

## ***Utricularia petertaylorii* (Lentibulariaceae), a new species from the south-west of Western Australia**

**Allen Lowrie**

6 Glenn Place, Duncraig, Western Australia 6023

### **Abstract**

Lowrie, A. *Utricularia petertaylorii* (Lentibulariaceae), a new species from the south-west of Western Australia. *Nuytsia* 14(3): 405–410 (2002). A new species, *Utricularia petertaylorii* Lowrie, is described and illustrated. A key is provided to all the known *Utricularia* species occurring in the south-west of Western Australia.

### **Introduction**

In Peter Taylor’s excellent taxonomic monograph of *Utricularia* (Lentibulariaceae) he recorded (Taylor 1989: 104) in detail his field examination of an unusual *Utricularia* population on North East Rd, 80 km south-east of Perth. He found the plants in this population not only varied in size, but had a corolla suggestive of *U. inaequalis* A. DC. and leaves and traps suggestive of *U. violacea* R. Br. He concluded that this population might represent a hybrid swarm and recommended further study of it in comparison with uniform populations of *U. inaequalis* and *U. violacea*.

Extensive study in the field of this population and of other similar populations discovered during the current study has established that these populations represent a distinct new species rather than a hybrid. It has a number of disjunct but morphologically similar populations in the south-west of Western Australia. The earliest known collection of it was made by Charles Gardner in 1920. The new species is here described as *Utricularia petertaylorii*.

### **Taxonomy**

#### **Key to the *Utricularia* species of south-west Western Australia**

- 1 Calyx lobes 4 (subgenus *Polypompholyx*) ..... 2
- 1: Calyx lobes 2 (subgenus *Utricularia*) ..... 4
- 2 Corolla pale pink to white; trap dorsal appendages deeply tridentate ..... **U. westonii**
- 2: Corolla pale pink to bright pink; trap dorsal appendages shortly bifid ..... 3
- 3 Corolla c. 4 mm wide, spur glandular ..... **U. tenella**
- 3: Corolla c. 12 mm wide; spur glabrous ..... **U. multifida**
- 4 Plants with tubers; corolla red ..... **U. menziesii**

- 4: Plants without tubers; corolla yellow, violet or pale lilac ..... 5  
 5 Plants free-floating; corolla yellow ..... 6  
 5: Plants affixed aquatics; corolla violet or pale lilac ..... 7  
 6 Ultimate segments of the leaves many; inflorescence 4–8-flowered;  
 pedicels pendulous in fruit ..... **U. australis**  
 6: Ultimate segments of the leaves very few; inflorescence 1–3-flowered;  
 pedicels semi-erect in fruit ..... **U. gibba**  
 7 Inflorescence peduncle twining around nearby herbs for support ..... 8  
 7: Inflorescence peduncle erect ..... 9  
 8 Corolla *c.* 20 mm wide; palate bearing 2 raised yellow ridges ..... **U. volubilis**  
 8: Corolla *c.* 5 mm wide; palate bearing 3 raised yellow ridges ..... **U. helix**  
 9 Inflorescence peduncle bearing 2–4 scales; corolla pale lilac on both  
 lips ..... **U. simplex**  
 9: Inflorescence peduncle without scales; corolla lower lip violet, upper  
 lip violet or pale lemon ..... 10  
 10 Corolla upper lip pale lemon ..... 11  
 10: Corolla upper lip violet ..... 12  
 11 Corolla lower lip reniform; spur longer than the lower corolla lip ... **U. paulineae**  
 11: Corolla lower lip semi-circular in outline with the apex 3-lobed; spur  
 shorter than the lower corolla lip ..... **U. benthamii**  
 12 Leaves linear-cuneate, apex rounded; bracts and/or bracteoles 2 ..... 13  
 12: Leaves narrowly linear, apex acute; bracts and bracteoles 3 or more ..... 14  
 13 Corolla lower lip depressed obovate in outline, apex  $\pm$  3-lobed;  
 bracts similar ..... **U. violacea**  
 13: Corolla lower lip reniform, apex  $\pm$  entire; bracts dissimilar ... **U. petertaylorii**  
 14 Corolla upper lip divided v-shaped into 2 oblong lobes,  
 apex rounded; palate bearing *c.* 8 prominent yellow slightly  
 raised ridges and streaks ..... **U. inaequalis**  
 14: Corolla upper lip obovate, apex truncate and slightly  
 emarginate; palate bearing 2 prominent yellow ridges  
 mostly with a smaller ridge between ..... **U. dichotoma**  
 (Western Australian variant)

**Utricularia petertaylorii** A. Lowrie, *sp. nov.*

Differt a *Utricularia inaequali* A. DC. lamina folii lineari-cuneata, apice rotundato, bracteis et/vel bracteolis 2, lobo superiori calycis ovato, lobo inferiori lato elliptico vel suborbiculari; a *U. violacea* R. Br. labio inferiori corollae reniformi et margine apicali undulato, lobo superiori calycis late obovato, lobo inferiori late ovato, appendice dorsali utriculi brevissimi applanato ad apicem truncato integro, appendicibus lateralibus brevis remote dentatis, alis ventralibus margine serratis.

