Volume 15: 215–220
Publication date: 11 December 2013
dx.doi.org/10.7751/telopea2013024

TELOPEA
Journal of Plant Systematics

The Royal Botanic Gardens & Domain Trust

plantnet.rbgsyd.nsw.gov.au/Telopea • escholarship.usyd.edu.au/journals/index.php/TEL • ISSN 0312-9764 (Print) • ISSN 2200-4025 (Online)

A new combination and lectotypification in *Xanthosia* (Apiaceae)

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Abstract

Platysace kochii (E.Pritzel) L.A.S.Johnson is here transferred to *Xanthosia* as *X. kochii* (E.Pritzel) J.M.Hart and Henwood *comb. nov*. (Mackinlayoideae, Apiaceae). *Xanthosia bungei* Keighery is reduced to the synonymy of *X. kochii*. A lectotype for *X. kochii* is chosen and the typification of *X. fruticulosa* adjusted. Descriptions *of X. kochii* and *X. fruticulosa*, a distribution map, and diagnostic images are provided.

Introduction

Xanthosia bungei Keighery was erected to resolve the taxonomy of the *X. fruticulosa* species complex (Keighery 1989). Prior to Keighery's work, *X. fruticulosa* was considered to be a geographically and ecologically widespread species within the Perth region. When dealing with an undescribed segregate of *X. fruticulosa*, Keighery examined an image of the type of *X. fruticulosa* and found that the name should be applied to what was then considered to be an undescribed species, whereas what was recognised as *X. fruticulosa* required a new name. He subsequently published *Xanthosia bungei* and applied it to what he described as a woody species with erect peduncles and white- to cream-coloured flowers. He restricted the application of *X. fruticulosa* to small herbs with reflexed peduncles and yellow-green flowers.

During the revision of Australian *Trachymene* (Hart and Henwood 2006) and *Platysace* (in prep.) we encountered a species endemic to Western Australia originally described as *Trachymene kochii* by Pritzel (1911) and subsequently transferred to *Platysace* (Johnson 1962). Examination by us of type material of *Platysace kochii* (E.Pritzel) L.A.S.Johnson, as held at NSW, found that the specimen has 9-veined mericarps; auriculate, petaloid sepals; petals with an inflexed apical appendage and an inflorescence that is a compound umbel, with two or three peripherally inserted, petaloid bracteoles on each umbellule. This suite of characters conforms to *Xanthosia*, and requires the species to be transferred from *Platysace* to *Xanthosia*.

Platysace (=*Xanthosia*) *kochii* was confirmed to be conspecific with the type of *X. bungei* that had been examined as part of a broader revision of *Xanthosia* (Hart 1998). Within *Xanthosia*, this perennial species is distinctive for its restriction to semi-arid habitats of Western Australia (the remaining species in this genus occur in temperate forest and heath communities) and for shedding its leaves following flowering. Individuals generally remain leafless during the hotter and drier months of the year. It is perhaps understandable, given that the species has a similar life history to *Platysace cirrosa*, that it was mistakenly placed in *Platysace*

(Johnson 1962). *Xanthosia bungei* is a relatively recent name, and has not appeared in any floras or published major revisions. Since Pritzel's epithet has priority over Keighery's (1989), a new combination in *Xanthosia* is here made for the species. In doing so, we provide descriptions of *X. fruticulosa* and *X. kochii* in order to further clarify these species and to assist in their recognition in the field and herbarium. It should be noted that *X. fruticulosa* has sepals with a truncate base, not auriculate as described by Keighery (1989), thereby providing another morphological character to distinguish these closely related species. The specimen of *X. fruticulosa* at K designated as the holotype (Keighery 1989) is adjusted to lectotype. The duplicate specimens of *Drummond 118* (BM, G, MEL239079A and NSW409406), not cited by Keighery (1989), are further isolectotypes.

The distribution of each species and the listing of selected specimens examined are presented according to Australia's bioregions (IBRA 2012).

Taxonomy

Xanthosia kochii (E.Pritzel) J.M.Hart & Henwood *comb. nov.*;

Trachymene kochii E.Pritzel, *Repertorium specierum novarum regni vegetabilis* 10: 133 (1911).

Platysace kochii (E.Pritzel) L.A.S.Johnson, *Contributions to the National Herbarium of New South Wales* 3: 101 (1962).

