Not all **thistles** are **weeds**

Most farmers, wildflower enthusiasts and bushland managers generally regard thistles with a view to their demise. However, not all thistles are introduced. There **are** native thistles and many are quite interesting and rare.

by **Greg Keighery** and **Bronwen Keighery**

In Western Australia, native thistle species range from common to very rare. Some may have been an important food source for Aboriginal people and may contain valuable genetic material for future crops.

Thistles are members of the daisies (Asteraceae), the largest family of flowering plants (more than 1100 genera and 25,000 species) in the world. Thistles are a huge group with around 130 genera, mostly found in the northern hemisphere. They all have inflorescences with soft ray florets clustered into a head (giving the appearance of a single 'flower') and differ markedly from the Australian daisies, in which the ray florets form a ring of 'petals' around the head. 'Spiny' thistles (Cardueae) generally have purple or white flowers without petals, whereas the 'soft' chicories (Lactuceae) generally lack spines and have a milky sap, yellow flowers and ligules (petals) spread through the inflorescence.

There are no native spiny thistles. In WA, these thistles are highly-invasive exotic weeds such as 'true' thistles (*Carduus* species), saffron thistle (*Carthamus lanatus*), cockspurs (*Centaurea* species), spear thistles (*Cirsium* species), cardoon or artichoke thistles (*Cynara* species), scotch thistles (*Onopordum* species) and variegated thistles (*Silybum* species). A few species, such as artichokes, are commonly cultivated.

Chicory thistles tell a different story, with both native and weed species in Australia. Well-known weeds include skeleton weed (*Chondrilla juncea*), flatweeds (*Hypochaeris* species), hawkesbeards (*Crepis* species), hawksbits (*Leontodon* species), false hawkbit (*Urospermum picroides*) and prickly lettuce (*Lactuca* species). The group also contains economically significant plants such as salsify, lettuce and chicory. However, there are at least 18 chicory thistles native to Australia, of which one was a major food source for Aboriginal people. Of the 11 chicories native to WA, five are endemic and three of these are presumed extinct!

Sow thistles

Sow thistles, a group of about 55 species in eight genera, have their centre of diversity in the Mediterranean. There are five species in Australia, two natives—dune thistle (*Actites megalocarpa*) and native sow thistle (*Sonchus hydrophilus*)—and the weeds prickly sow thistle (*Sonchus asper*), common sow thistle (*Sonchus oleraceus*) and clammy sow thistle (*Sonchus tenerrimus*).

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Main The native narrow-leaved hawkweed (*Picris angustifolia* subsp. *angustifolia*) after fire in karri forest in Porongurup National Park.
Inset Native yam daisy (*Microseris* species).

Above Plants of native sow thistle (*Sonchus hydrophilus*) after fire at Lake Cooloongup, Rockingham Lakes Regional Park, showing clumped habit.

Left A dune thistle (*Actites megalocarpa*) at Eyre, in Nuytsland Nature Reserve.

Above Inflorescence of the weed common sow thistle (*Sonchus oleraceus*). Note its highly lobed leaves.

Right The invasive weed spear thistle (*Cirsium vulgare*) at Cape Arid.

For many years all sow thistles in WA were regarded as weeds, as the native sow thistle was regarded as prickly sow thistle (a European species). Observations that indicated otherwise were ignored. For example, in June 1839, Colonial Botanist James Drummond wrote:

> 'The English Sowthistle (*Sonchus oleraceus*) which is now the most annoying weed we have all over the country even as far as York district was quite unknown when we came here; the native Sowthistle a far finer plant growing 8–10 feet high being at this time almost extinct about the Settlements.'

Also, a Nyoongar word for sow thistle—wau-da-rak—was listed by George Grey in 1840 and Symmons in 1841, and numerous early explorers recorded Aboriginal use of thistles as food.

Curiously, native sow thistle then became unknown in WA until the late 1980s, when *Sonchus hydrophilus*—the species noted by Drummond in 1839, but not formally named until 1965—was listed from Camel Lake in the Bold Park bushland. This large yellow-flowered thistle reaches up to 1.5 metres tall. Peak flowering time is summer, but plants can be found in flower throughout the year. In the Perth metropolitan area, it grows in calcareous seasonally-inundated areas such as the margins of Lakes Cooloongup and Walyungup and the Swan and Canning estuaries.

