Distribution: This species is locally common in the South, the North and the North-West, and less frequently encountered in other parts of the State. On the mainland it is found from South Australia through to N.S.W. It is native to Europe and Western Asia.

Occurrence and Significance: Occurs on roadsides, particularly in suburban areas. Many people consider the plant to have an offensive or even nauseating smell. Cultivated strains are used in cooking.

Description: The cotyledons are elongated and narrow, some 40 to 50 mm long. There is a hypocotyl and a short and indistinct epicotyl. The leaves are compound and pinnate, with water rosette and stem leaves having the leaflets pinnately sub-divided. The leaflets are very fine. The mature plant is erect with stems reaching 2 m or more tall. They are faintly striated, pithy, branched and with several stems emerging from each crown. The flowers are greenish-yellow and 3 to 6 mm in diameter, many being produced together in the umbrella-like umbels. The plant has a strong aniseed-like smell.

Distinguishing Features: Fennel

Life Cycle and Dispersal: The main germination occurs in autumn or spring. Plants initially

Weed Handbook

A guide to the identification of the main weeds of crops and pastures in Tasmania

This book is gratefully dedicated to those early settlers who brought both crops and weeds to Tasmania, AND to Dennis Morris (1924-2005), Weed Officer with the Department of Agriculture from 1961 to 1985, an honorary member of the Tasmanian Herbarium for more than 30 years, and the author and illustrator of many handbooks and other publications on the topic of Tasmanian weeds.
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INTRODUCTION

Weeds weeds weeds

Weeds are among the most serious threats to Tasmania’s primary production and environment. They reduce farm and forest productivity, displace native plant and animal species and communities and contribute significantly to land and water degradation.

The cost of controlling weeds and losses to primary production in Tasmania have been estimated to be over $50 million. It does not include the less tangible costs such as the loss of aesthetic, conservation and recreational values due to weeds, the impact of weeds on human and animal health, weed damage to water resources, and the fire hazard created by some weeds. Weeds also provide shelter for vermin (rabbits, feral cats and foxes) and act as hosts for crop pests and diseases. The costs of these less tangible effects are far more difficult to calculate as the results are often indirect and not immediately obvious, but they may be of greater significance in the long term.

Establishment and spread of weeds

Not all exotic plants that arrive in Tasmania go on to become weeds. Many plants never spread far from the original site of establishment, while sometimes there is a time-lag between establishment and spreading from the initial site as the plant waits for suitable conditions for propagation.

The plants that do succeed are often those which have characteristics that enable them to successfully colonise disturbed ground and outcompete anything else on that site. Plants that become weedy may also have an advantage as the predators and pathogens that help keep them in check in their country of origin are not present in Tasmania.

Exotic plants that do become weeds often have efficient means of seed dispersal, whether by wind, water, soil or with the help of animals. Weeds are also spread by human activities such as the movement of seeds on machinery, or by inappropriate control methods such as slashing weeds that are producing seed, or the careless dumping of garden waste in bushland.

Purpose of this handbook

This book has been produced to assist farmers and field workers in the identification of weeds. However, it is also a valuable resource for anyone interested in learning more about weeds that occur in Tasmania.

The weeds featured in this handbook are the most important or most commonly found weeds of crops and pasture in Tasmania. A number of less common species have been included either because they are capable of having a significant economic impact or because they closely resemble important weeds. Although some of the weeds in the book are considered environmentally
significant, the main thrust of the book is to highlight weeds that threaten agriculture. As such, a number of significant environmental weeds have not been included, although this in no way diminishes their importance in Tasmania.

This book is essentially a reprint and update of The Tasmanian Weed Handbook (1975) although a number of weeds from the Department's publication The Noxious and Secondary Weeds of Tasmania (1980) have been included. A number of the weeds featured in the handbook are declared as weeds under the Weed Management Act 1999 and as such landholders may be required to undertake control measures. Note that this book does not include all Tasmania's declared weeds. Please refer to the Department's web site for a complete list of declared weeds.

**What can you do?**

Weed identification cannot be learned entirely from a book. However, it is hoped that this handbook will prove to be a useful aid, but skill in identification can only be achieved by constant practice in the field.

Learn to recognise introduced plants, so that you can be alert for new invaders in an area. It is much easier to control a problem plant when it is low in numbers and restricted in area. Allowing a weed to become widespread can lead to major costs in the future. The aim should be to minimise the time between establishment and detection of a particular weed.

You can also play a significant role by joining a local Landcare, Bushcare, Coastcare or Weed Strategy Group to take part in a united effort in the control and eradication of weeds in your local area.

**Illustrations and descriptions**

Each weed is illustrated by line drawings of the seedling (life size except where indicated) and young plant together with parts of the mature plant including foliage, flowers, and, in most cases, the fruiting body.

The text notes supplement the drawings but do not attempt to give a detailed description of the plant. Notes on the distribution and the economic importance of the weeds are included and special reference is made to features which allow similar looking species to be distinguished from each other.

As far as possible the illustrations and the text indicate the size range and variation likely to be encountered in the weeds. However, individuals that fall outside these parameters will be encountered from time to time. For example, weeds which germinate over a large part of the year can be very variable; plants which germinate in summer are usually much smaller in size and mature earlier than those which germinate in autumn or spring.
Weed names

The common names given are those most commonly used in Tasmania and for the most part follow The Student’s Flora of Tasmania. The Little Book of Common Names for Tasmanian Plants provides a comprehensive guide to common names. There is no method of establishing a ‘correct’ common name for a weed and many weeds have several common names, while certain common names are used to cover a number of different weeds. Botanical names follow A Census of the Vascular Plants of Tasmania (Buchanan 2009) or the Weed Management Act 1999 for species not naturalised in Tasmania.

A cross-index of common and scientific names is given at the end of the handbook.

Key to identifying weeds

A key to the identification of the weeds in this book is provided (note that the key is based on the original Tasmanian Weed Handbook (1975) publication, and does not include several weeds added to the handbook since it was first published). Although many users of this book will identify weeds by simply comparing a specimen with the illustrations in the book, with a little practice it will be found that the use of the key enables an identification to be made both more quickly and more accurately.

Young plants can be very difficult to identify as they lack flowering and fruiting parts. In addition, many of their features such as size, leaf shape and colour may be variable and dependent on seasonal conditions and environmental factors. Consequently it is often impossible to identify a seedling with complete accuracy. However, some life stages such as seedling cotyledons (the first embryonic leaves to emerge from the seed) can be helpful if present, and these are shown for many of the species in this handbook.

Correct identification of a plant relies upon collection of useful specimens. Ideally, identification should not be based upon a single individual and if possible you should find a range of specimens in different growth stages, which will enable the identification to be made with greater accuracy. If possible, collect samples of the roots, stems, leaves, flowers and fruit. Specimens that do not include reproductive material may be impossible to identify with any certainty.

After collecting the specimen it is important to preserve it so that it can be identified. Try to submit fresh material. If this is not possible it may be necessary to press and dry specimens between layers of newspaper, ensuring that flowers and leaves lie flat. Alternatively, refrigeration in a sealed plastic bag may be useful for a period of 1-2 days. Aquatic plants may be stored temporarily in jars of source water.

If you are still having difficulties with identification there are experts who can assist you, such as the Tasmanian Herbarium and the Regional Weed Management Officers with the Department of Primary Industries, Parks, Water and Environment.

Technical terms

Like all branches of science, botany has evolved its own language and many special terms are used in plant identification guides. In this handbook the use of special terms has been avoided.
as far as possible and those which are used have been retained only where alternatives would be inaccurate or unnecessarily cumbersome. A glossary of the terms used is provided.

Weed control

No attempt has been made to indicate control measures for weeds. For current control methods, consult the Weed Information Sheets available on the Department of Primary Industries, Parks, Water and Environment website (www.dpipwe.tas.gov.au), or consult a DPIPWE Regional Weed Management Officer or an agronomist from an agricultural merchandise supplier. There are also many excellent references, some of which are listed in the back of the handbook.

The Tasmanian Weed Management Act 1999

Some weeds in Tasmania are ‘declared’ as weeds under the Tasmanian Weed Management Act 1999. Declaration of a weed may be based on the ongoing serious impacts of a weed already in Tasmania. Alternatively, declaration may reflect the potential risk of a weed already present in Tasmania but not yet wide-spread, or else not yet present in Tasmania but at high risk of entry and spread.

The Weed Management Act 1999 is administered by the Department of Primary Industries, Parks, Water and Environment. It is implemented by authorised weed inspectors in State and Local Government. Overall responsibility for administrative matters associated with the Act rests with the Principal Weed Management Officer of the Weed Management Section of DPIPWE. Underpinning the implementation of the Act is the statutory requirement that a scientifically based weed risk assessment be undertaken for every weed nominated for declaration under the Act. There is also a requirement that a Statutory Weed Management Plan be written for every declared species.

If you want to find out more about the Act, you can contact the DPIPWE Weed Management Section on 1300 368 550. Alternatively, visit www.dpipwe.tas.gov.au to access a copy of the Act. It is also available on the State's legislative database at www.thelaw.tas.gov.au.

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GLOSSARY

Achene: a one-seeded fruit enclosed within the wall of the ripened ovary.

Annual: completing the full cycle of germination to fruiting within a single year, and then dying.

Anther: that part of the stamen in which the pollen is produced.

Apex: the growing point of a stem: the tip of a leaf.

Axil: the angle between a leaf or its petiole and the stem from which it grows.

Axillary: growing in or arising from an axil.

Base angle: (of a leaf) the angle between the mid rib or centre line and the bottom edge.

Biennial: completing the life cycle in two years, flowering in the second year of growth, and then dying.

Bifid: deeply divided into two (usually more or less equal) parts.

Blade: (of a leaf) the flattened portion of a leaf as opposed to the petiole.

Bract: a modified leaf, particularly a small or scale-like leaf adjacent to the flower head.

Bulb: an underground organ consisting of a short stem bearing fleshy scale leaves or leaf bases which surround the bud for the following season.

Bulbil: a small bulb in place of the flowers.

Calyx: the outer most whorl of sepals forming the flower. The sepals may be free or joined in a calyx tube.

Carpel: the female part of a flower consisting of an ovary, a style and a stigma.

Clasping: partially wrapped round or enclosing the stem.

Cleistogamous flowers: flowers which do not open and are self-fertilising.

Composite flower: an inflorescence consisting of a (usually) large number of individual florets grouped closely together to form a single ‘flower’; the florets may be all similar or of two or more different types. Flowers of this sort are typical of the family Asteraceae.

Compound: composed of a number of distinct parts or individuals, for example, a compound leaf where the blade is divided into separate leaflets.

Cordate: heart shaped; usually applied to the base of a leaf.
**Corm:** a resting organ similar to a bulb but with the nutrients held in a solid, swollen, shortened stem. A short, swollen underground stem containing food reserves, that acts as a resting stage for the plant or allows for vegetative propagation.

**Corolla:** collective term for the petals, which may be joined or free.

**Cosmopolitan:** having a worldwide distribution and not restricted to specific areas.

**Cotyledons:** the first leaf or leaves of a plant (often called the seed leaves) which are present in the seed. They are frequently very different in shape from later or true leaves.

**Culm:** the stem of grasses bearing leaves and inflorescence.

**Entire:** (of a leaf margin) smooth, without incisions or lobes.

**Epicotyl:** the part of the stem between the cotyledons and the first true leaves. In many weeds this is extremely short and never elongates. Weeds which exhibit this characteristic are described as being without an epicotyl. In other weeds the epicotyl often lengthens as the seedling grows, initially being very short but later of appreciable length.

**Epiphyte:** a plant that grows upon another but does not get food, water or minerals from the supporting plant (c.f. parasitic plant).

**Extra axillary:** not produced from a leaf axil.

**Family:** a major grouping of living things, comprising groups of similar genera.

**Flexuose:** bent in a zig-zag manner.

**Florets:** the small individual flowers which together make a compound flower.

**Fluted:** (of a stem cross section) circular with regular ridges and grooves.

**Genus:** a subdivision of a family, comprising groups of related species.

**Glandular hair:** a hair with a swollen, often sticky, apex.

**Glaucous:** covered with a bluish-white bloom.

**Glume:** one of two bracts at the base of a grass spikelet, or subtending flowers in sedges.

**Grapnel hair:** a hair with the tip divided into two or three recurved hooks like a grappling hook.

**Hastate:** (of a leaf base) shaped like a spearhead with pointed lobes, which project beyond the margin of the leaf, but not below the insertion of the petiole (c.f. sagittate).

**Hybrid:** a cross between two parents which are genetically different, indicated in the plant name by an x.

**Hypanthium:** floral part which has at its top the sepals and petals (if these are produced) and the stamens. At the lower end is the ovary.
Hypocotyl: that portion of the stem between the root and the cotyledon. In many species this is extremely short and the cotyledon appears to sit directly on the soil surface.

Incised: cut into, usually sharply and deeply.

Inflorescence: the flowering parts of a plant considered as a whole rather than as individual parts; also used for the arrangement of the individual flowers of a stem or branch.

Internode: the part of a stem or rhizome between two successive nodes.

Leaflets: the individually separated parts of a compound leaf.

Lemma: (in grasses) the lower of the two bracts that enclose the flower.

Ligulate florets: florets in which the petals are reduced to a single narrow strap-like projection. Ligulate florets are common in plants belonging to the family Asteraceae.

Ligule: (in grasses) a projection from the top of the inner surface of the leaf-sheath in grasses and similar plants. It can either be membranous or hairy.

Lobed: with convex projections. These may be shallow, or large and dividing the leaf blade into almost separated portions.

Multi-cellular hair: a hair with several distinctly differentiated cells.

Node: a joint from which a leaf or whorl of leaves or a leaf scale is produced.

Notch: a small, usually moderately deep, indentation generally found at the tip of a cotyledon, leaf or petal.

Offset: a small bulb or corm.

Palmate leaf: a leaf which has a number of lobes or leaflets arising from a common centre.

Panicle: a branched inflorescence with stalked flowers.

Pappus: the parachute-like tuft of hairs found on the wind borne seed of certain plants, for example the thistles.

Pedicel: the stalk of one flower in a cluster or group of flowers.

Peduncle: the stalk of a flower cluster or flower head, or the stalk of a flower which is solitary.

Perennate: to adopt a perennial growth pattern.

Perennial: with a life span extending over more than two growing seasons, and usually flowering each year.

Perianth: the two floral whorls, i.e. sepals and petals, considered together. In monocotyledonous plants, e.g. in the lily family, the two whorls are produced at the same level and may be indistinguishable or fused. In such cases the term ‘perianth segment’ is used instead of petal or sepal.
**Petiole:** the stalk of a leaf or a cotyledon.

**Pinnate leaf:** a compound leaf consisting of a series of paired leaflets arranged opposite each other in pairs along the central stalk of the leaf.

**Polygonal:** (of a stem) with several more or less equal flattened sides.

**Raceme:** a simple, elongated inflorescence with stalked flowers.

**Ray floret:** a type of ligulate floret found around the margin of certain composite flowers; the fused petals are outward directed and the floret superficially resembles a single petal of a simple flower.

**Reflexed:** curved outwards and downwards.

**Rhizome:** an underground stem, distinguished from a root by the presence of nodes or scale leaves.

**Rosette:** a tuft of leaves, usually at ground level, resembling the arrangement of petals in a rose.

**Sagittate:** (of a leaf base) shaped like an arrowhead with pointed lobes that project below the insertion of the petiole (c.f. hastate; the two shapes are very similar).

**Scape:** a leafless peduncle arising from ground level. Basal leaves may sheath around the scape but do not arise from it.

**Scapigerous:** producing or bearing a scape.

**Scolloped:** (of a leaf margin) with more or less regular and shallow concave indentations.

**Sepals:** leaf-like structures found surrounding the base of a flower.

**Septate hairs:** short multi-cellular hairs only a few cells long.

**Serrate:** (of a leaf margin) with small and regular lobes shaped like the teeth of a saw.

**Sessile:** joined directly to a stem; leaf without a petiole.

**Sheath:** a long or more or less tubular structure surrounding an organ or plant part, such as a stem.

**Simple:** not divided into separate parts; not composed of a number of similar individuals.

**Spadix:** a thick fleshy spike in some plants such as the family Araceae, surrounded or subtended by a spathe.

**Spathe:** a bract or leaf surrounding or subtending a flower cluster or a spadix.

**Species:** the basic category of biological classification, designating a single kind of plant or animal.

**Spike:** an elongated simple inflorescence bearing sessile flowers.
Spikelet: the floral unit of a grass inflorescence, consisting of a simple floret or a number of florets subtended by floral bracts or glumes.

Stamen: the male part of the flower, normally consisting of a filament or stalk and an anther; the pollen-producing organ.

Star hair: a hair with several, usually five, radiating points which resemble a star.

Stipules: paired growths which occur at the base of the petiole in certain plants.

Stolon: a horizontal stem, usually above ground level, which produces roots from its nodes and gives rise to a new plant at its tip.

Succulent: fleshy, juicy, soft in texture and usually thickened.

Taxon: a classification group of any rank, e.g. family, genus, species and subspecies.

Terminal: at the end of a stem.

Trifid: deeply divided into three parts.

Trifoliate leaf: a compound leaf with three leaflets, one terminal and one lateral on each side.

Umbel: a usually flat-topped inflorescence whose pedicels and peduncles arise from a common point like the ribs of an umbrella.

Wavy: (of a leaf margin) when viewed from the side undulating like a wave and not all in the same plane.
KEY TO THE IDENTIFICATION OF SEEDLINGS

This key is a multi-choice type with each section (1,2,3, etc.) having two or three parts (parts a, b, c). To use this key, start at section 1, compare the specimen with the descriptions, select which part best fits the specimen, follow the direction to the next section, or until a weed name is reached. The specimen should then be compared with the drawings and description and also with the drawings and descriptions of any other weeds which are noted as being very similar in appearance. Note that some weeds may be keyed out by more than one route. Where practicable, features visible to the naked eye have been used but in a few the use of a hand lens is essential. Note that there is a detailed key to the docks on page 120.

The following species are included in the handbook but are not in the key: crow garlic (*Allium vineale*), three-cornered garlic (*A. triquetrum*), fennel (*Foeniculum vulgare*), hemlock (*Conium maculatum*), stinking mayweed (*Anthemis cotula*), Bathurst burr (*Xanthium spinosum*), Paterson’s curse (*Echium plantagineum*), viper’s bugloss (*E. vulgare*), St John’s wort (*Hypericum perforatum*), caper’s spurge (*Euphorbia lathyris*), gorse (*Ulex europaeus*), Canadian pondweed (*Elodea canadensis*), one-leaf cape tulip (*Moraea flaccida*), onion weed (*Asphodelus fistulosus*), barnyard grass (*Echinochloa crus-galli*), feathertop (*Pennisetum villosum*), African feathergrass (*P. macrourum*), glyceria (*Glyceria maxima*), pampas grass (*Cortaderia spp.*), serrated tussock (*Nassella trichotoma*), spiny emex (*Emex australis*), blackberry (*Rubus fruticosus agg.*), sweet briar (*Rosa rubiginosa*), Buxbaum's speedwell (*Veronica persica*), African boxthorn (*Lycium ferocissimum*), and cumbungi (*Typha latifolia*).

1   a  Cotyledons do not emerge above ground; first leaves compound with 1 or 2 pairs of opposed leaflets ... *Vicia* spp. (80)

   b  Cotyledons emerge above ground .............................................................................................................  2

2   a  Cotyledons heart shaped with long petiole; early leaves circular with palmate lobes ... *Malva* spp. (97-8)

   b  Cotyledons not heart shaped .........................................................................................................................  3

3   a  Cotyledons with lobes or lateral indentations ..............................................................................................  4

   b  Cotyledons without lobes or lateral indentations ..........................................................................................  5

4   a  Cotyledons with numerous lateral lobes; first leaves pinnately lobed ... *Erodium botrys* (90)

   b  Cotyledons oval with a terminal and one lateral lobe on each side; first leaf pinnately lobed; later leaves pinnate ... *Erodium cicutarium* (88)
Cotyledons elongated with a terminal and two lateral lobes on each side (in some instances, especially in young cotyledons, the apical lateral lobe on the right hand side is not separated from the terminal lobe); leaves pinnate ... *Erodium moschatum* (89)

5. a  Cotyledon as broad, or broader, than long; tip concave or flat (but not notched); petiole long .......................................................... 6
   b  Cotyledon not broader than long; tip not concave or flat ........................................ 9

6  a  Cotyledon with tip flat or shallowly concave and base concave; early leaves circular with palmate lobes; no epicotyl .......................................................... 7
   b  Cotyledon kidney shaped with deeply concave tip, base not concave; leaves elongated and lobed; no epicotyl .......................................................... 8
   c  Cotyledon almost square; leaf heart shaped with base angle greater than 90 degrees; epicotyl present .......................................................... 37

7  a  Cotyledon with glandular hairs; lobes of second leaf like those of first leaf and not subdivided ... *Geranium molle* (87)
   b  Cotyledon usually without glandular hairs; lobes of second leaf subdivided and not like lobes of first leaf ... *Geranium dissectum* (86)

8  a  Leaves with ‘warts’ on upper surface, and relatively broad in relation to their length; tip rounded ... *Brassica rapa* ssp. *sylvestris* (61)
   b  Leaves without ‘warts’; surface rather rough and veins deeply impressed; tip of first leaf usually broadly pointed; separated lobes usually present at base of first leaf; rosette usually grows flat on the ground. (very like *Sinapis* below) ... *Raphanus raphanistrum* (59)
   c  Leaves without ‘warts’; surface less rough and may be shiny; veins less deeply impressed; tip of first leaf usually rounded; base of first leaf not usually divided into separated lobes; rosette leaves usually semi-erect. (very like *Raphanus* above) ... *Sinapis arvensis* (60)

9  a  Cotyledons circular or slightly oval with distinct semi-circular notch at base and small nipple or spine on tip; petiole long and slender; leaves paired; early leaves spade-shaped or almost circular and lobed; petioles long and thin ... *Lamium amplexicaule* (94)
   b  Cotyledons without semi-circular notch at base ........................................ 10
10  a  Cotyledons about seven times as long as wide and more than 2 mm wide; sessile or with short merging petiole; tips sharply pointed; sides not parallel; leaves compound, first leaf being trifoliate with divided leaflets .............................................................. 11

b  Cotyledons at least eight times as long as wide and less than 2 mm wide; sessile; tips not sharply pointed; sides more or less parallel for the majority of their length; first leaves simple, not compound or lobed .............................................................. 12

c  Cotyledons less than seven times as long as wide or if more than seven times as long as wide then more than 2 mm wide and first leaf not compound ...................... 17

11  a  Cotyledons and leaves usually grey-green in colour; lobes of leaflets relatively broad and flat ... *Fumaria muralis* (84)

b  Cotyledons and leaves usually blue-green in colour; lobes of leaflets relatively narrow and cupped or folded, not flat ... *Fumaria densiflora* (85)

12  a  Cotyledons and leaves circular in cross section; hairless; after the first group the leaves grow in whorls around the stem .......................................................... *Spergula arvensis* (67)

b  Cotyledons and leaves not circular in cross section; cotyledons flattened or semi-circular; leaves do not grow in whorls .............................................................. 13

13  a  Cotyledons short, usually less than 5 mm long; first leaves short, usually less than 10 mm long and less than 2 mm wide, and parallel sided; later rosette leaves lobed and pinnate ... *Papaver hybridum* (104)

b  Cotyledons more — usually much more — than 5 mm long; first leaves usually more than 10 mm long ...................................................................................................................... 14

14  a  First leaves more or less parallel-sided or with their widest point towards the tip....... 15

b  First leaves not parallel-sided and with widest point about half way to tip ........... 16

15  a  First leaves hairless, long and narrow for most of length but usually broadening towards tip (spoon shaped); leaf tip pointed and usually with a small apical spine ... *Calandrinia ciliata* (126)

b  First leaves with white hairs; leaves more or less parallel-sided and not spoon shaped; tip rounded ... *Plantago coronopus* (105)
16 a Cotyledon with well defined median depression and hairs usually present, at least at base; first leaf hairy, six or more times as long as broad; mid-rib well defined and leaf usually a shallow ‘V’ in cross section; no membranous sheath at leaf bases; plant grows as a rosette ... *Plantago lanceolata* (106)

b Cotyledon hairless and without median depression; first leaf hairless, about four times as long as broad; mid-rib not well defined; a membranous sheath is found at the base of the leaves; the plant does not form a rosette; leaves not paired ... *Polygonum aviculare* (117)

c Cotyledon hairless and without median depression; first leaves paired, petiolate with a few hairs, and oval with a bluntly pointed tip; plant grows as a rosette ... *Papaver somniferum* (102)

17 a First leaves grow in whorls ........................................................................................................... 18

b First leaves do not grow in whorls ................................................................................................... 19

18 a Cotyledon with a distinct apical notch and a petiole about half as long as the blade ... *Galium aparine* (135)

b Cotyledon without an apical notch and sessile or with a very short petiole only ... *Sherardia arvensis* (136)

19 a Leaves petiolate, first leaf simple with base angle about 90 degrees, second and subsequent leaves trifoliate with lobes simple ................................................................. 20

b Leaves petiolate; all trifoliate with shallowly bifid tips ... *Oxalis* spp. (99-101)

c Second and subsequent leaves not trifoliate, or if trifoliate lobes not simple ...... 22

20 a Terminal leaflet with a stalk longer than that of the lateral leaflets ... *Medicago* spp. (82-83)

b Leaflets sessile or with stems all the same length ................................................................. 21

21 a Leaves hairy, at least on the underside ... *Trifolium subterraneum* (81)

b Leaves not hairy ... *Trifolium repens* (82-83)

22 a Cotyledons sessile and narrow, less than 2.5 mm wide, and more or less parallel sided; short, less than 10 mm long ................................................................. 23

b Cotyledons more than 2.5 mm wide and/or more than 10 mm long .................. 24
23  a  Cotyledons short, less than 4 mm long, and less than 2.5 times as long as wide; first leaves club shaped, broadening towards the tip; later leaves trifid or lobed, becoming pinnate ...  *Cotula australis* (54).  (Note: the cotyledons do not usually persist in this species, which then closely resembles *Lepidium didymum* (58) and will key out with *Lepidium*.)

b  Cotyledons about 4 to 8 mm long and 3 to 4 times as long as broad; first leaf petiolate with blade circular or oval ...  *Papaver dubium* (103)

c  Not as above .............................................................................................................................  24

24  a  Star hairs present on leaves, particularly the underside, and petioles and usually stems; later rosette leaves usually have several lateral lobes halfway towards the tip ...  *Capsella bursa-pastoris* (66)

b  No star hairs present ..................................................................................................................  25

25  a  Cotyledons circular or oval, less than 3 times and often less than twice as long as broad; sessile, or petiole broad and merging, usually short; leaves sessile or only shortly petiolate; leaf margins carry sharp spines.  Thistles ................................................  26

b  Cotyledons oval and sessile or with short merging petiole; first leaves almost circular on long broad petiole; margin of third and subsequent, and sometimes first and second leaves, with short, sharp spines; scattered white multi-cellular hairs on upper and lower leaf surfaces; stems and mid-ribs exude a white latex when cut ...  *Sonchus* spp. (46-7)

c  Cotyledons of various shapes, petiolate or sessile; leaves without sharp spines on margin though blunt teeth or protuberances may be present ........................................  30

26  a  Cotyledons long, usually longer than 30 mm, with a short, broad but distinct, merging petiole .................................................................................................................................  27

b  Cotyledons shorter than 30 mm; petiole usually short and not clearly defined ....  28