*Typus*: North East Rd, *c.* 3 km south of Albany Highway, upper Serpentine River, 32°29'S, 116°18'E, Western Australia, 10 November 1990, A. Lowrie 184 (*holo*: PERTH 05849500; *iso*: MEL, K).

Annual *herb*, terrestrial, with a compact basal rosette of leaves 14–20 mm diam., anchored to the soil by rhizoids, stolons absent, with traps located above soil level among the leaves; traps and leaves generally covered with a film of water at flowering. *Leaves* linear-cuneate, apex rounded, 7–10 mm long (including translucent white petiole); lamina green, 0.4–0.7 mm wide. *Traps* on a long slender stalk,

laterally compressed, *c.* 1.5 mm long, *c.* 1.3 mm wide in side view, to *c.* 0.8 mm wide in dorsal view; dorsal appendage above the mouth very short, flat, apex truncate, entire, curving downwards; lateral appendages short, wide, wing-like, distally dentate; ventral wings along the base marginally serrate. *Inflorescences* 1 or 2, erect, arising from basal rosette of leaves, 2.5–10 cm long (including peduncle); peduncle terete, 0.3–0.5 mm diam., glabrous, without scales. *Bracts* 2, opposite, basisolute (attached near the middle), dissimilar; one bract ovate, 1.5–1.7 mm long, 0.6–0.7 mm wide, apex acute, base  $\pm$  square, narrower and truncate; other bract obovate, 1.5–1.7 mm long, 0.6–1.0 mm wide, apex variable from emarginate to irregularly dentate, base  $\pm$  square, narrower but truncate at an angle. *Flowers* 1 per peduncle; pedicel 5–7.5 mm long. *Calyx lobes* 2, unequal; upper lobe ovate, 2–3 mm long, 2–3 mm wide; lower lobe broadly elliptic to suborbicular, 1.8–2.5 mm long, 1.5–2.7 mm wide. *Corolla* 7–13 mm long (not including the nectary spur), 10–20 mm wide; lower lip violet, reniform, 5–10.5 mm long, 10–20 mm wide, apical margin undulate; upper lip violet, broadly obovate in outline, with apex so deeply emarginated as to now appear  $\pm$  v-shaped, both lobes apically rounded, the upper outer lobe margins commonly rolled inwards a little, 3–5 mm long, 5–9 mm wide at the apex, 1.5–2.5 mm wide at the base. *Palate region* yellow bordered by a few radiating purple lines, bearing 4 raised yellow ridges, the central 2  $\pm$  entire, the outer 2  $\pm$  v-shaped. *Spur* in very small specimens longer, in larger specimens shorter than the lower corolla lip, positioned  $\pm$  45° to the lower corolla lip, yellowish, with faint purple lines near the base,  $\pm$  obpyriform, 5–6.5 mm long, 2–3.5 mm wide at the base, 1–1.2 mm wide near the apex, 1.2–1.5 mm wide at the apex, apex entire or emarginate. *Capsule* globose, 3–3.5 mm long, dehiscent by a longitudinal slit. *Seeds* *c.* 0.2 mm long; testa dark brown, reticulate. (Figure 1)

*Selected specimens examined.* WESTERNAUSTRALIA: Drakesbrook, Waroona, 32°51'S, 115°57'E, 17 Oct. 1920, *C.A. Gardner* 243 (PERTH); Metro Rd, 32°17'S, 116°26'E, 12 Nov. 1999, *F. Hort s.n.* (PERTH); Palgarup, 34°10'S, 116°12'E, 6 Oct. 1985, *A. Lowrie s.n.* (PERTH); North East Rd, upper Serpentine River, 32°29'S, 116°18'E, 19 Nov. 1996, *A. Lowrie* 1617 (PERTH); Talbot West Rd, Helena River East Branch, 31°57'S, 116°30'E, 24 Oct. 1999, *A. Lowrie* 2392 & *F. & J. Hort* (PERTH); Little Darkin Swamp, Warragel Rd, 32°04'S, 116°31'E, 3 Nov. 1999, *A. Lowrie* 2418 & *F. & J. Hort* (PERTH); Leona Rd, 32°14'S, 116°19'E, 17 Nov. 1999, *A. Lowrie* 2420 & *F. & J. Hort* (PERTH); Leona Rd, 32°15'S, 116°19'E, 17 Nov. 1999, *A. Lowrie* 2425 & *F. & J. Hort* (PERTH); Metro Rd, 32°18'S, 116°26'E, 17 Nov. 1999, *A. Lowrie* 2428 & *F. & J. Hort* (PERTH); Big Brook crossing, North East Rd, 32°34'S, 116°14'E, 2 Nov. 2000, *A. Lowrie* 2535 (PERTH).

