just re-potted to an 18" tub with a couple of other plants for company. It is about 50cm tall and a bit one-sided for some reason and I find it to be a brittle plant, with branches detaching at the slightest pressure. I have set 3 of these breakages as cuttings, but only one has survived and has just been potted up into an 8" waterwell pot. Neutrog Bush Tucker has been added to both. The larger plant has flowered for the first time, photos attached (see over the page).

I. buxifolius

The only Petrophile surviving in the garden is *P. pulchella*, which is now several years old and 2m tall, flowering every year. I have tried several times to propagate from cuttings without success. I have recently purchased a *P. longifolia* from Philip Vaughan's nursery at Pomonal, which is now also in an 18" waterwell tub with companions and a feed of Bush Tucker. I'm hoping it will tolerate our dodgy weather here in Boolarra and survive long enough to flower for me.

Di Clark, Eurobodalla Regional Botanic Gardens, Batemans Bay, NSW

Di and staff and volunteers at Eurobodalla Regional Botanic Gardens grow plants from the Clyde River catchment area of the NSW south coast:

Glad to hear you had a great time in the west. We have been sowing seed of some of our local plants and I thought you might like a couple of pics. The Petrophile seed was collected in 1998 from Little Forest Plateau. The Isopogon seed was collected from Tianjara Fire Trail in 2000. We use a mix of 3 parts sand, 1 peat, and 2 perlite and the punnets are hand watered, not under mist.

Isopogon anemonifolius seedlings (left), *Petrophile pedunculata* seedlings (right)

Liesbeth Uijtewaal, The Netherlands

In a previous newsletter I asked if anyone had information on how long it takes for I&P seedlings to flower. It seems like it doesn't take too long, for Isopogon divergens at least: my plant was sown in December 2014, the first two buds appeared in August this year so in less than three years. The buds still look promising (see photo, right), I can't wait to see the plant in full flower. I'll need to wait until spring though I guess even though some plants like Acacia podalyriifolia and Hakea 'Burrendong Beauty' are totally confused over here and are in full flower already, they usually flower in March/April for me. Isopogon petiolaris, same age as I. divergens, hasn't show any tendency to flower yet, it has always been less vigorous than divergens anyway. Looking for information on I.

asper I came across Newsletter no 9 where (the late) Jeff Irons mentions that his I. anemonifolius took 11 years to flower from seed. I do hope my I. petiolaris is a bit quicker than that.

I've had some great successes with my cuttings so far: I propagated them in the middle of October. I. anethifolius, anemonifolius, scabriusculus ssp. stenophylla and 'Candy Cones' struck in about 3 weeks after having spent some two weeks in plastic bags in the fridge [*Liesbeth collected these on her recent trip to Australia*] Isopogon fletcheri and dubius and Petrophile ericifolia, pedunculata and teretifolia are still looking good but haven't struck yet, unfortunately P. pulchella failed but I've got some seed of that one too, fingers crossed this will germinate. I've grafted two tiny pieces of Isopogon asper onto I. formosus and P. ericifolia onto formosus and 'Stuckey's Hybrid', one graft of each, four weeks ago: they're still OK. I do hope I can add these species to my collection shortly!

A problem I have with P. serruriae is that I had a high strike rate from cuttings earlier this year. The roots grew well in the potting mix after they were potted up so I suppose the potting mix was OK but most cuttings refused to grow and died. The two that did produce some new growth turned yellow, one of these died, the other one is still at a standstill after 6 months. Has anyone else seen this before? It's very frustrating!

Exchanging cuttings and seed

The following four step process is a way to share cuttings and seed between study group members. We need to expand the species list available by including all species growing in members' gardens. If you can provide material from other species please let us know so we can add them to the list.

All States apart from Western Australia allow cuttings to be mailed from NSW. If you would like us to send cuttings or seed to you, here are the steps (may vary for seed-only requests):

1. Email us to check that material is currently available (catrionaandphil@gmail.com).
2. Once availability is confirmed, purchase a 500g Express Post satchel from Australia Post (costs $10.55), self-address it, put in an envelope and send to:
   Isopogon and Petrophile Study Group
   PO Box 291
   ULLADULLA NSW 2539
3. We will then package up your cuttings/seed and send it back to you Express Post.
4. An email will be sent to you on the day the package is mailed so that you can be ready to propagate as soon as the parcel arrives!