Lectotype (here designated): Australia. Western Australia: Watheroo rabbit fence, Sept. 1905, *M. Koch 1459*; lecto NSW442786; isolecto NSW442785

Xanthosia bungei Keighery, *Nordic Journal of Botany* 8: 445 (1989).

Holotype: Australia. Western Australia: Summit of Mt. Singleton, 7 Sept 1973, *J.S. Beard 6453*; holo: PERTH1597787, iso: CANB359698, K, NSW409407, PERTH (n.v. *fide* Keighery).

Erect, perennial shrub, 0.3–1.0 m high. Taproot woody with a flaky or corky surface. Plants hirsute. Leaves cauline, trifoliolate. Petiole sheathing, 2–4 mm long. Leaflets cuneate, the segments equal, 3–20 mm long, 1–6 mm wide, margins tridentate, rarely entire. Inflorescence a compound umbel with (3 or)4(or 5) rays, (2–)6–15 flowers per ray, and up to 6 flowers between the rays; flowers all female or bisexual and male. Rays terete, 1–6 mm long. Involucral bracts 3–5, linear, foliaceous, green, equal to the rays, 2–6 mm long, c. 1 mm wide, apex acute. Bracteoles (2 or) 3, ovate, petaloid, green or yellow, shorter or equal to the flowers, 2.4–2.9 mm long, 0.6–1.3 mm wide, apex acute, the lateral bracteoles asymmetrical. Inflorescences pedunculate; peduncles erect, 8–40 mm long. Flowers pedicellate. Sepals narrowly elliptic to ovate, 1–1.5 mm long, c. 0.8 mm wide, white or yellow, base auriculate, apex acute, glabrous. Petals c. 1.1 mm long, c. 0.7 mm wide, white, midrib adaxially keeled and bridged, apex obtuse, appendage smooth. Stamens longer than perianth; filaments c. 1.9 mm long; anthers c. 0.5 mm long, yellow; staminodes present in female flowers; small, inconspicuous, about the same height as the nectaries with a short filament c. 0.2mm long and distinct, sterile anthers c. 0.2mm long. Nectaries slightly raised, c. 0.4 mm high, glabrous. Styles c. 2 mm long at female anthesis. Ovary glabrous. Male flowers differ from the female fertile flowers in having an undeveloped inconspicuous ovary, with styles barely protruding above the nectaries. Female flowers differ from bisexual flowers in lacking stamens, instead having inconspicuous staminodes. Fruit brown, ovoid, 2.2–2.7 mm long, 1.8–2.3 mm wide, 0.6 mm broad. Mericarps glabrous, minutely papillate, 9-ribbed: ribs keeled (Fig. 1).

Distribution: Endemic to Western Australia (Fig. 3). Tallering (Yalgoo region) and Merredin (Avon Wheatbelt), occurring from Jibberding north to Tardun, east to Mt Gibson and west to Yandanooka.

Representative Specimens: Western Australia: Yalgoo: Tallerang: Summit of Mt Gibson, *W.G. Henderson & M.H. Henderson s.n.*, 14 Sep 1972 (PERTH3619265); Avon Wheatbelt: Merredin: Koolanooka road near Morawa, *J.S. Beard 6701*, 27 Sep 1973 (PERTH); Between Mullewa and Morawa, *W.E. Blackall 2788*, 24 Sep 1932 (PERTH); Wanarra road, 31 km from the Great Northern Highway, N of Wubin, *J.M. Hart 95053*, 27 Oct 1995 (PERTH, SYD); Koolanooka Hills 18 km E of Morawa, *G.J. Keighery 2031 & J.J. Alford*, 15 Aug1990 (PERTH)

Flowering: August to September.

Ecology: Found under thickets dominated by species of *Allocasuarina*, *Melaleuca* and *Acacia* on red loam or yellow sand. Grows tangled in the bases of taller shrubs. Appears to drop its leaves when fruiting (around October) to become dormant over summer months.

Affinities: Morphologically similar to *X. fruticulosa* from which it differs by its compound umbels on erect peduncles (Fig. 1a), its auriculate sepal bases (Fig. 1k) and in being a larger shrub.