27  a  Leaves with white blotches, and a shiny upper surface; leaf texture hard ...  *Silybum marianum* (42)

b  Leaves without white blotches or shiny surface; leaves soft and flexible; first leaves with few spines mainly on basal margin ...  *Carthamus lanatus* (45)

28  a  Upper leaf surface carries ‘warts’ with sharp spines growing out of them; veins not particularly paler than rest of leaf surface ...  *Cirsium vulgare* (40-1)

b  Upper leaf surface covered in a dense mat of white hairs which give the seedling a grey appearance ...  *Onopordum acanthium* (43-44)

c  Upper leaf surface without spiny ‘warts’ or a mat of hairs; veins paler than rest of leaf surface ........................................................................................................................................  29
29 a Cotyledon with broad white vein; leaves shiny, about 3 times as long as broad, tip usually bluntly pointed; hairs short and scattered ... Carduus nutans (37)

b Cotyledon usually with white vein; leaves not shiny, about twice as long as broad, tip usually rounded; hairs long and scattered ... Carduus pycnocephalus, C. tenuiflorus (35-6)

c Cotyledon without, or with less distinct white vein; leaves usually shiny, about three times as long as broad with a rounded tip; spines more widely spaced than in above species ... Cirsium arvense (38-9)

30 a Cotyledon with short petiole, circular or slightly oval, less than 5 mm in diameter; first leaf with 3 lobes, later leaves having the lobes subdivided; leaves petiolate and stipulate ... Aphanes arvensis (133)

b Cotyledons with distinct, usually moderately long and narrow, petiole; base angle usually more than 60 degrees; leaves petiolate; more or less circular or spade shaped; base angle usually greater than 60 degrees; leaf margin with regular, distinct, and more or less symmetrical lobes ................................................................. 31

c Cotyledons various; leaves with simple, scolloped or irregularly lobed, but not regularly and symmetrically lobed, margins ......................................................... 35

31 a Leaves paired; plants do not form rosettes .......................................................... 32

b Leaves not paired; plants form rosettes ................................................................. 33

32 a Cotyledon oval, about twice as long as broad, with a long narrow petiole; surface shiny; leaves spade shaped with shallow lobes; veins not deeply impressed ... Veronica hederifolia (138)

b Cotyledon almost circular with a petiole almost as long as the blade; first leaves almost circular with moderately large lobes; veins deeply impressed ... Stachys arvensis 93

c Cotyledon spade shaped with petiole slightly shorter than blade; leaves spade shaped with moderately shallow lobes; veins deeply impressed ... Veronica persica (137)

d Cotyledon slightly oval, only a little longer than broad with a petiole about the same length; leaves spade shaped with moderately large lobes; veins very deeply impressed; leaf surface and petiole with long thin hairs which may form a loose mat over the surface and give the plant a grey appearance; leaf petioles long and thin ... Marrubium vulgare (95)

33 a Cotyledons do not have veins clearly defined; leaves with shallow lobes and veins not clearly defined; seedling medium to dark green in colour ... Viola arvensis (142)

b Cotyledons usually with veins clearly defined; leaves with deep lobes and veins clearly defined; seedling pale green in colour ......................................................... 34
34 a Leaves hairy ... *Ranunculus repens* (130)
   b Leaves hairless ... *Ranunculus muricatus* (129)

35 a Cotyledons petiolate and elongated; first leaf ovate or rather elongated with its widest point about a quarter the way to the tip; first leaf with a distinct apical notch ... *Amaranthus powellii* (27)
   b Cotyledons various; first leaf without apical notch ........................................ 36

36 a The first leaf petiolate, base concave with base angle greater than 90 degrees (cordate); leaves heart shaped or almost circular; leaves not paired............... 37
   b First leaf without concave, cordate base .......................................................... 39

37 a Cotyledons petiolate with base angle 60 degrees or more and tip flat or concave; epicotyl present ... *Convolvulus arvensis* (75)
   b Cotyledons elongated, sessile or only shortly petiolate with merging base; base angle 45 degrees or less; a membranous sheath present at the leaf base; no epicotyl present......................................................... 38

38 a Leaves heart shaped with a pointed tip; does not form a rosette ... *Fallopia convolvulus* (118)
   b Leaves round or slightly oval with rounded tip; forms a rosette ... *Rumex obtusifolius* (123)

39 a Cotyledons petiolate; leaves paired; epicotyl well developed and plant hairless; stems and mid-rib exude a white latex when cut; plant does not form a rosette .......... 40
   b Plants do not exude a white latex when cut, or if they do the leaves are not paired ................................................................. 41

40 a Leaf tips serrated; leaves sessile or with a merging base ... *Euphorbia helioscopia* (76)
   b Leaf tips not serrated; leaves petiolate ... *Euphorbia peplus* (78)

41 a Cotyledons and early leaves with merging base, basal angle less than 45 degrees; sessile or only shortly petiolate ........................................................................ 42
   b Cotyledons or early leaves, or both, with well developed petiole ...................... 47

42 a Underside of leaves covered with long fine hairs forming a dense mat, plant greyish in colour ... *Arctotheca calendula* (34)
   b Underside of leaves not covered with dense mat of hairs ............................... 43
43 a First leaves with hairs present ................................................................. 44

b First leaves hairless .................................................................................. 45

44 a Cotyledon oval, sessile or only shortly petiolate; about three times as long as broad; leaves sessile, ovate with widest point about the centre; tip rounded; leaves about three times as long as broad; early leaves shallowly or very slightly lobed; stout hairs on upper leaf surface; leaf with rather hard texture; no epicotyl present ... Hypochoeris radicata (48)

b Cotyledon oval, sessile or only shortly petiolate; about four times as long as broad; leaves sessile or only shortly petiolate, about four times as long as broad; leaves scolloped, early leaves shallowly and later leaves more deeply; widest point towards the tip; simple and grapnel hairs usually present on leaf; leaf with flexible texture; no epicotyl present ... Leontodon taraxacoides (49)

c Cotyledons oval, sessile or only shortly petiolate; about four times as long as broad; leaves sessile or shortly petiolate, rather less than three times as long as broad; leaves lobed and tend to have a shiny surface; first leaf may be hairless but later leaves have multi-cellular hairs which are also present at the base of the leaf and on the stem; epicotyl present ... Senecio vulgaris (53)

45 a Cotyledons oval, sessile or shortly petiolate; leaves with backwardly directed teeth, merging base which may be elongated into a petiole; when cut the stem and mid-rib exude a white latex; leaf surface rather shiny ... Taraxacum officinale (50)

b Leaves with simple or lobed margin but not having backwardly directed teeth; plant does not exude a white latex when cut ................................................................. 46

46 a Leaves broad, lobed and usually with a rather shiny surface; later leaves, and usually the stem and leaf bases, have multi-cellular hairs; epicotyl present; plant does not form a rosette ... Senecio vulgaris (53)

b First leaves elongated; usually simple but sometimes with a lobe; later leaves lobed and ultimately pinnate; no sheathing membrane at the base of the leaf; not reddish in colour; grows as a rosette; plant has a distinct 'cressy' smell when crushed ... Lepidium didymum (55). (Note: Cotula australis (54) will key out here if the cotyledons have been lost; it does not have the 'cressy' smell.)

c Leaves elongated and never lobed; often reddish in colour and may have black mark about half way along; membranous sheath at base of leaf; does not grow as a rosette; does not have a 'cressy' smell ... Persicaria maculosa (119)
47  a  Stem and mid-ribs exude white latex when cut; leaves with backwardly directed teeth; leaf surface usually shiny; hairless ... *Taraxacum officinale* (50)

b  Stem and mid-ribs do not exude a white latex when cut, or if they do, leaves do not have backwardly directed teeth on margin and are not hairless ................. 48

48  a  Cotyledons elongated and sessile or with short merging petiole; leaves not paired; leaves with long petioles, usually more than half as long as the blade, and base angle 45 degrees or more; membranous sheath at base of leaf; hairless ............... 49

b  Cotyledons not sessile, or if sessile, leaves are not hairless ......................... 50

49  a  Tip of leaf round; basal angle about 90 degrees or more; base usually cordate ... *Rumex obtusifolius* (123)

b  Cotyledons may have short merging petiole; petiole of leaf thin and often longer than blade; later leaves do not have hastate or sagittate base ... *Rumex crispus* (122)

c  Cotyledons seldom have short petiole; petiole of leaf rather wide and not normally as long as blade; later leaves have hastate or sagittate base ... *Acetosella vulgaris* (121)

50  a  First two leaves not paired ........................................................................... 51

b  First two leaves paired, or appear to be paired .............................................. 58

51  a  Cotyledons narrowly spade shaped or oval with a pointed tip; shortly petiolate; petiole and usually blade with glandular hairs; first leaf spade shaped and petiolate; leaf and petiole with glandular hairs ... *Solanum nigrum* (140)

b  Cotyledons not spade shaped; cotyledon and leaf do not have glandular hairs ... 52

52  a  Plants hairless; membranous sheath at base of leaf; cotyledons elongated with bluntly pointed tips ........................................................................... 53

b  Plants usually with some hairs; no membranous sheath at leaf base ............. 54

c  Plants hairless; no membranous sheath at base of leaf; cotyledons oval .......... 57

53  a  Leaf with rounded tip and base angle about 90 degrees ... *Rumex conglomeratus* (125)

b  Leaf with bluntly pointed tip and base angle about 45 degrees; rosette leaves waisted; not confined to moist situations ... *Rumex pulcher* (124)
54  a  First and second leaf with substantial differences in shape ........................ 55
    b  First and second leaf generally similar to each other ............................. 56

55  a  Cotyledons oval, often with a small apical notch, and shortly petiolate; second leaf
    with margin wavy and lobed, later leaves with margins very wavy and deeply lobed ... Senecio jacobaea (51-2)
    b  Cotyledons rather elongated and narrow without apical notch; at about the third leaf
    the margins develop shallow lobes or teeth, but do not become deeply lobed or very
    wavy ... Plantago major (107)

56  a  Cotyledons and leaves elongated about four times as long as broad; grapnel hairs
    usually present on leaf and stem; later leaves scolloped ... Leontodon taraxacoides (49)
    b  Cotyledons oval with blades only about twice as long as broad; petioles long, often as
    long as the blade; first leaves rather broad, usually a little longer than broad and often
    almost square; second and subsequent leaves lobed ... Sisymbrium spp. (62-3)

57  a  Cotyledon oval with a rounded tip; first leaves with bluntly pointed or rounded tip and
    not lobed ... Lepidium campestre (64)
    b  Cotyledon oval with a bluntly pointed tip; first leaves bluntly pointed and with shallow
    lobes ... Lepidium draba (65)

58  a  First two leaves apparently paired, but third and fourth leaves not paired; plants with
    some hairs ........................................................................................................... 55
    b  First two leaves apparently paired, but third and fourth leaves not paired; plants
    hairless .............................................................................................................. 57
    c  Early leaves, at least the first six, paired ...................................................... 59

59  a  Hairs present at base of leaf only, blade otherwise hairless; leaves oval with a pointed
    tip and long thin petiole; cotyledons oval with a pointed tip and long thin petiole;
    epicotyl long ... Stellaria media (71)
    b  Leaves hairy; epicotyl absent or very short .................................................. 60
    c  Leaves and plant hairless ............................................................................. 61
60  a  Cotyledons about 5 mm long, oval with a short petiole; first leaves oval with rounded or bluntly pointed tip, about 5 to 8 mm long ... *Cerastium spp.* (69-70)

b  Cotyledons about 8 to 10 mm long, oval with a short petiole; first leaves oval with a merging base, about 20 to 25 mm long ... *Silene gallica* (68)

c  Cotyledons about 4 to 8 mm long, oval with a short petiole; leaves oval with a petiole about a quarter to half as long as the blade; first leaves usually with a simple margin, later leaves shallowly lobed and after about the sixth leaf with deep divisions about the mid point cutting off several deep lateral lobes: however, the leaves are very variable and the median lobes may be absent; star hairs present on leaf, particularly the lower surface, petioles and stems, but these can only be seen with a hand lens and even then may be difficult to distinguish ... *Capsella bursa-pastoris* (66)

61  a  Cotyledons and leaves spade shaped or oval with a bluntly pointed tip; leaf margins simple .......................................................... 62

b  Cotyledon elongated, about four to seven times as long as wide; leaves, at least after first pair, lobed to some extent .................................................. 63

62  a  Early leaves sessile or very shortly petiolate; later sessile; dark spots present on the underside of the leaves ... *Anagallis arvensis* (128)

b  Leaves with petiole which is often as long as, or longer than, the blade; no dark spots on underside of leaf ... *Montia fontana* (127)

63  a  Plant a pale grey-green (occasionally purplish) colour; first leaves mealy; first leaves about two and a half times as long as broad with a bluntly pointed tip and usually only one or two lobes towards the base ... *Chenopodium album* (72)

b  Plant reddish-green in colour; first leaves not usually mealy on the upper surface, but may be mealy on the underside; first leaves about as broad as long with a rounded tip and usually shallowly lobed round most of the margin ... *Chenopodium murale* (73)
**AMARANTHUS**

*Amaranthus powellii* S. Wats.  
Annual

**AMARANTHACEAE**

**Distribution:** Amaranthus occurs in most parts of the State. It is native to North and Central America.

**Occurrence and Significance:** It is principally a weed of stock yards, waste areas, orchards and hop fields.

**Description:** Germination occurs mainly in spring. The cotyledon is 15 to 20 mm long overall with a merging petiole 5 to 7 mm long, and is hairless. The seedling has both hypocotyl and epicotyl. The leaves develop in pairs, the first being 12 to 25 mm long in the blade with a petiole 10 to 20 mm long. They are hairless, but have a few short hairs on the petiole. The first leaves have a distinctive apical notch. Later leaves have a typical kite shape. The plant does not form a rosette.

The mature plant is erect in habit, 700 mm to 1.5 m tall, with more or less horizontal branches from the base and along the length of the stems. The stems are circular or oval in cross section with shallow longitudinal grooves, are solid and have sparse fine hairs, particularly on the upper stems. The stem is frequently reddish in colour though the colour may develop on one side only. Lower stem leaves are 70 to 90 mm long with a petiole some 50 mm long, and are hairless. The leaves developing at the top of the stem are smaller and more elongated.

The inflorescences are terminal and axillary, consisting of large numbers of flowers packed tightly into bristly conical spikes. The individual flowers are 2 to 3 mm in diameter, sessile, and green with five petals.

Other common names applied to species of *Amaranthus* and occasionally used for *A. powellii* include Prince of Wales feather, redroot, tumbleweed and pigweed.

**Life cycle and Dispersal:** Seeds germinate in late spring to early summer, flowering is between mid-summer and autumn, and plants die off in autumn. Amaranthus can have two flowering events in a season, and a single plant can produce several hundred thousand seeds. At the end of the growing season the plant withers and detaches from its base, and the dried bush is then blown along the ground in a ‘tumbling’ manner. Seeds can be scattered over wide distances by the tumbling bush.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch
**CROW GARLIC**

*Allium vineale* L.

**Perennial**

**LILIACEAE**

**Distribution:** Locally common in the north, southern Midlands and southeast of the State. On mainland Australia it is largely confined to Victoria and the southern parts of South Australia and Western Australia. It is native to Europe, north Africa and Asia Minor.

**Occurrence and Significance:** Crow garlic is principally a weed of pasture but it will persist in annual crops following the cultivation of old pasture. Occasionally it is a weed of roadsides and waste places. In addition to its ability to compete with crops and pasture, crow garlic is of importance as a weed because of its content of allyl sulphide, a material which gives the plant its strong garlic smell. Milk and meat products from stock grazing infested pastures become tainted and unfit for sale.

In cereals the ripe bulbils are harvested with the grain and cannot be removed either by the header or by subsequent cleaning, making the crop unsaleable for malting or flour milling.

**Description:** In any population of crow garlic, two kinds of plants are found: vegetative plants which produce leaves only, and flowering or scapigerous plants which also produce a scape or stem at the tip of which the flower head is formed. Vegetative plants out-number flowering plants. They produce two or three long, slender, hollow, blue-green leaves, cylindrical in section with a shallow groove on the upper surface. By the end of the season, one soft central bulb and one or two hard offset bulbs are formed at the base of the plant.

Flowering plants are larger than vegetative plants, producing four or five leaves and a single scape which is up to 1 m in height. The scape is smooth, cylindrical, with a centre partially filled with an interrupted or discontinuous pith. The flowering head is at first enclosed in a papery spathe which in summer bursts open to reveal the flower (or bulbils in the case of Tasmanian plants). Flowering heads may produce flowers, bulbils, or a mixture of the two, but in Tasmania they rarely produce flowers. The umbel of bulbils may be single, or up to four umbels may form in the one head, bearing a total of up to 300 bulbils. The bulbils, enclosed in a thin, papery, straw-coloured sheath, are about the size of a grain of wheat. At the base of the plant a single soft white offset bulb is produced inside the innermost leaf-sheath, and outside the outer sheath about six hard, straw-coloured offset bulbs are formed.

There are three similar species in Tasmania. Three-cornered garlic (*A. triquetrum*) grows 30 to 50 cm high and has stems that are triangular in cross-section; white garlic (*A. neapolitanum*) produces loose umbels of white flowers; elephant garlic (*A. ampeloprasum*) is similar in size and flower shape, but has flat leaves.

**Life Cycle and Dispersal:** Each type of bulb and the bulbils are capable of developing into a scapigerous plant during the following season but in most cases the hard offsets remain dormant for up to six years. Most of the plants growing from hard offsets and from bulbils are vegetative, whereas flowering plants develop from central bulbs or soft offsets. Germination begins in the autumn and vegetative growth continues slowly through to spring when the growth rate increases. ‘Flowering’ (or bulbil production) occurs in early summer.

Increase in numbers in an established infestation is due largely to germination of the central bulbs and offsets, bulbils apparently having little impact. Spread to new areas may result from bulbs, offsets or bulbils being scattered by cultivation, by movement of contaminated topsoil, in mud on agricultural implements or on the feet of stock, by bulbils being carried along by heavy rains and by bulbils in hay or by bulbils present in grain.

**Status:** Declared weed
Illustrations

A. Scapigerous plant bearing a single head of bulbils
B. A head of two umbels of bulbils
C. A bulbil. The outer sheath is splitting to reveal the purplish bulbil inside
D. The base of a scapigerous plant at the end of the season. The outer tunic has been removed to reveal the soft offset bulb and two hard offsets
E. Hard offsets clustered around the base of the plant shown in D, before the removal of the outer tunic
F. The base of a vegetative plant at the end of the season. A soft central bulb and one hard offset have formed
G. Hard offset bulbs
Distribution: Scattered throughout the populated areas of the State, principally in towns and less frequently on roadides. On the mainland it is found in Victoria, South Australia and New South Wales. It is native to the western Mediterranean.

Occurrence and Significance: Predominantly an urban weed found in gardens, reserves and nature strips. Also occasionally found on roadsides in rural areas where it may encroach onto pastures. A tainter of milk and meat products, in domestic gardens and urban areas its smell is considered offensive.

Description: Three-corner garlic is a bulbous perennial, the bulb small and pale. The leaves are 2 to 5 in number and up to 300 mm long by 10 mm broad, flat or concave, and keeled on the underside. The flower stems are triangular in section, 300 to 500 mm tall. The flower buds are at first enclosed in two white papery bracts which split to reveal the umbel of flowers. There are three to 15 drooping flowers, on pedicels longer than the flowers, with six perianth segments, three broad elliptical, and three a little narrower, white in colour with a central green stripe and each with a stamen attached towards the base. The ripe fruit is about the size of a small pea.

Three-cornered garlic resembles several popular spring bulbs, including snowdrop (Galanthus nivalis), but is distinguished by its very strong odour.

Life Cycle and Dispersal: There are two methods of spread: by seed and by the production of bulbs. Seedlings produce leaves and a bulb in the first year, and flower in the second season. Flowering occurs in spring and early summer. The foliage dies off during summer.
**FENNEL**

*Foeniculum vulgare* Mill.

**Perennial**

**APIACEAE**

**Distribution:** This species is locally common in the south, the north and the northwest, and less frequently encountered in other parts of the State. On the mainland it is found from South Australia through to New South Wales. It is native to Europe and Western Asia.

**Occurrence and Significance:** Fennel occurs on roadsides, particularly in suburban areas. Many people consider the plant to have an offensive or even nauseating smell. Cultivated strains are used in cooking. Fennel is grown commercially in Tasmania.

**Description:** The cotyledons are elongated and narrow, some 40 to 50 mm long. There is a hypocotyl and a short and indistinct epicotyl. The leaves are compound and pinnate, with later rosette and stem leaves having the leaflets pinnately subdivided. The leaflets are very fine. The mature plant is erect with stems reaching 2 m or more. They are faintly striated, pithy, branched and with several stems emerging from each crown. The flowers are greenish-yellow and 3 to 6 mm in diameter, many being produced together in the umbrella-like umbels. The plant has a strong aniseed-like smell. Fennel resembles the herb dill (*Anethum graveolens*), but is less wispy, has a stronger odour, and has pithy rather than hollow stems.

**Life Cycle and Dispersal:** The main germination occurs in autumn or spring. Plants initially grow as a coarse rosette, and do not flower until they are about two years old. Regeneration from established roots occurs in spring and the plant flowers in summer. Top growth generally dies down over winter.

Fennel is spread mainly by seed. Most seed falls to the ground very near the parent plant. Longer-distance movement of seed occurs where seeds contaminate agricultural produce, machinery, animal skins and human clothing. Seeds are also spread in water along drainage lines. Fennel can regrow from crown and root fragments, and spread can occur when crown or root fragments are moved by cultivation or earth-moving machinery.

**Status:** Declared weed

**Illustrations**

A. Seedling
B. Leaf showing sheathing base
C. Flowering and fruiting branch
Conium maculatum L.  

**Biennial**  
APIACEAE

**Distribution:** Small patches can be found in all the higher rainfall areas of the State and occasionally in wet areas in the drier Tasmanian Midlands. On the mainland this species is found in most States. It is native to Europe and the Mediterranean.

**Occurrence and Significance:** Hemlock occurs in moist areas, especially along roadides, ditches and in pasture. Hemlock is an extremely poisonous plant.

**Description:** The seedling has oval cotyledons about 15 mm long with a distinct petiole and clearly marked longitudinal veins. There is a hypocotyl but no epicotyl. The leaves are petiolate, compound and pinnate with the leaflets pinnately subdivided. The youngest leaves are less divided than the older rosette and stem leaves. The stems are erect, reaching 2 m or more in height, ridged and hollow, with distinct purple-black blotches. The flowers are produced on umbrella-like umbels in large numbers. They are about 5 mm in diameter with five white petals. The plant has an unpleasant smell.

Hemlock resembles a number of members of the carrot family, e.g. Queen Anne’s lace (*Daucus carota*), but can be distinguished by its unpleasant smell and the presence of blotches on the stems.

**Life Cycle and Dispersal:** Seedlings germinate in autumn and probably spring, producing a coarse rosette initially. Flowering occurs in the late spring and summer. The plant reproduces from seed and the main method of dispersal is in water, or by being carried on animals and vehicles.

**Illustrations**

A. Lower leaf  
B. Flowering and fruiting branch  
C. Detail of stem and sheathing leaf-base  
D. Detail of single flower  
E. Single fruit
STINKING MAYWEED

Anthemis cotula L.

Annual

ASTERACEAE

**Distribution:** Occasional patches of this species are found in the north, northwest and around Hobart. On the mainland the species is found in scattered populations in all States. It is native to Europe and north and west Africa.

**Occurrence and Significance:** Occurs in waste areas, around farmyards and occasionally in pasture. Can be an invasive species in pasture, stinking mayweed taints milk, butter and meat when eaten by stock. In Europe, mayweeds are important weeds in cereal crops.

**Description:** The cotyledon is small, about 4 mm long, oval and sessile. The first leaves are pinnate, and as the plant grows the leaflets become progressively more divided. The mature plant is 300 to 600 mm tall with branched stems. The flowers are daisy-like, composite with yellow disc florets surrounded by a ring of ray florets with white ligules. The ‘flower’ is 25 to 35 mm overall in diameter. The plant has an unpleasant smell.

Stinking mayweed is very similar to the closely related corn chamomile (*A. arvensis*), but the latter has slightly broader foliage and lacks the unpleasant smell.

**Life Cycle and Dispersal:** Details of the life cycle in Tasmania are not known but germination is believed to occur in spring. The plant flowers in summer and dies off in autumn. Reproduction is by means of seed which can be carried by animals or vehicles or in water.

**Status:** Declared weed

**Illustrations**

- A. Flowering branch
- B. Leaf
- C. Achene (‘seed’)
**Distribution:** Capeweed is distributed throughout the State and is especially prolific on light sandy soils. Capeweed, a native of southern Africa, is widely distributed in Australia.

**Occurrence and Significance:** It occurs in pastures and cereal crops, occasionally in other crops, and in waste areas. It is strongly competitive in young pastures and cereals, and can cause allergic ‘hayfever’ reactions in livestock. A change of stock from sheep to cattle has frequently been found to result in a significant increase in the incidence of this species. It may be responsible for horse poisoning.

**Description:** The cotyledon is 10 to 20 mm long overall with an indistinct and merging petiole 1 to 2 mm long, and is hairless. The seedling has a short hypocotyl and no epicotyl. The first leaves are paired and are 10 to 20 mm long overall with a short petiole. Later leaves grow singly. The upper surface has short, rather mealy hairs, while the under surface is covered with a matted web of long hairs which give it a silvery appearance. The first leaves are simple or lobed or scolloped with later leaves pinnately lobed or pinnate. The plant develops as a rosette 200 to 300 mm or more in diameter.

The mature plant is semi-erect or prostrate in habit with several branched stems which reach a length of 400 mm. The stems are circular or fluted in cross section, often striated or partly striated, and have a small hollow core. They are covered with long hairs which form a loose, webby covering. The stem leaves reach a length of 250 mm. The lower leaves are petiolate but the upper leaves, in which the lobes are reduced or absent, are sessile. The leaves carry numerous short multi-cellular and fine cobwebby hairs on the upper surface, and a mat of fine hairs on the lower. The inflorescences are composite and terminal on the branches, 40 to 60 mm in diameter, with a single row of ray florets which are yellow and usually black towards the centre.

Capeweed can be confused with the hedge mustards in the rosette stage but is easily distinguished by the mat of hairs on the underside of the leaf.

**Life Cycle and Dispersal:** The main germination time is the early autumn, but germination can also occur later in the year in crops. Seedlings appear from late February through to late April. Flowering occurs in late spring and early summer; the masses of yellow, daisy-like flowers are conspicuous from a considerable distance. Capeweed dies off in late summer. Capeweed is spread by seed, which are spread by birds and animals, and as a contaminant in soils on vehicles and machinery.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch
**Carduus pycnocephalus** L. **Shore Slender Thistle**

**Carduus tenuiflorus** Curtis **Winged Slender Thistle**

**ASTERACEAE**

**Distribution:** Slender thistles occur throughout most of the State. The heaviest infestations occur in the Tasmanian Midlands. They occur on the mainland in South Australia, Victoria and New South Wales and probably most other States. The species are native to Europe.

**Occurrence and Significance:** Slender thistles are frequently weeds of improved pasture and adjacent roadsides. They establish most readily on areas with higher soil fertility and annual rainfall over 500 mm. Heavy infestations of slender thistle compete with desirable pasture species, interfere with the grazing of pasture by animals and may cause ‘scabby mouth’ in sheep. Since they are a prohibited contaminant in pasture seed it is necessary for them to be controlled in, or in areas adjacent to a grass seed crop.

