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14 <sup>th</sup> March 2014	General Meeting	
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9 <sup>th</sup> May 2014	General Discussion	
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	Pygmy Drosera	Kirk 'Fuzzy' Hirsch

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# The search for the ‘Blaze of purple’: Unraveling mysteries of the *Utricularia* *dichotoma* complex

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In late 2012 I had the great fortune to assist Dr. Richard Jobson from the NSW National Herbarium on a fieldtrip. We aimed to visit sites in western New South Wales (N.S.W.), northern Victoria and south eastern South Australia where members of the *Utricularia dichotoma* and related species had been collected, in order to provide data for one of his current research projects. Most of the taxa seen were subsequently formally named in a paper published by Jobson (2013).

On the six day fieldtrip we drove over 4,500 km and visited at least 20 sites where plants had been collected or were likely to grow. We found carnivorous plants at about a dozen site. Our travels took us from Wee Waa on the north western plains of

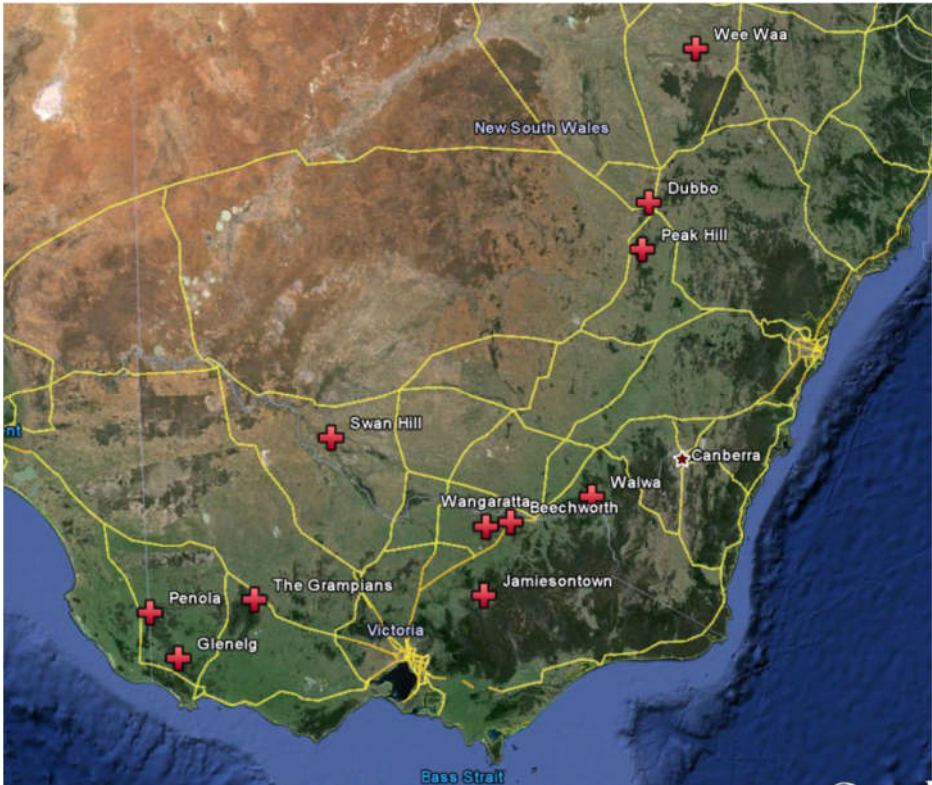
N.S.W. to Penola in South Australia, to The Grampians and to surrounding country in western Victoria and the Wangaratta/ Beechworth area in inland eastern Victoria (Figure 1). In many cases sites had dried out in the weeks that preceded our visit: such as near Wee Waa in N.S.W. and near Wangaratta in Victoria. However, seeing these areas provided informative clues about the ecology of these plants.

We saw seven species of *Drosera* and three taxa of *Utricularia* on our travels. The following is a brief summary of the observations I made on this trip.

## ***Drosera auriculata***

Plants of the Tall Sundew (*Drosera auriculata*) were seen in The Grampians and around Beechworth. Plants grew where soil moisture persisted well into





**Figure 1.** Key locations visited during fieldwork for the *Utricularia dichotoma* complex.

the summer, such as: wet peaty soil in roadside gutters near Dunkeld, moist grassland downslope of a spring-fed creek near Beechworth, thin moss covered soil by a creek in the Wonderland Range near Halls Gap, and thin-moss-covered soil on sheltered cliffs fed by seepage near the summit of Mt William in The Grampians.

Plants had erect stems to 40 cm tall with alternate crescentic leaves. As observed by others (e.g. Fretwell, 2012; Spence 2008) plants at higher parts of Mt William and the Wonderland Range had an overall dark red colouration to all vegetative parts and pink-petalled flowers (Front cover). Most of the flowers on the plants seen had been pollinated and were setting

fruit.

Usually this tuberous sundew is a winter-grower that is dormant by mid to late spring. However, in cooler situations this species may persist into late spring and early summer provided that the soil remains moist. It is likely that this species grew at other lowland sites on our fieldtrip but had gone dormant prior to our visit. It is also likely that plants we saw in growth will have

rapidly gone dormant once summer heat and drought settled in on the area. Plants often grew with *D. pygmaea*, *U. dichotoma*, *U. lateriflora* and *U. grampiana*.