It was first thought that native sow thistle was rare, but it has since been found in seasonally-waterlogged areas from Kalbarri to Esperance and in the eastern states. Even so, in WA it is still at some risk, as it hybridises with prickly sow thistle, its habitat is not widespread and it is eaten by introduced snails. However, native sow thistle grows easily from seed and persists for several years, regrowing each spring from a tuberous rootstock.

Unfortunately, native sow thistle is still often mistaken for prickly sow thistle and removed from wetlands. Though both plants are similar in height, they are fairly easy to distinguish: native sow thistle has long soft leaves with shallow teeth and a tall leafless inflorescence, whereas prickly sow thistle has hard prickly leaves with deep sharp teeth and a short leafy inflorescence. Prickly sow thistle, a short-lived perennial of damp and dry lands, rarely grows in bushland. The weeds common sow thistle and clammy sow thistle have thin, strongly-lobed leaves that are never spine tipped. These annuals from Europe and western Asia are widespread in southern WA, even invading the deserts in favourable habitats.

The leaves of all sow thistles are rich in vitamin C, and were used to combat scurvy. Nyoongar people may well have eaten native sow thistle. We have eaten small amounts of all species. Dune thistle leaves are tough, astringent and relatively unpalatable. Young leaves of native sow thistle and prickly sow thistle are edible. The annual sow thistles are the best, with leaves similar to endives and chicory. However, all are relatively bitter compared to our bred up lettuces!

Early explorers and Aboriginal people have been recorded as eating common sow thistle and clammy sow thistle. These records were mostly from remote areas, which has led to statements that these species must contain native forms. However, thistles have wind-dispersed seed and can disperse rapidly over long distances in short periods. Given the confusion between the weedy and native thistles, what they actually ate will remain a mystery.

Dune thistle

Dune thistle (*Actites megalocarpa*) is closely related to *Sonchus*, but has had its generic status confirmed in a DNA study by Seung Kim, Christina Lu of California and Brendan Lepschi from Canberra.

This tufted perennial herb regrows each year from a tuberous rhizome. It grows in small clumps on the beach foredunes, with each clump bearing long leathery leaves. Plants flower from late spring to early autumn. The species

Top left An inflorescence of Rottnest Island daisy (*Olearia rudis*), showing ligulate flowers confined to edges with 'petal-less' flowers in the centre, giving an effect of a ring of petals around a single flower. This is a typical daisy flower. *Photo – Bronwen Keighery*

Centre left Variegated thistle (*Silybum marianum*). Note its uniform pale purple flowers without ligules (petals) spread throughout the head, in contrast with the photo at left, a chicory thistle, and photo at top left, a 'normal' Australian daisy.

Left A native sow thistle at Camel Lake, Bold Park.

Above Habitat of tropical dune thistle (*Launaea sarmentosa*) at Exmouth.

Right Inflorescence of narrow-leaved hawkweed (*Picris angustifolia* subsp. *angustifolia*).

is rare on the Swan Coastal Plain, though it does occur as far north as Cervantes, but is common from Cape Naturaliste to the Great Australian Bight. It is also found in South Australia, Victoria, New South Wales and Queensland.

Hawkweeds

There are about 60 species of hawkweeds (*Picris*) from Europe, Africa, Asia and Australia. Material from this genus was collected during Cook's first voyage in 1770 and several species were described from Australia in the nineteenth century. However, George Bentham, who wrote the account for *Picris* in *Flora Australiensis* in 1867, regarded all the species described from Australia as part of the European species *Picris hieracioides*, recognising only the subspecies *squarrosa* as native. This led to most Australians regarding members of the genus as introduced.

Detailed worldwide studies of *Picris* by Walter Lack and Sebastian Holzapfel led to Holzapfel recognising 12 *Picris* species from Australia, 10 of them native. The only widespread weedy *Picris* in Australia is now in a separate genus as *Helminthotheca echioides*.

In WA, the genus *Picris* is very interesting, with one common species, one uncommon species and three species presumed extinct! These species all occur in native, often undisturbed, vegetation.