**Description:** In the early stages the two species of slender thistle are extremely difficult to differentiate. The cotyledon is 15 to 25 mm overall with a broad merging petiole and is hairless. It often has a pale streak up the centre. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, the first reaching 45 mm in length, with a broad merging petiole which tends to elongate as the leaf ages. The early leaves carry a few long multi-cellular hairs on the upper and lower surfaces and spines round the margin and have a distinctive pale venation. Later leaves are lobed and have a wavy margin. The plant develops as a rosette some 300 to 400 mm in diameter.

The mature plant is upright in habit and may branch considerably or be practically unbranched. It normally reaches a height of 1.2 m but in exceptional years may exceed 2 m. The stems are solid and pithy, polygonal in cross section, and very variable in diameter. They carry fine white cobwebby hairs. Stem leaves reach 130 mm long, are sessile, and their margins usually continue as wings down the stem. Hairs similar to those on the stem occur on upper and lower leaf surfaces. The flower heads form a cluster on the end of the stem. They are composite with tubular florets and reach 20 mm in diameter by 25 mm long.

The heads of *C. pycnocephalus* are usually four or five together and sessile. The heads of *C. tenuiflorus* are single or paired, and have a short but distinct petiole.

Slender thistle may be confused with spear thistle (*Cirsium vulgare*), nodding thistle (*Carduus nutans*) and Californian thistle (*Cirsium arvense*). Spear thistle has ‘warts’ on the leaf surface and lacks the pale veins present in slender thistle. Nodding thistle has a leaf which is much longer in proportion to its width, has more lobes and is much more deeply divided – often right down to the mid-rib between the lobes. Californian thistle has a branched rooting system which is absent in slender thistle. The flowers of these four species are quite distinctive.

**Life Cycle and Dispersal:** The main germination time for slender thistle is the autumn, depending upon moisture availability. Further germination may also occur during the spring, this being more common in the north and northwest areas of the State. In some years there would appear to be a succession of spring germinations. The plant forms an over-wintering rosette and throws a flowering stem during late spring. Flowering and seed production occur in early summer and the life cycle is normally completed in the Tasmanian Midlands and southern part of the State before the end of the year. In the northwest the plant continues through into summer and may even survive into the autumn.

The seed can be windborne although much of the thistle down is shed from the plant without any seed attached. Stock is important in dispersal, seeds being readily carried in the fleece of sheep.

**Status:** Declared weeds
Illustrations

A. Rosette
B. Flowering stem
C. Flower

Carduus tenuiflorus

Carduus pycnocephalus
**Distribution:** This species occurs in small and scattered infestations in all parts of the State, but is most prevalent in the higher rainfall areas. On the mainland nodding thistle occurs in New South Wales and Victoria. It is a native of Europe, and is a serious pest in New Zealand.

**Occurrence and Significance:** Nodding thistle occurs mainly in improved pasture, in crops, or in land which has previously been under improved pasture. Many infestations have been traced back to the use of imported New Zealand ryegrass. Nodding thistle is a large plant. It competes strongly with pasture, and grazing animals can be excluded by heavy infestations. Nodding thistle grows and flowers throughout the winter, and large competitive plants can be present during autumn and early winter when the effect on pasture production is most significant economically.

**Description:** The cotyledon is 10 to 15 mm long with a short, broad, merging petiole, and is hairless. It normally has a distinct white vein up the centre. The seedling has neither hypocotyl nor epicotyl. The leaves grow singly but the first two emerge close together and often appear paired. The first leaf reaches 20 to 30 mm in length and has a petiole which is about one quarter the length of the leaf. The margin has small spined lobes. The early leaves have a pale veining and carry short, scattered hairs on the upper surface and only a few, or none, on the lower. Later leaves are deeply lobed or pinnately lobed, and armed with long spines. The margin is wavy and the upper and lower surfaces carry long hairs which are numerous on the mid-rib but sparser or absent on the rest of the leaf.

The mature plant is erect and bushy in habit with stems that branch from the base and along their length. It reaches 1.5 m or more in height and frequently the same in diameter. The stem is polygonal in cross section, ridged, and solid with a small pithy core. The stems carry long thin hairs that may form a cobwebby mat. The stem leaves are 300 to 400 mm long and sessile, with their margins continued down the stem as wings. They carry short mealy hairs on the upper surface, and similar but rather larger hairs on the lower surface, especially on the veins. The inflorescences are composite and usually single and terminal on the branches. They are 50 to 80 mm in diameter with many tubular florets, purple in colour, and strongly and sweetly scented. The stem is almost invariably bent over to give the plant its characteristic ‘nodding’ habit.

Nodding thistle leaves are relatively longer and narrower than those of slender thistles (*Carduus pycnocephalus* and *C. tenuiflorus*) and tend to have a greater number of lobes. The lobes in nodding thistle are often completely separated from each other. The surface of Californian thistle (*Cirsium arvense*) is more shiny, while the general shape of the leaf is less regular and symmetrical. In mature plants the nodding thistle flowers are distinctive, while its spreading and bushy growth habit is unlike that of either of the other two species.

**Life Cycle and Dispersal:** Nodding thistle reproduces from seed. The main germination is in autumn, but seedlings can be found at all times of the year when there has been sufficient moisture to germinate the seed. The seedlings grow progressively throughout the year except during the hottest period of summer, and plants in all stages of growth can be found at most times of the year. Nodding thistle has a well developed pappus, which is relatively large in relation to the size of the seed, and seed is readily carried by wind. Seed may also be transmitted by animals, man and machinery, and in water.

**Status:** Declared weed

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch
**Distribution:** Californian thistle occurs in all farming areas in the State. It is least common in the dry Tasmanian Midlands and most prolific in the high rainfall areas of the far northwest. It is also common in the northeast. In the south it is widely distributed and grows vigorously in wet seasons. On the mainland it is found in the southern States and in New South Wales. It is native to Europe and the Mediterranean, and has become established in most of the temperate parts of the world.

**Occurrence and Significance:** Californian thistle occurs in pasture, cropping land, on roadsides, in riparian areas and waste areas. It is competitive in pasture, heavy infestations significantly reducing productivity and excluding grazing animals. In crops it is difficult to control with selective herbicides. It competes with the growth of the crop, and interferes with harvest operations. Produce contamination can also be a problem.

**Description:** The cotyledons are 12 to 18 mm long and hairless. The petiole is absent or very short and merging. The seedling has a very short hypocotyl and no epicotyl. The early leaves are 15 to 20 mm long, have a short merging petiole, and are armed with spines around the margin. The upper leaf surface is a shiny green with the veins much paler in colour. The plant develops as a rosette 200 to 300 mm in diameter. Annual growth from established roots also develops initially as a rosette of about the same size. Some of the rosettes produce flower shoots while others do not. The mature plant is erect in habit with stems, which may or may not branch, reaching 1 m in height. The stem is solid with a pithy core, polygonal in cross section, and may have shallow longitudinal grooves. Dark striations are frequently present. The stem is hairless or may carry a few short stout hairs and some fine downy hairs. The stem leaves are 100 to 200 mm long, sessile and semi-clasping, but do not extend down the stem as wings. They carry few or no hairs on the upper surface, and a few downy hairs, or no hairs, on the lower surface. The inflorescences are composite with tubular florets, terminal on the stem, one or two to four together, and are not spiny. They are relatively long and narrow with a diameter of approximately 15 mm and a length of approximately 20 mm. The male and female flowers differ slightly in shape. The flowers are strongly scented.

The presence of a perennial spreading root system and the absence of wings down the stem help to distinguish this species from slender thistles (*Carduus pycnocephalus* and *C. tenuiflorus*) and nodding thistles (*Carduus nutans*). The soft bracts around the flower contrast with the hard spiny bracts of slender thistle, the only other species with small, purple flower heads.

**Life Cycle and Dispersal:** Californian thistle can reproduce both by seed and vegetatively from the spreading underground root systems. There are separate male and female plants; significant seed production occurs only where the two sexes grow within approximately 100 m of each other. In Tasmania mixed populations are not common, and substantial seed production is rare. Male plants can produce a limited amount of viable seed. The main means of spread in Tasmania is vegetative (root) and cultivation can spread this plant. Regrowth from the perennial root system occurs in early summer. Rosettes normally appear in Tasmania in December, the centre stem being thrown up during January. Flowering occurs normally during January and February. The life cycle may be advanced in favourable seasons. The stems die down during autumn and the plant is normally dormant over winter.

**Status:** Declared weed
Illustrations

A. Seedling
B. Young shoot from perennial root
C. Flowering branch (male)
D. Stem leaves
E. Flower head (female)
**SPEAR THISTLE**

*(Scotch or Black Thistle)*

*Cirsium vulgare* (Savi.) Ten.  

**Annual**  

**ASTERACEAE**

**Distribution:** Spear thistle occurs in all farmed parts of the State. It tends to be most prolific in the Tasmanian Midlands grazing areas where extensive areas carry dense infestations. It is less frequently found in heavy infestations in the higher rainfall areas in the north of the State. It is found in most mainland States. The species is native to Europe, the Mediterranean and western Asia.

**Occurrence and Significance:** Spear thistle occurs in crops, pastures, on roadsides and in waste areas. Plants also occur in unimproved pasture and in areas of native vegetation, though heavy infestations are not normally found in such areas. It is not regarded as a weed of great importance, although it is capable of forming heavy infestations, particularly in the dry grazing areas of the Tasmanian Midlands, and severely reducing productivity. It downgrades hay quality. In pasture, good management will normally restrict the incidence of the weed, while in crops it is readily controlled by many of the selective herbicides normally used.

**Description:** The cotyledon is 15 to 20 mm long, sessile and hairless. The seedling has a short hypocotyl and no epicotyl. The leaves are produced singly, the first leaves being 20 to 25 mm long with a short merging petiole. The upper surface of the leaves carries a few multi-cellular hairs, and 'warts' from which strong spines arise. The margin is spiny. Later leaves are lobed, the lobes being subdivided into three or four parts and often rotated until they lie nearly at right angles to the main leaf blade. The lobes, usually four to six in number, are approximately half the width of the leaf blade. The plant develops as a rosette which can reach 750 mm in diameter.

The mature plant is erect with branching stem reaching 1.5 m in height. The stem is polygonal in cross section with a pithy core which is usually solid but may have a small hollow in the centre. The stem carries both stout hairs and a cobwebby mat of long fine hairs. The stem leaves are sessile, 200 to 250 mm long, and have their margins continued down the stem to form wings. The upper surface of the leaf carries stout hairs while the lower surface is covered with a cobwebby mat of fine hairs. The stem leaves are narrower than the rosette leaves and the lobes are wider in proportion. The lobes become long and pointed with strong terminal spines and their ultimate form may be conical. In the stem leaves there are normally only one to four lobes, with the upper leaves being smaller and having fewer lobes than the lower. The inflorescences are terminal on the branches, occurring singly or three to four together. They are composite with tubular florets, purple in colour, and approximately 40 mm in diameter.

Spear thistle is distinguished from slender thistles (*Carduus pyncnocephalus* and *C. tenuiflorus*), Californian thistle (*Cirsium vulgare*) and nodding thistle (*Carduus nutans*) in the young stages by the spined 'warts' on the upper leaf surface and the absence of a paler outlining to the veins. The mature leaves and the flowers are different in shape from those of the other thistles.

**Life Cycle and Dispersal:** Spear thistle reproduces from seed which carries a large pappus and can be wind-blown over considerable distances. Normally however, much of the seed separates from the pappus before leaving the head, and is deposited close to the parent plant. The main germination period is in the autumn, although seedlings may be produced throughout the winter, spring and also summer when adequate moisture is available. Seedlings germinated in summer and autumn form overwintering rosettes that throw a centre shoot and flower during the following spring and summer. Flowering plants can persist well into winter. Seedlings produced during winter and spring initially form a rosette and then normally flower during the same summer and autumn. In addition to wind dispersal, seed may be carried by animals, humans and vehicles, and by water. It is sometimes found as a contaminant in pasture and other seed.
Illustrations

A. Seedling
B. Rosette
C. Flowering branch
**Distribution:** Variegated thistle occurs in the south, Tasmanian Midlands and north of the State, but is less common in the northeast and the northwest. It can be found in most mainland States. The species originates from Europe and the Mediterranean.

**Occurrence and Significance:** Variegated thistle is a weed of pasture, roadsides and waste areas. It sometimes occurs as a weed in cereal crops, and in isolated areas in the northwest it can be found in irrigated crops. It is strongly competitive in all situations, and can cause severe yield depression in pasture or crops. When treated with herbicides the plant becomes toxic due to a high nitrate concentration in the leaf. Herbicide application also results in the plant becoming more palatable to stock and poisoning due to this plant is recorded from time to time.

**Description:** The cotyledon is large, 25 to 40 mm long with a broad merging petiole approximately 5 mm long, and is hairless. The seedling has a very short hypocotyl but no epicotyl. The leaves grow singly, the first leaf being 40 to 80 mm long, with a merging petiole 10 to 25 mm long. The leaves are shiny green in colour and carry distinctive white blotches which do not follow the veins. They carry a few long multi-cellular hairs on the upper and lower surface, and have a shallowly lobed and spined margin. Later leaves are lobed and have a wavy margin. The plant develops as a rosette which frequently exceeds 500 mm in diameter and may reach nearly 1 m. The mature plant is erect and bushy with stems which are branched from the base and along their length. It commonly reaches 1.3 m in height and often exceeds 2 m. The stem is circular and fluted in cross section, pithy, and hollow except towards the top. It carries fine, rather mealy hairs which may form a partial cobwebby covering. The lower stem leaves reach 500 mm in length; the upper leaves are very much shorter and reflexed. The stem leaves are sessile and clasping with very short, rather mealy hairs on the upper and lower surface. The inflorescences are single and terminal on the branches. They are composite with many tubular florets, purple in colour, and some 60 mm in diameter. Strong spiny bracts which may reach 50 mm in length surround the base of the inflorescence.

Variegated thistle can be distinguished from other thistles by the irregular blotches on its leaves.

**Life Cycle and Dispersal:** Variegated thistle reproduces from seed. The main germination occurs in late summer and autumn, although seedlings can be found in irrigated crops during spring and summer. The seedlings produce an over-wintering rosette, which throws a flowering shoot in spring. Flowering occurs during late spring and early summer, and may continue into or even through the winter in favourable years. Variegated thistle has a poorly developed pappus that is small in relation to the size of the seed. The seed is not readily windborne. Dispersal may also be effected by animals, humans and machinery, and as a contaminant in feed grain and seed.
**COTTON THISTLE**

*(Scotch Thistle)*

*Onopordum acanthium* L.  
Annual or Biennial  
*Asteraceae*

**Distribution:** Tasmanian Midlands and Fingal Valley, as far north as Launceston. Isolated infestations occur near George Town, Bridgewater, Hamilton, Cape Portland in the far northeast and near Swansea on the east coast. On the mainland it is found in New South Wales and Victoria. The species is native to Europe and Asia.

**Occurrence and Significance:** Cotton thistle occurs in improved pasture, and in crops grown in land that has previously been under improved pasture. Its growth is favoured by high fertility, especially nitrogen. It is not normally found in native or unimproved pasture or in bush or run country. Cotton thistle is a large plant with a rosette capable of growing to nearly 1 m in diameter. It competes strongly with pasture and grazing animals can be excluded by heavy infestations.

**Description:** The cotyledon is 15 to 25 mm long with a short broad merging petiole. It is grey-green in colour and hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves emerge singly, but the second usually follows very closely after the first and the two appear to be paired. The first leaf is sessile, 30 to 50 mm in length, and like all subsequent leaves is covered in a mat of white hairs. The early leaves may be relatively long and narrow but are more commonly broad. They are lobed and armed with strong spines. The plant develops as a rosette which may exceed 750 mm in diameter.

The mature plant is erect in habit with branching stems which reach 1.5 m and occasionally exceed 2 m in height. The stem is circular in cross section, hollow, and carries a mat of fine white hairs. The stem leaves reach 450 mm in length and are covered with a dense mat of white hairs on the upper and lower surface. They are sessile and grey-green in colour. The inflorescences are composite with many tubular florets, single or two to three together, terminal, and reach 50 mm in diameter. They are mauve in colour.

Cotton thistle is unlikely to be mistaken for any other species but occasionally young spear thistles (*Cirsium vulgare*) develop a covering of hairs which gives them a superficial resemblance to cotton thistle. The leaf shapes, however, are quite different and enable the two to be distinguished.

**Life Cycle and Dispersal:** Cotton thistle reproduces from seed. Mature plants, which have been mown or slashed, can regenerate provided there is adequate soil moisture, and field evidence suggests that plants that are slashed repeatedly can 'perennate'. The main germination occurs in late summer or early autumn, provided there is adequate rainfall, the seedlings forming sizeable rosettes before the onset of winter. Seedlings germinating in late autumn or early winter may suffer a high natural mortality. Further germination is likely in spring and early summer. Seedlings which germinate before about November usually mature and set seed in that season. Those which germinate later will not usually mature until the summer of the following season. Over-wintered plants start to shoot in September/October, and flowering begins in November/December and continues through to autumn.

Cotton thistle seed has a poorly developed pappus and is not readily windborne. However, whole plants can be carried considerable distances by winter gales and this contributes to the plant's spread. Seed or seed heads can be entrapped in fleece and it has been demonstrated that seed can pass unharmed through the sheep's digestive system. Birds have been implicated in seed dispersal, but this has not been proved. Vehicles and machinery are capable of carrying seed or seed heads. Cotton thistle seed has been intercepted in feed wheat and on sheep imported into the State.

**Status:** Declared weed
Illustrations

A. Seedling
B. Plant at rosette stage
C. Flowering branch

Cotton Thistle
(Scotch Thistle)
**Saffron Thistle**

*(Sulphur Thistle)*

*Carthamus lanatus* L.  

**Annual**  

**ASTERACEAE**

**Distribution:** Saffron thistle has been found in small patches in practically all parts of the State. It occurs in most mainland States. The species is native to the Mediterranean.

**Occurrence and Significance:** Saffron thistle seed is a common contaminant in imported feed wheat. It is normally found in pastures, infestations in Tasmania frequently being small and very seldom greater than half a hectare in extent. Saffron thistle is an extremely hard and spiny plant and stock are physically excluded from an infested area. Under favourable circumstances it is aggressive and invasive in pasture.

**Description:** The cotyledons are large, reaching 50 mm in length with a petiole 5 to 10 mm long, and are hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly but the first two appear very shortly one after the other and appear paired. The first leaves are 70 to 100 mm long and unlike most thistles have a very soft texture. They are glossy green in colour, with a margin which is scolloped rather than lobed with only a few weak spines. Later leaves are hard and spiny. The plant develops as a rosette which reaches 400 to 500 mm in diameter.

The mature plant is erect in habit with stems reaching 1.3 m in length, branching towards the top. The stem is circular and fluted in cross section, solid with a pithy core, and is hairless or has only a few fine hairs. The stem leaves are usually less than 100 mm in length and reflexed, particularly on the upper part of the stem. They have a very stiff texture, are sessile and partially clasping, and do not continue down the stems as wings. They are hairless or carry only a few fine cobwebby hairs. The inflorescences are single and terminal on the branches. They are composite with tubular florets, yellow, and about 40 mm in diameter. Strong spiny bracts 30 to 40 mm long surround the base of the inflorescence.

Saffron thistle can be distinguished from other yellow-flowering thistles found in Tasmania by its stiff, spiny leaves (sow thistles have soft leaves). In the rosette stage it can be distinguished from other thistles by the stiff, narrow and simply lobed leaf. The lack of wings on the stem distinguishes it from other Tasmanian thistles, with the exception of the variegated thistle (*Silybum marianum*), which has characteristic leaf blotches.

**Life Cycle and Dispersal:** Saffron thistle germinates extremely late in the season, seedlings seldom being found before September. The plant initially forms a rosette which throws a flowering stem during mid to late summer. Flowering and seed production occur during late summer and autumn. The seed is large, with a poorly developed pappus. It is likely that some saffron thistle infestations originate from contaminated feed wheat, but this cannot be confirmed in many instances. It is possible that infestation also occurs from imported stock, through birdseed, and through human transportation of the seed.

**Status:** Declared weed

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch  
D. Flower head  
E. Achenes (‘seed’)
**Distribution:** Prickly sow thistle occurs in all parts of the State, and is widely distributed in southern Australia. It is native to Europe.

**Occurrence and Significance:** It is principally a weed of waste areas, though it is often found in small numbers in many crops. Since it is palatable in the young stages it does not normally survive in pasture.

**Description:** The cotyledon is 12 to 18 mm long with a very short merging petiole and is hairless, or the upper surface may carry a few white multi-cellular hairs. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, the first being 12 to 18 mm long overall with a petiole approximately 5 mm long. A few white multi-cellular hairs may occur on the upper surface, and the margin is spined. Later leaves are lobed, sessile, and usually are hairless. The plant develops as a rosette some 250 mm in diameter.

The mature plant is erect with stems that branch, particularly towards the top, 1 to 1.2 m in height. The stem is circular in cross section, with shallow fluting, hollow, and has dark longitudinal striations. The stems are hairless or carry a few scattered purplish glandular hairs towards the top. The stem leaves are sessile and clasping but are not continued as wings down the stem. The upper leaves carry a reduced number of lobes or no lobes at all, and are reflexed. The leaves are hairless and the upper surface is shiny. When cut, the plant exudes a milky latex. The inflorescences are terminal, composite with yellow ligulate florets, 10 to 15 mm in diameter by 20 to 25 mm long.

In the later stages of growth prickly sow thistle can be distinguished from sow thistle ([*S. oleraceus*](https://en.wikipedia.org/wiki/Sonchus_oleraceus)) by the leaf shape and the curled leaf base. The leaves are also harder in texture. In the early seedling stage the two thistles are, for all practical purposes, indistinguishable. In the rosette sow thistle tends to have a long narrow petiole-like leaf base, while prickly sow thistle leaves have a tapering, more or less sessile base.

**Life Cycle and Dispersal:** Most seed germination occurs in autumn or spring but can occur throughout the year. The seeds are equipped with a small pappas for wind dispersal over large distances.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch (lower stem leaf behind)
**SOW THISTLE**
*(Milk Thistle)*

*Sonchus oleraceus* L.

**Annual**

**ASTERACEAE**

**Distribution:** Sow thistle occurs in all parts of the State, and is widely distributed in southern Australia. It is native to Europe.

**Occurrence and Significance:** It is principally a weed of waste areas but appears infrequently in most crops. Since it is palatable it does not normally survive in pastures.

**Description:** The cotyledon is 6 to 10 mm long overall with a very short and merging petiole, and is hairless. The seedling has a short hypocotyl and no epicotyl. The leaves grow singly, the first being 12 to 18 mm long overall with a petiole approximately 5 mm long. The leaves have spines around the margin and a few scattered white multi-cellular hairs on the upper surface. Later leaves are lobed and sessile. The plant develops as a rosette which reaches some 250 mm in diameter.

The mature plant is erect with stems 1.5 m long; exceptionally it may exceed 2 m in height. The stems branch from the base and along their length. The stems are circular in cross section and fluted, hollow, and hairless with longitudinal red striations. The stem leaves are hairless, sessile and clasping, and do not continue down the stems as wings. Upper stem leaves have a reduced number of lobes or no lobes at all. When cut, the plant exudes a milky latex. The inflorescences are terminal, composite with ligulate florets, yellow in colour, and 10 to 15 mm in diameter by 20 to 25 mm long.

In the later stages of growth sow thistle can be distinguished from prickly sow thistle (*S. asper*) by the texture and shape of the leaf and the nearly straight leaf base. In the early seedling stage the two species are practically indistinguishable. In the rosette sow thistle tends to have a narrow petiole-like leaf base, while prickly sow thistle leaves have a tapering, more or less sessile base.

**Life Cycle and Dispersal:** Germination occurs in spring and autumn. Spread is by movement of seed, by wind, water or in mud on footwear and machinery.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch
**CAT'S EAR**
*Hypochoeris radicata* L.

**Perennial**

**ASTERACEAE**

**Distribution:** Cat's ear is distributed throughout the State, and is widely distributed on mainland Australia. It is native to Europe.

**Occurrence and Significance:** It occurs in pastures and turf, most crops, and in waste areas. It is economically important as a weed in turf and is also strongly competitive in poor quality pasture.

**Description:** The cotyledon is 10 to 16 mm long overall with a short merging petiole some 3 to 5 mm long, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, the first being 15 to 25 mm long with a short merging petiole. Some long stout hairs are present on the upper surface. Later leaves become progressively more deeply and irregularly lobed and are very variable in shape and size. They have a stiff and leathery texture. On the upper surface the leaf has ‘warty’ protuberances from which stout hairs arise. There are long white hairs on the upper surface and shorter hairs on the lower. The plant develops as a rosette some 300 mm in diameter.

In the mature plant several branched flowering stems arise from the rosette. These are normally about 300 mm long but may occasionally exceed 750 mm. The stems are frequently swollen where they branch due to the attack of a gall wasp. The stem is solid, circular and fluted in cross section, and normally hairless. When cut the mid-rib exudes a white latex.

The inflorescences are terminal on the stem, 40 to 50 mm in diameter with numerous ligulate florets, and yellow in colour. The seed carries its pappus on a short stalk.

Cat's ear is commonly confused with both hawkbit (*Leontodon taraxacoides*) and dandelion (*Taraxacum officinale*), and is often called ‘dandelion’. It can be distinguished from both of these in the mature stage by the branching flower stems, and by the irregular lobing of the leaves which are stiffer in texture than either of the two other species. In the seedling the cotyledon is broader than that of hawkbit, the leaf is broader and has its broadest point nearer the centre. The leaf base is merging and not petiolate like that of dandelion and the blade has a much stiffer texture.

**Life Cycle and Dispersal:** Germination occurs mainly in the autumn and to a lesser extent also in spring. Seeds are produced in large numbers and dispersed by wind. Cat's ear regenerates rapidly from the crown of the taproot after fire.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flower  
D. Seeding heads  
E. Seed
**Hawkbit**  
*(Hairy Hawkbit)*

*Leontodon taraxacoides* (Vill.) Merat  
Biennial or Annual  
**ASTERACEAE**

**Distribution:** Hawkbit is distributed throughout the State, and is widely distributed on mainland Australia. It is native to Europe.

**Occurrence and Significance:** It occurs in turf and pasture, waste areas, and occasionally in crops. Its greatest importance is as a weed in turf, and it is locally significant as a weed in pasture.

**Description:** The cotyledon is 10 to 15 mm overall with a short merging petiole, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, the first being 15 to 20 mm long with a short merging petiole. It carries scattered hairs on the upper and lower surface, many of which are grapnel hairs which have a distinctive shape with a bifid or trifid tip reminiscent of a small grappling iron. The margin carries a few small protuberances. Later leaves reach 120 mm in length with more or less regularly scolloped margins. The tips and lobes frequently curl upwards. Grapnel hairs are present on the upper and lower surfaces.

In the mature plant flower stems 200 mm long arise from the rosette. These are circular in cross section and fluted, with a solid pithy core. They are not branched and when elongating have their apex turned downwards. Towards the base they carry grapnel hairs but are hairless towards the top.

The inflorescences are terminal on the stems, 25 to 30 mm in diameter with numerous florets, and yellow in colour. There is no stalk between the seed and its pappus.

Hawkbit is frequently confused with cat’s ear (*Hypochoeris radicata*) and dandelion (*Taraxacum officinale*) and is often called ‘dandelion’. In the mature stage it is distinguished from the former by having an unbranched flower stem and from the latter by having a solid flower stem. The leaf shape is more regular than that of cat’s ear and has a scolloped rather than a backwardly directed serrated edge like dandelion. In the seedling the first leaf is rather longer and narrower than that of the other two species, and usually has its widest point about three quarters of the length towards the apex of the blade rather than half way along.

