Auckland's weedy buttercups (*Ranunculus* spp., Ranunculaceae)

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Introduction

Foreign buttercups are so common around Auckland now that their botanical interest is, I suspect, generally discounted in favour of the indigenous species. American economist Thorstein Veblen (1857–1929), quoted on p. 44 of "Thorstein Veblen and the Institutionalists" by D. Seckler (Macmillan 1975) "... by habitually identifying beauty with reputability, it comes about, that a beautiful article which is not expensive is not accounted beautiful ... some beautiful flowers pass conventionally for offensive weeds ... [others] are rejected as vulgar by those people ... whose tastes have been developed under the critical guidance of a polite environment".

This familiarity though can also hinder our viewing them in a negative light, as persistent invaders of all except deep-forest habitats. For better or for worse then, I offer here some diagnostic notes and illustrations of these species. Eight are European in origin. The ninth, *R. sessiliflorus* from Australia, still occurs on Rangitoto but is probably no longer present on the isthmus.

Two of Auckland's four native species, *R. reflexus* and *R. urvilleanus*, are also mentioned below, though admittedly they are rarely seen as weeds, even in nursery situations. The two others, *R. acaulis* (coastal turfs) and *R. amphitrichus* (wetlands), are not included, since they have declined into near-rarity and so deserve a separate treatment (cf. de Lange et al. 2014). One European species, *R. ficaria*, has been omitted. Perhaps "wild" just as a garden discard, its circular glossy leaves, large flowers, and tuberous roots make it distinctive. It is generally treated now in the genus *Ficaria*, where it takes the name *F. verna*.

The habitat-notes below are based on my own observations and on the labels of specimens in the Auckland War Memorial Museum herbarium (AK). Fitter, Fitter and Blamey (1974) illustrate all the European species (including *Ficaria verna*) except *R. muricatus*. There are several images of *R. sessiliflorus* on the Web, none of them as good as a drawing and none with a scale-object.

The characters

The treatments of Flora NZ IV (Garnock-Jones 1988) and Flora of Australia (Eichler & Walsh 2007) should be consulted for more information, e.g. on variation in leaf size. The classic Biological Flora account by Harper (1959) of *R. acris*, *R. bulbosus* and *R. repens* has much of interest concerning the ecology of these plants, e.g. " ... on ridge and furrow grassland ... *R. acris* occupies a narrow zone on the sides of the ridges ... with *R. bulbosus* on top of the ridges and *R. repens* in the furrows" (loc. cit. 294). See also the British "comparative ecological accounts", e.g. Grime et al. (1990).

Identification can be done solely from the leaves at the base of the flowering stem (in this article, "lower leaves" or just "leaves"). By mid-summer these have died off but then the diagnostic achenes are present. Even later, the size, shape and hairiness of the bare "receptacle" (swollen end of the flowering stem, where the achenes sit) can provide a name.

The flowers deserve close attention. In some species the sepals are abruptly turned downwards ("deflexed") once the flower opens. They are green at the bud stage, but become yellowish and petal-like once they deflex, so perhaps they provide additional attraction for pollinators.

The petals may be upcurved, making the flower bowl-like, or they may stand out at right angles to the receptacle and be rather distant from one another (*R. parviflorus*, *reflexus*, *sessiliflorus*, *urvilleanus*). The "buttercup yellow" colour of the petals varies from somewhat golden ("road-marking yellow") in some species to mid-yellow in others (*R. bulbosus*, *reflexus*, *sardous*). The structure of the petal's nectary, a hollow on the upper surface just above the base, roofed over by a scale of various shapes (but open in *R. scleratus*) is also informative.

The height of the stamens relative to the receptacle and carpels at the time of flowering seems to vary from species to species too and presumably is an important factor in determining the amount of self-pollination a flower typically undergoes.

The species

Ranunculus acris meadow buttercup (Fig. 1a)

Perennial, to c. 75 cm tall, hairy on vegetative parts and inflorescence axes but not on receptacle. The deeply cut leaves resemble those of some geraniums but are never tinged with red and (as in all the spp. here) the tips of the lobes have a pale blunt callus rather than a mucro. Perhaps usually self-incompatible.