Notes: NSW442786 and NSW442785 bear reproductive and vegetative material, with NSW442786 having

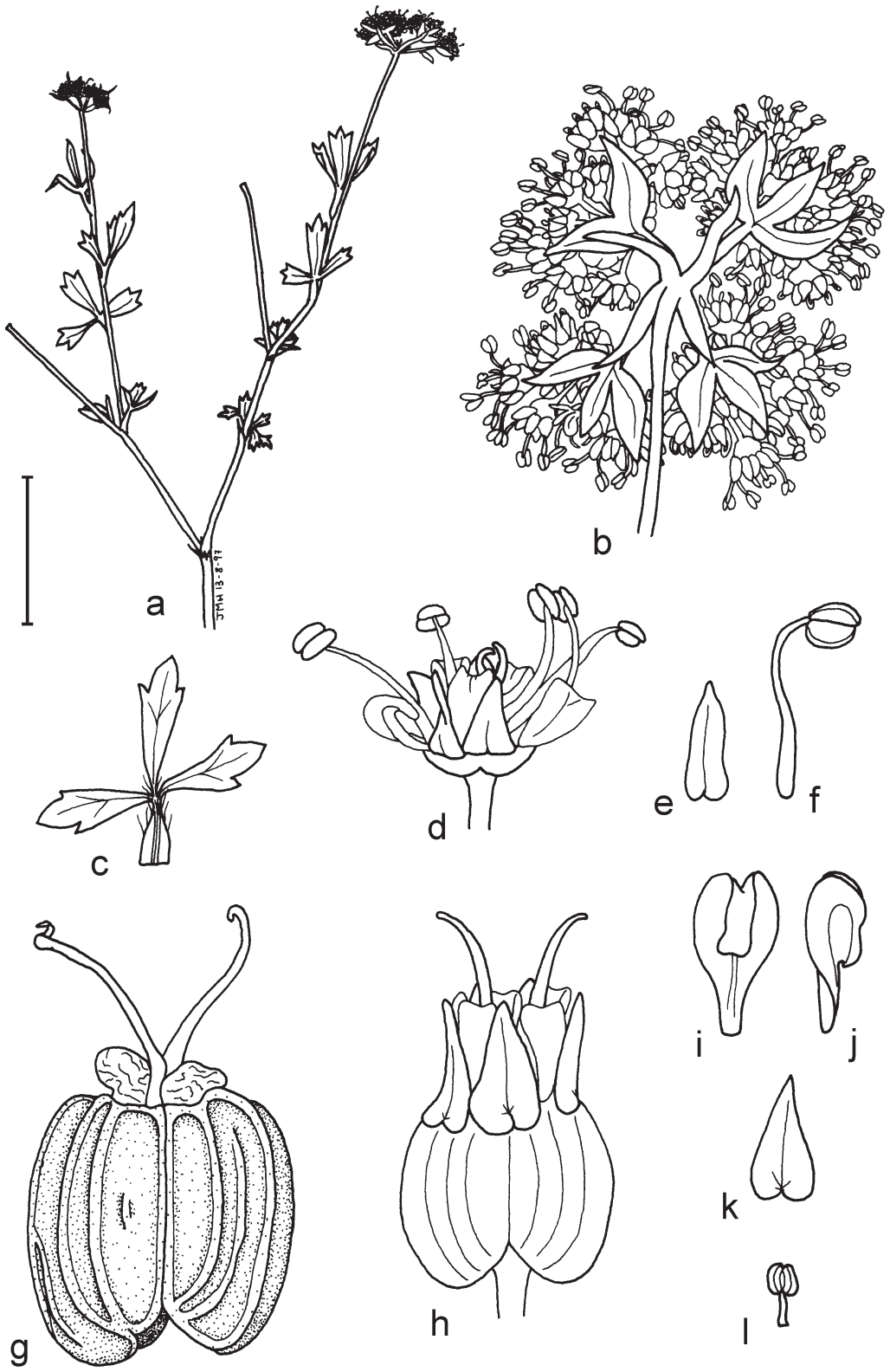

Fig. 1. ***Xanthosia kochii*****: a,** branchlet; **b,** underside of inflorescence; **c,** leaf; **d,** male flower in male anthesis; **e,** sepal from male flower; **f,** stamen from male fertile flower; **g,** fruit; **h,** female flower in female anthesis; **i-j,** petals, **i,** adaxial view, **j,** side view; **k,** sepal from female fertile flower; **l,** staminode from female flower. **a–f,** drawn from *G.J. Keighery 2031* (PERTH), **g,** drawn from *J.M.Hart* 95033 (PERTH, SYD), **h-l,** drawn from *W.G and M.H Henderson* (PERTH). Scale bar: a = 40 mm; b = 4 mm; c = 20 mm; d–g = 1.5 mm; h, k = 2 mm; i, j, l = 1 mm.

