

## *Actinotus repens* Keighery ex Henwood (Apiaceae): A new species from south-west Western Australia

Murray J. Henwood

*John Ray Herbarium, School of Biological Sciences, University of Sydney, NSW 2006, Australia.*

### Abstract

*Actinotus repens* Keighery ex Henwood (Mackinlayoideae, Apiaceae) is here described as a new species from south-west Western Australia. A key to Western Australian species of *Actinotus* is included.

### Introduction

*Actinotus* comprises 19 described species, with two centres of species richness: one in south-west Western Australia (8 endemic spp.) and the other in eastern Australia (6 endemic spp.). *Actinotus schwartzii* F.Muell. is restricted to the Macdonnell ranges (Northern Territory), and three species (*A. bellidioides* (Hook.f.) Benth., *A. moorei* F.Muell., and *A. suffocates* (Hook.f.) Rodway) are currently restricted to Tasmania. One species, *A. novae-zelandiae* (Petrie) Petrie, is endemic to Te Waipounamu, Aotearoa–New Zealand.

Placement of *Actinotus* within Apiaceae has, until relatively recently, been somewhat equivocal. Maximum parsimony analysis of nucleotide sequences from chloroplast and nuclear genomes has consistently placed *Actinotus* as a well-supported member of Mackinlayoideae (Plunkett and Lowry, 2001; Nicolas and Plunkett, 2009). Relationships between *Actinotus* and other Mackinlayoideae, however, remain unresolved with the genus either supported as sister to the New Caledonian endemic shrub, *Apiopetalum* or in a weakly supported sister relationship to the Australian endemic genera, *Xanthosia*+*Chlaenosciadium*, and the South African centred genus, *Centella* (Nicolas and Plunkett, 2009).

As with the placement of *Actinotus* within Mackinlayoideae, the phylogenetic relationships within *Actinotus* await clarification. There are, however, several morphologically distinct groups within *Actinotus*. One of the most morphologically distinct groups contains *A. omnifertilis* (F.Muell.) Benth., *A. rhomboideus* (Turcz.) Benth. and *A. laxus* Keighery, all of which are restricted to south-west Western Australia. This group of species are readily distinguishable from other *Actinotus* by their simple, often toothed leaves; umbels of relatively few mostly co-sexual flowers subtended by relatively small, free bracts; clawed, ovate petals; more or less connate sepals, and basipetally swollen styles that cross at anthesis. It is with this group of species that the newly described *A. repens* Keighery ex Henwood has its strongest morphological similarities.

## Taxonomy

*Actinotus repens* Keighery ex Henwood, *sp. nov.*

**Diagnosis:** Differing from *A. laxus* and *A. omnifertilis* by its prostrate habit, robust indumented branches, and broadly ovate cauline leaves with c. 5–13 teeth. It differs from *A. rhomboideus* (Turcz.) Benth. by its prostrate habit and leaves with fewer teeth.

**Holotype:** Western Australia: Warren: Walpole-Nornalup National Park: Delta Road, 0.45 km from junction with Isle Road, *J.R. Wheeler 3786 & S.J. Patrick*, 27 Jan 1993 (*holo*: PERTH 4058488).

**Informal names synonymous with *A. repens* Keighery ex Henwood:**

*Actinotus* “walpole” (*Wheeler 3786*) in Wheeler et al., *Flora of the South West* 2: 477 (2002)

*Actinotus* sp. Walpole (*J.R. Wheeler & S.J. Patrick 3786*)\* WA Herbarium [FloraBase accessed 2013].

\*A miscitation of the type collection: *J.R. Wheeler 3786 & S.J. Patrick*

*Actinotus repens* Keighery ms WA Herbarium [FloraBase accessed 2013]

Suffrutescent, prostrate perennial, to 5 cm high, c. 20 cm wide. *Stems* glabrous, robust. *Leaves* alternate, estipulate; *petioles* (2–)4–15 mm long, pilose, terete to slightly canaliculated, bases alate; *lamina* entire, broadly ovate, (6–)9–10 × (6–) 10 (–15) mm long, glabrous or with scattered trichomes towards margin of younger leaves; margin coarsely dentate; venation pinnate, obscure; abaxial surface lighter green than adaxial surface. *Inflorescences* simple, umbellate, (3–)6–9-flowered; peduncles 4–21 mm long; *bracts* free, elliptic, foliose 0.7–0.8 × 2–5 mm; *pedicels* 0.5 mm long, apically articulated with ovary, retained after fruit is shed. *Calyx* tubular, distally with a 5-toothed rim 0.4 mm long, sparsely ciliate. *Petals* 5, ovate, 0.3 × 0.5 mm, white, with a single obvious vein. *Stamens* 5. *Styles* 2, often crossed at maturity, 0.5 mm long. *Fruit* uniloculate, turbinate, 0.5 × 0.7 × 1 mm, slightly compressed, 5-ribbed, pilose. Fig. 1.