### ***Drosera binata***

The forked-leaf Sundew (*Drosera binata*) was observed in two locations - a wetland south of Casterton (Figure 2) and a roadside gutter near Dunkeld. This species favours permanent moisture, rather than periodically



**Figure 2.** *Drosera binata* ‘T-form’ near Glenelg, growing with *U. barkeri*.

wet peaty soils and at the site near Casterton it grew in a sodden peaty soil on the edge of a swamp with Button Grass (*Gymnoschoenus sphaerocephalus*). A few small plants were also seen in a wet roadside gutter near Dunkeld.

The plants seen on this trip had erect leaves with a petiole to about 15 cm tall topped with a once-forked lamina to about 10 cm across. This form fits within the informally recognized *D. binata* ‘T-form’ (sensu Slack 1980). A few of the larger plants were observed with an unfolding inflorescence at their centre, but no open flowers were seen. Many plants supported small Sundew Bugs that hunted for trapped prey in the leaves.

The plants at the site near Casterton were richly red and formed the main biomass on the peat beside the road. Thus formed a wonderful blaze of red that had the added beauty of low-angle sunlight reflecting off the droplets of mucin on the leaves (e.g. see Spence, 2008). The site was wonderful to see and reminded me of a few sites with

this species I had seen years before in western Tasmania.

This species often grew with *D. peltata*, *D. pygmaea*, *U. dichotoma* and *U. barkeri*.

### ***Drosera burmanni***

Burman’s sundew (*D. burmanni*) is an annual or short-lived perennial rosette sundew with distinctive wedge-shaped leaves. It is a widespread species across northern Australia and into South East Asia (Lowrie 1998). We found a population of this species in sandy loam soil on a bank of a small creek (Figure 3) near the city of Dubbo in central western N.S.W. The plants formed pale green rosettes to



**Figure 3.** Drought-affected *Drosera burmanni* plants near



about 5 cm across, some of which had scapes. The site was drying out and the new leaves of the plants were held erect – something I had not seen before (Figure 1). The dead stems of *Drosera hookeri* were also present at this site.

### ***Drosera glanduligera***

The Pimpernel Sundew (*D. glanduligera*) is a widespread, and locally abundant sundew native to southern Australia (Lowrie, 1989), and is known from western Victoria (e.g. Fretwell, 2012). It is a winter-growing annual and no live plants were seen on our travels. However, at one site west of Horsham, the remains of *D. glanduligera* plants were seen in a dry sandy loam soil in a clearing in dry sclerophylla forest. The distinctive scapes were about 3 cm tall with their multiple round (now-empty) fruit were clearly recognizable. They grew in a mini-forest of dormant *D. hookeri* stems. (Figure 4).

### ***Drosera hookeri***

The Pale Sundew (*Drosera hookeri*) is a widespread

tuberous sundew from south eastern Australia (Gibson *et al.*, 2012). This erect sundew is typically bright yellow-green and occurs as usually a short stem that has multiple branches from the basal rosette centre. Some types though grow as a taller plant with a stem that branches near the apex. Both plant types



**Figure 4.** Standing dead stems of *D. hookeri* and scatted dead scapes of *D. glanduligera* near Mount Arapiles.



typically grow in winter and flower in spring before going dormant for the summer.

The remains of dormant plants were seen in woodlands west of Horsham and also in a drainage line near Dubbo. Live plants, in fruit were seen beside wetlands in western Victoria and near Penola in South Australia, and also in a wetland near Jamieson in eastern Victoria. Plants grew in the company of *D. burmanni*, *D. glanduligera*, *D. pygmaea*, *U. dichotoma* and *U. lateriflora*, with a different assemblage of associated plants at each site.

### ***Drosera peltata***

Lovely red plants of *Drosera peltata* were seen at three sites on our travels: at a wetland near Casterton (Figure 5), in spring-fed wetland near Beechworth and in a swampy creekbed near Walwa in the headwaters of the Murray River. Each population was represented by only a few plants, each of which was gracile and richly pigmented. All plants were in fruit. The sepals were completely and thickly covered in hairs (Figure 2). Brief examination of the rootsystem of

plants on the western slopes of the Snowy Mountains suggested they were stoloniferous.

This tuberous sundew grows most frequently in permanently saturated, often flooded habitats



**Figure 5.** *Drosera peltata* in fruit.

in peaty soil. It appears that at the sites seen dormancy is more likely driven by air and soil temperature rather than seasonal drought.

This sundew was observed growing with *D. binata*, *U. dichotoma* and *U. barkeri*, and was never common.

### ***Drosera pygmaea***

*Drosera pygmaea* is the most widespread of the 'pygmy sundews' (*Drosera* subgenus *Bryastrum*) and occurs widely in south eastern Australia (Lowrie, 1989). However, on this trip were only found plants around Casterton and The Grampians, growing in moist sandy loam soils in wet roadside gutters. It also occurred on the roadside shoulder beside the bitumen surface.