*Distribution.* Recorded from the Helena River East Branch *c.* 60 east of Perth, upper Darkin River, Upper Serpentine River, Waroona and Palgarup (near Manjimup) Western Australia.

*Habitat.* *Utricularia petertaylorii* grows in yellowish brown granitic soils along winter-wet drainage lines of granite outcrops; in red loam soils in winter wet creek watersheds; and in black sandy soil or brown clayey loam on the margins of winter wet swamps, creeks, swampland flats and watersheds.

The population of *Utricularia petertaylorii* near Metro Rd (*A. Lowrie* 2428 & *F. & J. Hort*) was the largest encountered in this study. In mid November the species was flowering en masse at this large, south-sloping, almost flat granite 'outcrop' that is scarcely raised above the level of the surrounding ground. Here the species occurs as small crowded colonies, in patches commonly only a few square metres in size, with scattered individuals between, along the main winter-wet drainage lines on the aprons of the granite outcrop. Plant height and flower size are variable. Small specimens commonly grow alongside larger specimens, both sharing the same soil and moisture availability. Field surveys since 1990 have established that in good rainfall years the population is large. In drought years the population is notably reduced in overall numbers.

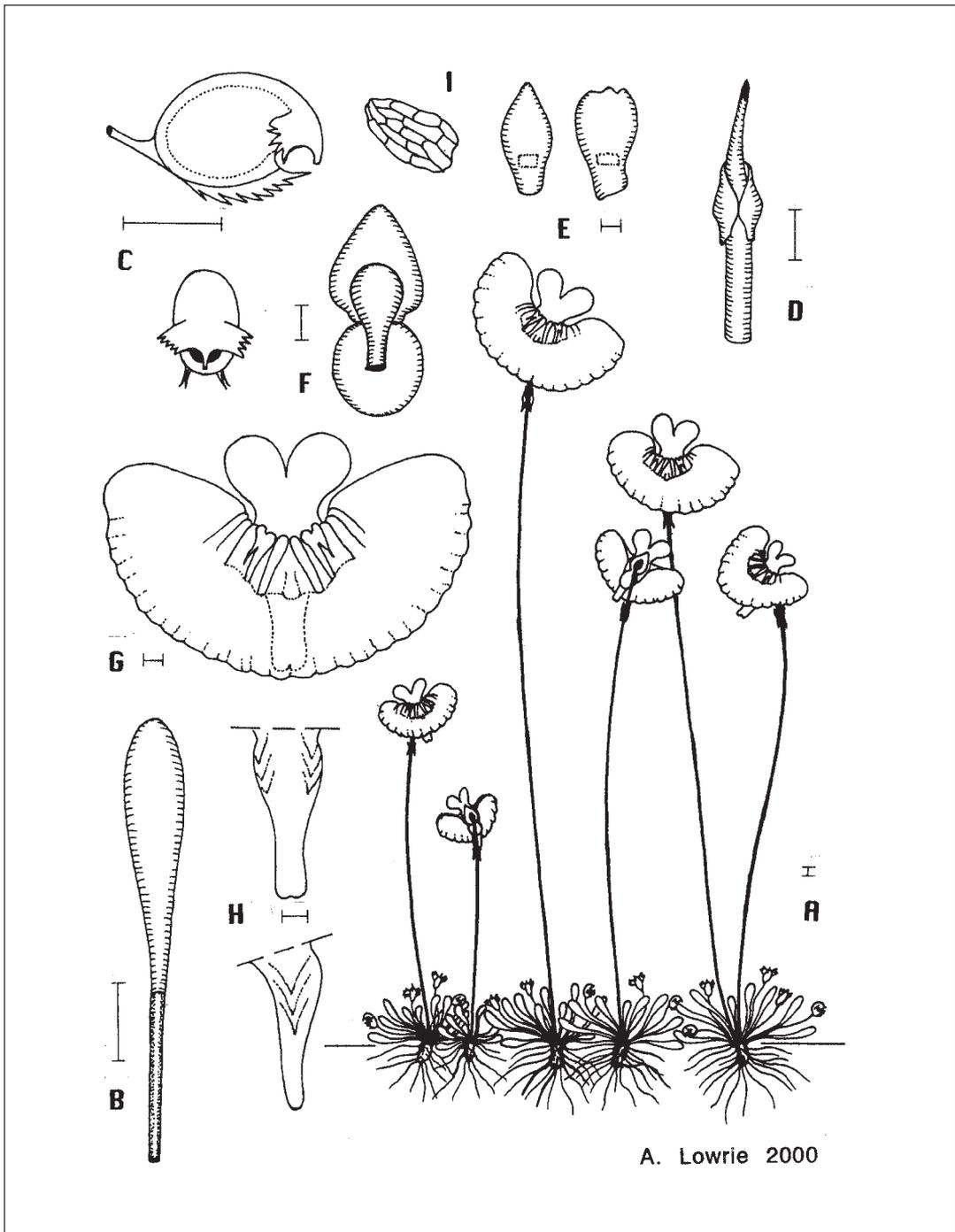


Figure 1. Live material of *Utricularia petertaylorii* from the type location, drawn by Allen Lowrie. A – colony of mature plants; B – leaf; C – trap, side view above, dorsal view below; D – peduncle and pedicel with bracts or bracteoles; E – bracts or bracteoles; F – calyx lobes, rear view; G – corolla; H – spur, front view above, side view below; I – seed, enlarged. Scale bars all = 1 mm.

*Phenology.* Flowering observed October to November, also some fruiting capsules with mature seed at this time. Most capsules were bearing mature seed by the end of November and early December.

*Conservation status.* *Utricularia petertaylorii* is currently not under threat. It is locally abundant at its known localities.

*Etymology.* This species is named in honour of Peter Taylor, professional botanist, world authority on *Utricularia* and author of a taxonomic monograph on the genus, which he began in 1948 (the year of my birth) and published in 1989.

*Notes.* The closest relatives to *Utricularia petertaylorii* in south-west Western Australia are *U. inaequalis* A. DC. and *U. violacea* R. Br. While *Utricularia petertaylorii* does share a number of morphological similarities with both *U. inaequalis* and *U. violacea*, each of the three species has a unique combination of these characters. *U. petertaylorii* also has unique characters, such as the much shorter dorsal appendage to its traps.