**Representative specimens listed by IBRA (2012) subregion: Western Australia. Northern Jarrah Forest:** 2.8 km ENE of Mt William, near the intersection of Willowdale Road and Zigzag Road, Lane-Poole Conservation Reserve, *A.J. Perkins AJP-WA48*, 19 Oct 2003 (PERTH, NSW, SYD); **Southern Jarrah Forest:** 0.5 km W of the corner of Sues and Crouch roads, E of Margaret River (SWCC.WH.03a Plot SCRD01), *M. Morley 490*, 22 Oct 2007 (PERTH); **Warren:** Creek-line on Lane-Poole Road, 5.5 km E of the Wheatley Road, near Northcliffe, *R. W. Hearn (ARA 5886)*, 12 Mar 1997 (SYD); Near Granite Peak, c. 20 miles [32 km] N of Walpole, *A.S. George 11122*, 3 Oct 1971 (PERTH); c. 2 km W of Walpole, north of the SW highway and 500 m W of Walpole River, Edge of Walpole National Park, *J.R. Wheeler 3779 & S.J. Patrick*, 27 Jan 1993 (PERTH); Pemberton, *M. Koch 2613*, Dec 1921 (NSW); Delta Road, 0.5 km W of Isle Road, Walpole-Nornalup National Park, *A.J. Perkins AJP-WA54*, 22 Oct 2003 (PERTH, NSW, SYD).

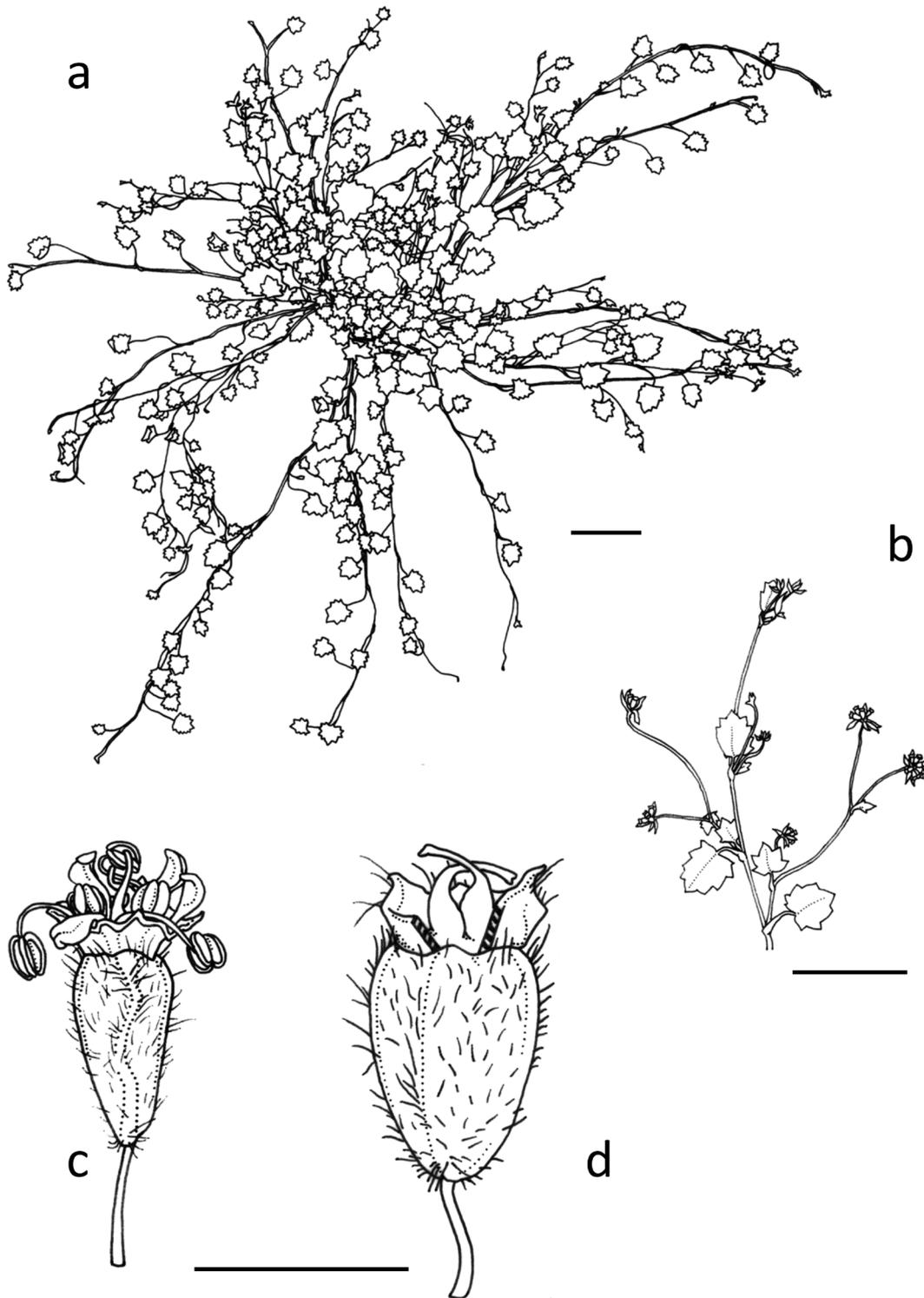
**Etymology:** The specific epithet, *repens*, refers to the prostrate growth habit of this species.