The plants seen formed small flat rosettes to 1.6 cm across, with a prominent silvery white, conical stipule bud in the centre from which emerged a rosette of many red spatulate leaves with linear petioles and orbicular lamina. A few erect single-flowered scapes



**Figure 6.** *Drosera pygmaea* in the Grampians National Park with an atypical number of petals.

to 3 cm tall also emerged from the plant centre. The white flowers, when open, were small (about 5 mm diameter) and usually had four sepals, petals, stamens and styles; but plants can have flowers with five (Figure 6). This species was locally abundant and at the different sites it grew with a combination of the following species: *D. auriculata*, *D. binata*, *D. hookeri*, *U. dichotoma*, *U. lateriflora* and *U. barkeri*.

### ***Utricularia beaugleholei***

I was keen to see *Utricularia beaugleholei* during our travels

and we visited many sites where this species had been previously collected. This species is very like *U. dichotoma* and is most readily identified by the more robust size, leaves that lend to have an acute rather than an obtuse apex, and they have dark purple flowers commonly produced in whorls which possess a radiating fan of ridges at the base of the lower petal.

We found plants of this species at one site, in a sedgeland along an intermittent stream near Wangaratta. Plants had died, but the scapes hadn't yet disintegrated. Most spent flowers apparently set seed, which is probably how plants at the site persisted during the summer drought (Figure 7).

Without the knowledge of previous collections of this species from the sites we visited I would not have considered that they supported any carnivorous plants. Most of the sites were billabongs and seasonal wetlands associated with the Murray River around Wangaratta, where most of the surrounding vegetation had been cleared for farming. We



**Figure 7.** Dead scape of *U. beaugleholei* near Wangaratta.

were probably a month too late to see plants flowering at many of these locations, for the sites had dried out rapidly. But it was heartening to know that this species was still hanging on in an otherwise highly modified landscape.

### ***Utricularia dichotoma* complex**

The main focus of our attention was on ‘Fairies Aprons’ (*Utricularia dichotoma* complex) which includes one of the most widespread and largest of the bladderworts in southern Australia (Taylor, 1989). Richard was keen to visit sites where herbarium collections

used in his studies were collected and to see the ecological features where the plants grow. Naturally it was great to see Bladderworts there too.

Since this fieldtrip, Richard published a paper (Jobson, 2013) in which three of the taxa seen have now been formally described: *U. bakeri*, *U. grampiana* and *U. fenshamii*. As a consequence, the concept of *U. dichotoma* has been refined.

### ***Utricularia dichotoma***

This stoloniferous species is characterized by the moderate size to most plant parts, with



**Figure 8.** *Utricularia dichotoma* near Nangwarry, South Australia.



flowers usually produced in opposite pairs and with a number of raised parallel ridges at the base of the purple, or (rarely) white flowers. The flowers may also have a domed, semicircular lower petal or a vaulted lower petal, rectangular in outline. In some populations the plants may form tubers, or in other they appear to die down and survive dry times as dormant seeds. Importantly, the bracts and bracteoles of this species are all connected at the base (i.e. basifixed), the palate has two or three conspicuous yellow ridges in the centre, and the bracts and bracteoles are all inflated (gibbous) at the base (Jobson, 2013)

Some variation in *U. dichotoma* was observed on our travels. Plants in South Australia and adjacent parts of western Victoria had large traps (to about 6 mm long) and flowers with a dark purple vaulted lower petal with a series of parallel ridges at its base. The upper petal has dark purple veins (Figure 8). In many cases the flowers were not much larger than the ripened spherical fruit capsules. Plants from inland