Uncommon in Auckland: inner sides and base of Mt St John crater; swampy lake at Puhinui, wasteland; Mt Roskill; found by Cheeseman on One Tree Hill. Collected recently by Maureen Young from waste ground in Warkworth (AK 306985).

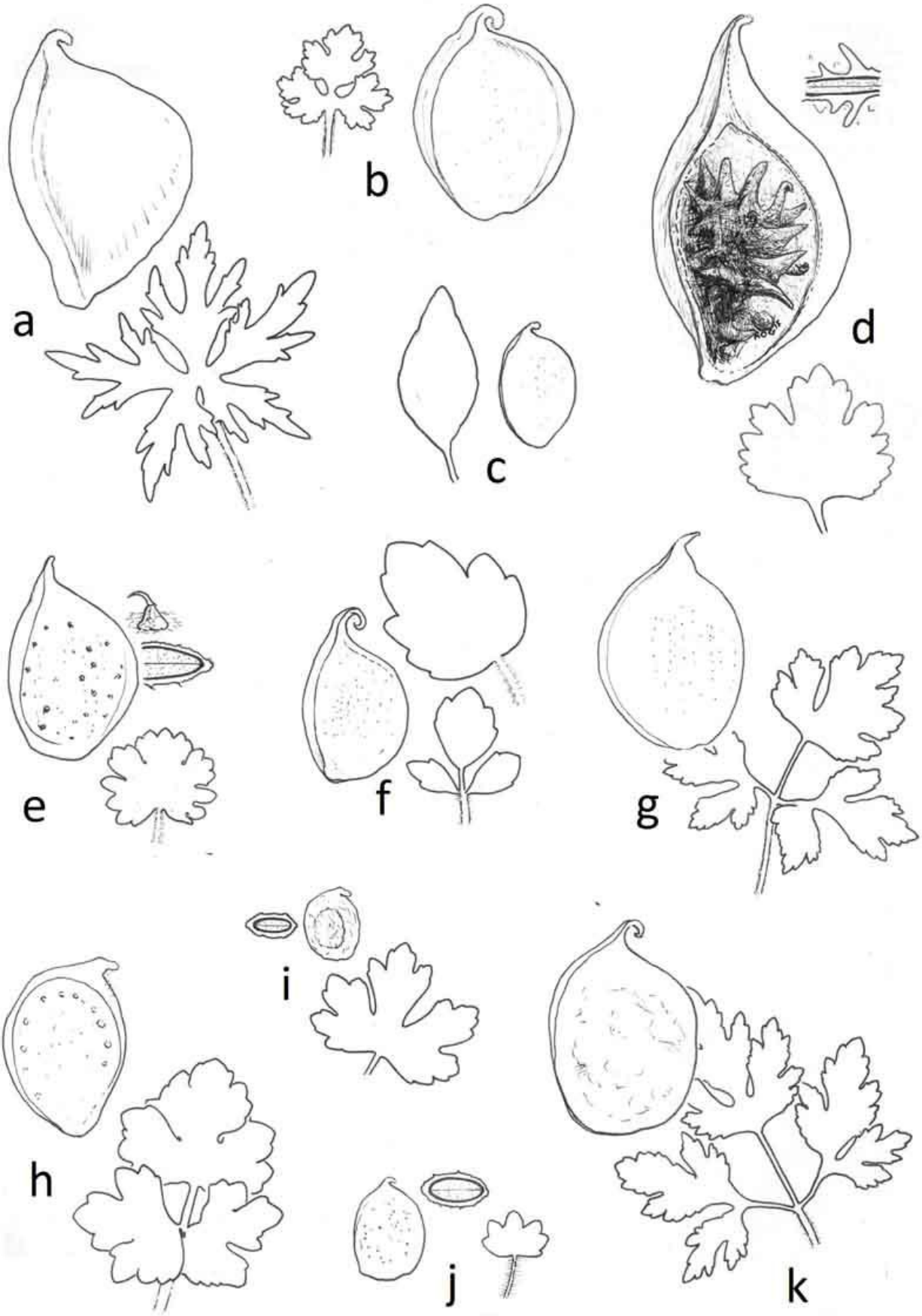

Fig. 1. *Ranunculus* species. Lower leaf and achene. **a** *R. acris*, **b** *R. bulbosus*, **c** *R. flammula*, **d** *R. muricatus*, **e** *R. parviflorus*, **f** *R. reflexus*, **g** *R. repens*, **h** *R. sardous*, **i** *R. scleratus*, **j** *R. sessiliflorus*, **k** *R. urvilleanus*. Leaves x1. Achenes, including median tranverse sections, x16. Detail of hook-tipped spine on sides of achene (**e**) x40. From fresh, unvouchered material except **j** (leaf AK 288532, achene AK 327496). Two leaves shown for *R. reflexus*. In achene t.s., cotyledons are stippled and gap between them and achene wall is exaggerated, as a dark air-gap.

Ranunculus bulbosus bulbous buttercup (Fig. 1b)
Perennial, to c. 50 cm tall, with a swollen short corm (renewed each year), very hairy (incl. receptacle). Perhaps usually self-incompatible.

Apparently still of local occurrence: Mt Albert, in mown grass; around trees near Stanley Street, Auckland Domain; Henderson Creek; Pakatoa I.

Ranunculus flammula lesser spearwort (Fig. 1c)
Perennial of swamps and lake edges, stems sprawling and sometimes rooting at lower nodes, more or less hairless (incl. receptacle). Distinctive in its subentire, lanceolate leaves. The achenes are hard-walled rather than corky. These are said to be non-buoyant (Grime et al. 1990). These authors also say the species is "largely self-incompatible".

Uncommon in Auckland, e.g. absent from Western Springs and Lake St John, etc., for no clear reason, though present in Northland and abundant in the Waikato. At Puhinui and on Puketutu Island. Although the first Auckland collection appears to be on Waiheke I. (*Sexton*, AK 252406) in 1956.

Ranuculus muricatus spiny buttercup (Fig. 1d)