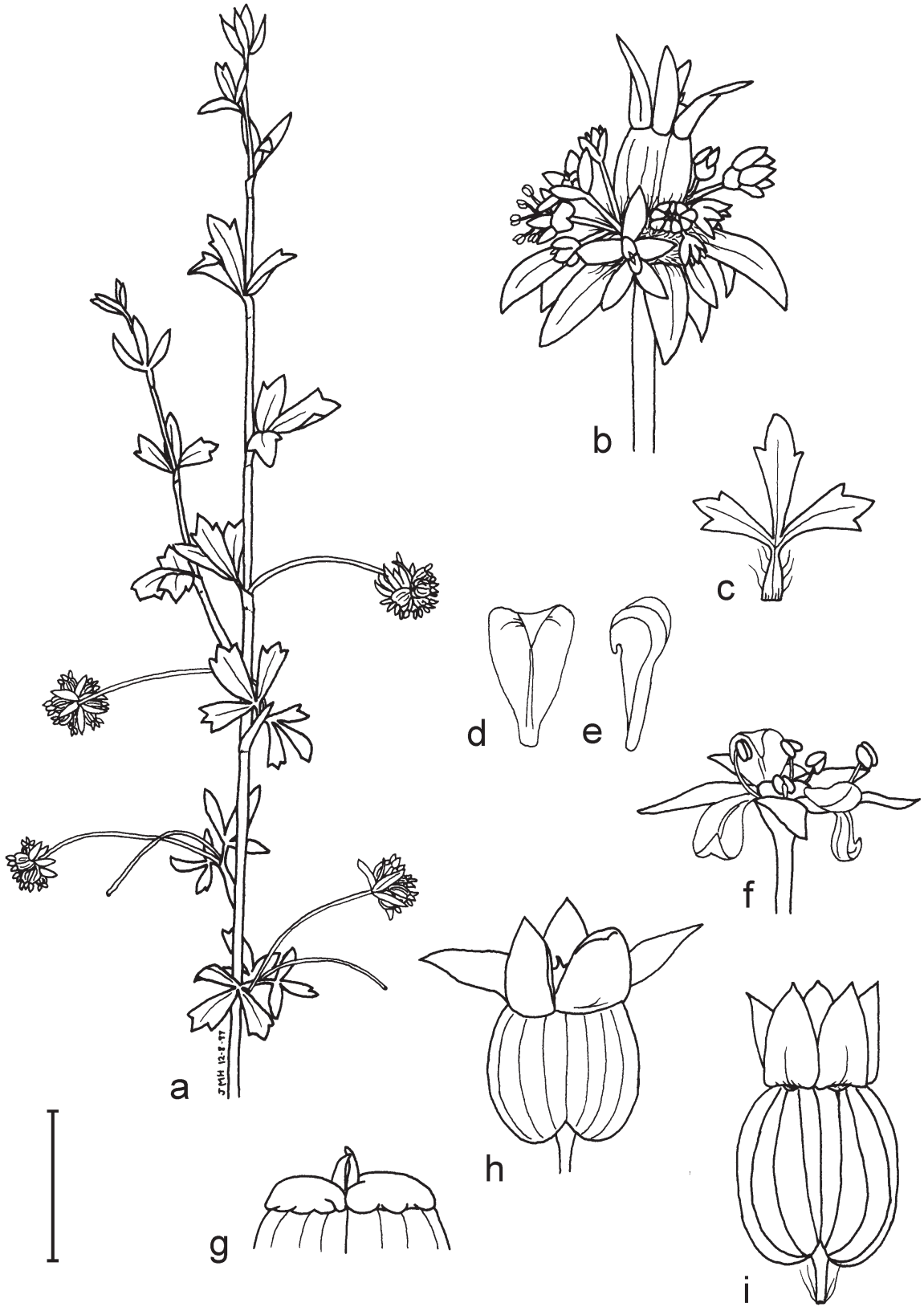

Fig. 2. ***Xanthosia fruticulosa*****: a,** branchlet; **b,** inflorescence; **c,** leaf; **d-e,** petals, **d,** adaxial view, **e,** side view; **f,** male flower in male anthesis; **g,** summit of fruit showing nectaries and styles; **h,** bisexual flower in female anthesis, petals and stamens shed; **i,** fruit. Drawn from *J.M.Hart 95060* (CANB, PERTH, SYD). Scale bar: a, c = 20 mm; b, h = 3 mm; d, e = 1 mm; f, g, i = 2.5 mm; h = 2 mm.

most material. For this reason NSW442786 was chosen as lectotype. NSW442785 and excess material are designated as isolectotypes. We were unable to locate the additional sheet at PERTH designated by Keighery (1989) as isotype for *X. bungei*.