**Life Cycle and Dispersal:** Hawkbit germinates in autumn and spring. Spread is by seed dispersed by wind.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flower (from below)  
D. Maturing seed head  
E. Seed head and seed
**Distribution:** Dandelion occurs in all parts of the State, and is widely distributed on mainland Australia. It is native to Europe and Asia.

**Occurrence and Significance:** It is found in waste areas and in limited numbers in crops, but is mainly important as a weed in turf.

**Description:** The cotyledon is 7 to 12 mm long overall with a short merging petiole, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The first leaves, which arise singly, are 10 to 20 mm long overall with a usually short but distinct petiole. They are hairless and have a dark green shiny surface. Initially leaves have only a few small lobes but as the plant develops the leaves become progressively more lobed and later rosette leaves may be secondarily divided. The lobes are more or less regular and generally backwardly directed. The plant develops as a rosette.

The mature plant is a rosette with leaves up to 300 mm long. They are petiolate and apparently hairless but may carry a few short multi-cellular hairs on the upper and lower surfaces which are not readily visible to the naked eye. The inflorescences are terminal on unbranched hollow stems which are circular in cross section and some 300 mm long. A few thin downy hairs, which tend to be more numerous towards the top, are present. When cut the leaves and stems exude a white latex.

The yellow inflorescences are 30 to 60 mm in diameter and single with numerous ligulate florets. The seed carries its pappus on a stalk.

The name ‘dandelion’ is commonly misapplied to both cat’s ear (Hypochaeris radicata) and hawkbit (Leontodon taraxacoides). Dandelion is similar in appearance to both cat’s ear and hawkbit. The rosettes are distinguished from those two species by the relative lack of hairs on the leaves and by the more regular and backwardly directed lobes. The leaf is thin and of a flexible texture, unlike the hard brittle texture of cat’s ear. The flower stem, being hollow, is unlike that of the other two species where it is solid. In the seedling the leaves are relatively broader, more flexible in texture, and more regularly lobed, the lobes being more distinctly backwardly directed than the other two species. The leaves have a more clearly defined petiole.

**Life Cycle and Dispersal:** Germination occurs in autumn and to a lesser extent in spring. The characteristic seeds are equipped with a small pappus for effective dispersal by wind.

**Illustrations**

A. Seedling
B. Flowering plant
C. Seed heads
**RAGWORT**

*Senecio jacobaea* L.

**Biennial or Perennial**

**ASTERACEAE**

**Distribution:** Ragwort is widely spread in the northwest, although in the far northwest only occasional patches are to be found. There are local infestations in the northeast, and more widespread infestations in the north. In the south, populations occur in the Huon Valley, the Channel, Bruny Island and the Tasman Peninsula. Localised populations also occur in the Tasmanian Midlands and Central Highlands. Initially recorded from the Royal Tasmanian Botanical Gardens in the late 1800s, the first field record of ragwort in Tasmania was from St Helens on the east coast in 1905 and today localised infestations are to be found along the east coast. Ragwort occurs in Victoria, New South Wales, South Australia and Western Australia. It is a native of Europe and is established in North America and New Zealand.

**Occurrence and Significance:** Ragwort occurs in all situations from high fertility improved pasture to barren unimproved areas. It does not thrive under shade, and is totally excluded by established forest. It occurs from sea level up to an altitude of at least 1000 metres, and probably higher. Once established, ragwort can be a competitive species in pasture. In country grazed by sheep it is not normally a problem. It is generally avoided by cattle and can become a serious weed in areas used exclusively for beef and dairying. Ragwort is not, as a rule, palatable to cattle but will be eaten by them in times of food shortage when no alternative is available. It is toxic, causing chronic liver damage; instances of stock poisoning have occurred. Though less susceptible than cattle, sheep may also be poisoned.

**Description:** The cotyledon is 10 to 15 mm overall in length with a short petiole, and is hairless. The seedling has a very short hypocotyl but no epicotyl. The leaves develop singly and the first leaf is 15 to 20 mm long overall with a short petiole. Generally it is hairless and has an entire margin. Later leaves are lobed with wavy margins and are hairy. The plant grows as a rosette in its first year and may die down over winter. In the second spring it grows first as a rosette, then throws up flowering stems.

The mature plant is erect in habit with stems branching towards the top, and occasionally from lower down. Perennating plants produce multiple stems from the roots. Stems are normally 1.5 m high but exceptionally exceed 2 m. They are circular in cross section with shallow fluting, solid and pithy, and cobwebby long hairs are present. Lower stem leaves are petiolate while the upper stem leaves, which reach 100 to 200 mm in length, are sessile and clasping. The leaves carry cobwebby hairs on the upper and lower surfaces. The inflorescence is terminal on the stems with numerous yellow composite flowers 15 to 25 mm in diameter with a single row of ray florets.

Ragwort is most commonly confused with other members of the *Senecio* genus, particularly fireweed (*S. linearifolius*). Fireweed is a native plant, and has narrow leaves that are not deeply lobed.

**Life Cycle and Dispersal:** Most seedlings mature during the autumn and develop into a rosette by winter. In the following growing season the plant throws a flowering stem which usually develops from November onwards. Flowers appear during mid-late summer and early autumn, although flowers can be seen outside this period. The plant will normally die at the end of the season. Seedlings, which germinate in the spring, may follow a similar pattern, producing a rosette during the first growing season, over-wintering in this stage and flowering in the second growing season. There are, however, indications that some plants are capable of completing their life cycle in a single season. Plants that are damaged during the early to mid-flowering stage may perennate, thereafter producing flowering stems for several seasons.

Ragwort seed may be windborne although much of the windborne down consists of empty pappus from which the seed has already been shed. Ragwort seed is readily carried in water and can survive immersion for a considerable period. The seed may be carried on the hide or fleece of animals and in recent years transport by vehicles has become increasingly important.

**Status:** Declared weed
Illustrations

A. Seedling
B. Rosette
C. Flowering branch
D. Achenes ('seeds')
**Distribution:** Groundsel is distributed throughout the State. It is native to Europe.

**Occurrence and Significance:** It occurs principally as a weed of waste areas and gardens but may also be found in small numbers in crops. It is of little economic significance.

**Description:** The cotyledons are 6 to 13 mm long overall with a short merging petiole 2 to 4 mm long, and are hairless. The plant has a long hypocotyl and a short epicotyl. The leaves develop singly, the first being 15 to 25 mm overall in length and sessile or with a merging petiole. The earliest leaves may have a few or no hairs, but later leaves have numerous multi-cellular hairs on the upper and lower leaf surface. The first leaf usually has a few small lobes while later leaves have many lobes. The plant does not form a rosette.

The mature plant is erect in habit, 150 to 400 mm tall. The stems may branch but small plants are often single stemmed. They are polygonal in cross section, solid, and carry multi-cellular hairs that look like minute strings of beads under magnification. The stem leaves are sessile and often partially stem-clasping, 50 to 75 mm long, and practically hairless or with a scattering of multi-cellular hairs on the upper and lower surfaces.

The inflorescences are terminal or axillary in clusters, and carried on short stems. The inflorescence is 4 to 5 mm in diameter by 8 to 12 mm long with short yellow non-ligulate florets.

Groundsel resembles a number of both introduced and native *Senecio* species. Groundsel is one of the few annual *Senecios*. This means that it does not become woody at any stage of its life cycle. It also displays a discoid inflorescence (one without ray or ligulate florets); all the florets are tubular.

**Life Cycle and Dispersal:** Germination occurs in the autumn or spring. The tufted seed is spread by wind.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering plant
**COMMON COTULA**

*Cotula australis* (Seiber ex Spreng.) Hook.f.

**Annual**

**ASTERACEAE**

**Distribution:** Common cotula is distributed throughout the State. It is native to Australia and is found in the cooler parts of all States.

**Occurrence and Significance:** It occurs in waste areas and in towns and occasionally in crops or pasture. It is of limited economic significance.

**Description:** The cotyledon is small, only 2 to 3 mm long, sessile and hairless. The seedling has a very short hypocotyl and no epicotyl. The first leaves are paired, 15 to 20 mm long with a merging petiole, and have a few long thin hairs on the upper and lower surfaces. The margin is simple. Later leaves grow singly. As the plant grows, the leaves become progressively more lobed. The plant develops as a rosette 100 mm to over 300 mm in diameter.

The mature plant is prostrate or semi-erect and often has short erect stems. The stems branch from the base and along their length and reach more than 200 mm in length. Stems are circular in cross section, solid, and sparsely hairy. Stem leaves reach 30 mm in length with a short petiole and have lobed stem-clasping stipules. They are sparsely hairy on the upper surface and rather more hairy on the lower. The inflorescences are single and terminal on the stem, 5 mm in diameter, button shaped without ligulate florets, and white or green in colour.

Common cotula is very similar in appearance to lesser swinecress (*Lepidium didymum*) in the seedling stage if the cotyledons are absent. The early leaves of common cotula are more regularly lobed and hairy. Lesser swinecress is hairless. The leaflets of common cotula also lack the distinct 'cressy' smell of lesser swinecress. The leaflets of common cotula are usually pinnately lobed while those of lesser swinecress usually have lobes on one side only. The terminal lobe of common cotula is often trifid, and that of lesser swinecress single.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Seedling plants develop quickly and flower stems appear in October with flowering reaching a peak in November. Plants die back over summer. Spread is by seed.

**Illustrations**

A. Seedling with cotyledons and 2 true leaves
B. Seedling with cotyledons and 4 true leaves
C. Young plant
D. Leaf
E. Flowering branch
F. Flower
BATHURST BURR
(Spiny Cocklebur)

*Xanthium spinosum* L.

**Annual**

**ASTERACEAE**

**Distribution:** Small isolated infestations have been found in various parts of the State. Bathurst burr is widely distributed on the mainland. The plant originates from South America, possibly Chile.

**Occurrence and Significance:** In Tasmania Bathurst burr has been found in pasture, stock holding paddocks, adjacent to aviaries and near premises used for wool handling. This species is one of the worst causes of vegetable fault in wool. The fruit is covered in hooked spines and becomes entangled in the fleece. It can usually be removed only by carbonisation. The main method of introduction into Tasmania appears to be as a fleece contaminant. Seed has been found in parrot seed imported into the State.

**Description:** The cotyledon is elongated, some 20 to 25 mm long with a round tip. It has a short petiole. The hypocotyl and epicotyl are short. The first leaf is some 25 mm long by 15 mm wide with a long distinct petiole.

The plant has an upright habit. The stem is normally branched but may remain unbranched in small specimens. Mature plants can exceed 1.5 m in height. The stem leaves are three lobed with a distinctive pale marking along the centre vein. A triple spine, often 25 mm or more long, occurs at the base of the leaf petiole. The flowers are inconspicuous.

Bathurst burr is readily distinguished by the combination of burrs, stem spines and narrow leaves. Other burrs have broader leaves and lack stem spines.

**Life Cycle and Dispersal:** Seed germinates in the spring and the plant develops during the summer and early autumn. Fruit can usually be found on the plants by December. The full life cycle has not been recorded in Tasmania as plants are destroyed whenever found. It is likely that most plants would die off by winter, but circumstantial evidence suggests that in sheltered areas plants can survive for more than one season.

**Status:** Declared weed

**Illustrations**

A. Young plant
B. Leaf
C. Spine
D. Mature burr
E. Seedling
**PATERNON'S CURSE**  
(Salvation Jane)  
*Echium plantagineum* L.  
Annual  
BORAGINACEAE

**Distribution:** Localised infestations occur in most parts of the State, and are becoming more common. On the Australian mainland it occurs from Western Australia to Victoria and in New South Wales. The species is native to western Europe and the Mediterranean.

**Occurrence and Significance:** This weed is found in pasture and orchards and where chickens are or have been kept and fed on imported grain. This species can be competitive in pasture. It contains toxic pyrrolizidine alkaloids similar to those found in ragwort. Many Tasmanian infestations are believed to have originated from contaminated feed grain.

**Description:** The cotyledon is 15 to 20 mm long with a merging base. There is no hypocotyl or epicotyl. The rosette leaves are oval with a merging base and short petiole. The veins branch off from the mid-rib. The stems are about 1 m tall, erect with stout hairs and may be branched. Short branches carrying inflorescences arise towards the top of the main stems. The stem leaves are elongated and sessile. The top of the stem carrying the flowers is curled and unrolls as the flowers open. The flower is blue-purple (occasionally white-pink), 20 to 30 mm long, and trumpet shaped with five petals.

Paterson's curse can be confused with the very similar viper's bugloss (*E. vulgare*), as well as several other members of the Boraginaceae family. The leaves are broader and have branched rather than parallel veins. The flowers of viper’s bugloss tend to be slightly bluer.

**Life Cycle and Dispersal:** Paterson's curse reproduces from seed. The seedlings usually germinate in the autumn, though spring germination probably occurs, and the plant forms a rosette over winter. A flowering stem is thrown up in spring and flowering continues through summer and autumn. Seed can be carried by animals or machinery, or be windborne over short distances.

**Status:** Declared weed

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch
**Echium vulgare L.**  
*Biennial*  
*BORAGINACEAE*

**Distribution:** Found in a few isolated localities in the northwest, north and in the south. On the Australian mainland this species probably has the same distribution as Paterson’s curse. It is native to Europe.

**Occurrence and Significance:** This weed occurs in pasture and lucerne and on roadsides. It is potentially competitive in pasture and crops. It also contains pyrrolizidine alkaloids.

**Description:** The seedling and rosette are similar to those of Paterson’s curse (*E. plantagineum*) except that the leaves are less broad, and the veins are longitudinal and not branched. The flowers are similar to those of Paterson’s curse but are slightly smaller and darker in colour.

**Life Cycle and Dispersal:** The life cycle is similar to that of Paterson’s curse except that further flowering stems are produced in its second year. It is possible that in Tasmania this species survives as a perennial. It is not known how the Tasmanian infestations arose.

**Status:** Declared weed

**Illustrations**

A. Flowering branch  
B. Bud in axil of bract  
C. Flower  
D. Nutlet  
E. Seedling  
F. Young rosette
**Lepidium didymum** (L.) Sm.

**BRASSICACEAE**

**Annual**

**Distribution:** Lesser swinecress occurs throughout the State, and across much of agricultural Australia. Its origin is South America.

**Occurrence and Significance:** It is found in waste areas, arable crops, and pasture during the establishment stage. It may also be present in weak established pasture. It is a moderately competitive species, and is a major cause of taint in milk.

**Description:** The cotyledon is 7 to 12 mm long overall with a merging petiole, and is hairless. The seedling has a short hypocotyl and no epicotyl. The first leaves, which develop singly, are 12 to 20 mm long overall of which about half is petiole. The leaves are hairless. The first leaf has a simple margin or only small lobes; later leaves become increasingly lobed and ultimately pinnate. The plant forms a rosette approximately 200 mm in diameter.

The mature plant is prostrate and spreading or semi-erect in habit. The stems, which reach 400 mm or more in length, are much branched, solid, fluted or circular in cross section with longitudinal grooves and carry long thin white hairs. They tend to be darker in colour on the upper side. The stem leaves are pinnate with a short petiole, and hairless. The plant has a distinctive ‘cressy’ smell when crushed.

The inflorescences are terminal or axillary, the flowers being very small, only 1.5 to 2 mm in diameter with four petals. The fruit has a distinctive double sphere shape.

Lesser swinecress is difficult to distinguish from common cotula (*Cotula australis*) except when seed or flowers are present. The ‘cressy’ smell of lesser swinecress is distinctive, as are the small cotyledons of common cotula if present, but these do not usually persist. Though generally very similar there are differences in leaf shape; the terminal leaflet of common cotula often has three lobes while that of lesser swinecress is often single, and the leaflets on common cotula are usually pinnately lobed while the leaflets of lesser swinecress tend to have lobes on one side only, rather than paired lobes.

**Life Cycle and Dispersal:** Germination occurs in autumn or spring. There is little known about the dispersal mechanisms of lesser swinecress.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
D. Leaf (x2)
E. Flowers and fruit
F. Fruit (x3)
**Raphanus raphanistrum**

**BRASSICACEAE**

**Distribution:** Wild radish occurs throughout the State. It is found in all mainland States and is a native of the Mediterranean region.

**Occurrence and Significance:** It occurs in waste areas, crops, and young pastures. It is strongly competitive in all situations and is one of the most important weeds in Tasmania.

**Description:** The cotyledon is 8 to 15 mm long by 10 to 20 mm wide with a petiole 10 to 25 mm long, and is hairless. The seedling has a short hypocotyl and an epicotyl may be present or absent. The leaves grow singly, the first being 20 to 100 mm long with a short petiole. The leaves are hairy. The first leaf normally has a few distinct lobes at the base though these may be absent. Later leaves are lobed. The leaf surface is usually rough and the veins deeply impressed. The plant develops as a rosette 200 to 400 mm in diameter.

The mature plant is erect in habit, reaching a height of 800 mm to 1 m. The stems, which branch from the base and along their length, are solid (sometimes with a pithy core) and fluted or circular in cross section with shallow longitudinal grooves. The stems carry strong downwardly directed hairs though the degree of hairiness is very variable. Stem leaves are petiolate, the basal leaves being some 355 mm long overall while those developing at the top of the stems are much smaller. The lower stem leaves have basal lobes but the upper stem leaves are frequently lobeless.

The inflorescence is terminal with flowers 15 to 18 mm in diameter. The four petals are relatively narrow and do not overlap or touch, are pale yellow, white, or lilac in colour, and frequently distinctly veined.

In the seedling stage wild radish is extremely difficult to separate from charlock (*Sinapis arvensis*). Charlock tends to lack basal lobes on the first leaf but this character is not specific. The leaves of wild radish are rough while those of charlock tend to be smoother and rather shiny, with less deeply impressed veins. In the mature plant the flower colour and shape distinguish these species. Wild radish has sepals pressed against the back of the petal while in charlock they stand out; the petals of wild radish are longer and narrower and do not overlap or touch. Wild turnip (*Brassica rapa* ssp. *sylvestris*) is also very similar to wild radish but can be distinguished in the seedling stage by its leaves, which carry ‘warts’ on the upper surface and are broader in relation to their length, and in the mature stage by the upper stem leaves, which are sessile and clasping. The flowers of wild turnip are closer to those of charlock than to wild radish in both colour and shape.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring, continuing through into summer in irrigated crops. Spread is solely by seed which is moved by wind, water, animals and people. Seed can be spread in mud sticking to hooves, footwear and machinery, and as a contaminant of agricultural produce.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch  
D. Flower  
E. Fruit
**Distribution:** Charlock is widely distributed in the south of the State, but much more localised and restricted in distribution in the northern half. A native of Europe and Asia, it is common in southern Australia.

**Occurrence and Significance:** It appears to be more prevalent on heavy rather than on light soils, though it is known to be capable of growing on red soils. It is a weed of waste areas and crops, and is of considerable importance, especially in cereals, in the south due to its strong competitive habit and its ability to overgrow and swamp crops.

**Description:** The cotyledon is 8 to 15 mm long by 10 to 20 mm wide with a petiole 10 to 25 mm long, and is hairless. The seedling has a long hypocotyl and a reddish purple epicotyl. The leaves grow singly, the first being 20 to 70 mm long with a short petiole, and are hairy. The first leaf is not normally lobed at the base, but the second and subsequent leaves usually have lobes which are completely separated. The degree of leaf hairiness is variable. The plant forms a rosette 150 to 350 mm in diameter.

The mature plant is erect in habit with stems branching from the base and along their length. The plant reaches a height of 1.4 m. The stems are solid with a pithy core, fluted or circular in cross section with shallow grooves, have dark longitudinal striations, and carry scattered hairs. The degree of hairiness is very variable. Lower stem leaves, which reach 300 mm in length, are petiolate and usually lobed at the base. The upper stem leaves are much shorter, have short or no petioles, and do not normally have basal lobes. Scattered hairs are usually present on the upper and lower surfaces. The inflorescence is terminal. The bright yellow flowers are some 12 mm in diameter and have four petals.

Charlock is extremely difficult to distinguish in the seedling stage from wild radish (*Raphanus raphanistrum*). In general the first leaf of charlock does not carry lobes at the base, while that of wild radish does. This characteristic, however, is not definitive. The leaves of wild radish are rough, while those of charlock tend to be smoother and rather shiny. The leaf tip tends to be more rounded. Charlock, unlike wild radish, seldom forms a completely flat rosette. In the mature plant the petal shape and size serves to distinguish the two species; charlock flowers are always bright yellow while those of wild radish are pale yellow, lilac, or white. In wild radish the sepals are pressed against the back of the petal, while in charlock they stand away. Charlock petals are shorter and broader than those of wild radish, and are not veined. Wild turnip (*Brassica rapa* ssp. *sylvestris*) is also very similar. It can be distinguished in the seedling stage by its leaves which have ‘warts’ on the upper surface and are broader in relation to their length, and in the mature stage by the upper stem leaves which are sessile and clasping.

**Life Cycle and Dispersal:** Germination occurs mainly in the autumn. Spread is by seed. Seed is not spread far from the parent plant but can remain dormant in the soil for up to 35 years. Most spread is as a contaminant of cereal seed and of birdseed.

**Illustrations**

A. Seedling
B. Rosette
C. Flowering branch
D. Flower
E. Fruit
**Distribution:** Wild turnip occurs throughout the State, but is very much less common in the Tasmanian Midlands than it is in the south or in the northeast and northwest. It is a native of Eurasia.

**Occurrence and Significance:** It is a major weed in all arable crops, being strongly competitive and capable of overwhelming young or low growing crops.

**Description:** The kidney shaped cotyledons are 5 to 8 mm long by 8 to 15 mm wide with a petiole 5 to 10 mm long, and are hairless. The seedling has a long hypocotyl but no epicotyl. The leaves grow singly, the first being 30 to 55 mm long with a petiole 5 to 15 mm long. The margin is lobed and from the second leaf on these lobes are often completely separated towards the base of the leaf. The upper surface carries a number of 'warts' from which short hairs arise, and short hairs are found on the underside of the leaf, particularly on the veins. The plant develops as a rosette which may exceed 500 mm in diameter.

The mature plant is erect in habit, normally 700 mm to 1 m tall with branching stems. The stems are polygonal in cross section, solid with a pithy core, and hairless. Longitudinal striations are often present especially on later stems. The leaves grow similar to the later rosette leaves, petiolate, and with 'warts' on the upper surface. The upper stem leaves are sessile and clasping, up to 100 mm long, smooth and hairless, and with a well-defined lacy venation. The upper stem leaves and stems are glaucous. The inflorescence is terminal. The flowers are approximately 15 mm in diameter with four bright yellow petals.

In the seedling stage the 'warts' on the leaf surface, and the relatively broader leaf, distinguish wild turnip from both wild radish (*Raphanus raphanistrum*) and charlock (*Sinapis arvensis*). In the mature plant the stem-clasping leaves differentiate the species.

Hybrids between wild turnip and domestic *Brassica* species occur.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring, and continues through the summer when there is sufficient moisture. Wild turnip has been spread widely as a cultivated species for culinary purposes.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch  
D. Flowers  
E. Fruit
**Distribution:** Hedge mustard is found in most parts of the State. It is a native of Europe and western Asia.

**Occurrence and Significance:** It is principally a weed of waste areas, and is found in orchards and cereal or vegetable crops. It is moderately competitive and the hard and wiry mature stems can interfere with cereal harvesting.

**Description:** The cotyledon has a blade 5 to 8 mm long with a petiole of the same length, and is hairless. The hypocotyl is very short and there is no epicotyl. The leaves arise singly, the first being 8 to 12 mm long with a petiole approximately the same length. Moderately long hairs are found on the upper surface, with longer hairs around the margin. The earliest leaves have shallow lobes, but as the plant develops the leaves elongate and become more lobed and ultimately pinnate. The plant grows as a rosette 300 to 400 mm in diameter.

The mature plant is erect in habit. The stems branch from the base and have short laterals along their length. The plant grows to a height of approximately 1 m. The stem is solid and pithy, circular in cross-section, and has numerous small white hairs and a few strong downwardly directed hairs. Longitudinal striations are present on the stem which is often reddish at the base. The lower stem leaves are some 200 mm long and petiolate. Towards the top of the stem the leaves are smaller and may be sessile. The leaves have a few hairs on the upper side, and rather more on the lower side especially towards the tip and on the veins. The stem leaves tend to have fewer lobes than the rosette leaves.

The inflorescence is terminal. The flowers are yellow with four petals and 3 to 4 mm in diameter. The seed pods are short, 10 to 20 mm long, and are held close and parallel to the stem.

Hedge mustard is almost identical to Indian hedge mustard (*S. orientale*) in the seedling stage, but in the rosette stage it can be distinguished from it by the terminal lobe of the leaf, which is more or less round; in Indian hedge mustard the terminal lobe is elongated and pointed. In the mature plant the difference in size of the flowers, and in the size and way the seed pods are held, distinguishes the two species.

The name ‘wireweed’ is used for this species in some parts of Tasmania. In these localities true wireweed (*Polygonum aviculare*) is called ‘hogweed’.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. The plant has been widely cultivated for its edible leaves and seeds. Spread is solely by seed.

**Illustrations**

- A. Seedling
- B. Rosette
- C. Flowering branch
- D. Lower stem leaf
- E. Flowers and fruits
- F. Flower

![Illustrations of Hedge Mustard](image-url)
Sisymbrium orientale L.  

**Annual** 

**BRASSICACEAE**

**Distribution:** Indian hedge mustard occurs in all parts of the State, but is generally less common than hedge mustard (*S. officinale*). It is a native of Europe and Asia.

**Occurrence and Significance:** It is a weed of waste areas and orchards, and occasionally occurs in arable crops. It is of little economic importance.

**Description:** The cotyledon has a blade 5 to 8 mm long with a petiole of approximately the same length, and has a few long hairs. The seedling has only a short hypocotyl and no epicotyl. The leaves grow singly, the first having a blade 8 to 12 mm long with a petiole of approximately the same length. The leaves carry longish hairs. As the plant grows the leaves elongate, becoming lobed and ultimately pinnately lobed or pinnate. The plant forms a rosette 200 to 300 mm in diameter.

The mature plant is erect in habit, with stems reaching some 1 m or more in height. The stems are branched and the branches stand out at approximately 45 degrees to the main stem. They are solid with a pithy core and usually woody, circular in cross section, and have scattered fine hairs. The lower stem leaves are petiolate and some 50 mm long, while the upper stem leaves are shorter, may be sessile, and have considerably reduced lobes. The leaves carry fine hairs on the upper and lower surfaces.

The inflorescence is terminal, the flowers being approximately 10 mm in diameter with four yellow petals. The seed pods reach a length of about 120 mm and are held at an angle of 45 to 90 degrees to the stem.

In the seedling stage Indian hedge mustard and hedge mustard (*S. officinale*) are practically identical. In the rosette stage Indian hedge mustard can be distinguished by the terminal lobe of the leaf which is elongated and pointed while that of hedge mustard is short and rounded. In the mature plant the larger size of the flower and the long seed pod held away from the stem are characteristics distinguishing this species from hedge mustard.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Spread is by seed.

**Illustrations**

A. Seedling  
B. Young plant  
C. Rosette  
D. Flowering and fruiting branch  
E. Flowers
**Distribution:** Field cress is found in many parts of Tasmania, but is somewhat local and restricted in its distribution. It is native to Europe.

**Occurrence and Significance:** It occurs in waste areas and crops, and is capable of being competitive.

**Description:** The cotyledon has a blade 5 to 8 mm long with a petiole 3 to 5 mm long, and is hairless. The seedling has a long hypocotyl but no epicotyl. The leaves arise singly, but the first two appear almost at the same time and superficially appear to be paired. The early leaves are 6 to 10 mm long in the blade with a petiole of the same length. Later leaves are elongated and may be shallowly lobed. The plant forms a loose rosette.