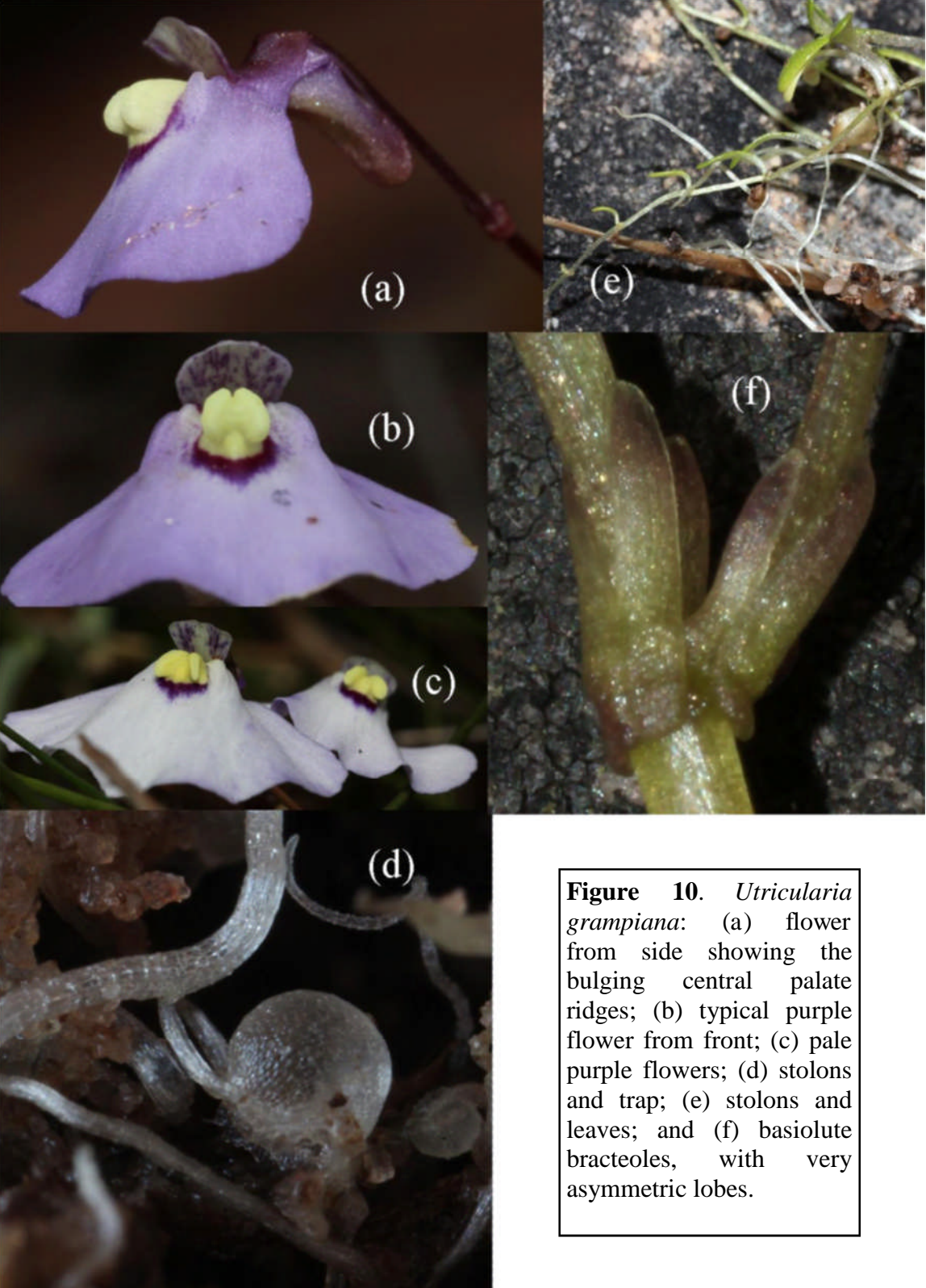
eastern Victoria tended to have semi-circular lower petals but were otherwise similar to lowland plants to the west. Near Jamieson plants showed a lovely range of flower colour forms from very pale purple (almost white) to dark purple (Figure 9).

### ***Utricularia grampiana***

An unusual member of the *U. dichotoma* has been long-known from the higher parts of The Grampian Range in western Victoria (e.g. Spence, 2006 and Fretwell, 2012). It is perhaps best known from seepages on exposed quartzite around the car park of Mt William (the highest



**Figure 9.** Pale purple *U. dichotoma* flowers near Jamieson.



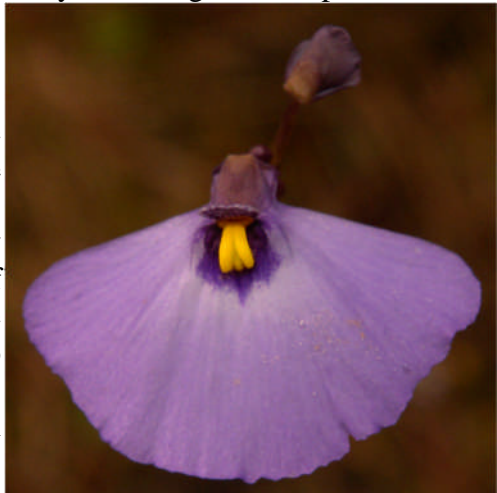
**Figure 10.** *Utricularia grampiana*: (a) flower from side showing the bulging central palate ridges; (b) typical purple flower from front; (c) pale purple flowers; (d) stolons and trap; (e) stolons and leaves; and (f) basiolute bracteoles, with very asymmetric lobes.

peak in The Grampians: Front cover). We also observed it growing beside a creek in the nearby Wonderland Range, just west of Halls Gap. This taxon has large flowers, to about 2 cm across. The flowers were produced singularly or in opposite pairs at or near the apex of the scape. The central two or three yellow ridges at the base of the lower petal were parallel, but the adjacent ridges radiated out in a semi-circle around the entrance to the nectary spur in a way a little reminiscent of *U. beaupleholei*.

This Bladderwort was recently described as *U. grampiana* (Jobson, 2013), and is characterized by the near central, peltate attachment of its bracts and bracteoles to the peduncle (i.e. basiolute). It also has a pale upper petal with purple flecks rather than veins, and a key character is the relative size of the central yellow ridges of the palate (Figure 10). It appears to be restricted to the Grampians National Park and Langi Ghiran State Park.

### ***Utricularia barkeri***

The most widespread variant of the *U. dichotoma* complex we encountered grows in lowland wetlands around Casterton and adjacent parts of South Australia. Flowers of this species have an upper petal in mottled shades of purple which lack distinct veins (Figure 11). This Bladderwort was recently described by Jobson (2013), and shares several features with *U. grampiana*, to which it appears most closely related, because of its basiolute bracts and bracteoles, and pale upper petal with purple flecks, rather than veins. However the central yellow ridges of the palate are all



**Figure 11.** Typical flower form of *U. barkeri* near Glenelg.

about the same width.