Isopogon – anethifolius, anemonifolius (1.5m shrub, 0.3m shrub), buxifolius var. spathulatus (now I. spathulatus), cuneatus, dawsonii, divergens, dubius, formosus, latifolius, mnoraifolius, prostratus, petiolaris, sphaerocephalus, tridens, trilobus, 'Stuckeys Hybrid'

Petrophile – canescens, pedunculata, pulchella, sessilis, shirleyae

Plant profile – *Isopogon gardneri, Foreman, Flora of Australia 16: 479 (1995)*

Charles Gardner, Government Botanist of Western Australia, first described *Isopogon gardneri* in 1933, incorrectly naming it *Dryandra petrophiloides*. Interestingly, he commented that 'this plant has much the aspect of *Isopogon teretifolius* or *Petrophila rigida*, and might at first sight be easily mistaken for either of these species.' The current name was given by Foreman in his treatment of *Isopogon* published in Volume 16 of *Flora of Australia*, recognising Gardner's initial, if incorrect naming of the species.

Description – *Isopogon gardneri* is a shrub up to 2m in height. It has no lignotuber. The leaves are terete, alternate and pinnately divided 2 or 3 times, with a pungent point. They interlace to form a dense mass. It produces masses of terminal flowers between July and December. Flower colour is predominantly pink but cream/yellow flowered plants also exist. The flowers are relatively long (up to 30mm) and extremely hairy, held upright before spreading out over the persisting bracts. Thicker and longer hairs at the apex form a silver/white tip. Cones are ovoid, around 10mm long, tapering noticeably to a narrow end.

Distribution – *Isopogon gardneri grows* in inland South West WA, from Corrigin in the north, south to Kukerin, and east to near Hyden. Corrigin Nature Reserve and the Kulin-Corrigin Road are excellent spots to see this species.

Cultivation – Surprisingly, this stunning isopogon is unknown in cultivation. Despite its slightly prickly foliage, the contrasting blue-green foliage and large terminal pink flowers make a spectacular display. A bit taller than most isopogon species, it is usually a dense shrub and its foliage can be somewhat columnar. The buds have highly decorative bracts, and when the flowers

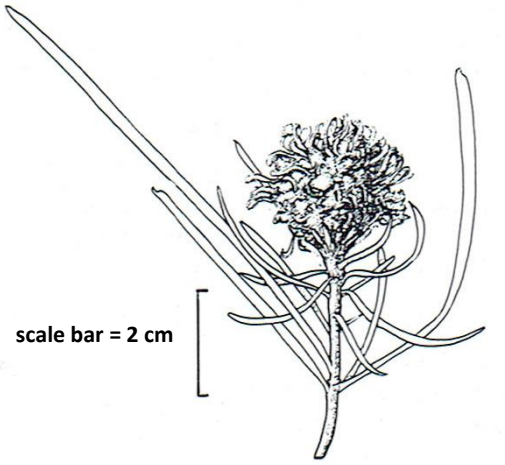
open, the contrast between the dark pink, smooth tepal interior and paler pink, hairy exterior is an attractive feature. It also has a pretty maroon and white stripe behind the anther, and yellow to deep orange pollen presenters. It appears to naturally hybridise with *I. divergens* to produce equally attractive offspring.

Its adaptability to cultivation is unknown, but it is a high priority plant for the study group to bring into cultivation in order to make an assessment. Like most WA isopogons, grafted forms are probably required for reliable results in east coast gardens.

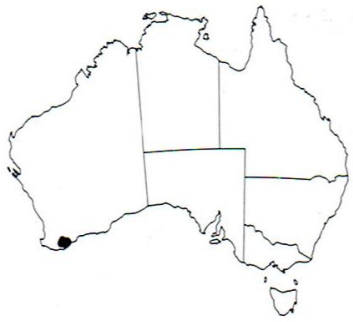
Plant profile – *Petrophile anceps, R. Br., Suppl. Prodr. Fl. Nov. Holl. 5 (1830)*

Petrophile anceps was first described by Robert Brown in 1830. In 1870 English botanist George Bentham in his major work on Australian flora, 'Flora Australiensis', included the species in *Petrophile linearis* as *var. anceps*. However, Robert Brown's original name is now accepted. The species name, meaning two-edged, refers to its very narrow, winged leaf margins.

