**Hydrocotyle ranunculoides**

**Scientific Name**
*Hydrocotyle ranunculoides* L. f.

**Family**
Ariaceae (New South Wales, the ACT, Victoria, Tasmania, Western Australia and the Northern Territory)
Araliaceae (Queensland)
Umbelliferae (South Australia)

**Common Names**
buttercup-pennywort, floating marsh-pennywort, floating marshpennywort, floating pennywort, hydrocotyl, hydrocotyle, marsh pennywort, pennywort, water pennywort, water pennywort

**Origin**
Native to North America (thought to have become naturalised in Central and South America some time ago).

**Cultivation**
Water pennywort (*Hydrocotyle ranunculoides*) was deliberately introduced as an ornamental for garden ponds and aquaria.

**Naturalised Distribution**
Locally naturalised in and near Perth in south-western Western Australia.

**Habitat**
A potential weed of tropical, sub-tropical and temperate freshwater environments. It invades marshes, wetlands, the edges of still water bodies (i.e. ponds, dams, lakes, etc.) and sometimes also slow moving waterways.

**Habit**
A long-lived (i.e. perennial), floating (i.e. aquatic), aquatic plant forming mats on the water surface and spreading via creeping stems or runners (i.e. stolons).

**Distinguishing Features**
- a floating aquatic plant that forms mats of vegetation on the water surface.
- it spreads via creeping stems or runners that produce roots from their joints.
- its stems and leaf stalks are somewhat fleshy.
- its leaves are alternately arranged and either rounded, with a deep split, or kidney-shaped.
- these leaves (4-12 cm across) are shallowly to deeply lobed and/or with bluntly toothed margins.
- its inconspicuous flowers are arranged in complex clusters arising from the leaf forks and are either white, greenish or yellowish.

**Stems and Leaves**
The stems are mostly creeping (i.e. stolons) and produce roots (i.e. adventitious roots) from their joints (i.e. nodes), usually at intervals of approximately 4-6 cm. These roots are profuse and hairlike in nature. The stems and leaf stalks (i.e. petioles) are hairless (i.e. glabrous) and somewhat fleshy (i.e. semi-succulent) in nature, and aid in floatation.

The leaves are alternately arranged along the stems and are also hairless (i.e. glabrous). These leaves (2-18 cm across, but usually 4-12 cm across) are almost round (i.e. orbicular) in shape with a deep split or are occasionally kidney-shaped (i.e. reniform). They are shallowly to deeply lobed and/or with bluntly toothed (i.e. crenate) margins.

**Flowers and Fruit**
The flowers are arranged in complex clusters (i.e. compound umbels) arising from the leaf forks (i.e. axils) and are often hidden underneath the leaves. These flower clusters consist of a stalk (i.e. peduncle) which has several 1-5 cm long branches, each bearing a smaller cluster (i.e. an umbel of 5-10 flowers. The tiny flowers are white, greenish or yellowish in colour with five minute petals and no obvious sepals. Flowering occurs mostly during summer.
The fruit is oval (i.e. elliptic) to round in shape, flattened, and has a few faint ribs. These fruit (1-3 mm long) divide into two halves (i.e. mericarps) when mature, each with a tiny persistent projection (i.e. the remains of the styles).

Reproduction and Dispersal

Water pennywort (Hydrocotyle ranunculoides) reproduces via seeds and vegetatively via stolons and stem fragments. Most reproduction is thought to be vegetative, and the plant is capable of forming extensive mats from the smallest root or stem fragment.

Longer distance dispersal of stem fragments usually occurs by water movement and floods, or by introduction as a result of human activities (e.g., dumped aquarium waste).

Environmental Impact

Water pennywort (Hydrocotyle ranunculoides) is regarded as an environmental weed in Western Australia and as a “sleepier weed” or potential environmental weed in many other parts of the country. It is usually rooted to the banks of waterways, from which it spreads out over the water surface. Dense growth of this species can entirely cover the surface of static or slowly flowing waterways, particularly in nutrient-rich waters. Wate pennywort (Hydrocotyle ranunculoides) is ranked as a moderately important species in the Environmental Weed Strategy of Western Australia, because it has the ability to form a monoculture in invaded areas and can change the structure, composition and function of aquatic ecosystems.

This species escaped from ornamental garden ponds and aquaria and invaded several kilometres of the lower reaches of the Canning River in the 1980s and early 1990s. At the height of the infestation, water pennywort (Hydrocotyle ranunculoides) spread across the river from bank to bank, killing off fish and encouraging the growth of blue-green algae. During one control effort it is estimated that 2000 tons of this weed was pulled out of the river. It is still a weed of rivers, creeks and freshwater streams in the coastal plains of south-western Western Australia, and is locally common through the southern Perth area (e.g. an infestation was recently found in the lakes and banks of Bodkin Park, at Waterford).

Water pennywort (Hydrocotyle ranunculoides) is also invasive in other parts of the world, including in the UK. Prior to a control programme, it had out-competed native plants and grown to dominate parts of the Gillingham Marshes in eastern England.