### ***Utricularia fenshamii***

The first site on our travels was to a seasonal clay pan on the floodplain near Wee Waa. This claypan covers several hectares with water several decimeters deep. However, at the time of our visit the claypan has dried out and all wetland plants it supports were dead or dormant, including the bladderwort that grows there. This bladderwort is unusual in that it occurs widely across the inland parts of Queensland, New South Wales and adjacent parts of South Australia. Plants grow in mound springs fed by rising groundwater from the Great Artesian Basin; the site at Wee Waa is the one exception to this habitat preference.

*Utricularia fenshamii* shares the basifixed bracts and bractoles of *U. dichotoma* (and *U. beaugleholei*) but they are not gibbous at the base, and the central palate ridges are twice as long as the surrounding ridges of the palate (Jobson, 2013).

### ***Utricularia lateriflora***

*Utricularia lateriflora* is a small but widespread terrestrial species that has diminutive stolons that can extend to a surprising depth into the soil profile (Taylor, 1989). The traps are minute. The broadly obovate leaves were often hidden by other plants. Their rather stocky and persistent scapes generally revealed the presence of this species. Also, unlike *U. beaugleholei* and *U. dichotoma*, the scape of *U. lateriflora* had multiple alternate bracts along its length.

The flowers had a horizontal lower petal that was obovate in



**Figure 12.** Large flowered form of *U. lateriflora* from the Wonderland Range.



outline and had a domed base against which the upper petal arose. The nectary spur pointed forward, but was shorter than the lower petal. Flower colour varied from pale to dark purple to white, but the plants seen on this trip in The Grampians all had mid-, to dark purple flowers.

Populations of *U. lateriflora* also varied in the number and size of flowers on the scapes. Plants typically had scapes to about 12 cm tall which bore up to five flowers with lower petals to about 5 mm maximum width. However in some parts of the range, plants with shorter scapes (to about 8 cm tall) with one, rarely two flowers were produced. These had impressive flowers that reached about 1 cm across (Figure 12). Plants of both forms were observed in shallow soil along a creek bed where they also grew with *Drosera auriculata*.

### Conclusions

The fieldtrip through inland New South Wales to south eastern South Australia and along the northern part of Victoria was excellent. It provided an

opportunity to see ten species of carnivorous plant and to get a better idea of the morphological variation and ecology of these species; particularly members of the *Utricularia dichotoma* complex. It was a wonderful experience.

### Acknowledgements

I thank Dr. Richard Jobson for the wonderful opportunity to participate in this fieldtrip, and also Greg Bourke for providing details of some plant locations visited.



Mottled purple flower of *U. barkeri*.

## References

- Fretwell, S. (2012) The wild west of the Grampians: Part 1. *Journal of the Victorian Carnivorous Plant Society Inc.*, **103**: 7-12
- Gibson R., Conn, B.J. and Bruhl, J.J. (2012) Morphological evaluation of the *Drosera peltata* complex (Droseraceae) *Australian Systematic Botany* **25**: 49-80
- Jobson, R.W. (2013) Five new species of *Utricularia* (Lentibulariaceae) from Australia. *Telopea* **15**: 127-142
- Lowrie, A. (1998) Carnivorous Plants of Australia: Vol. 3. University of Western Australia Press, Nedlands
- Lowrie, A. (1987) Carnivorous Plants of Australia: Vol. 2. University of Western Australia Press, Nedlands
- Slack, A. (1980) Carnivorous Plants. Alphabooks, Dorset.
- Taylor, P (1989) The Genus *Utricularia*: A taxonomic monograph. Her Majesty's Stationery Office, London
- Spence, S. (2006) VCPS fieldtrip 2005 – Grampians National Park. *Journal of the Victorian Carnivorous Plant Society Inc.*, **80**: 6-13
- Spence, S. (2008) From the ashes – Grampians National Park fieldtrip: Part 1. *Journal of the Victorian Carnivorous Plant Society Inc.*, **87**: 6-15



Dark purple form of *Utricularia dichotoma* at Wonderland in the Grampian National Park.

# Carnivorous Plants of the North Island, New Zealand

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## Introduction

Between 10<sup>th</sup>-14<sup>th</sup> of January 2013, I travelled to the North Island of New Zealand to meet up with friends to see a range of carnivorous plants in the wild (Figure 1). It was great to see a carnivorous plant flora that is both similar and different to the counterpart in eastern Australia.

New Zealand is home to 11 species of native carnivorous plants comprising: 7 Sundews (*Drosera arcturi*, *D. auriculata*, *D. binata*, *D. hookeri*, *D. pygmaea*, *D. spatulata* and *D. stenopetala*) and four native Bladderworts: *Utricularia*

*australis*, *U. delicatula*, *U. gibba*, and *U. novae-zelandiae*. Most of these species also occur in Australia. In addition, New Zealand is home to a few naturalized species too, (Salmon, 2001).

## An overview of my travels

Brian Quinn met me at Auckland airport and had organised a clockwise loop through Northland, which began immediately. We arrived at Lake Kai Iwi (Figure 2) around mid-afternoon. This followed a brief stop to see the largest Kauri Pine in New Zealand. We finished Day at Kaitaia. On the



**Figure 2.** Lake Kai Iwi lake edge sedgeland that is home to carnivorous plants.



**Figure 1.** North Island of New Zealand showing key locations visited.





**Figure 3.** View of the eastern flanks of Mt Ruapehu from the Desert Road site.

Friday morning we drove west to the famous Ahipara Gum Fields before turning east to visit Lake Ohia. We returned to Auckland via the eastern side of the Northland Peninsula, arriving late on Friday night.