Description –*Petrophile anceps* is a low shrub 30-60 cm up to 1 m in height. It has flat, incurved, linear, smooth leaves up to 11 cm long and 3 mm wide. The leaves end in a pronounced, pungent point. It produces yellow/cream, very hairy terminal flowers with deeper yellow tips between August and October. The cones are ovoid (egg-shaped, broadest below middle), around 25 mm in length.



Distribution – *Petrophile anceps* is confined to Stirling Range and nearby, where it grows on gravelly sand and sandy/clay on sandstone.



Cultivation – *Petrophile anceps* is a lovely, low, bushy shrub, displaying masses of velvety yellow/cream terminal flowers with striking brilliant yellow pollen presenters on show when in full flower. It is currently unknown in cultivation but is worth trialling. Reliable forms (probably grafted for summer-wet eastern gardens) would be highly suited to the trend for smaller plants in our gardens.


Petrophile anceps, Stirling Range National Park, October 2017. Left, open flowers; Right, shrub.

Seed germination success at Kalamunda

Keith Alcock

The GOOD news is that I had far more success at raising seed last year than ever. At planting I soaked everything in smoke water and with the petrophiles I slit the skin covering to ensure water got in. Planting took place in September (much later than intended). Nothing came up in the way of Is & Ps (nothing unusual there) while hakeas, banksias and (most but not all) dryandras were OK. I decided to leave everything in the pots and continue to care for them. THEN in February - some P helicophylla came up! Then back to nothing until I started to get seedlings poking though regularly through May/June.

The tricky bit is just what the secret is. My guess at the moment is that seeds have to 'mature' in the ground for a period of time - maybe something has to leach out to set them free. The alternative is that the right germination time (daylength, temperatures, moisture) is May/June - but this has never worked for me before and so I think that the secret - especially for isopogons is TIME in the ground.

The emergence stats are:

Petrophile helicophylla 22 out of 36
P. glauca 21/30
P. longifolia 4/24
Prostrate Petrophile Cheyne Beach 5/14
P. longifolia 1/11
P. circinata 1/50
Forked leaf Petrophile 3/36
Prostrate Petrophile thin leaves 0/6
Petrophile terete leaves 0/15

Isopogon teretifolius subsp. teretifolius 6/22
I. teretifolius subsp. petrophiloides 3/35
I. villosus 8/17
I. scabriusculus 10/30
I. formosus 1/22
I. cuneatus 0/23 (old seed)

The seed was fresh - which I think is important and in slitting the petrophile seed I discarded many as they were empty - couldn't do the same with isopogons as seed is too small - but think that seed quality is important - but not as important as allowing time in the ground with regular watering.

Below left, Keith's Petrophile bed;
Above, *P. squamata and P. brevifolia,* with *P. shuttleworthiana* at the back

Clearly, some are better than others - and more than likely other folk smarter than me could do better. However, given that most of my seed raising efforts with Is & Ps have resulted in NO success other than a couple of P. helicophylla, then this trick is a big advantage. If I was still growing Is & Ps from seed I would (a) sow at a more conventional time of May/June but not expect germination until the following year and (b) sow a batch in March/April to see whether they come up early.

WA study trip – October 2017

Catriona Bate

We seemed to strike the perfect timing for this year's isopogon and petrophile flowering, even though we thought we might be a little late. The I&P species in flower were the best we have ever seen on our numerous WA visits, in scenes worthy of any grand garden.

With only a couple of weeks at our disposal we reluctantly left the 4WD at home and flew over. From Perth we headed north for Eneabba and Three Springs then turned south to Badgingarra. Next stop was the Stirlings and Bremer Bay, and west to Fitzgerald River National Park, Ravensthorpe and Lake King. The final leg was from Mount Barker up to Corrigin and over to Brookton and Dryandra Woodland.

Naturally we targeted the best areas for isopogons and petrophiles within easy reach of Perth. While they all yielded a high number of species, the best individual locations in terms of species range were Hi Vallee, the Stirling Ranges, Koornong Road near Ravensthorpe, and Tozer's Bush Camp at Bremer Bay, where we found ten or more species at each.