**Distribution and habitat:** Endemic to south-west Western Australia (Fig. 2). It occurs on sandy clay and mud in valleys along creek-lines and edges of other water channels from the Waroona area south to Walpole, amongst *Eucalyptus* or *Melaleuca* dominated woodland.

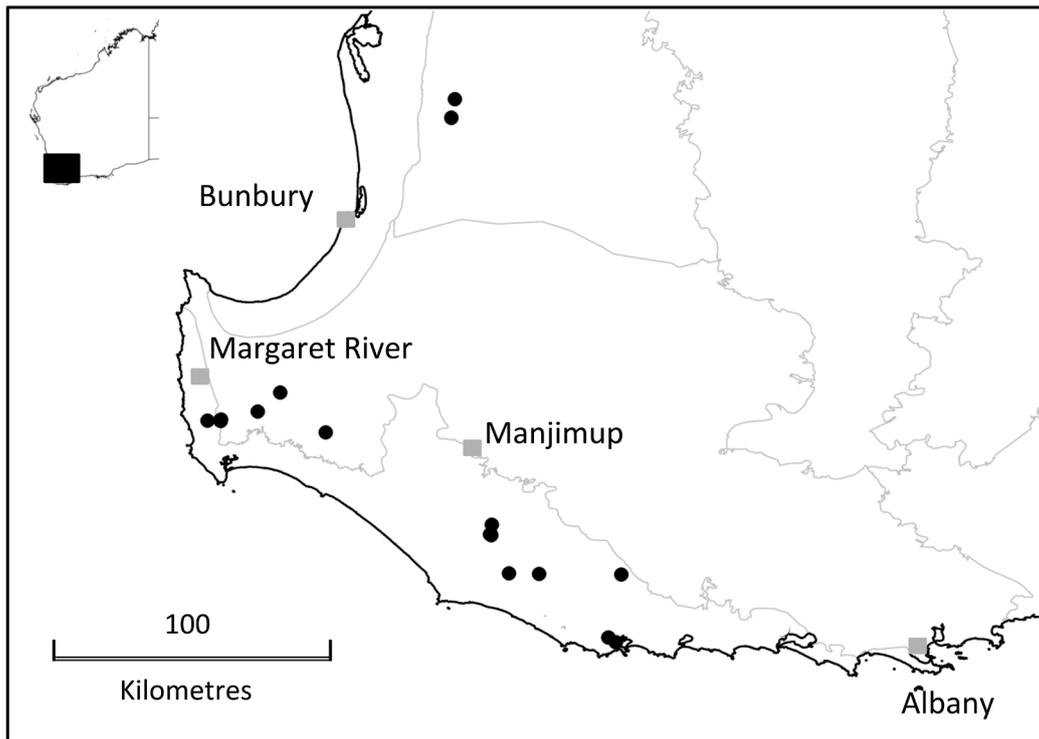
**Flowering period:** January to March.