Bruce Salmon, Brian and I had a pre-dawn departure on Saturday morning, heading south east to Taupo, then south along the eastern edge of Lake Taupo and onto the central plateau to meet the rest of the gang at a carnivorous plant site at the Desert Road. (Figure 3) From here we drove to the south west flanks of Mt Ruapehu to visit an amazing carnivorous plant site just above the treeline. After a

few hours here we explored two other carnivorous plant sites near Horipoto to the west of Mt Ruapehu before heading south to crash at Andrew's place at Palmerston North. After a leisurely start on Sunday morning Brian, Bruce and I bid farewell to the group and headed north on a mission to look for *Drosera stenopetala* near its northernmost limit, before arriving in Auckland late that night. On the Monday morning Bruce took me to the Auckland botanic gardens before delivering me to the airport.

It was a whirlwind adventure, which gave me the chance to see many of New Zealand's native

carnivorous plants, and some naturalized species too, and to catch up with some wonderful friends. A summary of the plants seen is provided below:

### Sundews

#### *Drosera arcturi*

The alpine sundew, *D. arcturi*, was observed in wetlands above the treeline at Mt Ruapehu and in the Ruahine Range. Plants were associated with permanently wet soil and grew by creekbanks, beside tarn lakes, in cushion plants on peaty soil and occasionally beside waterfalls. These sundews had one to four erect oblong leaves typically about 3 to 5 cm long. Many plants were in flower and had

erect single-flowered scapes to about 5 cm tall with white-petalled flowers to about 12 mm diameter (Figure 4). This sundew was frequently seen growing in the company of *Drosera spatulata* ‘Alpine Form’ and *U. novae-zealandiae*.

#### *Drosera auriculata*

A few plants of *Drosera auriculata* were observed at the Ahipara Gum Fields where the peaty sand soil remained moist and thus enabled this typically summer-dormant species to maintain growth. It grew in the company of *U. delicatula*.

#### *Drosera binata*

The fork-leaved sundew,



**Figure 4.** *Drosera arcturi* colony in flower on Mt Ruapehu.

*D. binate*, was seen in many sites in Northland and in sites around the central plateau. Invariably plants grew in permanent wetlands where the soil surface may periodically become dry and cracked. It is the largest



**Figure 5.** Vibrant red plant of *D. binata* at Horipoto.

sundew in New Zealand and individually impressive plants can reach 30 cm tall. They were usually lovely shades of red and collectively form impressive stands (Figure 5). Leaves were commonly once or twice forked, and a few plants in dense sedgeland in the north of Northland had leaves with up to 24 terminal lobes.

Plants of this species were observed at Ahipara, Lake Ohia, The Desert Road, and around Horipoto. Plants were in flower at the time of my visit. They had small white-petalled flowers to 1 cm across, most of which appeared to be pollinated, based on the abundance of ripening fruit on most scapes.

Most plants encountered appeared to fit the concept of *D. binata* ‘T-form’. Those few plants observed with multiply divided leaves still appeared to fit this taxon concept but reflected the tendency for some plants in this complex to produce fewer but larger, more divided leaves when growing in dense vegetation.

### *Drosera hookeri*

A few plants of this tuberous sundew were seen in sedgeland on the edge of Lake Kai Iwi. They were almost completely dormant and it was thanks to Brian's eagle-eye that those plants were observed. This taxon is locally common in Northland and appears to be a relatively recent arrival to New Zealand (Salmon, 2001).

### *Drosera pygmaea*

The diminutive *Drosera pygmaea* was seen in local abundance at a few sites, particularly at Lake Ohia. The species formed flat rosettes between about 7 and 12 mm diameter with round lamina on a linear petiole. They were commonly olive green and variably suffused with red. The erect scapes were typically single-flowered. The small flowers typically had four white petals. Each petal had a translucent midvein through which the red sepals often showed, an arrangement perhaps to enhance their attractiveness to pollinators.

Atypical yellow-green plants



**Figure 6.** Pale green *Drosera pygmaea* rosette at Lake Kai Iwi.

occur at both The Desert Road and Lake Kai Iwi (Figure 6).

### *Drosera spatulata*

Four forms of *Drosera spatulata* have been reported from New Zealand (Salmon, 2001) two of which were seen on this trip:

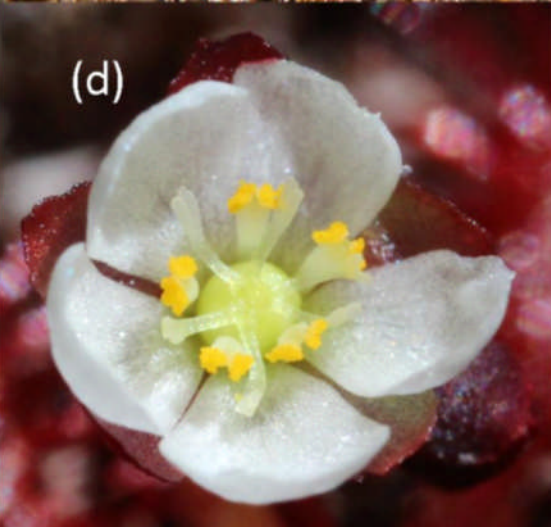
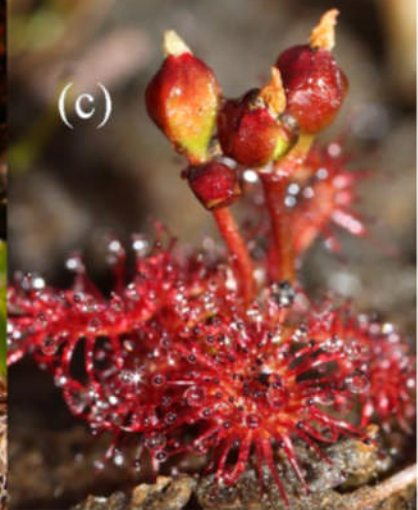
#### *Drosera spatulata* ‘Typical New Zealand Form’