An early highlight was the mass display of *I. divergens* along the Brand Highway (photo above). Many specimens had the flowers almost hiding the foliage, a common isopogon trait. The great examples we saw up north caused many an unscheduled stop. We were impressed with their generally deep pink colour, so much darker than the delicate pale pink found further north towards Geraldton.

Other famous pinks were prominent on the trip, especially *I. formosus ssp. formosus* and *P. linearis*, the Pixie Mops much loved by photographers. We also saw some lovely plants of I. linearis and a few of *I. dubius*, although both species were generally past peak flowering. At Bluff Creek Road down south there was an unusual form of *I. formosus* with very long stems and axillary buds, possibly reflecting competition for light in such dense vegetation. The *I. cuneatus* plants in this location had finished flowering but had unusually large inflorescences.

Some *P. drummondii* plants (right) put on such a dramatic show, their large inflorescences glowing gold in the afternoon sun, that Phil had to scream to a halt and do a U-turn on the Brand Highway – well worth the effort. We were lucky to catch them at their peak, as we saw few others of this standard.

The lovely petrophiles with creamy flowers and short terete leaves along the roads east of Eneabba had us initially guessing at *P. brevifolia*, until we realised it was a similar species, *P. megalostegia* (below) with slightly larger flower heads and broader involucral bracts. We also found examples with flattened leaves, causing more confusion. Turns out this is an atypical flat-leaved form! *P. megalostegia* grows north of Perth whereas *P. brevifolia* currently has a wide range (possibly reduced in future with taxonomic splitting on the cards).

Another widespread species putting on a great display was *P. serruriae* with its arching canes. We also saw great examples of *P. squamata* (northern form) and *P. striata* as we travelled around – all three species have similar inflorescences. Having previously only seen rather scrappy examples of *P. striata* before, it was amazing to see neat, mounded, and very floriferous plants such as those at Yandin Hill or Julimar State Forest.

Our experience confirms that *P. seminuda* is a very widespread and variable species. The best forms are very attractive, especially in massed displays of yellow. We found this common species all the way from the Eneabba area down to the Fitzgerald River. It exercised our minds considerably in terms of getting the

identification correct as it is so variable and there are many other similar species. It can be distinguished from other petrophiles by its glabrous flowers and leaves, often with a woolly white covering on its involucral bracts. We found what appears to be a form with very large and deeply coloured flowers around Corrigin (right, *P. seminuda*).

P. divaricata, found in many locations in the south, had even greater leaf variability. The name refers to the leaf lobes spreading at a wide angle. The most attractive specimens have quite regularly shaped grey-green leaves which arch backwards, increasing the angle and growing wider with each division, giving a pretty symmetry. From side on these leaves curling downwards are graceful, and viewed from above they form a green circle around the inflorescence. The flowers only open part way in this species which is unusual for petrophiles. In this case the flowers are long and generally cream-coloured.

A favourite species is *I. gardneri* with silver tufts at the end of its large, hairy pink flowers and interlacing grey-green leaves, and we found lovely examples at North Jitarning Nature Reserve and near Corrigin. (See cover plus photos in our profile on page 8.) The buds are especially beautiful, their bracts creating pretty patterns of pale green and pink with a dark tip. Plants near Corrigin had paler pink flowers and here we discovered a natural hybrid with *I. divergens*, displaying a deeper colour in the flower and less divided leaves.

I. crithmifolius (far left) was at its peak in Dryandra Woodland, and in Boyagin Nature Reserve there were particularly deep pink/magenta examples. The similar species *I. dubius* found further north had largely finished flowering. *I. crithmifolius* also tends to be taller with longer stems (and has grooved or canaliculate leaves). Similarly, finding both subspecies of another 'pink' in flower, *I. scabriusculus*, helped to illustrate the differences between them – *ssp. pubifloris* (photo, left) found east of Lake King had hairy flowers which gave them a dusky pink colour, while *ssp. stenophyllus* west of Corrigin had smooth flowers.