Of the five WA species, narrow-leaved hawkweed (*Picris angustifolia* subsp. *angustifolia*) is the most common and widespread. It grows from Dongara to Esperance and inland to the Fraser Range, but is most common between Bunbury and Albany. This subspecies also occurs in South Australia, Victoria and Tasmania. *Picris squarrosa* has been rarely recorded from Bunbury to the Warren River. It is also known from South Australia, Victoria and New South Wales.

The three other species are presumed extinct in WA. Compact hawkweed (*Picris compacta*) is known only from the type collection in 1902 and one other collection made along the Swan River in 1941. Drummond's hawkweed (*Picris drummondii*) is known from the type collection by James Drummond in 1848, with no specific locality, and a collection by Ferdinand von Mueller in 1867 from the Oldfield River on the south coast. *Picris wagenitzii* is only known from four collections between 1841 and 1899 in the Darling Range near Perth.

At least one eastern Australian species (the species was not determined) was gathered for food by Aboriginal people. However, today the native species are generally uncommon across Australia. This decline in abundance and loss of hawkweeds is hard to understand. However, *Picris* can be confused with the closely-related weeds *Helminotheca* and *Crepis*, and these weeds may compete with native *Picris* species.

Dandelions

Dandelions (*Taraxacum*) are another huge genus of about 2500 'species', mostly from Europe and Asia. Most (approximately 2300) are not normal species, but stable hybrids (with high chromosome numbers) that reproduce asexually, forming true breeding populations. Many of these populations are named as separate species. In Australia, they are generally referred to collectively as *Taraxacum officinale*—a common weed in southern WA.

Australia has two native dandelions: one described from WA in 1907 as native dandelion (*Taraxacum cygnorum*) and the mountain dandelion (*T. aristatum*) from Alpine areas of eastern Australia. Both reproduce sexually and are 'true' species. Native dandelion has not been recorded in WA since James

Left An inflorescence of native yam daisy (*Microseris* species) at Lake Grace, which has ligulate yellow flowers spread evenly throughout the head.

Below left Tropical dune thistle (*Launaea sarmentosa*) at Exmouth.

Drummond first collected it in 1841 somewhere near Cape Riche. In WA, this species is presumed extinct, though it has also been recorded in coastal western Victoria and the Bass Straight Islands growing in shallow soils over limestone, and flowering from October to December. The species is listed as rare and threatened with extinction in Victoria. The WA and Victorian plants differ in seed characters and may well be different species.

Native yam daisy (*Microseris*)

Microseris is a genus of 14 species distributed in North and South America, New Zealand and Australia. In Australia, there is a complex of four to six species, all currently under the name *Microseris lanceolata* (a Tasmanian species). All are tuberous perennial herbs that produce a basal tuft of leaves each winter, flower in spring then die off in summer.

In mainland eastern Australia, there are at least three species not yet named: one Alpine species, a woodland species and true murrnong. Murrnong appears to have been the major food source of the Koorie people of Victoria. Millions of plants grew on the rich clay soils of western Victoria, where they were harvested and consumed or stored for winter. Following European settlement, the plains were initially used for sheep grazing. The sheep grazed the plants and easily pulled up their shallow tubers, depleting the murrnong populations within a few years. The demise of murrnong was completed when its habitat was cleared for farming. It is now a rare plant.

Microseris is less common in WA, where there appear to be two unnamed species. One is found around the edges of naturally-saline lakes in the Wheatbelt between Wagin and Scadden. The other is associated with the granites of the Fraser Range east of Norseman. It was probably used by Aboriginal people, though there are no records to confirm this. WA has very distinctive forms of the genus that could potentially provide valuable genetic material for a saline-adapted food crop.

Tropical dune thistle

Tropical dune thistle (*Launaea sarmentosa*) is found on beaches around the Indian Ocean and flowers for most of the year. In WA, it grows from Coral Bay northwards, and on offshore islands east to the Montebello Islands. The trailing stems of this creeping perennial herb root when they are buried, producing tufts of fleshy leathery leaves. It forms large plants up to three metres across that bind the loose sand of the beaches and foredunes.

Though the chicory thistles have had more than a century of bad press, relegating them to the status of undesirable aliens, current research is demonstrating that for many species this is undeserved. Let's hope that they can improve their image and receive recognition as interesting and valuable native plants!

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