The mature plant is erect in habit, reaching some 600 mm in height. The stems branch from about half way up, but have few or no branches from the base. The stem is solid, circular in cross section, and carries short hairs. Stem leaves are 50 to 100 mm long, sessile and clasping. The inflorescence is terminal and forms an elongated cone. The flowers are 4 to 5 mm in diameter with four white petals.

Field cress is generally similar in appearance to whiteweed (*L. draba*) but can be distinguished from it in the mature stage by the lack of a perennial spreading root system. In field cress the inflorescence is elongated, frequently carrying flowers towards the top and seed at the bottom, while in whiteweed the inflorescence tends to be umbrella-shaped, broad and spreading. The fruits are distinctive. The seedlings are very similar and not readily separated. In field cress the cotyledon is more rounded and the leaf is only bluntly pointed or rounded at the tip and without lobes, while in whiteweed the first leaves tend to be pointed and have small but distinct lobes.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Spread is by seed.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering stem  
D. Fruit
**Distribution:** Whiteweed is most prevalent in the southern Tasmanian Midlands and south of the State, being relatively uncommon north of Campbell Town, though in recent years it has become more prevalent. Whiteweed is found in most mainland States. It is native to the Mediterranean and western Asia.

**Occurrence and Significance:** This species is common on roadsides and along railway lines. It also occurs in pasture and, locally in the southern Tasmanian Midlands, in cereal crops. During its growing period whiteweed competes with pasture and in cereal crops it may interfere with harvesting and reduce yields.

**Description:** The cotyledon is 8 to 15 mm long overall with a petiole 3 to 5 mm long, and is hairless. The seedling has a long hypocotyl but no epicotyl. The leaves arise singly but the first two leaves appear very closely together and have the appearance of being paired. The early leaves have a blade 8 to 12 mm long with a petiole of the same length, and are hairless.

The mature plant is erect in habit, reaching a height of some 900 mm. The stems are not usually branched except for short branches towards the top. The stem is solid and pithy, circular in cross section with shallow longitudinal ridges, and carries very short hairs which are difficult to see with the naked eye. The lower stem leaves have a short merging petiole and the upper stem leaves are sessile and clasping. The stem leaves reach a length of some 100 mm, less towards the top, and carry numerous very short hairs, similar to those on the stem, on the upper and lower surfaces. The inflorescence is terminal and tends to be rather broad and umbrella shaped. The flowers are 4 mm in diameter with four white petals.

Whiteweed is similar in appearance to field cress (L. campestre) but in the mature stage can be distinguished from it by the presence of a spreading root system and by the inflorescence which in this species is broad and spreading while in field cress is elongated and conical. The seedlings are difficult to differentiate. In whiteweed the cotyledons are slightly more pointed and the first leaves tend to be pointed with distinct small lobes, while in field cress the leaf is only bluntly pointed or rounded at the tip and without lobes.

**Life Cycle and Dispersal:** Whiteweed reproduces both from seed and from a spreading perennial rootstock. Germination occurs in the autumn, the plants developing initially as a rosette over winter. In the spring a flowering shoot is thrown and flowering occurs in late spring or early summer. Regrowth from perennial roots occurs principally in the spring with the plants flowering at the same time as those developing from seedlings. Vegetative dispersal appears to be as significant as or more significant than dispersal by seed. Most large infestations appear to have developed in this way.

**Status:** Declared weed.

**Illustrations**

A. Seedling
B. Young shoot
C. Flowering stems
D. Flower head
E. Fruit
**Distribution:** Shepherd’s purse occurs throughout the State. It is a native of Europe.

**Occurrence and Significance:** It is a common weed of arable crops. It is moderately competitive in young crops, but most soon overgrow it. Occasionally it competes with farm forestry plantations.

**Description:** The cotyledon is 4 to 8 mm long overall with a short petiole, and is hairless. The plant has a very short hypocotyl and no epicotyl. The first leaves are paired but later leaves grow singly. The first leaf is 5 to 10 mm long overall with a short petiole. It carries simple hairs, and star hairs which can be distinguished only with the aid of a lens. The leaves are extremely variable in shape, the early leaves being oval with a scalloped or toothed margin. Usually after the 4th to 6th leaf they develop deep lateral incisions cutting off a number of lobes in the middle of the leaf. In some cases, however, these lobed leaves are not produced. In later leaves the blade often extends towards the base, and the petiole is much reduced, or entirely absent. The plant develops as a rosette which reaches 200 mm and occasionally 300 mm in diameter.

The mature plant is erect in habit with a rosette which, depending on competition at ground level, may persist for much of its life. The stems are branched, solid, and circular in cross section with shallow longitudinal grooves. Scattered star hairs occur along their length. The stem leaves are approximately 40 mm long, sessile and clasping, with simple and star hairs on the upper and lower surfaces. The inflorescence is terminal, the individual flowers being 3 mm in diameter with four white petals. The fruit has a distinctive heart shape. This species is commonly infested with a white rust.

As a rosette Shepherd’s purse can be hard to distinguish from other brassicas. The heart-shaped seed pods are characteristic.

**Life Cycle and Dispersal:** Germination occurs in autumn or spring. Reproduces entirely from seed, has a long soil seed bank time, and is capable of producing several generations each year. Seeds are small and light, and carried by wind or rain wash. They become sticky when moistened and can also be dispersed on the feet of birds and mammals, and via footwear and vehicle tyres.

**Illustrations**

A. Seedling and star hair
B. Rosettes
C. Flowering branch
D. Flowers
E. Fruit and seed
**Distribution:** Spurry occurs commonly throughout the State. It is native to Europe.

**Occurrence and Significance:** It is frequently found during the establishment stages of pasture but does not normally survive the first grazing. It is strongly competitive, and is an important weed in cereal and vegetable crops.

**Description:** The cotyledon is some 10 mm long and only 0.5 mm or less in diameter, hairless, and sessile. The seedling has a hypocotyl but no epicotyl. The first two leaves arise as a pair. After the first few the leaves arise in paired groups on either side of the stem which give the appearance of a whorl. The early leaves are some 20 mm long and only 0.5 mm or less in diameter. The first leaves carry few or no hairs but later leaves have short glandular hairs. The plant does not form a rosette.

Initially plants are erect in habit but as they grow they become prostrate and spreading. The stems branch both from the base and along their length and often have a sharp bend at a node. Stems, which reach some 400 mm in length, are solid and circular in cross section, and have short glandular hairs. The stem leaves grow in whorls, are sessile, reach some 30 mm in length, and are covered in short glandular hairs. The inflorescence is terminal. The flowers are strongly and sweetly scented, 8 to 12 mm in diameter, and have five white petals.

Mature spurry is unlikely to be confused with any other plant. The cotyledons are superficially similar to those of narrow-leaf plantain (Plantago lanceolata) and purple calandrinia (Calandrina ciliata), but are distinguished from these two species by being circular in cross section. The leaves are unlike those of the other two species.

**Life Cycle and Dispersal:** Germination occurs both in autumn and spring, continuing into summer in irrigated crops. The seeds are spread when the valved capsule or seed vessel breaks open, and the seeds are dispersed around the parent plant. Seeds can remain viable in soil for at least 5 years. Seed can be spread as a contaminant of grass, clover and cereal seeds, in mud on the tyres of farm vehicles, and in animal droppings.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch  
D. Flowers
**Distribution:** French catchfly occurs in all parts of the State but is more common in the south than in the north. It is native to Europe.

**Occurrence and Significance:** It is principally a weed of waste areas but occurs quite commonly as a minor weed in crops. It is not of great economic significance.

**Description:** The cotyledon is 8 to 10 mm long overall with a petiole 1 to 2 mm long, and there are a few hairs on the petiole. The seedling has a very short hypocotyl and no epicotyl. The leaves arise in pairs, the pairs being alternate. The first leaves are 20 to 25 mm long overall, with a short and broad merging petiole, and have scattered multi-cellular hairs on the upper and lower surface. As the plant develops the leaves become more elongated.

The mature plant is usually erect in habit but may be semi-erect or prostrate. The stems are usually branched, particularly at the base. The stems grow to 400 mm in length, are solid and pithy with a fluted cross section, and carry septate and glandular hairs. The stem leaves are sessile with septate hairs on the upper and lower surface and are some 30 mm long. Towards the top of the stem the leaves are narrow and much shortened. The plant often has a rather untidy appearance.

The flowers are terminal and axillary, and like all members of the genus *Silene* have a swollen base (calyx) which, in this species, is some 6 to 10 mm long. The flowers are about 6 mm in diameter with five petals and are very variable in colour, being white, pink with a crimson base, or crimson.

French catchfly can be confused with the mouse-ear chickweeds (*Cerastium glomeratum* and *C. fontanum* ssp. *vulgare*) in the seedling and young plant stages. The cotyledon of French catchfly is larger than that of mouse-ear chickweeds, and the leaves are larger, more elongated, and have their broadest point closer to the tip.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring and flowering is in late winter to spring. Spread is solely by seed.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch  
D. Flower
**DISTRICT MOUSE-EAR CHICKWEED**

*Cerastium glomeratum* Thuill.  
**CARYOPHYLLACEAE**  

**Annual**

**Distribution:** Sticky mouse-ear chickweed is distributed throughout the State. It is native to Europe.

**Occurrence and Significance:** It is commonly found in most arable crops and in pasture in the establishment stage. If present in large numbers it is capable of offering considerable competition to a crop. It also occurs as a weed in turf where it can take over extensive areas.

**Description:** The cotyledon is 4 to 6 mm long overall with a short merging petiole and is hairless though some hairs may be present at the base of the petiole. The seedling has a short hypocotyl and a short epicotyl. The leaves are paired and in the early stages are 5 to 10 mm long overall with a short petiole. Hairs are present on the upper and lower leaf surfaces and the leaves are yellowish-green in colour. The plant does not form a rosette.

In young plants the habit is erect, but as the plant grows the stems often become prostrate and spreading. The stems, which branch at the base, reach 300 mm vertically or 450 mm when horizontal. They are circular in cross section and hollow with both glandular and simple hairs. The leaf petioles shorter in the later leaves, and upper stem leaves are sessile and semi-clasping. They are some 20 mm long, have glandular and simple hairs, and are yellow-green in colour. In some cases the glandular hairs, which are normally a distinctive feature in this species, are present in small numbers only. The inflorescence is terminal, the individual flowers being 5 to 10 mm in diameter and white with five deeply bifid petals.

Sticky mouse-ear chickweed is extremely difficult to distinguish from mouse-ear chickweed (*C. fontanum* ssp. *vulgare*) in the early stages. In the mature plant the yellow-green colour and the much broader base of the leaf distinguishes it from the latter. The inflorescence is very much more tightly clustered than that of mouse-ear chickweed. The presence of large numbers of glandular hairs on the stem and leaves confirm the identification of this species but individuals with relatively few or no glandular hairs are not uncommon.

The mouse-ear chickweeds are, in the seedling stage, superficially similar to chickweed (*Stellaria media*) and montia (*Montia fontana*). The presence of hairs on the leaves distinguish the mouse-ear chickweeds from these other species. Chickweed leaves have a long, thin petiole. The leaves of montia are relatively thick, stiff, and fleshy.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Flowers late winter to summer. Reproduces by seeds and stems rooting at the nodes. Some form of disturbance is essential for establishment. A weed of gardens and lawns and can be transported with horticultural stock.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch with petal-less winter flower  
D. Fruit
**Distribution:** Mouse-ear chickweed is locally common, both in the north and south of the State. It is native to Europe.

**Occurrence and Significance:** It occurs in waste areas, crops and turf but is usually of relatively minor importance only.

**Description:** The cotyledon is 4 to 6 mm long overall with a short petiole and is hairless, or has a few hairs at the base of the petiole. The seedling has a short hypocotyl and a short epicotyl. The leaves are paired, the first being 5 to 10 mm long overall with a short petiole. Some long hairs are present on the upper surface, and the leaves are dark green in colour. The plant does not develop as a rosette.

Young plants have an erect habit but as they become larger they usually become prostrate and spreading. Vertical stems reach some 250 mm long and spreading stems twice that. Stems are branched at the base, circular in cross section, hollow, and have simple and occasionally some glandular hairs. The lower stem leaves are shortly petiolate, but the upper stem leaves, which are 15 to 30 mm long, are sessile or have an ill-defined merging petiole. The leaves carry simple hairs on the upper and lower surfaces and occasionally a few glandular hairs. The inflorescence is terminal, the flowers being 5 to 10 mm in diameter, with five deeply bifid white petals.

Mouse-ear chickweed is extremely difficult to distinguish from sticky mouse-ear chickweed (C. glomeratum) in the seedling stage. The mature plant has a dark green colour while sticky mouse-ear is decidedly yellowish. The upper leaves of mouse-ear chickweed are much longer and taper towards the base, while the inflorescence is much more open. The complete or relative absence of glandular hairs is not a diagnostic feature as these may also be absent from sticky mouse-ear chickweed.

The mouse-ear chickweeds are, in the seedling stage, superficially similar to chickweed (Stellaria media) and montia (Montia fontana). The presence of hairs on the leaves distinguishes the mouse-ear chickweeds from these other species. Chickweed has a long, thin petiole. The leaves of montia are thick, stiff and fleshy. Mouse-ear chickweed can also be confused with French catchfly (Silene gallica) if the distinctive flowers of the latter are absent. The leaves of French catchfly are much longer in relation to their width and have their widest point closer to the tip; the upper stem leaves in particular are long and narrow, and the leaf pairs are more widely separated along the stem.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Flowers late winter to summer. Reproduces by seeds and stems rooting at the nodes. Some form of disturbance is essential for establishment. A weed of gardens and lawns and can be transported with horticultural stock.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch  
D. Flower  
E. Fruit (x2)
**Stellaria media (L.) Vill.**

**CARYOPHYLLACEAE**

**Annual**

**Distribution:** Chickweed occurs in all parts of the State. It is native to Europe and western Asia.

**Occurrence and Significance:** It is common in waste areas and is an important and competitive weed in crops. It occurs frequently in young pastures but does not normally survive the first grazing.

**Description:** The cotyledon is 14 to 20 mm long overall with a petiole 5 to 10 mm long. The petiole is usually nearly vertical and the blade held almost at right angles to it. A few hairs are present on the petiole and at the base of the blade. The seedling has a long hypocotyl and an epicotyl. The leaves arise in pairs, the first being 10 to 20 mm long overall of which about half is petiole. A few hairs are present on the petiole and at the base of the blade. The plant does not form a rosette.

The mature plant is erect if small but large plants are prostrate and spreading. The stem is 300 to 400 mm long, branching from the base and along its length. Stems are circular in cross section, hollow, and have a line of more or less recurved hairs in line with the leaf axil. The stem leaves are some 25 mm in length with a long petiole. Towards the top of the stem, particularly in large or old flowering plants, the petiole is shorter and leaves may be sessile. The leaves have few or no hairs except on the margin and at the base. The sessile upper leaves are often broader than the petiolate leaves. The flowers are terminal or axillary on a long stem, some 6 mm in diameter, with five white bifid petals. After flowering the plant stems commonly become reflexed.

The seedling of chickweed is very similar to that of montia (*Montia fontana*). Chickweed has some hairs on the petiole and base of the leaf, but montia is hairless. Chickweed has a mid-rib groove on the leaf and montia does not. The cotyledon in chickweed leaves is much narrower than that of montia and the blade thinner and less fleshy. Scarlet pimpernel (*Anagallis arvensis*), which also resembles chickweed, has short merging petioles to the cotyledons, and the two are not at a sharp angle to each other. The leaves of scarlet pimpernel are sessile or only very shortly petiolate. The mouse-ear chickweeds (*Cerastium glomeratum* and *C. fontanum* spp. *vulgare*), which also look something like chickweed as seedlings, have much shorter petioles to both cotyledon and leaf while the leaves have hairs all over the surface of the blade.

A very similar species (*Stellaria pallida*) has been found in several parts of Tasmania. It is smaller generally than chickweed, tends to be yellowish-green in colour, and has flowers that lack petals.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring, continuing into summer where there is sufficient moisture. Flowers are followed quickly by the seed pods, and the seed pods explode when mature to disperse the seeds. Longer-distance seed dispersal can occur in soil and mud on footwear, tools and machinery.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch
**Distribution**: Fat hen occurs in all parts of the State. It is native to Europe.

**Occurrence and Significance**: It is a major weed in cereals and arable crops and can offer serious competition during the establishment stage of pasture and legume crops.

**Description**: The cotyledon is 13 to 18 mm long overall with a petiole 3 to 5 mm long, hairless, and has a distinctive grey-green colour. The seedling has a hypocotyl and epicotyl. The leaves in the seedling and young plant are paired, the pairs being at right angles to each other, but in the mature plant they tend to grow singly. The first leaves are 15 to 20 mm long with a petiole approximately 5 mm long, and are frequently mealy. Later leaves develop a lobed margin. The plant does not form a rosette.

The mature plant is very variable in size and form. Normally it is erect and bushy in habit, reaching a height of 1 m or more. The stems branch from the base and along their length, are polygonal in cross section, solid, hairless, and with dark longitudinal striations. They may be slightly mealy. The stem leaves are some 100 mm long overall of which approximately 40 per cent is petiole. The leaves are hairless and grey-green in colour. The inflorescence is terminal on the stem. The flowers are clustered together and about 2 mm in diameter, mealy, green, and have five lobes.

Fat hen is distinguished from nettle-leaved goosefoot (*C. murale*) by its lighter colour and by the leaves which are longer, narrower, and usually less lobed.

**Life Cycle and Dispersal**: Germination occurs in autumn and spring, and continues through summer in irrigated crops. Spread is by seed. Most seed falls around the parent plant. Seed is also a common impurity in crop seed. Fat-hen seed has also been found in cattle, horse and pig droppings. Plants can produce over 500 000 seeds and seeds have been known to survive for 30 to 40 years in the soil.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
**NETTLE-LEAVED GOOSEFOOT**

*Chenopodium murale* L.  
**Annual**  
**CHENOPODIACEAE**

**Distribution:** Nettle-leaved goosefoot is found in all parts of the State. It is native to Europe.

**Occurrence and Significance:** It occurs mainly in waste areas and stock yards but sometimes reaches significant numbers in cereals or arable crops. It may also be found during the establishment stage of pasture.

**Description:** The cotyledon is 12 to 18 mm long overall with a petiole approximately 3 mm long, is hairless, and reddish in colour. The seedling has both hypocotyl and epicotyl. The leaves in the seedling and young plant are paired, the pairs being at right angles to each other, but in the mature plant the leaves tend to grow singly. The early leaves are 10 to 15 mm long overall with a deeply grooved petiole approximately 4 mm long. The leaves are hairless and usually mealy on the underside. As the plant grows the leaves become lobed and almost as broad as long. The plant does not develop as a rosette.

The mature plant is erect and bushy in habit reaching 1 m in height. The stems branch from the base and along their length, are solid, circular, and fluted in cross section, and are hairless with longitudinal red striations. Stem leaves reach 120 mm long overall, the blade being about 80 mm long by 80 mm across at the widest point. They are hairless. Upper stem leaves are more elongated and less lobed. The inflorescence is terminal, the individual flowers being clustered together and 2 mm in diameter.

Nettle-leaved goosefoot is distinguished from fat hen (*C. album*) by the darker green of the leaves and purplish colour of the stem, and by the relatively broader leaf.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Spread is by seed.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch
**Distribution:** This species is most commonly found in the northwest. Patches also occur in the north, northern Midlands, south and probably other parts of the State. On the mainland it occurs in most States. It is native to Europe and the Mediterranean.

**Occurrence and Significance:** Roadsides and waste areas. On the mainland it is invasive in pasture. St John’s wort can cause photo-sensitisation in animals.

**Description:** The mature plant is erect, about 1 m tall, with stems which may branch from the base and which carry many short lateral branches, at approximately 45 degrees from the main stem, towards the top. The leaves are paired, oval, about 20 mm long, with numerous oil glands which appear as translucent spots when the leaf is held up to the light. The flowers are 15 to 25 mm in diameter with five yellow petals, carried in clusters on the end of the stems.

Although superficially similar to many other yellow-flowered herbs, St John’s wort is distinguished by its opposite, glandular leaves. The very similar St Peter’s wort (*H. tetrapterum*) has been found near Hobart. Its stems are square in cross section and have wings between the nodes rather than a raised line.

**Life Cycle and Dispersal:** The life cycle in Tasmania has not been investigated. The plant reproduces from seed and vegetatively from underground rhizomes. Flowering stems are thrown up in the spring and the plant flowers in summer. The stems die off over winter but may remain standing for several months.

**Status:** Declared weed.

**Illustrations**

A. Flowering branch  
B. Leaf  
C. Flower  
D. Seed capsules
**Distribution:** Bindweed occurs in all parts of the State, but is less prevalent in the Tasmanian Midlands. It is found in the southern mainland States and New South Wales. The species is native to Europe, Asia and Africa.

**Occurrence and Significance:** Field bindweed is principally a weed of roadsides and waste areas, but in recent years has begun to appear in cropping areas. At present it is principally confined to the margins of paddocks but in some instances has actively invaded the growing area. Bindweed is of little or no significance in waste areas and on roadsides. In urban areas it is important as a garden weed, being exceedingly difficult to control. It can compete strongly with the young crop and grows up through and infests mature crops.

**Description:** The cotyledon is 10 to 15 mm long with a petiole the same length, and is hairless. The seedling has both hypocotyl and epicotyl. The leaves grow singly, the first being 10 to 20 mm long with a petiole of the same length, and are hairless. The sagittate base is present from the earliest leaves. The plant does not form a rosette. The mature plant is climbing or prostrate in habit. It is frequently found climbing fences and is capable of growing up and over crop plants. The stems branch from the base and along their length, commonly reaching 1.5 m or more in length. They are solid, circular or polygonal in cross section, and may be ridged. The stems frequently show a spiral twist. Longish cobwebby hairs are usually present on young shoots but tend to disappear with age. Stem leaves, which are 60 mm long, are generally similar to the early leaves but rather more elongated and pointed. They are petiolate. Towards the top of the stem the leaves are smaller and the petioles shorter. The leaves carry a few scattered hairs, most numerous around the margin. The flowers are single and are carried on stems arising in the leaf axils. The petals are fused to form a conical flower 20 to 30 mm in diameter and of a similar length. It is pinkish in colour and may have deeper pink streaks.

Bindweed is similar to the native Australian bindweed (C. angustissimus), but may be distinguished by its twining habit and twisted stems. Australian bindweed has lobed or toothed leaves, and often bears a smaller, pinker flower. Bindweed also resembles great bindweed (Calystegia silvatica), of which three species occur in Tasmania. All are much larger in every respect.

**Life Cycle and Dispersal:** Bindweed reproduces both by seed and vegetatively from the spreading root system. The latter is considered to be the more important. Growth from the roots appears during late winter and early spring. Flowering occurs during early summer and may continue through into autumn. Within a property the main method of spreading is via root segments carried on tillage or earth moving equipment.
**Distribution:** Sun spurge is locally common in the south and northwest, but less common in the north where the very similar petty spurge is prevalent. It is found throughout Europe, Asia and north Africa.

**Occurrence and Significance:** It is a species of waste areas and has little economic significance, though being poisonous it is potentially of some danger to children.

**Description:** The cotyledon has a blade 7 to 10 mm long with a short petiole 3 to 4 mm long, and is hairless. The seedling has both a hypocotyl and an epicotyl. The early leaves are paired, the pairs being at right angles to each other, but as the plant grows the leaves become single. The early leaves are 10 to 15 mm long, sessile and hairless, and do not usually persist in the mature plant. The plant does not develop as a rosette.

The mature plant is some 350 to 450 mm tall and may have more than one stem arising from the base. The stems are circular in cross section, solid, and hairless. Towards the top the stems branch, these branches themselves becoming subdivided. Where branching occurs there is a group of hairless, sessile leaves, one for each branch. The lowest of these leaves are some 25 mm long and the upper ones somewhat shorter. When cut the plant exudes a sticky white latex. The flowers are terminal on axillary branches.

Sun spurge can be distinguished from petty spurge (*E. peplus*) in the seedling stage by the serrated leaf tips, those in petty spurge being plain. The mature plant is much larger than petty spurge and can be distinguished by the detail of the flower illustrated.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Seeds are dispersed explosively when ripe. The seeds bear a caruncle that is attractive to ants and this may aid dispersal. Sun spurge seed can also occur as a contaminant in crop seeds. Seeds buried in soil can still be viable after 30 years.

**Illustrations**

A. Seedling
B. Flowering plant
C. Detail of flower and fruit
**Distribution:** Caper spurge occurs as an occasional weed in most parts of the State. It appears to be more common in the north and northwest. On the mainland it is recorded in New South Wales, Victoria and South Australia. It is native to southern Europe.

**Occurrence and Significance:** On roadsides and waste areas and along or adjacent to rivers and creeks. It also can be found within urban areas and is sometimes cultivated as a garden plant. The fruit is toxic. The white latex-like sap is toxic and caustic and would be potentially very dangerous if introduced into the eye.

**Description:** The seedling is erect with a distinct hypocotyl and epicotyl, and is hairless. The cotyledons are sessile, and elongated, about 30 mm long by 3 mm wide. The first leaves are about 50 mm long by 4 mm wide, hairless, with a pale streak up the centre and a prominent mid-rib on the underside. The stem is normally unbranched initially, the lower stem leaves being paired, elongated and reflexed downwards, 100 to 150 mm long, with a distinct pale centre stripe. When the plant reaches a height of 300 mm to 1 m, depending on growing conditions, the stem divides into two or four, rarely three or five, branches. These branches themselves subdivide several times. The upper stem leaves arise where the stems branch, and along the upper stems; where the stem branches there is one leaf per stem, otherwise they are paired. The fruit is globular, about 10 mm in diameter, and has three lobes. The plant exudes its sap prolifically whenever a stem or leaf is damaged.

Caper spurge resembles a number of *Euphorbia* species grown as garden ornamentals. However, the bluish-green colour of the leaves, their size and opposite arrangement, distinguish caper spurge from other species naturalised in Tasmania.

**Life Cycle and Dispersal:** Germination occurs in spring and early summer, and probably autumn. Flowering starts in summer and continues for several weeks into autumn. Both late flowers and early mature fruit can be found at the same time. The mature plant dies off in late autumn or early winter. When ripe the fruits burst open explosively and the seed is thrown several metres. Long range dispersal is known to occur by seed being carried in rivers. Other means of dispersal are not known.

**Illustrations**

*Illustration A.* Flowering plant

*Illustration B.* Maturing fruits
**PETTY SPURGE**

*Euphorbia peplus* L.  
**Annual**  
**EUPHORBIACEAE**

**Distribution:** Petty spurge is found in most parts of the State. It is native to Europe.

**Occurrence and Significance:** It is principally a weed of waste areas and gardens. It has little or no economic importance. When cut the plant exudes a caustic white latex and is potentially a source of some danger to children.

**Description:** The cotyledon is 5 to 10 mm long overall with a short petiole, and is hairless. The seedling has a hypocotyl and a short epicotyl. The early leaves, which arise in pairs initially, are 7 to 12 mm overall with a petiole 2 to 3 mm long, and are hairless. There is little change in the leaf shape during the early stages of stem elongation though the tendency for leaves to develop in pairs is lost. The plant does not form a rosette.

The mature plant is erect in habit, reaching some 200 to 300 mm in height. The stems may be single, or branching at the base to give a rather bushy appearance. The stems are solid with a pithy core, circular in cross section and hairless. Towards the top the stems branch, these branches themselves being subdivided. Where branching occurs there is a group of hairless, very shortly petiolate or sessile leaves, one for each branch. These leaves are 12 to 15 mm at the bottom and smaller towards the top of the branches, and usually cupped. The flowers are terminal on axillary branches.