Of the large (and confusing) group of yellow-flowered petrophile species with short, simple leaves, we found at least eight. Of these, the best examples were *P. ericifolia ssp. ericifolia* with its sticky green involucral bracts in the Stirlings and near Bremer Bay, *P. misturata* (simple leaf form) west of Corrigin, and *P. globifera* at Wilson Nature Reserve east of Eneabba.

P. globifera has official Priority Three Conservation Status (poorly-known species but not under imminent threat), as has *P. biternata* which we found on Tootbardi Road a bit further south. At Hi Vallee, its only known location, we found many plants of the Threatened (i.e. likely to become extinct or rare) species *P. nivea*, while *P. carduacea* (Priority Two – poorly known, restricted geographic location, possibly under threat) was in flower in the Stirlings and in Hassell National Park near Bremer Bay. *P. carduacea* (photo, left) has distinctive, down-pointing serrated leaves, and holds its pale-yellow flowers above the leaves up on stalks out from the leaf axils.

There was much more to interest I&P lovers, such as different forms of familiar species (highly attractive forms, different leaf forms etc.) and the presence of a range of insects. Identifying the insects was beyond our ability, about all we can say is they were small! At least we have them recorded in photos. Ants were common – particularly evident on the *P. rigida* at Tozer's Bush Camp (photo, right). Very little is known about pollination in isopogons and petrophiles, except that insects are the main pollen vectors.

The red new growth emerging at this time of year is typical of proteaceae, and was a real feature of the trip. A very attractive feature in isopogons and petrophiles, the colouring was very striking, ranging from salmon-pink new leaves on species like *I. dubius* and *I. linearis* (with short hairs) and *P. divaricata* (pictured above left) and *P. serruriae* (with long hairs) to dramatic burgundy or red in *P. seminuda*, *P. glauca* and *P. biternata* (pictured above right).

In total we identified 58 taxa in the wild (plus a few we are still wondering about), a great effort in only a couple of weeks. This is over half of all the WA species and subspecies, and therefore also around half of all the taxa in Australia. Most were species we have found previously, but about twenty were new finds in the wild for us.

Inspecting *P. filifolia* in the Stirlings. Photo: Margaret Pieroni

Revision to 'nodding' isopogons

Phil Trickett

In *Nuytsia* Volume 28 published on 8 June 2017, Barbara Rye and Michael Hislop from the WA Herbarium revised the 'nodding' coneflower *Isopogon teretifolius*. Formerly, two subspecies were recognised, *Isopogon teretifolius subsp. teretifolius* with divided leaves, and *subspecies petrophiloides* with simple leaves.

In his treatment of isopogon in *Flora of Australia* published in 1995, Foreman included the simple-leaved plants found north-east and east of Stirling Range to Newdegate and Lake King, and near Ravensthorpe, in *subspecies petrophiloides*. This inclusion was at odds with a collection by Charles Gardner in 1962 which he recognised as different to *Isopogon teretifolius*. Gardner gave these plants a manuscript name *Isopogon nutans C. A. Gardner ms*. Rye and Hislop have agreed with Gardner's view, and have indicated that this name will be formally adopted. In the meantime, this species has the name *Isopogon sp*. Newdegate.

Rye and Hislop have reduced *subspecies petrophiloides* to synonymy, as they consider that this simple-leaved variant, which only occurs in the vicinity Stirling Range, can no longer be separately recognised as it intergrades with the typical divided leaf *I. teretifolius*.

So there are now two species of 'nodding' isopogons:

- *Isopogon teretifolius* (photo below left) – widespread distribution in south-west WA from the south coast between Denmark and Hopetoun, north to Alexander Morrison National Park and inland to near Hyden. Leaves are mostly divided, and flower colour can be yellow or pink or cream.
- *Isopogon sp.* Newdegate (photo below right) – occurs north from Ravensthorpe to Newdegate, Lake King and Kulin. Flower colour ranges from light to deep pink and leaves are simple (i.e. not divided). It can be further distinguished from *I. teretifolius* by its glabrous branchlets and young leaves, involucral bracts with hairs only on the central area, and tepals with a glabrous claw and densely hairy limb.

Cutting success at the Banksia Farm

Kevin & Kathy Collins

Collection quadruples in 2017 from the miserly base of 2x long established species i.e I. latifolius (2) & P. filifolia, which have flowered well over the past 6 years .They are growing in deep grey sand of pH 5.5 & latifolius are under a huge E. cinerea, heavily shaded, which surprisingly does not inhibit its flowering excessively.