Annual, to c. 30 cm tall, hairy (incl. receptacle). The foliage may be glabrous or have scattered, rather long, wide-spreading hairs. The spiny achenes are unmistakeable. Young plants look like those of *R. bulbosus* and *R. sardous* but the leaves of the latter have a stalked central leaflet and are comparatively densely appressed-hairy.

Local in open dry grassland and waste: street verges, Mt Eden-Balmoral-Sandringham; Waikumete.

Ranunculus parviflorus small-flowered buttercup (Fig. 1e)
Annual, somewhat sprawling (or ascending at the base of rock walls), to c. 20 cm tall, hairy (but not on receptacle).

Local in dry open grassland and waste: street verges, Mt Eden-Balmoral-Sandringham; dry steep-sided grassy mounds under old trees, Mt St John; close-mown grass on top of water reservoir, Mt Albert.

Ranunculus reflexus (Fig. 1f)
Annual, to c. 30 cm tall, hairy (incl. receptacle). Basal leaves with 3 short-stalked leaflets or merely 3-lobed. Called *R. hirtus* in the older literature; "*reflexus*" because of its recurved achene-beak (a feature also of *R. urvilleanus*). Self-compatible.

A native of forest clearings and the edges of tracks and streams, mainly seen now in the Waitakere and Hunua Ranges, becoming infrequent (unable to compete with *Selaginella kraussiana* ?).

Ranunculus repens creeping buttercup (Fig. 1g)
Sprawling stoloniferous perennial, to c. 30 cm tall, somewhat hairy (incl. receptacle). Common Auckland weed, mainly in damper sites, dismayingly tenacious around the edges of vegetable gardens on clay soil.

Ranunculus sardous pale-flowered buttercup (Fig. 1h)
Annual, erect, to c. 40(–70) cm tall, hairy (incl. receptacle). Looks like *R. bulbosus* but not swollen at stem base, hairier, and petals said to be paler. Epithet means "from Sardinia".

Local in Auckland; mainly in mesic to dryish sites in grassland; common on lightly mown street verges, Pt Chevalier; pasture at Puhinui Reserve, in places too dry for *R. repens*.