Plants of the typical form were seen in Northland at Ahipara and Lake Ohia. The plants formed rosettes to about 3 cm across with erect scapes to about 25 cm tall bearing small white-petalled flowers (Rear cover).

#### *Drosera spatulata* ‘Alpine Form’

The interesting ‘Alpine Form’ of *D. spatulata* was observed at Desert Road, the SW flanks of Mt Ruapehu, and at Horipoto.





**Figure 7.** *Drosera spatulata* 'Alpine Form': (a) plants in habitat; (b) plant in cushion plant; (c) plant in fruit; (d) open flower; and (e) open flower from side with fruit and bud.. Photo (b) taken at Mt Ruapehu, (c) taken at The Desert Road; and all other photos taken at Horipoto.

Plants formed rosettes to about 2 cm across and have short, few-flowered scapes to about 4 cm tall (Figure 7). They were fascinating to see. It is interesting that there is nothing like this form in *D. spatulata* outside of New Zealand.

#### *Drosera stenopetala*

Bruce, Brian and I searched for *Drosera stenopetala* near the northern part of its range. We did not have a precise location but ended up at the Rangiwahia Access Track in the Ruahine Forest Park. Here we saw only *D. arcturi*. Better luck next time.

#### Bladderworts

##### *Utricularia australis*

*Utricularia australis* was observed at Ahipara and Lake Ohia. At the former location it grew in an artificial pond formed by flooding of old Kauri gum extraction works. Plants had stems to about 1 m long and

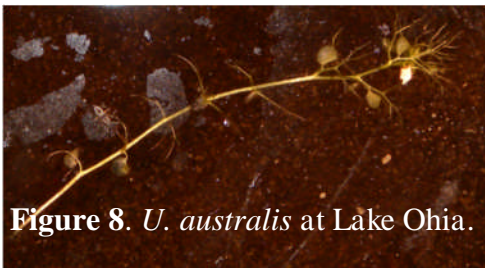
traps to about 2 mm long (Figure 8). Brian was pleased to see many plants of this species at Lake Ohia, where its numbers have fluctuated widely.

##### *Utricularia delicatula*

Endemic to New Zealand, and closely related to *Utricularia lateriflora* from eastern Australia, *Utricularia delicatula* has a restricted distribution in New Zealand that includes the northern part of Northland and, mysteriously, Chatham Island. I saw this species at Ahipara where it was locally common and in flower. Scapes were typically 3 to 7 cm tall in open areas, but reached up to 20 cm tall where growing amongst dense restios. The flowers are small and pale purple and often contrasted with the otherwise red scape (Figure 9).

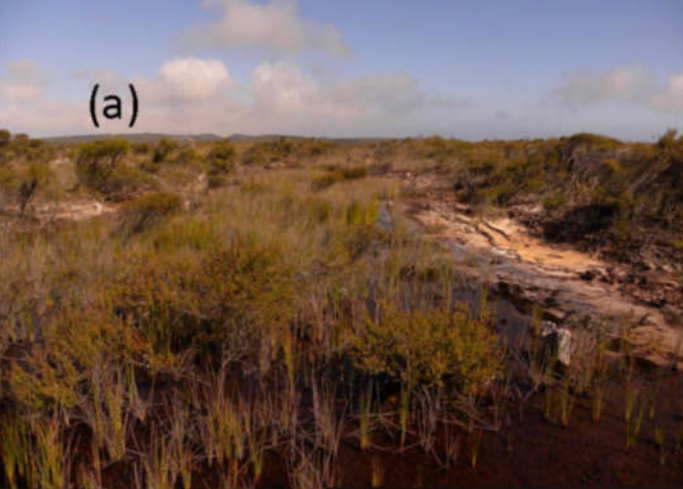
##### *Utricularia gibba*

In New Zealand *Utricularia gibba* has been found only in the north west of the North Island where two forms have been recognized. I saw the 'Far North Form' (sensu Salmon, 2001) at Lake Kai Iwi and Lake Ohia. Plants of this form have a floral



**Figure 8.** *U. australis* at Lake Ohia.





(a)

**Figure 9.** *Utricularia delicatula*.: (a) habitat; (b) plants in flower; (c) open flowers and bud; (d) leaves; (e) flower and sepals from behind; (f) flower from the front; and (g) ripening seed. All photos taken at the Ahipara Gum fields.