Petty spurge is very similar in general appearance to sun spurge (*E. helioscopia*) but usually much smaller. In petty spurge the lower stem leaves are petiolate and have less square cut tips. In the seedling stage sun spurge has serrated leaf tips while those of the petty spurge are simple. The two can be distinguished in the mature plant by differences in the flowers illustrated.

**Life Cycle and Dispersal:** Germination occurs at most times of the year when moisture is available. The seeds are dispersed explosively when ripe. Ants may aid with further dispersal. Seed can remain viable in the soil for over 30 years.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Detail of flower and fruit
**Ulex europaeus L.**

**Perennial**

**FABACEAE (LEGUMINOSAE)**

**Distribution:** Gorse occurs in all farmed areas of the State. It is most prevalent in the Tasmanian Midlands. On the mainland it occurs in Western Australia, South Australia, Victoria and New South Wales. The species is native to Europe.

**Occurrence and Significance:** Gorse occurs in unimproved and second class grazing land, pasture, waste areas and on roadsides. It is an invasive and competitive plant in grazing land and pasture and a harbour for vermin. Gorse can be utilised by sheep for feed when other food is not available, and can be a habitat for native species.

**Description:** The seedling leaves are trifoliate but those of the mature plant are narrow and spine-like, up to 40 mm long. Gorse forms an erect woody bush which grows to 3 m or more in height, with individual plants reaching 2 or 3 m in diameter. The stems are much branched, and can form layers when they contact or lie along the ground. The flower is bright yellow, pea-like, and some 20 mm long, usually single in the leaf axils and very numerous towards the ends of the branches. The fruit is a pod about 20 mm long.

Gorse resembles several native plants, particularly *Daviesia ulicifolia*. However, the native lacks grooved stems, and tends not to be hairy with its spines much less densely spaced. The flowers of *D. ulicifolia* are purplish at the base; gorse flowers are completely yellow.

**Life Cycle and Dispersal:** Reproduction is by seed. Germination occurs in autumn and spring. The young foliage is soft, and at this stage readily grazed by sheep (and rabbits). As the plant develops the stems become woody and leaves spine-like. Flowering usually starts in the second season. Gorse plants can be found in flower at all times of the year. The main flowering time is autumn and through winter with a second main flush in spring. The plants carry relatively little flower in summer. When ripe the seed pod splits open explosively with a sharp crack and seed is thrown a distance of several metres.

**Status:** Declared weed

**Illustrations**

A. Flowering branch  
B. Detail of spines  
C. Maturing pod  
D. Flowers
**VETCHES**

*(Tares)*

**Vicia spp.**

**Annual**

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Vicia sativa</em> L.</td>
<td>COMMON VETCH</td>
</tr>
<tr>
<td><em>V. sativa</em> ssp. <em>nigra</em> (L.) Ehrh</td>
<td>NARROW-LEAVED VETCH</td>
</tr>
<tr>
<td><em>Vicia tetrasperma</em> (L.) Schreb.</td>
<td>FOUR-SEEDED SLENDER VETCH (Slender Tare)</td>
</tr>
<tr>
<td><em>Vicia hirsuta</em> (L.) S.F. Gray</td>
<td>HAIRY VETCH (Hairy Tare)</td>
</tr>
</tbody>
</table>

**Distribution:** The species listed above are all annuals and can be found in most parts of the State. Vetches are native to Europe, the Mediterranean, western Asia and North Africa.

**Occurrence and Significance:** Vetches are most common in waste areas and gardens, but occasionally occur as weeds in crops. Common and narrow-leaved vetch are both cultivated, and may appear in significant numbers in subsequent years in the areas in which they were cropped.

**Description:** Vetches are very similar to each other in appearance. The cotyledons of vetches do not emerge above the ground. The first leaves have only one or two pairs of leaflets while later leaves are pinnate and stipulate with several pairs of leaflets, and terminate in a tendril not a leaflet. The plants do not form a rosette. The mature plant is climbing or spreading in habit. The inflorescence is axillary, the flower being like that of a pea. The seeds are produced in pods.

Common and narrow-leaved vetch are very similar, being larger and more sturdy than the other two species. The leaves have four to seven pairs of leaflets 10 to 20 mm long and branched tendrils. The stems are branched from the base and may exceed 1 m in length. The plant is more or less hairy. The leaflets of common vetch are oval or oblong. The flower petals are 15 to 20 mm long and purple and magenta-red in colour, and the pods 7 to 10 mm long with eight to ten seeds. Narrow-leaved vetch has upper leaflets which are generally much longer and narrower, flower petals 10 to 15 mm long and magenta-purple in colour, and pods 25 to 50 mm long with about eight seeds.

Hairy vetch is slender, hairy or hairless, with stems branched at the base and growing to 700 mm long. The leaves have four to ten pairs of leaflets 8 to 15 mm long and the tendrils are usually branched. The flower petals are 4 to 5 mm long and grey-white or pale blue-purple. The seed pods are sessile, 8 to 10 mm long, usually with two green seeds. Four-seeded slender vetch is slender and hairless with stems branched at the base and growing to 700 mm long. The leaves have three to six pairs of leaflets 8 to 12 mm long with simple or branched tendrils. The flowers have petals 4 to 6 mm long and pale blue-mauve in colour. The pods have a short stalk, are 10 to 14 mm long, and contain four seeds.

**Life Cycle and Dispersal:** Vetches can spread rapidly by seed and by the multi-branched, creeping rhizomes.

**Illustrations**

A. Common vetch seedling
B. Common vetch flowering and seedling branch
C. Hairy vetch seedling
D. Hairy vetch flowering and seedling branch
**Distribution:** Subterranean clover is an introduced pasture legume which is established in all parts of the State. It is native to the Mediterranean and western Asia.

**Occurrence and Significance:** It is a serious weed in many vegetable crops and is of particular importance in potatoes where it forms a ground covering mat which interferes with lifting the crop.

**Description:** The cotyledon is 4 to 5 mm long with a petiole of approximately the same length, and is hairless. The seedling has a short hypocotyl and no epicotyl. The leaves arise singly, the first being a simple spade-shaped leaf some 5 mm long with a petiole about 10 mm long. Subsequent leaves are trifoliate, with leaflets about 6 to 8 mm long, and petiolate. The leaves are hairy on the underside and may have hairs on the upper surface. The trifoliate leaves often carry a black mark, but this may be absent. As the plant grows the leaflets increase slightly in size and the petioles become much longer. The plant develops as a rosette 150 to 300 mm in diameter.

The mature plant is prostrate in habit with numerous branching stems arising from the rosette. The stems are capable of reaching a length of 1 m or more, are solid with a pithy core, fluted or circular with fine longitudinal ridges in cross section, and hairy. The stem leaves have leaflets some 10 mm in length and a petiole 20 to 30 mm in length with stipules at the base. The underside of the leaf is hairy but the upper side may be hairless. The inflorescences are axillary, consisting of several florets clustered together. The flowers are tubular, 6 to 8 mm long and white or occasionally pink in colour.

The hairy leaves of subterranean clover distinguish it from white clover (*T. repens*). There are several cultivars of subterranean clover and this species is extremely variable, particularly with relation to hairiness, colour, and leaf markings.

**Life Cycle and Dispersal:** Germination occurs in autumn and in spring, and through summer in irrigated crops. Spread by both seed and vegetatively through rhizomes.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
D. Flowers (x2)
**CLOVERS AND ALLIED SPECIES**

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name (Dutch clover)</th>
<th>Perennial/Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Trifolium repens</em> L.</td>
<td>WHITE CLOVER</td>
<td>Perennial</td>
</tr>
<tr>
<td><em>Trifolium dubium</em> Sibth.</td>
<td>YELLOW SUCKLING CLOVER</td>
<td>Annual</td>
</tr>
<tr>
<td><em>Medicago sativa</em> L.</td>
<td>LUCERNE (Alfalfa)</td>
<td>Perennial</td>
</tr>
<tr>
<td><em>Medicago polymorpha</em> L.</td>
<td>BURR MEDICK</td>
<td>Annual</td>
</tr>
</tbody>
</table>

**FABACEAE (LEGUMINOSAE)**

*Distribution:* White clover, yellow suckling clover, lucerne and burr medick are found throughout Tasmania, but are more common in higher rainfall and irrigated areas. They also occur throughout mainland Australia. White clover is native to northern Europe, while yellow suckling clover, lucerne and burr medick are native to Eurasia.

*Occurrence and Significance:* Although subterranean clover (*T. subterraneum*) is by far the most common leguminous weed a number of other species, including those listed above, are encountered from time to time in crops. White clover is quite common as a seedling in crops in the higher rainfall areas. It is less vigorous and slower growing than subterranean clover and is far less significant as a weed. Yellow suckling clover is rather smaller than white or subterranean clover and not normally a problem in crops, but in lawns or turf it can be a nuisance as it is not easily controlled.

*Medicago* species are encountered as weeds far less commonly than the clovers, and do not usually create a significant problem.

*Description:* The seedlings of all these species have a spade leaf with subsequent leaves trifoliate. This first leaf separates the legumes from other groups, for example oxalis, which may be superficially similar. In *Medicago* species the terminal leaflet has a stalk distinctly longer than that of the lateral leaflets. The leaflet is usually notched at the tip and has the mid-rib projecting to form a small spine. The leaflets of *Trifolium* species are sessile or have stalks all of the same length (except *T. campestre* hop clover, and yellow suckling clover, both of which have yellow flowers) and lack a terminal spine. *Lotus* species (trefoils) have leaves with five leaflets, three in a trifoliate group at the apex of the stalk and a further pair at its base.

Identification of leguminous species is based on details of the flower and the fruiting body in particular and can present considerable problems. Many species have numerous cultivars which differ considerably in vegetative characteristics. White clover is distinguished from subterranean clover by having smaller cotyledons and hairless leaves. The yellow flowers of yellow suckling clover may lead to confusion with wood sorrel but the shape of the leaf easily separates the two.

*Life Cycle and Dispersal:* White clover seed can be dispersed long distances by human activities and through the digestive tract of birds and grazing animals. Short distance dispersal may occur by dehiscence, stock trampling, worms, ants and to a small extent by wind. Vegetative spread occurs through stolon growth.
Clovers and allied species

Yellow Suckling Clover
A. Flowering plant
B. Flowerhead and leaf

White Clover

Lucerne
A. Flowering plant
B. Flowerhead and leaf
C. Axil

Burr Medick
A. Seedling
B. Stem
C. Axil
D. Fruit
**Distribution:** Fumitory is widely distributed in most parts of the State. It is native to Eurasia.

**Occurrence and Significance:** It is rather less common in the Tasmanian Midlands than in parts of the south or on the red soils of the northeast and northwest. It is a major weed in cereal, arable, vegetable, and forage legume crops. In young pastures it may be numerous but does not normally persist beyond the first grazing. It competes strongly with crops and can cause a serious yield reduction.

**Description:** The cotyledon is 20 to 35 mm overall in length with a short or merging petiole, and is hairless. The seeding has a hypocotyl but no epicotyl and is generally grey-green in colour but may have a marked purplish tinge. The leaves grow singly, the first leaf being 15 to 30 mm long overall, of which about half is petiole. The first leaf is trifoliolate and later leaves become progressively more compound and lobed. The plant develops as a rosette.

The mature plant is semi-erect when small, but becomes prostrate and scrambling in habit as it grows. Stems reach 1 m in length and are much branched. Under suitable conditions a single plant may cover an area of one square metre or more. The stem is polygonal in cross section, solid and hairless. The stem leaves have a long petiole deeply grooved on the upper side and are hairless. They are compound with the leaflets deeply lobed. The inflorescences are terminal, axillary, and contain 10 to 15 flowers. The flowers are of a distinctive shape, 10 to 15 mm long, and pink with a blackish tip. The fruit is spherical and carried on a short stalk.

In its early stages fumitory has a superficial resemblance to parsley piert (Aphanes arvensis), common cotula (Cotula australis), lesser swinecress (Lepidium didymum), and storksbill (Erodium cicutarium) but is readily distinguished from these by the cotyledon and the leaf shape. Distinguishing fumitory from the F. densiflora group is more difficult. Fumitory is usually grey-green in colour while the others tend to be more blue-purplish green. In fumitory the early leaves are larger and the lobes wider and flat; in F. densiflora the leaves are smaller with the lobes small and curled together. In the flowering plant fumitory has fewer flowers per inflorescence but these are larger individually.

**Life Cycle and Dispersal:** Germination occurs in autumn or spring, and in irrigated crops continues through summer. Reproduces by seed. Can be spread via clothing, boots, vehicles, tillage and harvest machinery, crop and pasture seed and forage. The seed has an oil sack that reduces germination and attracts ants which can disperse seeds short distances. The seed bank may persist for several years.

**Illustrations**

A. Seedlings
B. Young plant
C. Flowering branch
D. Flower and fruit
**Distribution:** Cluster-flowered fumitory occurs locally in the south, north and northwest of the State, but its full distribution is not clearly known. It is native to Europe.

**Occurrence and Significance:** Where it has been found it has occurred as a weed of cereal or vegetable crops. If present in numbers it can be strongly competitive, though it appears that the plants do not develop to as large a size as fumitory (*F. muralis*). There are indications that it may be more resistant than fumitory to certain herbicides.

**Description:** The cotyledon is 20 to 40 mm long overall with a petiole 7 to 15 mm long, and is hairless. The seedling has a long hypocotyl but no epicotyl. The leaves develop singly and are hairless, the early leaves being 20 to 35 mm long overall with a petiole 10 to 20 mm. The plant usually has a distinct blue-green colour. The first leaf is trifoliate with lobed leaflets, while later leaves become progressively more lobed and compound. The leaflets tend to be cupped and not spread flat. The plant develops as a rosette. The mature plant has a semi-erect or prostrate and scrambling habit. The stems are branched, reach 500 mm in length, are solid and circular in cross section with longitudinal ridges, and are hairless. The leaf stems are 50 to 80 mm long overall with a long petiole and are hairless. The lobes of the upper stem leaves are much narrower than those of the rosette leaves. The inflorescences are terminal and axillary, and consist of a large number, at least 30 and frequently more, individual flowers. The flowers, about 5 mm long and carried on a short stem, are elongated and of the typical fumitory shape.

Cluster-flowered fumitory can be distinguished from fumitory in the early stages by the leaves and leaflets which are smaller and cupped rather than flat, and by its blue-green as opposed to grey-green colour. In the mature stage the two species can be distinguished by the size and number of flowers in the inflorescence.

At the present time the number of fumitory species present and their distribution in Tasmania is not fully known. There are at least two other species. *F. bastardii* has been recorded from the east coast. *F. officinalis* has been found in several locations in the north of the State, near Westbury and in the Devonport/Northdown area. It tends to have a slightly more erect habit than cluster-flowered fumitory which it otherwise generally resembles.

**Life Cycle and Dispersal:** Germination occurs in spring and possibly also in autumn. Reproduces by seed. Can be spread via clothing, boots, vehicles, tillage and harvest machinery, crop and pasture seed and forage. The seed has an oil sack that reduces germination and attracts ants which can disperse seeds short distances. The seed bank may persist for several years.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering and fruiting branch  
D. Flower and fruit
**Distribution:** Cut-leaf cranesbill is found throughout the State. It is native to the Mediterranean and western Asia.

**Occurrence and Significance:** It is principally a weed of waste areas and gardens, but does occur to some extent in arable crops. It is of little economic importance.

**Description:** The cotyledons are 4 to 6 mm long by 6 to 8 mm wide with a petiole 6 to 12 mm long. A few very short hairs are present on the upper surface of the blade with longer hairs on the petiole. The veins on the cotyledon are very prominent. The seedling has a hypocotyl but no epicotyl. Leaves arise singly, the first leaves being 8 to 15 mm in diameter with a petiole 10 to 20 mm long. Numerous long hairs are present on the upper surface with rather shorter and less numerous hairs on the lower. The leaves increase in size and petiole length and become palmate and more divided as the plant develops. The plant may form a loose rosette.

The mature plant has a prostrate or semi-erect habit with stems which branch from the base and along their length. The stems reach 600 mm in length, are solid and circular in cross section, and hairy. The stem leaves are some 60 mm in diameter on a petiole 80 mm or more long, though towards the top of the stem the leaves are smaller and the petiole shorter. The leaves are hairy on the upper and lower surface. Towards the top of the stem the palmate leaves are often reduced to a series of lobes. The inflorescences are axillary and terminal, with flowers borne on a stem some 25 mm long and usually paired. The flowers are about 7 mm in diameter and the 5 purplish petals have notched tips.

Cut-leaf cranesbill can be distinguished from dove’s-foot cranesbill (G. molle) by the deeper division of the lobes of the leaves. In cut-leaf cranesbill the division does not usually extend beyond half the depth to the base. In cut-leaf cranesbill the lobes of the second leaf are subdivided, while in dove’s-foot cranesbill they are not, and in this species the upper leaves do not lose their overall circular outline. The apical notch on the petals of cut-leaf cranesbill is deeper.

**Life Cycle and Dispersal:** Cut-leaf cranesbill is an annual with germination occurring in autumn or spring. Spreads by seed, often as a contaminant of crop seed.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch  
D. Fruit  
E. Flower
**Geranium molle** L.  
**Annual**  
**GERANIACEAE**

**Distribution:** This species occurs throughout the State but is probably less common in the north than in the south. It is native to Eurasia.

**Occurrence and Significance:** It occurs in waste areas and gardens and occasionally in crops. It is not of great economic significance.

**Description:** The cotyledon is 3 to 6 mm long by 5 to 10 mm wide, with a petiole 5 to 20 mm long which elongates as the seedling ages. Numerous short simple and glandular hairs occur on the upper and lower surfaces of the cotyledon and its petiole. The plant has a hypocotyl but no epicotyl. The leaves grow singly, the first being 5 to 10 mm in diameter with a petiole which elongates to some 30 mm. Simple and glandular hairs are present on the upper and lower surfaces and the petiole. Later leaves are more deeply lobed, larger in diameter, and have longer petioles. The plant forms a rosette.

The mature plant is prostrate or semi-erect in habit with stems branching from the base. Stems reach 300 to 400 mm in length, are solid, circular in cross section, and have both simple and glandular hairs. Stem leaves are some 40 mm in diameter, the lobes extending to a depth of about half the leaf radius. Upper stem leaves are smaller and carried on short petioles. They may be deeply lobed and reduced in area, but not to the extent found in cut-leaf cranesbill (*G. dissectum*). Inflorescences are axillary and terminal with the flowers in pairs. The flowers are 8 to 10 mm in diameter and have five purplish petals with deep apical notches.

Dove’s-foot cranesbill is distinguished from cut-leaf cranesbill by the shallower lobing of the leaves generally and the lobes of the second leaf which are not subdivided. In the mature plant the upper leaves, though more deeply divided than in the seedling, are not reduced to a series of narrow lobes. The petals of dove’s-foot cranesbill are more deeply notched than those of cut-leaf cranesbill.

**Life Cycle and Dispersal:** Dove’s-foot cranesbill is an annual with germination occurring in autumn and spring. Spreads by seed, often as a contaminant of crop seed.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering and fruiting branch
Common storksbill is found in all parts of the State. It is native to Eurasia.

Locally it, or the closely related musk storksbill (E. moschatum), may be predominant. It is a weed of waste areas, arable crops, and pasture. It appears to be somewhat less aggressive in pastures than musk storksbill.

The cotyledon has a blade 5 to 8 mm long with a petiole 10 to 15 mm long. Glandular and fine hairs are present. The seedling has a hypocotyl but no epicotyl. The leaves arise singly, the first leaf having a blade 5 to 10 mm with a petiole 10 to 15 mm long. Both simple and glandular hairs are present. The first leaf is usually pinnately lobed and later leaves pinnate with separated lateral leaflets. The plant develops as a rosette with a diameter up to 400 mm.

The mature plant is prostrate or semi-erect in habit with stems which branch both from the base and along their length. The stems are solid with a pithy core, circular in cross section, and reach about 700 mm in length. Glandular and simple hairs are present. The stem leaves have a blade 40 mm or more long with a petiole approximately as long again, and have glandular and simple hairs. The inflorescence is terminal, the flowers being 8 to 12 mm in diameter and pinkish-purple with five petals.

Common storksbill is distinguished from musk storksbill as a seedling by the shape of the cotyledon and the first leaf which is lobed but not completely pinnate. In the rosette and mature stages the leaflets are far more deeply divided, frequently more than half way to the mid-rib. This is particularly noticeable in the upper stem leaves.

Common storksbill is an annual. Autumn is the main germination time in waste areas and established pasture. In crops germination commonly occurs in spring and through summer where moisture is available. Spreads by seed. Seeds are ejected explosively from the ripened seedpods. Seed can be spread on animal fur, in contaminated grain, hay, straw, manure, and on farm machinery. Seeds can remain viable for many years, and form extensive seed banks in the soil.

Illustrations

A. Seedling
B. Rosette
C. Fruiting branch
D. Flowers
**MUSK STORKSBILL**

*Erodium moschatum* (L.) L’Her.

**Annual/Biennial**  
GERANIACEAE

**Distribution:** Musk storksbill is one of Tasmania’s commonest weeds and is found in all parts of the State. It is native to Eurasia.

**Occurrence and Significance:** Locally it, or the closely related common storksbill (*E. cicutarium*), may be predominant. It occurs in waste areas, all crops, both young and established pasture, and is often a serious problem in newly planted lucerne. It is strongly competitive and is capable of overgrowing and overwhelming a crop.

**Description:** The cotyledon has a blade 8 to 12 mm long with a petiole 5 to 10 mm long. Glandular hairs are present, particularly on the margin of the cotyledon and the petiole, and may also occur on the upper and lower surfaces of the blade. The seedling has a hypocotyl but no epicotyl. The leaves develop singly, the early leaves having a blade 7 to 15 mm long and a petiole 5 to 10 mm long which tends to elongate as the leaf ages. Both simple and glandular hairs are present. The leaves are pinnate. Later leaves are larger with more leaflets. The plant develops as a rosette with leaves reaching 500 mm long overall. The mature plant has a prostrate or semi-erect habit with stems which branch at the base and along their length. The stems reach 1 m in length, are solid with a pithy core, circular in cross section and covered in simple and glandular hairs. The stem leaves are pinnate, being some 80 mm long in the blade with a petiole about 25 mm long. Simple and glandular hairs are present. In both rosette and stem leaves the leaflets often exhibit a purplish colouration surrounding the lower veins and mid-rib. The inflorescence is terminal, the flowers being 10 to 15 mm in diameter with five pinkish-purple petals.

Musk storksbill is distinguished from common storksbill in the seedling stage by the shape of the cotyledon and the first leaf which is pinnate and not just lobed. The leaflets on this species are not normally divided more than half way to the mid-rib while those of common storksbill are. This difference is particularly noticeable in the stem leaves.

**Life Cycle and Dispersal:** Musk storksbill is an annual or biennial weed with flowering from winter to spring. Germination occurs mainly in autumn in established pasture and waste areas, but in annual crops occurs also in spring, and throughout the summer in irrigated crops. Spreads by seeds which are ejected explosively from the ripened seedpods. Seed can be spread on animal fur, in contaminated grain, hay, straw, manure, and on farm machinery. Seeds can remain viable for many years, and form extensive seed banks in the soil.

**Illustrations**

A. Seedling  
B. Rosette  
C. Fruiting branch  
D. Flower
**Erodium botrys** (Cav.) Bertol.  
*Annual  
GERANIACEAE*

**Distribution:** Long storksbill is widespread throughout the State but is far less common than the other two *Erodium* species. It is native to the Mediterranean.

**Occurrence and Significance:** It is probably found more frequently in the south than in the north. It is mainly a weed of waste areas, but can be of some significance in new pastures and arable crops where it is competitive if present in large numbers.

**Description:** The cotyledon has a blade 8 to 12 mm long with a petiole of similar length. Hairs are present on the petiole and may be present on the blade. The veins are deeply impressed. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, the first being 8 to 12 mm long with a short petiole. A few hairs may be present on the upper surface, longer hairs on the margin, and short, stout hairs on the underside particularly on the veins. Long white hairs occur on the upper side of the petiole. As the plant ages the leaves become more deeply lobed but not pinnate. The leaves are somewhat leathery in texture and the upper surface often has a dull shiny appearance. The plant develops as a rosette. The mature plant is erect or semi-erect in habit with stems, branching from the base, reaching 500 mm in length. The stem is circular in cross section, solid, and carries long simple and short glandular hairs. The stem leaves are some 60 mm in length and are petiolate, the petioles being shorter than those of the rosette leaves. Short hairs are present on the upper and lower surfaces and the petiole. The stem leaves are more deeply divided and the lobes more pointed than those of the rosette. The inflorescence is axillary and terminal with 1 to 4 flowers. The flowers, 12 to 18 mm in diameter, have five lilac petals that often show darker veins. The beak of the fruit is 80 to 110 mm long.

The multiple lobing of the cotyledon separates this from the other two storksbill species as seedlings. The rosette leaves of long storksbill are lobed but never pinnate. The mature plant is distinguished from common (*E. cicutarium*) and musk storksbill (*E. moschatum*) by the leaves which have deep pinnate lobes but are not pinnate, and by the larger size of both flowers and fruit.

**Life Cycle and Dispersal:** Long storksbill is an annual with flowering from late autumn to spring. Germination occurs in autumn. In crops germination commonly occurs in spring and through summer where moisture is available. Spreads by seeds which are ejected explosively from the ripened seedpods. Seed can be spread on animal fur, in contaminated grain, hay, straw, manure, and on farm machinery. Seeds can remain viable for many years, and form extensive seed banks in the soil.

**Illustrations**

A. Seedling  
B. Rosette  
C. Fruiting branch  
D. Flowers
**CANADIAN PONDWEED**

*Elodea canadensis* Michx.

**Perennial**

**HYDROCHARITACEAE**

**Distribution:** The species has been reported from several rivers around the State and is also known to occur in dams and ornamental ponds throughout the settled areas of the State. It is occasionally offered for sale by aquarium suppliers. On the mainland Canadian pondweed is found in Victoria and New South Wales. The species is native to North America.

**Occurrence and Significance:** Canadian pondweed can establish in any permanent still or slow flowing body of freshwater, up to 3 m in depth. Once established, Canadian pondweed grows rapidly and in still or slow moving water can occupy most of the available volume. It is one of the most persistent and obstructive of all aquatic plants. In drainage and irrigation channels it restricts water flow, which in turn causes more rapid silting of the channel. It interferes with fresh water bodies, and particularly affects trout fishing.

**Description:** Canadian pondweed is a submerged perennial which roots in the silts or muds. The cylindrical stems are much branched and roots frequently form at the branch junctions. Leaves are produced in whorls of three (rarely four or five) from each node. They are usually 6 to 12 mm long, oblong or lanceolate, brownish green with a thin translucent margin which is minutely toothed. In summer, flowers are produced from leaf axils near the tips of the branches. The flowers are solitary, minute and white, and are borne on what appear to be white thread-like stalks, which, in fact, are not stalks but an elongation of the lower part of the flower. The whole plant eventually forms a dense mass, the branches reaching to the surface but not emerging.

Distinguished from dense waterweed (*Egeria densa*) by having leaf whorls predominantly in threes rather than four to six, and by having whorls less densely occurring on the stem. Distinguished from hydrilla (*Hydrilla verticillata*) by having smooth leaf edges.

**Life Cycle and Dispersal:** Canadian pondweed is a dioecious plant, that is, male and female flowers are borne on separate plants. Flowering occurs in summer. In Tasmania female plants only have been found and all reproduction is presumed to have been vegetative. The stems break easily and roots readily arise from the nodes, usually those nearest the break, or from the base of branches. Fragments broken off by accidents or strong water flow after flood rains are carried downstream to become the focus of a new infestation. As water temperature falls in the autumn, the internodes fail to lengthen and the leaves become crowded at the tips of the branches. The plant overwinters in this condition and is stimulated to more rapid growth as temperatures rise in spring.