Xanthosia fruticulosa Benth., *Flora Australiensis* 3: 361 (1867).

Lectotype: Between Moore and Murchison rivers, Western Australia, *J. Drummond 6th coll. no. 118*; lecto: K686317, isolecto: MEL0239079A, NSW409406, BM582873, G367417 (n.v.).

Erect, perennial subshrub to 0.2 m high. Taproot woody with a flaky or corky surface. Plants sparsely hairy; the stem excorticating when aged. Leaves cauline, trifoliolate. Petiole sheathing shortly at the base, sheaths 1.3–2.1 mm long. Petiole 1–6 mm long, flattened. Leaflets cuneate, the segments equal, 5–22 mm long, 1.5–8 mm wide, sessile; margins tridentate sometimes entire. Inflorescence a simple umbel with 16–40 flowers, flowers all bisexual or bisexual and male. Involucral bracts 5–8, lanceolate, irregularly inserted and not clearly whorled, foliaceous, green, approximately equal to the flowers, 3.5–5.7 mm long, 1.7–2.1 mm wide, apex acuminate. Inflorescences pedunculate; peduncles reflexed, 6–22 mm long at flowering. Flowers pedicellate. Sepals lanceolate, 1.7–2.7 mm long, c. 0.8 mm wide, green, base truncate, apex acuminate, glabrous or rarely ciliate. Petals 0.7–0.9 mm long, c. 0.5 mm wide, white or pink, midrib adaxially keeled and bridged, apex acute, appendage smooth. Stamens approximately equal to the perianth. Nectaries slightly raised, c. 0.4 mm high, glabrous. Styles 0.4–0.6 mm long. Ovary glabrous. Male flowers differ from the bisexual flowers in having an undeveloped inconspicuous ovary, with the styles barely protruding above the nectaries. Fruit brown, ovoid, 2.5–3.2 mm long, 2.1–2.8 mm wide, 0.6 mm deep. Mericarps glabrous, smooth, oblong in transverse section, 5–7 ribbed: the ribs not elevated (Fig. 2). Chromosome number n=10 (Keighery 1982).

Distribution: Endemic to Western Australia (Fig. 3). Katanning (Avon Wheatbelt), Lesueur Sandplain (Geraldton Sandplain), Perth (Swan Coastal Plain) and Northern Jarrah Forest (Jarrah Forest), found around Lesueur National Park, Dandaragan - Moora area, Chittering Valley and Serpentine River.