*I. latifolius (*under *E.cinerea).*

Inspired with Phil & Catriona's enthusiasm for the two genera after joining them on exciting WA field trips to photograph and collect, we embarked on experimenting with a few cuttings in 2016 and further cuttings and seed trials in 2017.

Cuttings of approximately 7x I Sps and 20x P Sps were trialled 2016, in 30mm coir plugs in polystyrene holders. Each species was first sterilised in a weak bleach solution, tried with:- NO treatment, banksia honey or purple clonex. NO treatment and honey proved the best.

Successful species which have either been added to the arboretum in April 2017 or potted up are:-

- buxifolius var.obovatus (Point Henry dwarf form), I. buxifolius var. linearis (Salt. R. Rd. Stirlings), I. spathulatus, I. cuneatus (Cheynes dwarf form) & I. trilobus.
- P. serruriae, P. serruriae X P. diversifolia (Mondurup Reserve, Mt. Barker W.A., sole plant, recently lost in a prescribed burn), P. rigida, P. squamata & P. helicophylla.

7x 2016 struck & potted up species. *(*Back lhs to rhs & forward*). P. serruriae X diversifolia, I. trilobus,* Unknown *Sps (*Boonalling Reserve*), I. cuneatus (*dwarf*), I. buxifolius var. obovatus (*dwarf*), P. rigida & P. squamata.*

2017 New cuttings in coir plugs and poly tray

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The cuttings were housed in an open nursery under the shade of an oak tree, wind limited by a 3m shade cloth fence, on 1.5m metal benches with no under heating. They were hand watered several times a day for the first fortnight then watered once a day for 2 minutes with nursery automated spray watering. (twice a day on hotter days). Our overall percentages were low and we know with better protection, misting and bottom heat we could greatly improve. We were happy with our results utilising the existing nursery setup we have.

P. helicophylla (layered and grown from an underground stem)

Two other needle leafed species from Boonalling Reserve near Corrigin have successfully taken and we've yet to identify them. Further we sowed a mixture of I & P seed from unknown species cones, mulched, sown in commercial native seed raising mix (April 2017) and four species have germinated to-date. When these are larger, or down the track flowered, we will be able to I.D. them as well.

The P. helicophylla was struck from an underground stem piece approx. 4 inches long and pencil thickness, with a small clump of terminal leaves. The branch was scraped and soaked in banksia honey and layered in seed raising mix about one inch under the surface, or mid depth of the tray.

Easiest W.A. species from our first trials – Isopogons buxifolius & trilobus and Petrophiles rigida & squamata.

What a pearler

5 stars! That was the kind of rave reaction when Brian Freeman from Victor Harbour SA put up these photos on Facebook on 13 September this year.

This *Isopogon formosus* 'Pink Sparkler' plant is about three years old. It has never been pruned; the cultivar grows to approximately 70cm tall and 1m wide. The presence of numerous axillary flowers is interesting as this cultivar is supposed to have mauve-pink terminal flowers. *Isopogon formosus* does usually have terminal flowers, and can grow up to two metres tall. The *I. formosus* plants we saw recently in Hassell National Park near Bremer Bay this year had axillary flowers and were tall – its long stems covered in flowers were reaching for the sky because of overcrowded, dense vegetation.

Like Western Australia, South Australia has wet winters so this plant should be more at home there than here on the summer-wet east coast. According to the Bureau of Meteorology, the 2017 South Australian winter was generally drier than average. Although planted on a bank for good drainage, water ran through a nearby drain most of the winter so time will tell how it goes. However, this cultivar does seem to do well – a photo of a similarly impressive specimen growing in Portland VIC was put up on the same forum a couple of years ago.

Ros Walcott reports that Pink Sparkler survived a ferocious winter in Canberra this year (as did *I. formosus* itself) but three *I.* 'Candy Cones' (*formosus* x *latifolius*) succumbed. *I. formosus* struggled in severe winter conditions in Uralla NSW for Pat Laher, with two plants killed and severely reduced flowering in the remaining two.

Has any other study group member grown the cultivar *Isopogon formosus* 'Pink Sparkler'? How does its performance compare to the species?