**Status:** Declared weed.

**Illustrations**

A. Flowering branch
B. Whorl of leaves
C. Portion of stem showing female flower at end of elongated hypanthium
**ONE-LEAF CAPE TULIP**

*Moraea flaccida* (Sweet) Steud.

**Distribution:** Localised populations occur in the north. Small patches are found on the East and West Tamar, and on one property in the far northeast. Isolated infestations have also been found at Launceston, Ulverstone and on King Island. On the mainland it occurs in Western Australia, South Australia, Victoria and New South Wales. It is native to South Africa.

**Occurrence and Significance:** Cape tulip is a weed of pasture in Tasmania. On the mainland it is a significant weed in cereal crops. Cape tulip is a toxic plant, and is competitive and invasive in pastures.

**Description:** The corm produces a single ribbed leaf up to 1 m long. The stem is rather shorter than the leaf and carries several flowers. The flowers are 40 to 50 mm in diameter. The six petals are pink with a yellow centre. The fruit is an elongated capsule containing some 150 seeds.

The corm is 15 to 25 mm in diameter and enclosed in a brown fibrous sheath. Each season one to three new corms are produced above the old corm. Seedlings are grass-like in appearance and do not flower until they are two or three years old.

It is difficult to distinguish from other members of the iris family when not in flower. The slight zigzagging of the stem, and the long bracts clasping branches in the flowering stem are helpful characteristics for identification.

**Life Cycle and Dispersal:** One-leaf cape tulip reproduces both from seed and from corms. Seedlings germinate in the spring, growing through the summer period. They do not normally flower in the first season. Regrowth from bulbs starts in spring, the plants growing rapidly and flowering around October or November. Top growth dies down rapidly thereafter. Local dispersal is through seed, infestations moving only slowly. In Tasmania long range movement of the plants appears to have been as a result of people deliberately planting the bulbs as an ornamental.

**Status:** Declared weed.

**Illustrations**

A. Flowering plant
**Stachys arvensis** L.

**Annual**

**LAMIACEAE** (LABIATAE)

**Distribution:** Stagger-weed occurs in most parts of the State. It is native to Europe.

**Occurrence and Significance:** It is commonly found in waste areas and gardens, and is often an important weed in vegetable crops where it can be strongly competitive. Although it does not cause any particular problems in Tasmania this species can be toxic to stock, hence its common name.

**Description:** The cotyledon has a blade 5 to 8 mm long with a petiole 4 to 6 mm long. Hairs are present on the upper surface and on the petiole but not on the lower surface. The seedling has both hypocotyl and epicotyl. The leaves are paired, the pairs being at right angles to each other. The first leaves are 10 to 14 mm long with a petiole 8 to 12 mm long, and carry stout hairs on the upper surface and on the petiole, with fewer, principally on the veins, on the lower surface. The number of lobes may vary slightly and three or four lateral lobes may be present; the basal lobe is usually much smaller than the others. The plant does not form a rosette. It has a strong and unpleasant smell.

Stagger-weed is very variable in growth habit. It is often erect, reaching a height of 200 to 300 mm with, especially in competitive situations, few or no branches. Alternatively, it may be much branched, especially from the base, with prostrate lateral stems which can grow to well in excess of 300 mm; these stems can themselves be branched and have semi-erect or prostrate laterals. The stems are square in cross section and solid with long, fine hairs. The upper stem leaves are sessile, some 30 mm long with hairs on the upper, and on the lower surface especially on the veins. The inflorescence is axillary with two to six flowers in a whorl. The petals are fused to give a tubular flower, purple in colour and some 5 mm long.

The seedling of stagger-weed is most likely to be confused with that of Buxbaum’s speedwell (*Veronica persica*). In stagger-weed the cotyledon and leaf are circular or only slightly elongated to oval in shape, while in Buxbaum’s speedwell both are distinctly spade shaped. Other seedlings which resemble stagger-weed to some extent are henbit (*Lamium amplexicaule*), distinguished by the long, thin petiole on both leaf and cotyledon and the basal notch on the cotyledon, and ivy-leaf speedwell (*Veronica hederifolia*), distinguished by its oval cotyledon and by the leaves having fewer lobes. The mature plant is superficially similar to henbit but is differentiated from it by upper stem leaves, which are more elongated and do not grow round the stem at their base.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Flowering is mostly in winter to spring. Spread is by seed.

**Illustrations**

A. Seedling
B. Flowering plants
C. Flower
**HENBIT**
*(Dead-nettle)*

*Lamium amplexicaule* L.

**Annual**

**LAMIACEAE (LABIATAE)**

**Distribution:** Henbit is locally common in parts of the south, northeast and northwest of the State, but appears to be absent from the Tasmanian Midlands. It is native to Eurasia.

**Occurrence and Significance:** It occurs in waste areas and in vegetable and cereal crops. It can be competitive in seedling vegetables or low growing species like red beet, but is usually overgrown by cereals and other tall crops.

**Description:**
- The cotyledon is 5 to 6 mm long and has a distinctive semicircular notch at the base of the blade. The petiole is 6 to 10 mm long and grows almost vertically, with the blade almost at right angles to it. The cotyledon is hairless though short hairs are present on the petiole. The seedling has both hypocotyl and epicotyl. The leaves are paired, the pairs being at right angles to each other. The early leaves are 5 to 10 mm long with a petiole slightly longer which elongates further as the leaf matures. Hairs are present on the upper and lower surface and on the petiole. The earliest leaves frequently lack the third lateral lobe normally found in later leaves. The plant does not form a rosette.

- The mature plant is erect in habit with stems up to 250 mm long which branch from the base and to a lesser extent along their length. The stem is hollow, square in cross section with ridges on each corner, and is hairless or carries a few hairs only. Lower stem leaves are carried on petioles square in cross section and are some 25 mm long by 30 mm wide. The upper stem leaves are sessile with a base angle greater than 90 degrees, each pair forming a complete circle round the stem. The leaves carry sparse fine hairs on the upper and lower surfaces. The inflorescence is axillary, the flowers arising in whorls. The pinkish-purple petals are fused to form a tube some 15 mm long. Cleistogamous flowers are frequently found in the early part of the season.

A very similar species, red dead-nettle (*L. purpureum*), is found in both waste areas and crops but is not common. In the early stages it is almost identical to henbit but in the mature plant is distinguished by the upper leaves which are shortly petiolate and do not clasp the stem.

The *Lamium* species are distinguished in the seedling stage from the speedwells and stagger-weed (*Stachys arvensis*) by the very long and thin petiole on both cotyledons and early leaves, and by the semicircular notch at the base of the cotyledon.

Stagger-weed has tubular flowers in whorls in the leaf axil and could possibly be confused with henbit. It can be distinguished from henbit by the upper stem leaves which are more elongated than those of henbit and do not grow round the stem.

**Life Cycle and Dispersal:** Henbit is an annual with flowering occurring in winter to early spring. Germination is principally in spring but also occurs in autumn. Spreads by seed. Can also grow and spread from stem fragments. Seed can remain viable in the soil for many years.

**Illustrations**

- A. Seedling
- B. Flowering plant
- C. Cluster of summer flowers
- D. Summer flower
- E. Cluster of winter flowers

*Lamium purpureum*

- F. Flowering branch
- G. Flower
**Marrubium vulgare** L.  

**Perennial**  

**LAMIACEAE**

**Distribution:** Horehound occurs in the south, Tasmanian Midlands, north, northeast and northwest. It is most common in the Tasmanian Midlands grazing areas. On the mainland the species is found in Western Australia, South Australia, Victoria and New South Wales. It is native to Europe, north Africa and western Asia.

**Occurrence and Significance:** In the Tasmanian Midlands, horehound occurs in improved grazing land. In most other parts of the State it is seldom present in significant numbers in pasture, and is frequently confined to fence lines and around farm buildings. It is often common around shearing sheds. Horehound causes vegetable fault in wool which results in a downgrading of the fleece. When wool prices are low this additional loss of income causes considerable concern to graziers. Heavy infestations in pasture can be competitive and reduce the grazing area available.

**Description:** The cotyledon has a blade 4 to 5 mm long with a petiole of approximately the same length and has short hairs on the upper and lower surface and usually a thick covering of long hairs on the petiole. The seedling has a hypocotyl but no epicotyl. The leaves are paired, the pairs being at right angles to each other. The first leaves have a blade of 5 to 8 mm long with a petiole of approximately the same length. They have long white hairs on the upper surface, and on the lower surface and the petiole; these are usually dense and matted. The leaves have a distinctive grey colour and the margins are wavy. The veins are deeply impressed above and prominent below. The plant does not form a rosette. The mature plant is erect and bushy in habit with stems which branch from the base and along their length and become woody. The top growth dies back, partially or completely, over winter but dead stems may persist for a considerable time. The plant reaches a height of some 700 mm to 1 m. Stems are square in cross section with a pithy core which may be solid or have a small central hollow, and have a mat of fine hairs which tend to be particularly thick towards the top of non-flowering branches. The stem leaves are 35 to 55 mm long with petioles, which may reach 60 mm or more in length, though towards the top of a flowering stem they are very much shorter. The leaves are variably hairy, in some cases being almost hairless and in others having a mat of thin cobwebby hairs. The inflorescences are axillary, many flowers being carried in paired whorl-like clusters. The individual flowers are white with fused petals and are some 5 mm long.

**Life Cycle and Dispersal:** Germination occurs in autumn. The young plants grow slowly during winter and rapidly during spring and summer. Regrowth from established roots also occurs during spring and summer. Flowering occurs during late spring and early summer. The fruit carries a ring of recurved spines and becomes readily entangled in the fleece when sheep graze infested pasture. Horehound reproduces by seed. The main method of distribution is by animals. It is also capable of being spread when the fruit becomes attached to human clothing.

**Status:** Declared weed.

**Illustrations**

A. Seedling  
B. Group of young shoots from old rootstock  
C. Flowering stem  
D. Single flower  
E. Fruiting calyx showing hooks
**Distribution:** Occasional in the south of the State and on the Bass Strait Islands. Onion weed occurs in all mainland States. It is native to the Mediterranean, western Asia and northern India.

**Occurrence and Significance:** It is mainly a weed of roadsides and waste places. On Flinders Island it occurs in pasture. In Australia the most serious infestations are on light sandy soils with an annual rainfall of less than 400 mm. Dense infestations can seriously reduce pasture production. The plant is not eaten by stock and it has been claimed that in areas in the Mallee carrying capacity has been reduced by 75 percent.

**Description:** Roots fibrous, thick, yellow. Leaves hollow, onion-like, and shorter than the flowering stems and all emerging from the base. Flowering stems branched, up to 750 mm high and smooth. The flowering tip is compressed at first but elongates as flowering progresses. Flowers solitary, evenly spaced along the stem, each subtended by a small triangular bract shorter than the pedicel. The six ‘petals,’ are elliptical, free to the base and white or pinkish in colour with a brown central stripe.

The flowers of onion weed are distinctive, but when not in flower it resembles other members of the lily family (e.g. Bulbine). The very yellow roots are characteristic. Note that onion weed does not smell or taste like onion, nor does it produce bulbs.

**Life Cycle and Dispersal:** The main means of dispersal is by seed. Re-establishment of fragments spread by cultivation can occur but this is of minor importance as a method of dispersal. Seed germination occurs mostly in late summer, only leaves being produced in the first year. Flowering occurs in the spring of the second and subsequent seasons. After seed has ripened the flowering stem dies, the leaves persisting until autumn when a fresh crop of leaves arise from tillers around the crown. The plant can be biennial or perennial.

**Status:** Declared weed.

**Illustrations**

A. Flowering and fruiting plant
B. Flower
C. Fruit
**Small Flower Mallow**

*Malva parviiflora* L.

**Distribution:** Small flower mallow occurs throughout the State. It is native to Eurasia.

**Occurrence and Significance:** Principally a weed of stockyards and waste areas. However, it can invade weak pasture and is occasionally present in crops, particularly vegetable crops.

**Description:** The cotyledon has a blade 5 to 8 mm long with a long petiole 12 to 18 mm in length, and is hairless. The veins are pale in colour and distinct. The seedling has a hypocotyl but no epicotyl. The leaves grow singly, the first being 4 to 8 mm in diameter with a petiole 7 to 15 mm long. Star hairs are present on the upper and lower surfaces and on the petiole and simple hairs are also present on the leaf blade. The plant develops as a rosette-like clump.

The mature plant is either erect and bushy in habit, reaching a height of some 500 to 600 mm, or prostrate and spreading. The stems branch from the base and along their length, are normally solid though they may have a small hollow in the core, circular in cross section, and carry star hairs and tubercles, both of which may be few in number. The stem is often reddish in colour towards the base, particularly on the upper side in branching stems. The stem leaves are some 70 mm in diameter with long petioles and have short simple hairs and occasionally star hairs on the upper and lower surfaces; star hairs are present on the petiole which also carries longer simple hairs on its upper surface. The number of lobes on the leaf may show some variation, usually being five to seven. The inflorescence is axillary, the flowers being some 5 to 6 mm in diameter with five notched pink petals.

The palmate lobed leaf shape is common to most species of mallow, and small flower mallow is most easily distinguished from other species found in Tasmania by the flower.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Spread is by seed via movement of fruit fragments. Seeds possess a hard impermeable seed coat that inhibits seed germination and causes the seed to remain dormant until a period of fluctuating or high temperatures, freezing, thawing, drying or fire. Sheep can ingest the seed, some of which remains viable after ingestion and can be spread considerable distances.

**Illustrations**

* A. Seedling
* B. Young plant
* C. Flowering branch
* D. Flower
* E. Fruit
* F. Seed
**Distribution:** Tall mallow occurs in most parts of the State, but is more common in the south than the north. It is native to Eurasia.

**Occurrence and Significance:** It is principally a weed of waste areas and stockyards, and is of little economic importance.

**Description:** The cotyledon is 8 to 12 mm long with a petiole of approximately the same length, and is hairless or has a few hairs principally on the petiole. The seedling has a hypocotyl but no epicotyl. The leaves develop singly, the first being 12 to 18 mm in diameter with a petiole of approximately the same length, and are hairy. The plant develops as a loose rosette-like clump with leaves up to 100 mm in diameter with long petioles.

The mature plant is erect or semi-erect in habit with stems which branch, particularly from the base. The stems reach 900 mm long, are solid, circular in cross-section, and have simple and a few double or star hairs. The stem leaves reach 100 mm in diameter with a long petiole. They have few or no hairs on the upper surface, a few hairs on the lower surface especially on the veins, and mostly simple with a few double or star hairs on the petiole. The stem leaves have three to seven, usually three to five lobes, and are more deeply lobed than the rosette leaves. The flowers are axillary and grow several together. They are 25 to 40 mm in diameter with five petals which are rose-purple in colour with dark veins and have notched tips.

The mallows are difficult to separate in the young stages, though small flower mallow (M. parviflora) appears to have numerous star hairs present on stem and leaves while tall mallow has few. In the mature stage the flower size separates these species. Mallow of Nice (M. nicaeensis), which is fairly common in the northwest, is very similar to tall mallow.

**Life Cycle and Dispersal:** Germination occurs in the autumn. Tall mallow has been transported worldwide as a medicinal plant. Spread is by seed.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
D. Fruit
E. Seed
**Distribution:** Oxalis occurs in all parts of the State, mainly as a weed of gardens, towns and waste areas. On the mainland it is recorded from Victoria. It is native to Mexico.

**Occurrence and Significance:** In gardens, nature strips and reserves in cities and towns, and in cemeteries. Occasionally as a roadside weed outside urban areas. An invasive species, oxalis is regarded by many as the most serious weed of domestic gardens.

**Description:** Oxalis is a rosette plant with the leaves borne on long petioles. The leaves are trifoliate, the leaflets being divided into two lobes. The trumpet-shaped flowers, 15 to 20 mm in diameter, are carried on long stems in clusters of up to 12 flowers. The five petals are pinkish-purple in colour.

Oxalis species superficially resemble clovers because of their trifoliate leaves. However, oxalis leaves are more or less heart-shaped or notched, and often appear to be folded along the mid-rib. The flowers are distinctive. Distinguishing between the 10 Oxalis species that occur in Tasmania, including four native species, can be difficult and may depend on flower colour and size. The native O. magellanica has white flowers; the native O. exilis and O. perennans and the introduced O. corniculata have yellow flowers. O. pes-caprae has bright yellow flowers; O. latifolia has pinkish-purple flowers. O. incarnata has very pale pink-mauve flowers; O. purpurea has reddish-purple flowers. The native O. radicosa and the introduced O. articulata have bright pink-purple flowers.

**Life Cycle and Dispersal:** The plant reproduces by bulbs and bulbils produced from the underground stems. Distribution is by introduction of bulbs or bulbils, or soil containing them.

**Illustration**

*Plant with flowers*
Distribution: Soursob is found principally within city areas and locally in other parts of the State. Soursob occurs in Western Australia, South Australia, Victoria, New South Wales and Queensland. The species is native to South Africa.

Occurrence and Significance: Soursob occurs mainly as a garden weed. It is also found in waste areas and recreational areas. It is not regarded as a crop weed in Tasmania but has been found in orchards. Because of its persistent nature and resistance to most control measures soursob is regarded as one of the most annoying garden weeds in Tasmania. In mainland States this species is a serious weed in cereal crops.

Description: The leaves are trifoliate with a deep apical notch on the leaflet, and are carried on a long petiole. The plant grows as a rosette throughout its life. The plant is hairless. The flower has five yellow petals and is trumpet shaped, several being carried on short curved stalks at the end of a long erect flowering stem. The leaves frequently carry distinct black spots.

Soursob is distinguished from yellow woodsorrel (O. corniculata) by its bright yellow flowers, generally brighter green leaves, more upright habit, and rhizomes rather than above ground stolons. It is distinguished from other Oxalis species by the combination of bulbs/tubers, and yellow flowers present as an umbel rather than solitary.

Life Cycle and Dispersal: Soursob produces numerous bulbils on the roots, which are capable of remaining dormant for a period of years. These bulbils are the principal means of reproduction. The plant is spread when contaminated soil is moved. Seed is seldom, if ever, produced. The plant appears during late summer or early autumn forming a rosette from which the flowering stems arise during autumn and winter.

Illustrations

A. Flowering plant
B. Root system showing bulbils and contractile root
**Distribution:** The origin of yellow woodsorrel is obscure, but it is considered to be introduced. It is common in a wide range of habitats including pasture, waste areas and mountain plateaux.

**Occurrence and Significance:** It does not produce bulbils on the roots and is not particularly aggressive in cultivated areas. However, it can be a serious pest in lawns or turf where it is difficult to control.

**Description:** Yellow woodsorrel may be either an annual or perennial. It is much smaller than soursob (*O. pes-caprae*) and *O. latifolia*. The leaves are about 15 mm in diameter and the yellow flowers about 6 to 10 mm long. It is distinguished from most other *Oxalis* species present in Tasmania by its lack of bulbs, tubers or stout fleshy rhizomes. It is distinguished from the native *O. incarnata* by its yellow, rather than white, flowers.

**Life Cycle and Dispersal:** Often grows as an annual, regenerating each year from seed. Seeds are readily spread by soil and water movement, and may also be scattered by machinery such as lawn mowers. The stems do root where they touch the ground but the main means of spread is by seed, ejected forcibly from the ripe seed pods.

**Illustration**

*Plant with flowers*
**Distribution:** Opium poppy is grown in the northwest, and in parts of the northeast, Tasmanian Midlands, and south of the State. It is native to Eurasia.

**Occurrence and Significance:** It is grown as a source of alkaloids for pharmaceutical purposes. The growing of opium poppy other than as a licensed crop is prohibited under the *Poisons Act 1971*.

**Description:** The cotyledon is sessile, 10 to 15 mm long, and hairless. The seedling has a hypocotyl but no epicotyl. The first two leaves appear as a pair, but subsequent leaves grow singly. The first leaves are 8 to 15 mm long overall of which rather less than half is petiole. The first two leaves have simple margins and the next two to three have small lobes. Thereafter the leaves have lobes which become larger and more numerous. The leaves have a few long hairs on the upper and lower surface and rather more on the margin. The plant develops as a rosette which tends to have the leaves semi-erect rather than flat.

The mature plant is erect in habit with stems which may be branched and reach a height of 1.4 m. In cultivation this species is very variable in height, depending on the fertility status of the soil and the time of year when it germinated, and when it occurs as a weed it shows a similar wide range in size. The stems are solid and pithy, fluted in cross section, and are hairless or have only a few hairs. The stem leaves are 80 to 150 mm long, sessile, and hairless. Towards the top of the stem the leaves are smaller.

The flower is terminal and single, some 50 to 80 mm in diameter. The four petals are lilac and usually have a darker basal blotch. The capsule is more or less spherical, 20 to 40 mm in diameter with a flat plate-like cap.

The opium poppy's lilac flowers distinguish it from other naturalised members of the family, all of which produce flowers that are varying shades of red. In addition, the leaves are glaucous and shallowly lobed.

**Life Cycle and Dispersal:** Germination occurs in the spring and can also take place in the autumn. Spreads by seed. Where crops have been grown, volunteer seedlings frequently occur in the following and, to a lesser extent, in subsequent years as weeds. Poppies produce seeds prolifically, over 1000 seeds in each pod.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flowering branch  
D. Capsule
**Distribution:** Longhead poppy is common in the south and parts of the northwest. It is native to Eurasia.

**Occurrence and Significance:** It is a weed of crops, particularly commercial poppy crops, and also occurs in waste areas. It is not normally competitive or a problem in crops other than opium poppy.

**Description:** The cotyledon is 4 to 5 mm long and usually less than 1 mm wide, hairless, and sessile. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, the first being 2 to 5 mm long in the blade with a petiole slightly shorter, and are hairless. The first two leaves are almost circular and have smooth margins while later leaves are lobed. As the plant develops, the leaves become more elongated and pinnately lobed or pinnate, and hairy. The plant grows as a rosette.

The mature plant is erect in habit. The stems branch from the base and along their length, reach some 600 mm in height, are circular in cross section, and hairy. The lower leaves are petiolate but the upper stem leaves are sessile or have very short petioles. Stem leaves are 70 to 150 mm long and the upper leaves are shorter. The leaves are hairy and pinnately lobed, the lobes being long and narrow. The flowers, red in colour, are single and terminal, some 70 to 100 mm in diameter, with four petals which overlap. The capsule is elongated and 15 to 20 mm long.

Longhead poppy is distinguished from other red-flowered poppies that are found locally in Tasmania by its combination of hairy leaves and smooth seed capsule. Rough poppy (*P. hybridum*), and pale poppy (*P. argemone*) have bristly seed capsules; field poppy (*P. rhoeas*) only has sparse leaf hairs.

**Life Cycle and Dispersal:** Germination occurs in the spring. Spreads by seed.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch  
D. Capsule
**Papaver hybridum L.**

**Annual**

**PAPAVERACEAE**

**Distribution:** Rough poppy occurs locally in parts of the northwest and south of the State. It is native to Europe.

**Occurrence and Significance:** It is a weed of waste areas and arable crops, being most important in commercial opium poppy (P. somniferum) crops.

**Description:** The cotyledon is sessile and very small, being only 3 to 5 mm long, and is hairless. The seedling has only a very short hypocotyl and no epicotyl. The leaves grow singly, the first being 6 to 10 mm long and sessile. The early leaves are simple, but as the plant grows the leaves develop lateral lobes and ultimately become pinnate.

The mature plant is erect in habit with branching stems which reach a height of some 500 mm. The stem is more or less circular in cross section with short, closely pressed hairs. The stem leaves, which are similar in shape to the rosette leaves, are 50 to 70 mm long and petiolate. They are more or less hairy, and have very long hairs towards the base of the petiole. Towards the top of the stem the lobing of the leaves is reduced and they may be sessile. The flowers are single, terminal or axillary, and carried on a long stem. The flowers are 40 to 50 mm in diameter, have four petals and are crimson with a darker basal blotch. The capsule is oval, bristly and approximately 15 mm in length.

The larger size and hairy leaves of rough poppy distinguish it from field poppy (P. rhoeas). It is distinguished from longhead poppy (P. dubium) by its bristly seed capsule, and from pale poppy (P. argemone) by a seed capsule that is as broad as it is long, rather than being much longer than it is broad. In addition, the rough poppy has bright blue anthers; pale poppy has dark purple anthers.

**Life Cycle and Dispersal:** Germination occurs in the spring. Spread is by seed.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch with bud, flower and capsule
**Plantago coronopus** L.  
Annual, Biennial, or Perennial  
Plantaginaceae

**Distribution:** Buckshorn plantain is found throughout the State and is especially prevalent along coastal areas. It is native to Eurasia.

**Occurrence and Significance:** It is a weed of waste and neglected areas. It can withstand trampling, and has a high salt tolerance which allows it to grow very close to the sea. It is not normally of great significance as a weed, being poorly competitive, but it can create problems in poor quality pasture and in lawns established on low fertility coastal soils.

**Description:** The cotyledons are 10 to 15 mm long by less than 1 mm wide, flattened dorsally, sessile, hairless and without a well defined median groove. The seedling has a very short hypocotyl and no epicotyl. The leaves arise singly, the first being 15 to 25 mm long, are sessile, and have distinct forwardly directed white hairs. The first six or so leaves are parallel sided; thereafter lateral lobes begin to develop, initially one per side, but increasing in numbers in later leaves. In the mature plant the leaves are pinnately lobed, the lobes often being subdivided. The plant develops as a rosette.

The mature plant has a rosette habit and is 150 to 250 mm in diameter. The inflorescence is borne on a non-branching stem which tends to grow horizontally to a point just beyond the diameter of the rosette, and thereafter vertically for some 40 to 100 mm. The stem is solid and circular in cross section and carries longish hairs. The inflorescence is elongated, normally 50 mm or more in length, with numerous flowers. The flowers are 2 mm in diameter with four greenish petals. The stamens are some 5 mm long and the prominent yellow anthers surround the inflorescence. This plant is useful as a salinity indicator. The plant becomes redder and smaller with increased salinity.

As a seedling buckshorn plantain can be distinguished from narrow-leaf plantain (*P. lanceolata*) by the absence of a distinct depression on the cotyledon and by the difference in shape and hairiness of the early leaves. Both spurry (*Spergula aervensis*) and purple calandrina (*Calandrina ciliata*) have similar cotyledons (though that of spurry is circular in cross section) but totally different leaves.

**Life Cycle and Dispersal:** Germination occurs in the autumn. Flowers mainly during spring and summer but can flower throughout the year. Spreads by seed. Seed can remain dormant in soil, forming a persistent seed bank.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flowering stalk
**NARROW-LEAF PLANTAIN**

*Plantago lanceolata* L.

**Ribwort**

**Perennial**

**PLANTAGINACEAE**

**Distribution:** Narrow-leaf plantain occurs throughout the State. It is native to Eurasia.

**Occurrence and Significance:** It is significant principally as a weed in turf, although it does occur to a limited extent in crops and in pasture usually during the establishment stage. It is sometimes important in vegetable crops. It is common in waste areas.

**Description:** The cotyledons are 25 to 35 mm long and only 1 to 1.5 mm wide, sessile, and carry hairs at the base only. They have a distinct median depression. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, at first being 20 to 25 mm long, and are sessile or have a very short merging petiole. Long, often downy hairs are present on the upper surface and a few occur on the lower surface. In young plants the hairs may form a cobwebby mat on the upper surface. The plant develops as a rosette, the leaves reaching 200 to 300 mm in length with a petiole 20 to 40 mm long. They have three to seven longitudinal veins, and the margins are often shallowly toothed.