Legislation

This species is declared under legislation in the following states and territories:

- South Australia: 1@ - this species is declared under Class 1a, a classification for prohibited aquatic plants. Its presence must be notified and the plant must be destroyed (throughout the entire state).
- Western Australia: P1 - trade, sale or movement into the state prevented, and P2 - to be eradicated (throughout the entire state).

Management

For information on the management of this species see the following resources:

- the Western Australian Department of Agriculture and Food information page on this species, online at http://www.agric.wa.gov.au.

Similar Species

Hydrocotyle (Hydrocotyle ranunculoides) is very similar to shield pennywort (Hydrocotyle verticillata), coastal pennywort (Hydrocotyle bonariensis) and several other pennyworts including Hydrocotyle laxiflora, Hydrocotyle acutiloba, Hydrocotyle peduncularis and Centella asiatica. These species can be distinguished by the following differences:

- hydrocotyle (Hydrocotyle ranunculoides) is a floating (i.e. aquatic) plant, usually forming mats on the water surface, with hairless (i.e. glabrous) stems and leaves. Its relatively large leaves (usually 4-12 cm across) do not have their stalks attached to the centre of their undersides (i.e. the leaves are not peltate). These leaves are rounded (i.e. orbicular) or kidney-shaped (i.e. reniform) with shallowly to deeply lobed and/or bluntly toothed (i.e. crenate) margins. Flowers are arranged in complex clusters (i.e. compound umbels) consisting of a stalk (i.e. peduncle) with several branches, each bearing a cluster of 5-10 tiny flowers.

- shield pennywort (Hydrocotyle verticillata) is either a floating (i.e. aquatic) or terrestrial plant with hairless (i.e. glabrous) stems and leaves. Its moderately-sized leaves (usually 2-5 cm across) have their stalks attached to the centre of their undersides (i.e. the leaves are peltate). These leaves are rounded (i.e. orbicular) with bluntly toothed (i.e. crenate) margins but they do not have any obvious lobes. Flowers are arranged in simple clusters along an unbranched stalk or are arranged in complex clusters (i.e. compound umbels) with several branches, with 2-5 tiny flowers in each cluster.

- coast pennywort (Hydrocotyle bonariensis) is a terrestrial plant, usually growing on dry land (often in sandy coastal habitats), with hairless (i.e. glabrous) stems and leaves. Its relatively large leaves (usually 3-12 cm across) have their stalks attached to the centre of their undersides (i.e. the leaves are peltate). These leaves are rounded (i.e. orbicular) with bluntly toothed (i.e. crenate) margins but they do not have any obvious lobes. Flowers are arranged in complex clusters (i.e. compound umbels) consisting of a stalk (i.e. peduncle) with several branches, each with several clusters of tiny flowers.

- stinking pennywort (Hydrocotyle laxiflora) is a terrestrial plant growing on dry land or in swampy areas with hairy (i.e. pubescent) stems and leaves. Its moderately-sized leaves (usually 2-5 cm across) do not have their stalks attached to the centre of their undersides (i.e. the leaves are not peltate). These leaves are rounded (i.e. orbicular) or kidney-shaped (i.e. reniform) in outline with 5-11 rounded lobes that have bluntly toothed (i.e. crenate) margins. Flowers are arranged in simple clusters (i.e. umbels) containing numerous (30-50) tiny flowers that are stalkless (i.e. sessile) or borne on stalks (i.e. pedicels) up to 8 mm long.

- pennwort (Hydrocotyle acutiloba) is a terrestrial plant growing on dry land or in swampy areas with hairy (i.e. pubescent) stems and leaves. Its relatively small leaves (usually 1-3 cm across) do not have their stalks attached to the centre of their undersides (i.e. the leaves are not peltate). These leaves usually have 3-7 obvious lobes with relatively sharp (i.e. acute) tips and bluntly toothed (i.e. crenate) margins. Flowers are arranged in small dense clusters (i.e. umbels) containing several tiny flowers that are stalkless (i.e. sessile) or ver...
shortly stalked (i.e. sub-sessile).

- small pennywort (*Hydrocotyle peduncularis*) is a terrestrial plant growing on dry land or in swampy areas with mostly hairless (i.e. glabrous) stems and leaves. Its small leaves (usually 0.5-1 cm across) do not have their stalks attached to the centre of their undersides (i.e. the leaves are not peltate). These leaves are rounded (i.e. orbicular) or kidney-shaped (i.e. reniform) in outline and are entire or have a few shallow lobes with bluntly toothed (i.e. crenate) margins. Flowers are arranged in small dense clusters (i.e. umbels) containing several tiny flowers that are stalkless (i.e. sessile) or very shortly stalked (i.e. sub-sessile).

- pennywort (*Centella asiatica*) is a terrestrial plant growing on dry land or in swampy areas with hairless (i.e. glabrous) stems and leaves. Its moderately-sized (usually 1-4 cm across) leaves do not have their stalks attached to the centre of their undersides (i.e. the leaves are not peltate). These leaves are rounded (i.e. orbicular), heart-shaped (i.e. cordate) or kidney-shaped (i.e. reniform) in outline and have entire or toothed (i.e. crenate) margins but they do not have any obvious lobes. Flowers are arranged in small clusters (i.e. umbels) containing a few (3-4) tiny flowers that are stalkless (i.e. sessile) or very shortly stalked (i.e. sub-sessile).