(b)



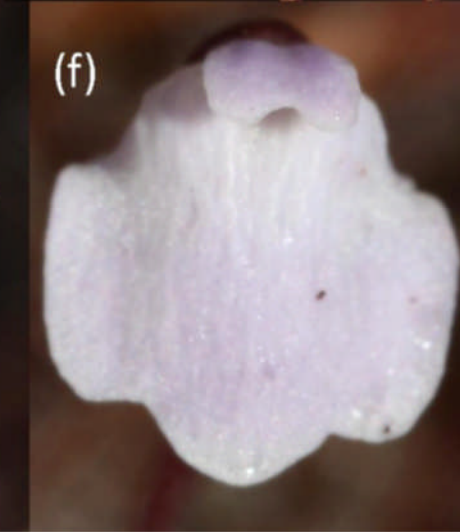
(c)



(d)



(e)



(f)



(g)



**Figure 10.** *Utricularia gibba* flower at Lake Kai Iwi.

spur shorter than the lower petal and readily set seed (Figure 10).

#### *Utricularia novae-zelandiae*

The existence of *U. novae-zelandiae* as a distinct species has been controversial, particularly after work published by Reut and Fineran (1999) who reduced it to synonymy with *U. dichotoma*. However, recent work by Jobson (e.g. 2013) is revealing distinct entities in the *U. dichotoma* complex. In this context *U. novae-zelandiae* is recognized here.

Salmon (2001) identified four forms of *U. novae-zelandiae* in

New Zealand, three of which occur in the North Island (accepting *U. monanthos* as distinct from *U. novae-zelandiae*). I saw at least two of the North Island forms on my travels: the ‘Upper North Island Form’ at Ahipara and Lake Ohia — which has relatively tall scapes to 15 cm tall with 1 to 3 mostly white petalled flowers (Figure 11), - and the ‘Central North Island Montane Form’ from Horipoto and the SW flanks of Mt Ruapehu with its scapes to



**Figure 11.** *Utricularia novae-zelandiae* flower at Mt Ruapehu.

4 cm tall with solitary or paired pale to dark purple flowers (Figure 11).



### Exotic Carnivores

New Zealand has a number of naturalized carnivorous plants. I saw the following:

*Sarracenia leucophylla* hybrids

A stand about 15 x 10 metres of *Sarracenia* hybrids occurred in the Ahipara Gum Fields. Plants grew in wet sandy peat in a *Restio* sedgeland. The plants had erect red pitchers to about 60 cm tall (Figure 12) and appeared largely to be hybrids between *S. leucophylla* and *S. rubra*. Fruit set, seedlings and juvenile plants were observed, suggesting



**Figure 12.** *Sarracenia* hybrid naturalized at Ahipara.



**Figure 13.** *Pinguicula grandiflora* at Horipoto.

effective pollination by the local insect fauna (perhaps largely by European Honey Bees?). Brian explained that local members of the New Zealand Carnivorous Plant Society had spent time removing plants at the site, thereby keeping numbers low and controlling the area of spread.

*Pinguicula grandiflora*

A small population of *Pinguicula grandiflora* had been naturalised near Horipoto. The plants formed

conspicuous rosettes to about 12 cm across and at the time of the visit had a number of spent scapes (Figure 13). Numerous juvenile plants were present.

#### *Utricularia reniformis*

An area about 8 metres by 8 metres near the Ahipara Gum Fields contained a naturalized area of *Utricularia reniformis*. The South American bladderwort had reniform leaves to about 5 cm across held on erect pedicels to about 20 cm tall. On my visit I observed three scapes, one of which still had open flowers (Figure 14). This



**Figure 14.** *Utricularia reniformis* naturalized at Ahipara.

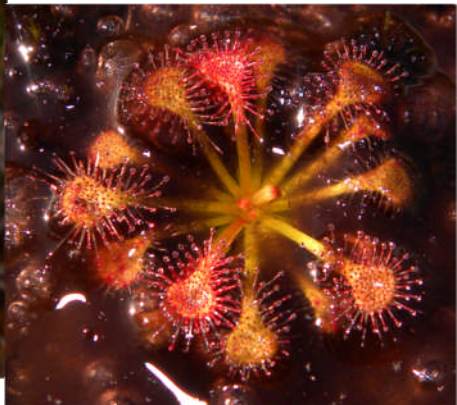
bladderwort does not appear to set seed in this location.

#### Conclusions

I had a most enjoyable time visiting New Zealand and seeing many of the native carnivorous plants in the company of great friends. It will be great to return and see more of this wonderful country and its fascinating flora.

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*Drosera spatulata* rosette at Ahipara.

### Notes to contributors

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### References

- Salmon, B. (2001) *Carnivorous Plants of New Zealand*. Ecosphere Publications, Maurewa
- Jobson, R.W. (2013) Five new species of *Utricularia* (Lentibulariaceae) from Australia. *Telopea* **15**: 127-142
- Reut, M.S and Fineran, B.A. (1999) An evaluation of the taxonomy of *Utricularia dichotoma* Labill., *U. monanthos* Hook.f., and *U. novae-zelandiae* Hook.f (Lentibulariaceae). *New Zealand Journal of Botany* **37**: 243-255
- Taylor, P. (1989) The Genus *Utricularia*: A taxonomic monograph. Her Majesty's Stationery Office, London



From left to right: Robert, Bruce, Andrew, Paul, Brian (squatting) and Peter.