**Fruiting period:** January to March.

**Conservation status:** Western Australian Declared Flora priority 3, under the name *Actinotus* sp. Walpole (*J.R. Wheeler & S.J. Patrick 3786*) i.e. poorly known species including some populations that are not currently endangered (FloraBase, accessed 2013).



**Fig. 1.** Illustration of *Actinotus repens* Keighery ex Henwood: **a**, habit; **b**, flowering branch; **c**, flower; **d**, fruit with sepaline rim partially removed to show the crossed styles. Based on R.W Hearn ARA 5886I. Scale bar a & b = 15 mm, c & d = 1 mm



**Fig. 2.** Map of known localities of *Actinotus repens* Keighery ex Henwood in south-west Western Australia with v 7.0 IBRA sub-regions (Australian Government Department of the Environment, 2012, as provided by: Department of Sustainability, Environment, Water, Population and Communities) indicated in grey.

### Key to Western Australian *Actinotus*

- 1 Leaves simple, toothed; styles crossed; petals ovate. .... 2
- 1: Leaves variously ternatisect; styles not crossed; petals spatulate or absent ..... 5
- 2 Leaves cuneate; stems glabrescent with an indumentum of sparse, short, patent trichomes ..... 3
- 2: Leaves orbiculate, rhomboidal or ovate; stems with a villous indumentum ..... 4
- 3 Leaves mostly basal with more than three teeth on the margin; branches robust ..... *A. omnifertilis*
- 3: Leaves scattered along branches, tridentate; branches weak ..... *A. laxus*
- 4 Plants prostrate; leaf lamina ovate, glabrous or sparsely indumented ..... *A. repens*
- 4: Plants ascending; leaf lamina orbiculate-rhomboidal, villous ..... *A. rhomboideus*
- 5 Sepals free, elongated ..... 6
- 5: Sepals connate forming an entire or shortly toothed rim ..... 7
- 6 Leaf laminas 20–25 mm long; flowers numerous and arranged in an umbellate pseudanthium; stylopodium and nectary free from each other in fruit; peduncles 50–80 mm long ..... *A. whicheranus*
- 6: Leaf laminas 4–12 mm long; flowers 3–5 per umbel; stylopodium and nectary connate, becoming swollen in fruit; umbels sessile or shortly pedunculate ..... *A. glomeratus*
- 7 Anthers purple at maturity; involucre bracts 7 mm long ..... *A. leucocephalus*
- 7: Anthers yellow at maturity; involucre bracts 15 mm long ..... 8
- 8 Stems and inflorescences erect; involucre bracts 2–3 mm wide (appearing wider due to indumentum) ..... *A. superbus*
- 8: Stems erect or spreading; inflorescences radiating; involucre bracts 5 mm wide ..... *A. humilis*

### Acknowledgments

Thanks to Dr Patricia Lu-Irving for preparing the drawings of Figure 1. I am also grateful to the Director and staff of PERTH and NSW for access to specimens, and to Judy Wheeler (PERTH) for providing additional locality information.

### References

- IBRA (2012). Interim Biogeographic Regionalisation of Australia (IBRA Version 7.0). Department of Sustainability, Environment, Water, Population and Communities. (Commonwealth of Australia, Canberra, ACT, Australia)
- Nicolas AN, Plunkett GM (2009) The demise of subfamily Hydrocotyloideae (Apiaceae) and the realignment of its genera across the entire order Apiales. *Molecular Phylogenetics and Evolution* 53: 134–151. (<http://dx.doi.org/10.1016/j.ympev.2009.06.010>)
- Plunkett GM, Lowry II, PP (2001) Relationships among ‘ancient araliads’ and their significance for the systematics of Apiales. *Molecular Phylogenetics and Evolution* 19: 259–276. (<http://dx.doi.org/10.1006/mpev.2000.0920>)
- Wheeler J, Marchant N, Lewington M (2002). *Flora of the South West: Bunbury, Augusta, Denmark*, vol. 2. Flora of Australia supplementary series no. 12. (Australian Biological Resources Study, Canberra, ACT and Western Australia Herbarium in association with University of Western Australia Press, Crawley, WA)

Manuscript received 31 October 2013, manuscript accepted 12 December 2013