Source: Australian Native Plant Enthusiasts forum www.facebook.com

Grafting update

Phil Trickett

Isopogons

Recent losses of grafted plants on our form of *I. anethifolius* has led to trials of other eastern species to use as rootstock. The provenance of our *I. anethifolius* stock plants is unknown, so I have also begun to grow other local forms and the dwarf cultivated form of *I. anethifolius* to use as alternatives. Once established, trials will be undertaken on these stocks to ascertain if these forms are more reliable.

Grafts using *I. mnoraifolius* from our garden as a rootstock continue to look good with species planted in the garden comprising *I. cuneatus*, *I. latifolius*, *I. trilobus*, *I. buxifolius var. buxifolius*, *I. scabriusculus subsp. stenophyllus*, and *I. panduratus subsp. panduratus*. All are young plants less than two years old but *I. cuneatus* and I. *scabriusculus subsp. stenophyllus* both flowered well this year.

Grafts have been undertaken on the 23 isopogon species we collected on the recent WA trip. Material was collected under licence. Cuttings have also been made from this material to trial these species on their own roots, and to provide back-up plants in case the grafts fail.

Petrophiles

Trials of cutting grafts using the Queensland petrophile *P. shirleyae* look promising. Grafts of *P. teretifolia* (see photo, right) and P. biloba have struck roots and the scion is shooting. The collection of 35 petrophile species on our WA trip has given me the opportunity to undertake a large trial using *P. shirleyae*, *P. pulchella*, and *P. sessilis* as stocks. Mike Beamish and Liesbeth Uijtewaal have found *P. pulchella* cuttings difficult but no one seems to have tried *P. sessilis*. Initial results of my trials should be available for the next newsletter.

Abandoning of peat plugs

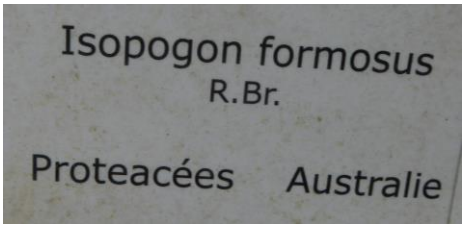
After unacceptable losses of cutting grafts and cuttings in the 20mm peat plugs that I have been using for a number of years, I have decided to switch back to the 5-part perlite/1 part coco-peat mix that I previously used. While the peat plugs are very convenient and space-efficient, I find they are too unforgiving of over or under watering. The first three months of this switch is showing huge improvements to propagation success rates.

Isopogons…in Europe!

Spring means isopogon flowers (to us, anyway) but you don't expect to see them on a history, food and wine trip in Europe as we did in April-May this year.

The Jardin Exotique de Roscoff is a botanical garden located in Roscoff, Brittany. It is surrounded on two sides by sea creating a micro-climate for sub-tropical plants. Plants come from countries of the Southern Hemisphere as well as exotic plants from the Northern Hemisphere. The stereotype Frenchman with a garland of onions comes from Roscoff farmers who crossed The Channel and walked the streets of English coastal towns selling their onions.

The garden displayed collections of acacia and eucalyptus and we also saw tea trees and callistemons in flower. An interesting curiosity was a bromeliad from Pitcairn Island. There were also a few proteaceae flowering beautifully – *Dryandra formosa* and a very impressive burgundy *Banksia praemorsa*. Naturally, the plant that we were most excited about was *Isopogon formosus*! It is relatively tough plant on its own roots and therefore a good choice.



Moving further north to Holland we found more Australian treasures at the home of one of our members, Liesbeth Uijtewaal, this time in pots in a conservatory (moved outside for the European summer). Liesbeth is growing some truly amazing banksias, dryandras, grevilleas, and a rapidly growing collection of I&Ps among a wide variety of Australian native plants. At her place we saw *I. latifolius*, *I. cuneatus* and *I.* 'Stuckey's Hybrid' in full flower.

Financial Report

Donations have been received from Canberra ANPS and Native Plants Queensland.

Total 10/4/2017		$1,147.31
	Bank balance	$1,030.62
	Cash on hand	$116.69
Donations		$40.00
Total 17/11/2017		$1,187.31
	Bank balance	$1,070.62
	Cash on hand	$116.69