*Utricularia inaequalis* differs from *U. petertaylorii* by having a corolla lower lip depressed obovate in outline with an obscurely 3-lobed apex; leaf lamina narrowly lanceolate, apex acute; bracts and bracteoles 4; trap dorsal appendage very long, pointed and entire, lateral appendages long, narrow, distally fimbriate, ventral wings narrow and distally fimbriate, positioned at the dorsal end of the base only. *U. violacea* differs from *U. petertaylorii* by having a corolla lower lip depressed obovate in outline with a markedly 3-lobed apex; spur in both large and small specimens longer than the lower lip; calyx upper lobe broadly obovate, lower lobe broadly ovate; trap dorsal appendage longer, pointed and serrate on the inside margin, lateral appendages slightly longer, distally fimbriate, and ventral wings marginally fimbriate.

*Utricularia inaequalis* is a coastal species extending along the coastal plain from just north of Perth to Busselton. *U. inaequalis* and *U. violacea* grow together at Armadale, Pinjarra and Busselton. Notably each of these populations is at the same distance, c. 20 km, from the west coast. At each of the three sites no intermediates or hybrids have been found after very extensive searches over a number of seasons. These observations suggest that *U. inaequalis* and *U. violacea* are genetically isolated from each other. Certainly there is no evidence that *U. petertaylorii* is a hybrid between these two taxa.

*Utricularia inaequalis* does not occur anywhere in the vicinity of *U. petertaylorii* and the typical *U. violacea* is also notably absent from this and all the other known locations of *U. petertaylorii*. However, typical *U. violacea* has been found on a few granite outcrops in the region but always by itself or in association with *U. tenella* R. Br.

The atypical white-flowered variant of *U. violacea* (see photograph, plate 30 E in Lowrie 1998: 115) was found growing in association with *U. petertaylorii* at only one location (*A. Lowrie* 2425 & *F & J Hort*). No intermediates or possible hybrids were found between these two taxa suggesting that they are genetically isolated from each other. A very thorough search in and for some distance beyond this site failed to find any of the typical violet-flowered *U. violacea*.

Another possibility examined during the present study was of *Utricularia petertaylorii* being a hybrid between *U. benthamii* P. Taylor and the widespread *U. violacea*. No evidence was found to support this. At Palgarup *Utricularia petertaylorii* was discovered growing with *U. benthamii* but without the presence of *U. violacea*.

### Acknowledgements

I would like to thank Paul Wilson for his assistance with the Latin diagnosis; the referee Peter Taylor for his suggestions and comments; Barbara Rye for her comments, and the staff of the Western Australian Herbarium.

### References

- Lowrie, A. (1998). "Carnivorous Plants of Australia." Vol. 3. (University of Western Australia Press: Nedlands.)  
Taylor, P. (1989). The genus *Utricularia* – a taxonomic monograph. *Kew Bulletin* additional series XIV. London.