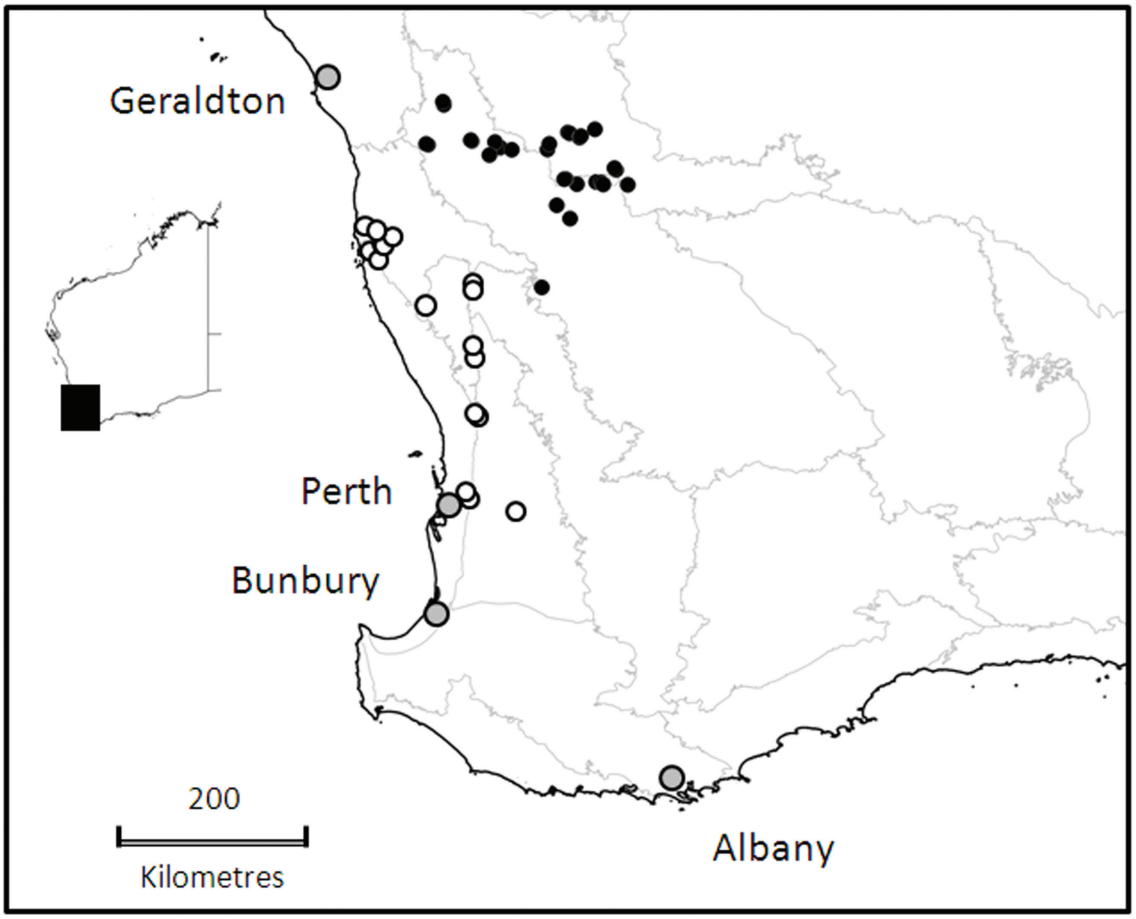

Fig. 3. Map of known localities of *Xanthosia fruticulosa* (❍) and *Xanthosia kochii* (●) in south western Western Australia, overlaid on IBRA (2012) version 7.0 sub-regions indicated in grey.

Representative Specimens: Western Australia: Avon Wheatbelt: Katanning: 11 km N of Moora along Midlands road, *R. Cranfield 8173 and P. Spencer*, 16 Oct 1991 (PERTH); Geraldton Sandplain: Lesueur Sandplain: Mt Lesueur, *A.S. George s.n.*, 13 Oct 1974 (CANB352275.1, K, PERTH3620417); Mt Misery W of Dandaragan, *E.A. Griffin 5046*, 11 Sep 1988 (PERTH); Swan coastal plain: Perth: Serpentine River, *W.V. Fitzgerald s.n.*, Sep 1900 (NSW52403, PERTH3620174); 7.5 km from Bullsbrook end on Chittering Valley road, *J.M. Hart 95060*, 28 Oct 1995 (CANB, PERTH, SYD).

Flowering: September to November.

Acknowledgments

We wish to thank the Directors and staff of BM, K, NSW and PERTH for access to their collections. This research was partly funded by the Australian Biological Resources Study (ABRS), Department of the Environment.

References

IBRA (2012). Interim Biogeographic Regionalisation of Australia (IBRA Version 7.0). Department of Sustainability, Environment, Water, Population and Communities. (Commonwealth of Australia, Canbnerra, ACT, Australia)

Hart JM (1998) Systematics of *Xanthosia* and allied genera (Apiaceae). PhD Thesis, University of Sydney.

Hart JM, Henwood MJ (2006) A revision of Australian *Trachymene* (Apiaceae: Hydrocotyloideae). *Australian Systematic Botany* **19**: 11–57.

Johnson LAS (1962) Taxonomic notes on Australian plants. *Contributions to the National Herbarium of New South Wales* **3**: 93–102.

Keighery GJ (1982) Chromosome numbers of Western Australian Apiaceae. *Journal of the Royal Society of Western Australia* **65**: 143–146.

Keighery GJ (1989) Taxonomy of the *Xanthosia fruticulosa* group (Apiaceae). *Nordic Journal of Botany* **8**: 445–446.

Manuscript received 28 October 2013, manuscript accepted 5 December 2013