Ranunculus scleratus celery-leaved buttercup (Fig. 1i)
Annual, to c. 50 cm tall, vegetative parts glabrous but receptacle hairy. Leaves somewhat fleshy and lobes rounded (i.e., rather unlike those of the celery plant). The ovoid-cylindrical receptacle, c. 1 cm long, is distinctive, as are the very numerous small achenes (buoyant due to their corky coat, this easily punctured by a needle).

Local in shallow wetlands: Oratia Native Plant Nursery; base of Taylors Hill; Western Springs; Mangere sludge ponds.

Ranunculus sessiliflorus sessile-flowered buttercup (Fig. 1j)
Annual, sprawling, us. less than 10 cm tall, hairy (but not on receptacle). Flowers are like those of *R. parviflorus* but are subsessile and less than c. 5 mm diam. The short projections on the faces of the achene are tipped by a recurved hair, as in *R. parviflorus*, though smaller.

Native to Australia; apparently known in our region now just from Rangitoto I., as a spring wildflower. Even Australian authors have shirked describing the sepals properly: do they deflex or simply spread ? I have not been able to say from the AK specimens. I suspect that they are petaloid (as in *R. parviflorus*) but are soon shed.

Ranunculus urvilleanus Dervey's buttercup (Fig. 1k)
Annual, to c. 40 cm tall in the wild but nearly twice this in cultivation, hairy (incl. on receptacle). Leaves deeply cut like those of *R. acris*, but with stalked leaflets. The leaves also resemble those of *R. repens* but have patent rather than subappressed hairs and lack a broad groove

along the upper side of the petiole. Self-compatible (Rendle & Murray 1988).

Rare in Auckland, a swamp-edge plant (e.g. under *Leptospermum scoparium*), long ago found on the fringe of the Waitakeres but not known from Western Springs or Lake St John. Now known from: swamp at Whakanewha, Waiheke; Jeff McCauley's nursery, Glen Esk Road, Piha, vigorous in cultivation but not a weed there. Peter de Lange found it growing in cracked asphalt at the Mount Albert Research Centre in 2001 (AK 286238); the species was at that time the object of study by Peter and molecular taxonomist Tristan Armstrong. For more on distribution and ecology see de Lange and Gardner (1997).

Identification

The "spot characters" here can be used together (and with Fig. 1) to get a name, directly or by elimination. Brackets around a name indicate that the character is only occasionally seen in that species.

Habit

Plant more than 50 cm tall: (*acris*), (*sardous*), (*scleratus*), (*urvilleanus*)
Perennial of dry places, rootstock swollen (cormose), 1 cm diam.: *bulbosus*
Perennial, stolons present at least in larger plants: *repens*

Lower leaves

Petiole glabrous: *flammula*, (*muricatus*)
Blade in outline less than 2 cm diam.: (*reflexus*), *sessiliflorus*
Blade nearly entire, weakly notched: *flammula*, (*reflexus*)
Leaf pinnate, its central lobe stalked: *bulbosus*, (*reflexus*), *repens*, *sardous*, *urvilleanus*

Flowers

Sepals deflexed: *bulbosus*, *muricatus*, *parviflorus*, *reflexus*, *sardous*, *scleratus*,
Petals less than 2.5 mm long: (*parviflorus*), *sessiliflorus*
Petals 2.5– 5 mm long: (*parviflorus*), *scleratus*
Petals 5– 9 mm long: *muricatus*, *reflexus*, *urvilleanus*
Petals more than 15 mm long: (*sardous*)
Nectary roofed over by a scale that is free only along its front edge: *flammula*
Nectary crater-like, i.e. not roofed over at all: *scleratus*

Fruiting heads

Receptacle with fewer than 5 achenes: (*parviflorus*), *sessiliflorus*
Receptacle ovoid, with more than 50 small achenes: (*reflexus*)
Receptacle nearly cylindric, with more than 100 small achenes: *scleratus*
Achene coarsely spiny: *muricatus*
Achene with short or minute hook-ended warts: *parviflorus*, *sessiliflorus*
Achene with low rounded tubercules near margin: *sardous*
Achene hairy on adaxial margin near beak: *sardous*

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