The mature plant has a rosette habit. It is usually compact in turf but very much more loose and spreading in non-competitive situations. The inflorescence is carried on a stem usually 100 to 200 mm long, though it may reach 650 mm. The stem is fluted or circular in cross section with shallow ridges, solid with a pithy core, and carries long, thin downy hairs. The flowers form a tight cluster 10 to 25 mm long. They are green in colour, 1 to 2 mm in diameter, and have four petals. The stamens are some 5 mm long and the prominent white anthers surround the inflorescence.

The seedling is very similar to, and can easily be mistaken for that of wireweed (*Polygonum aviculare*). Narrow-leaf plantain can be distinguished by the presence of a median depression on both cotyledon and leaf, while the membranous sheath at the leaf base in wireweed is absent in narrow-leaf plantain. The cotyledon and leaf in wireweed are hairless, while narrow-leaf plantain has hairs, particularly round the base of the leaf. After the second or third leaf the two species have totally different growth habits.

The cotyledon of narrow-leaf plantain is similar to that of spurry (*Spergula aervensis*) and purple calandrinia (*Calandrina ciliata*), but neither of these has a median depression. The cotyledon of purple calandrinia is oval and that of spurry is circular in cross section. The leaves are quite distinct. In buckshorn plantain (*P. coronopus*) the cotyledon, which is very like that of narrow-leaf plantain, does not have a well defined median depression. The leaves are, again, quite different in appearance being more or less parallel sided (until the 6th or so, when lateral lobes start to develop), without a median depression or venation, and with a rounded or blunt rather than pointed tip.

**Life Cycle and Dispersal:** Germination occurs principally in the autumn. Flowers mainly during spring and summer but can flower throughout the year. Spreads by seed. Seed can remain dormant in the soil.

**Illustrations**

A. Seedling
B. Flowering plant
**Distribution:** Great plantain is found principally in the north and south of the State and is less common in the Tasmanian Midlans.

**Occurrence and Significance:** It is local in occurrence and almost entirely restricted to damp situations. It is found in waste areas especially in ditches and creek banks, and occasionally in pasture which is subject to waterlogging. It is of little economic importance.

**Description:** The cotyledon is 8 to 12 mm long overall with a short petiole, and is hairless. The seedling has a short hypocotyl and no epicotyl. The leaves arise singly, the early leaves being 12 to 18 mm long overall with a petiole 5 to 6 mm long. They are hairless or have few hairs. As the plant grows the leaves often develop toothed margins. The plant forms a rosette with petiolate leaves up to 200 mm long. They have short sepaate hairs on the upper and lower surfaces, and five to nine longitudinal veins. The mature plant is a rosette from which unbranched flower stems grow to a height of 100 to 150 mm. The stems are circular in cross section, solid or with a small hollow core, and have short sepaate hairs. The inflorescence forms a terminal spike 25 to 50 mm or more long containing numerous florets. The florets are about 2 mm in diameter with four petals.

There are 17 plantain species in Tasmania, of which 13 are native. Great plantain may be distinguished from other weedy species by its flower stem without ridges (narrow-leaf plantain, *P. lanceolata*) and its unlobed leaves (*P. coronopus*). Several native species closely resemble great plantain, especially in the seedling and small plant stages. Of the native species only *P. varia* has a leaf that is as long as that of the adult *P. major*. The leaves of *P. varia* tend to be lanceolate, with scattered long hairs on both surfaces, and tapering gradually at the base.

**Life Cycle and Dispersal:** Germination occurs in the autumn. Spreads by seeds and from root fragments. A single plant can produce up to 14,000 seeds. Seeds are viable in soil for up to 60 years. Seeds are sticky when wet and may adhere to soil particles, feathers, fur, skin, or vehicles. Seeds can be spread in contaminated topsoil and via commercial seeds.

**Illustrations**

A. Seedling

B. Flowering plant
African feathergrass

**Pennisetum macrourum** Trin.

**Perennial**  
**POACEAE**

**Distribution:** In Tasmania known infestations are restricted to areas in the Huon and Derwent valleys. This grass also occurs in Western and South Australia, Victoria and New South Wales. It is native to South Africa.

**Occurrence and Significance:** Mostly confined to roadsides and the banks of rivers and creeks, with occasional incursions into pastures. Infestations may also occur on dry and sandy banks and established plants are drought-resistant. African feathergrass is coarse and unpalatable to stock. Dense stands completely dominate any pasture species, making the infested area useless for grazing. Established infestations can extend rapidly by rhizome production. Chemical control is very expensive. Other control measures have proved ineffective.

**Description:** African feathergrass is a robust perennial grass eventually forming dense overhanging tussocks up to 2 m in height. In many ways these tussocks resemble those of pampas grass (*Cortaderia* species). On emergence the leaf is inrolled, but later the lower part of the blade may flatten, leaving only the tip inrolled. The upper surface of the blade is whitish-green with prominent ribbing. The lower surface is darker-green, purple along the edge and at the tip. The ribs on the upper surface, and the edges of the leaf, bear minute upwardly pointing teeth, so that the leaf feels rough if the fingers are run down it. The leaves are tough and harsh. The flower head is a narrow cylindrical spike up to 300 mm long, straw-yellow to purplish in colour, with prominent bristles 10 mm long protruding from the body of the spike. When ripe the spikelets containing the seed fall away, leaving the bare stem.

The shape of the spike readily distinguishes African feathergrass from pampas grass.

**Life Cycle and Dispersal:** Vegetative spread is by means of stout rhizomes. The rhizomes, up to 5 mm thick, are enclosed in sheathing scales. Roots and buds emerge at the nodes or joints. If the rhizome is broken and moved by cultivation the growth from these buds will start a new colony. An invaded area generally carries an irregular cover of large tussocks with smaller ones arising as offshoots from the parent plants. Eventually, as the plants steadily spread by this process, the invading species can completely dominate the original vegetation.

Established African feathergrass plants have the potential to produce large numbers of seeds although seed production varies from year to year. The barbed bristles on the seed husk assist its spread by wind or in the hair or wool of animals. Some spread along roadsides has probably resulted from dispersal of the feathery spikelets by the wind from passing vehicles.

**Status:** Declared weed

**Illustrations**

- A. Flowering spike
- B. Base of culms and a rhizome
- C. Junction of leaf sheath and blade
- D. Single spikelet
**Distribution:** Barnyard grass is found throughout the State but is more common in the south than in the north. It occurs in all mainland States and is native to Eurasia.

**Occurrence and Significance:** Barnyard grass occurs as an occasional roadside weed. Volunteer plants of the very similar cultivated Japanese millet (*E. esculenta*) are also frequently found on roadsides. In the northeast, around Scottsdale, this species is established in cropping land. Occasional plants, presumably originating from contaminated seed, occur in crops in the northwest. In vegetable crops it can become extremely competitive, reducing crop yields significantly. In drainage ditches it impedes water flow and accelerates siltation. High levels of nitrate have been recorded in the plant which could, as a result, be toxic to stock.

**Description:** Barnyard grass is a summer-growing annual which grows to a height of 300 or 400 mm to more than 1 m depending on the situation. Leaves are flat, up to 350 mm long and 20 to 25 mm broad, green or purplish, smooth and finely ribbed on the upper surface with the lower surface rough to the touch. Culms are erect, smooth and often have purple nodes. The panicle or flowering head is erect, ovate or pyramidal with up to 15 spreading spike-like racemes, usually single but occasionally two from each node. The lowest raceme is the longest and the farthest from the next; racemes are progressively shorter and closer together towards the tip of the stem. The spikelets are in pairs and crowded along the length of the racemes, ovate, plump, greenish or purple tinged. Each spikelet consists of two unequal glumes, one sterile and one fertile floret. The lemma of the sterile floret has a stout rough awn which may be short or up to 50 mm long. Awns are usually present on the spikelet but vary considerably in length.

Barnyard grass can be distinguished from other grasses by the absence of a ligule.

**Life Cycle and Dispersal:** Germination usually occurs in October to early November but has been known to continue through into February in the northeast. The seedling develops into a flattened rosette with relatively broad leaves. As summer advances the flowering culms are produced, the flowering heads appearing in December or early January, with seed maturing some six to eight weeks later. Successional flowering by tillers may extend seed production well into the autumn. The seed is without any specialised mechanism for dispersal and as a result seed falls in the immediate vicinity of the parent plant. It can be spread in soil on vehicle wheels or cultivation equipment. Barnyard grass seed has been identified as an impurity in carrot seed imported into the State.

**Illustrations**

A. Flowering head and awned spikelet
B. Plant and group of spikelets of Japanese millet for comparison
**Distribution:** Small populations of feathertop occur in the east and south east of the State and on Flinders and Cape Barren Islands. Feathertop is found in most mainland States. It is native to North Africa and Arabia.

**Occurrence and Significance:** Feathertop occurs on roadsides and in waste places. It has been found capable of invading pasture, replacing more productive and palatable improved pasture species.

**Description:** Feathertop is a perennial grass with a wiry, branching rhizome. The leaves are up to 300 mm long and 6 mm wide, linear, flat or folded, tapering to a fine point, hairless or with a few scattered hairs, or rough. Flowering stems are up to 750 mm high, moderately slender, smooth but hairy just below the flowering head. The panicle is 20 to 100 mm long, ovoid or cylindrical; silky. The spikelets are solitary or in groups of up to four, subtended by numerous long pale straight or flexuose bristles which are feathery in the lower half.

Resembles the native blady grass (*Imperata cylindrica*) but has short, wiry rhizomes rather than long, succulent and scaly ones.

**Life Cycle and Dispersal:** Feathertop spreads by seed, which is readily windborne, and vegetatively by its rhizome. Cultivation can rapidly increase population size.

**Status:** Declared weed.

**Illustrations**

A. Portion of plant in flower  
B. Junction of leaf-sheath and blade  
C. Single spikelet
**Distribution:** Reed sweet grass is scattered throughout the agricultural areas of the State, particularly in the vegetable growing areas of the northeast and northwest. On the mainland it occurs in most States but is not, apparently, a problem weed. It is a native of Europe.

**Occurrence and Significance:** In wet or periodically inundated sites. A weed of farm dams, creeks and drainage and irrigation channels. It grows in water up to 1.5 m deep and often forms floating ‘rafts’ over much deeper water. Dense stands of this grass will impede water flow, cause local flooding, reduce holding capacity of farm dams and accelerate siltation. It is one of the main causes of cyanide poisoning of livestock in Tasmania.

**Description:** Reed sweet grass is a robust perennial aquatic grass arising from stout widely spreading rhizomes which produce both vegetative and flowering shoots, the vegetative being more numerous. The leaves have prominently cross-veined sheaths. The ligule (the papery flap at the junction of leaf-sheath and blade) is white, rounded, and usually has a central point. On the outside of the leaf at this point there is a pale triangular patch on either side of the mid-rib. Leaf blades are up to 600 mm long by 20 mm wide, bright green with an abruptly pointed tip. The flowering head is large and widespreading, producing large numbers of spikelets. The spikelets are less than 10 mm long, narrow, green or purplish, with four to 10 florets. As seed matures the branches may become adpressed to the main axis giving the flowering head a more narrow appearance.

Under magnification reed sweet grass species can be distinguished from other grasses by the presence of parallel ribs on the lemmas.

**Life Cycle and Dispersal:** New infestations arise from seed or rhizome fragments. In its first year the seedling usually produces vegetative shoots only, flowering occurring for the first time in the second year. Once the plant is established most local spread is by rhizomes, seedlings being unable to establish within the dense cover of vegetative growth.

**Illustrations**

A. Flowering head
B. Spikelet with 6 florets
C. Base of culm and rhizome with apical shoot
D. Junction of leaf sheath and blade
E. Outside of leaf at D
### PAMPAS GRASS

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
<th>Growth Habit</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cortaderia selloana</em> (Shult. &amp; Schult. F.) Asch. &amp; Graebn.</td>
<td>Common pampas</td>
<td>Perennial</td>
<td>South America; C. jubata is native to Argentina, Bolivia, Ecuador, Peru; C. richardii is native to New Zealand.</td>
</tr>
<tr>
<td><em>Cortaderia jubata</em> (Lemoine ex Carriere) Stapf.</td>
<td>Pink pampas</td>
<td>Perennial</td>
<td></td>
</tr>
<tr>
<td><em>Cortaderia richardii</em> (Endl.) Zotov</td>
<td>Toetoe</td>
<td>Perennial</td>
<td></td>
</tr>
</tbody>
</table>

**Distribution:** Pampas is found in localised populations across all areas of the State. *Cortaderia selloana* is native to South America; *C. jubata* is native to Argentina, Bolivia, Ecuador, Peru; *C. richardii* is native to New Zealand.

**Occurrence and Significance:** In the past it has been planted as an ornamental and in hedges as windbreaks on rural properties. When it occurs as seedlings in pasture it is readily grazed by stock. It occurs along roadsides, in waste areas, bushlands and forest areas. Pampas is extremely invasive, rapidly colonising areas such as drains, firebreaks, road edges, logged or burnt sites and quarries. It has already established itself in both pine forests and eucalypt regeneration areas and in National Parks. Once established in the understorey, pampas is capable of completely smothering all other plants, creating dangerous fire hazards.

The original pampas in Tasmania was the white flowering kind. It was vegetatively propagated from female plants. Seeding was not a problem due to the absence of male plants and pollen. Later, seed was imported to satisfy consumer demand. This seed contained both male and female plants. The original pampas is able to hybridise with the newer arrivals creating an enormous potential weed problem. All pampas, regardless of the colour of the flowers, should be removed.

**Description:** *C. selloana* – A large tussock-forming grass with leaves mostly developing from the base, growing to a height of about 2 m with stems to 6 m. The plant produces white, pink or mauve plume-like terminal panicles, 30 to 90 cm long.

*C. jubata* – A large perennial tussock-forming grass with mostly basal leaves and stout hollow stems to 4 m high. The plant produces purple terminal panicles, 30 to 90 cm long which fade to a dull brown as it matures.

*C. richardii* – A large dense tussock-forming grass usually to 3 m high. The plant produces pale golden, drooping rather sparse panicles, 30 to 90 cm long.

The flower heads are distinctive; when not in flower they may be distinguished from native cutting grasses (*Gahnia* spp.) by the presence of curled dry leaves at the base of the plant.

**Life Cycle and Dispersal:** Wind can carry seed over 25 km from the mother plant.

*C. selloana* – Seeds germinate in spring and the seedlings grow slowly. A number of tillers and rhizomes are produced during the first growth season. The majority of plants do not flower until the second or third year of growth. Plants initiate the inflorescence in late spring but panicles do not emerge from the sheath until late summer.

*C. jubata* – Seeds germinate in spring and the seedlings develop rapidly producing tillers and rhizomes. Most plants flower in their first growth season. Flowering takes place in the spring.

*C. richardii* – Seeds germinate in autumn and seedlings develop slowly. Growth increases rapidly the following spring. Flowering begins in November and continues into January.

**Status:** Declared weed.
Illustrations

A. Panicle
B. Leaf sheath
C. Spikelet and seed
D. Detached seed

Cortaderia richardii
Cortaderia jubata
**SERRATED TUSSOCK**

*Nassella trichotoma* (Nees) Hackel ex Arechav.  

**Perennial**  

**POACEAE**

**Distribution:** In Tasmania, serrated tussock occurs in the southeast, the Tasmanian Midlands, east coast, and in localised populations in the south of King Island. On the mainland serrated tussock is found in New South Wales and Victoria. It is native to Argentina.

**Occurrence and Significance:** Serrated tussock occurs in pasture, lightly timbered rough grazing areas, on roadsides and in waste areas. Experience in New South Wales and New Zealand indicates that dense infestations can make large areas of improved and partially improved pasture completely unproductive. The plant is unpalatable to stock and of little nutritional value.

**Description:** Serrated tussock is a perennial, tussock-forming grass with a deep, fibrous root system similar in general appearance to several Tasmanian native tussocks (*Poa* spp.). Young plants are erect and densely tufted with tightly inrolled leaves. The leaves are bright green and the leaf sheaths at the base are whitish and more slender and closely packed than in the native tussocks. As the plant grows to maturity, the later leaves are longer, the tips turning a brownish green or in winter a bleached straw colour. Leaves at all growth stages feel rough or serrated if the finger and thumb are drawn down the blade. This characteristic is not, however, restricted to serrated tussock and is not diagnostic for the species. By the time the tussock is at the flowering stage the leaves are long and drooping. Flowering stalks begin to appear in spring, earlier in dry years and later in years when an adequate water supply allows a longer period of vegetative growth.

The flowering heads are carried on slender stalks slightly longer than the leaves. The flower head is an open, branched panicle with the primary branches in pairs and each pair distant from the next. They are slender and drooping. Each floret is purple in colour and produces one seed, about 2 mm long, pale straw-coloured, with a tuft of short hairs at the base and a long slender twisted awn from the tip. A tussock in full flower presents a distinctly purple appearance due to the large number of purple florets. The seed head clearly distinguishes serrated tussock from the native tussocks.

When the seeds are ripe the stalk becomes very brittle, the first strong winds breaks it off and the whole seed head is blown along until it lodges against some obstacle. As the seed head dries out the seeds are released and fall to the ground to begin a new colony. It has been estimated that half a hectare of dense tussock can produce over a tonne of seed, or about 227 million seeds.

Distinguished from native tussock grasses (*Poa* species) by the white or cream-coloured leaf bases (never purplish); larger, rounded and purple seeds; long, whitish ligule. The rough leaf surface, while useful in distinguishing this species from some grasses, is not in itself diagnostic.

**Life Cycle and Dispersal:** Seedlings in the first year form a tuft of tightly packed leaves. Flowering generally occurs for the first time when the plant is about 18 months old. Individual plants increase in size by tiller production, and a mature tussock may measure 300 mm across the base with the drooping leaves covering a diameter of almost 1 m.

Serrated tussock is capable of rapid spread. Seeding heads can be carried by the wind over long distances. Seed dormancy makes eradication of established infestations a long-term operation. In Tasmania it is obvious that human activities have been responsible for introducing and spreading the weed. The tuft of basal hair and the awn of the seed cause it to catch on the fleece of sheep. It may be picked up in mud on the hooves of livestock or on cultivating implements, on vehicle tyres or on firewood.

**Status:** Declared weed.
Illustrations

A. Young tussock
B. Flowering culm
C. Detail of leaf
D. Detail of ligule
E. Single spikelet
F. Glumes of spikelet
G. Seed with awn
H. Detail of seed
Distribution: Spiny emex is occasionally reported in small infestations in Tasmania, mainly near stockyards. It is present in most mainland States. Spiny emex is native to South Africa.

Occurrence and Significance: Spiny emex is a weed of pasture, and on Flinders Island is also found in domestic gardens. The spined fruit is capable of causing crippling injury to stock. It can also penetrate through footwear and vehicle tyres.

Description: The cotyledons are large, reaching some 50 mm long by 10 mm wide with a petiole some 20 mm long. The cotyledons are hairless, and the mid-rib is clearly discernible on the underside. The seedling has a hypocotyl but no epicotyl. The leaves grow singly. The first leaf is spade shaped with a rounded tip, approximately 55 mm long by 35 mm wide with a long distinct petiole. There is a membranous sheath at the base of the petiole. The plant initially forms a rosette, later developing a spreading habit with branched stems which can cover a considerable area. The flowers are small and carried in whorls in the leaf axils. The fruit are produced in the axils of the leaves. The fruit carries three long spines which are so arranged that one spine is always pointing upwards when it lies on the ground.

The three-spined covering of the fruit is distinguishing.

Life Cycle and Dispersal: Germination occurs during the autumn and probably also in spring. Fruit is produced very early in the life cycle, often in the axils of the first leaves. Under Tasmanian conditions the plant continues to grow throughout the summer period, finally dying off during the autumn.

Status: Declared weed.

Illustrations

A. Flowering branch  
B. Female flower  
C. Group of male flowers  
D. Seedling
Distribution: Wireweed is common throughout the State. It is a native of Eurasia.

Occurrence and Significance: It is a major weed in all arable crops. It is both competitive in the early stages and likely to interfere with harvesting operations in cereals when mature. It can be a problem in footpaths and gardens.

Description: The cotyledon has an overall length of 10 to 15 mm, is sessile or has only a very short petiole, and is hairless. Very young plants look like fine grass. The seedling has a long hypocotyl and an epicotyl. The leaves grow singly and the first is 10 to 15 mm long with a short petiole. Later leaves are larger but generally similar to the first leaf. There is a membranous sheath surrounding the base of the leaf and the stem. The plant does not form a rosette, and is hairless.

Young plants may be erect, but this species usually has a spreading and scrambling habit, overgrowing surrounding vegetation, with stems reaching 1 m in length. The stems branch at the base and along their lower length and are circular or fluted in cross section with shallow longitudinal ridges, solid and hairless. Plants which germinate in the early spring tend to have stem leaves which are 30 to 50 mm long and a dull green in colour. Plants which germinate later in the season, and those which grow in infertile areas, have much smaller leaves 15 to 29 mm long and are generally a much darker green or blue-green in colour. The flowers are axillary, two to five together, on short stems. They are about 2 mm in diameter with five petal-like sepals which are green with white or pink margins.

In the one-leaf stage wireweed is easily confused with narrow-leaf plantain (Plantago lanceolata). The cotyledons of the narrow-leaf plantain are much longer, and are narrower in relation to their length. The first leaf of narrow-leaf plantain is usually hairy and has a well defined median longitudinal depression and longitudinal veins. Wireweed has a hairless leaf and a sheathing membrane at the base of the leaf.

Life Cycle and Dispersal: Germination occurs principally in spring, continuing through into summer where moisture permits. Spreads by seed. Seeds can be dispersed by birds, mammals, and water, as well as by vehicles or other mechanical means and via contaminated crop seeds. Seeds remain dormant in the soil and form a persistent seed bank.

Illustrations

A. Seedling
B. Young plant showing large leaves
C. Flowering stem showing small leaves
D. Flowers
**Distribution:** Black bindweed is fairly common in the northwest and northeast of the State, less frequently found in the south and of local occurrence only in the Tasmanian Midlands. It is a native of Asia, Europe, north Africa.

**Occurrence and Significance:** It is a major weed of cereals and vegetables, its climbing habit enabling it to smother low growing crops and cause lodging in grain.

**Description:** The cotyledon is 15 to 20 mm long overall and sessile or with a short merging petiole. It is hairless and usually reddish in colour. The two cotyledons normally form an obtuse ‘V’. The seedling has a long hypocotyl but no epicotyl. The leaves develop singly and have a distinctive heart shape. The first leaf has a blade 20 to 30 mm long with a petiole 5 to 10 mm long. Later leaves reach 60 mm with a petiole some 50 mm long. The leaves are hairless. A membranous sheath surrounds the stem and the base of the petiole. The plant does not form a rosette.

The mature plant has a scrambling and climbing habit, twining round the stems of erect plants. Stems, which reach a length of 1.7 m, are branched at the base and have a few shorter branches developing along their length. They are ‘circular’ or polygonal in cross section with shallow ridges, have a small hollow in the core, and are hairless. The flowers are axillary or terminal, one to six together, approximately 3 mm in diameter with five green petal-like sepals.

Black bindweed is very similar in appearance to field bindweed (*Convolvulus arvensis*). In the seedling the cotyledon shapes are different, while the sheath at the base of the leaf petioles in black bindweed distinguishes these species at a more advanced stage of growth. The flowers are quite different.

See the key to the dock family on the page 120 for help in the identification of dock species.

**Life Cycle and Dispersal:** Germination occurs in spring and through early summer in irrigated crops. Spreads entirely by seeds. Seeds can be dispersed by water over short distances. Seeds can also be dispersed by farm machinery and as a cereal crop contaminant. The hard seed coat allows for several years of dormancy.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
D. Flower and fruit
**Distribution:** Redshank is found in a number of areas in the north, northeast and south of the State. It is native to Europe.

**Occurrence and Significance:** In recent years it appears to have been spread by mobile pea viners. It occurs mainly in damp situations although it has been shown to be capable of growing vigorously on a free draining krasnozem soil. It grows as a weed in both annual and perennial crops and can be strongly competitive. In Europe it is a major weed in cereal crops.

**Description:** The cotyledon is 6 to 12 mm long overall with a short merging petiole, and is hairless. The hypocotyl is usually short and there is no epicotyl. The early leaves, which develop singly, are 15 to 20 mm long with a short merging petiole. They have a distinct reddish colour and carry a few hairs, mainly on the margin. A membranous sheath is present at the base of the leaf. The plant does not develop as a rosette.

The mature plant is prostrate in habit with the ends of the stems semi-erect. The stems reach 800 mm in length and are branching, solid, circular in cross section, hairless, and red in colour. The lower stem leaves have short petioles and the upper leaves are sessile. The leaves are 50 to 100 mm in length with a few simple hairs on the upper surface and a few simple and glandular hairs on the lower surface. They are reddish in colour and usually have a dark blotch half way along their length. The flowers are axillary and terminal, forming a loose spike which reaches some 35 mm in length. The flowers are red or greenish in colour, only 1 to 15 mm in diameter, with five petal-like sepals.

Redshank is distinguished from other members of the dock family by its reddish colour and red stems. The name redshank is sometimes applied to *Amaranthus* species.

See the key to the dock family on the page 120 for help in the identification of dock species.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Spreads by seed. Seed can be spread by stock and birds, as a contaminant of cereal grain, and in water. Seeds can remain viable in soil for up to 45 years.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flowering branch
### KEY TO DOCKS

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>COTYLEDON</th>
<th>MATUERE</th>
<th>FIRST LEAF</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Petiole</td>
<td>Petiole</td>
<td>Base angle ° (approx.)</td>
</tr>
<tr>
<td>Acetosella vulgaris</td>
<td>short &amp; merging</td>
<td>long</td>
<td>60</td>
</tr>
<tr>
<td>Rumex conglomeratus</td>
<td>long</td>
<td>long</td>
<td>60-90</td>
</tr>
<tr>
<td>Rumex crispus</td>
<td>short &amp; merging</td>
<td>long</td>
<td>60</td>
</tr>
<tr>
<td>Rumex obtusifolius</td>
<td>short &amp; merging</td>
<td>long</td>
<td>90</td>
</tr>
<tr>
<td>Rumex pulcher</td>
<td>long</td>
<td>long</td>
<td>60</td>
</tr>
<tr>
<td>Polygonum aviculare</td>
<td>sessile</td>
<td>long</td>
<td>30</td>
</tr>
<tr>
<td>Fallopia convolvulus</td>
<td>long</td>
<td>long</td>
<td>90</td>
</tr>
<tr>
<td>Persicaria maculosa</td>
<td>short &amp; merging</td>
<td>short or sessile</td>
<td>30-45</td>
</tr>
</tbody>
</table>

### ROSETTE LEAF

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>Base angle ° (approx.)</th>
<th>Blade shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetosella vulgaris</td>
<td>90 (hastate)</td>
<td>elongated: often constricted just above base</td>
</tr>
<tr>
<td>Rumex conglomeratus</td>
<td>45</td>
<td>elongated: more or less steady taper from base to tip</td>
</tr>
<tr>
<td>Rumex crispus</td>
<td>variable (30 to 90)</td>
<td>elongated and narrow very wavy margins</td>
</tr>
<tr>
<td>Rumex obtusifolius</td>
<td>90 (cordate)</td>
<td>much broader in relation to length than other species</td>
</tr>
<tr>
<td>Rumex pulcher</td>
<td>90 (cordate)</td>
<td>elongated and waisted about half way along</td>
</tr>
<tr>
<td>Polygonum aviculare</td>
<td>30</td>
<td>elongated or oval</td>
</tr>
<tr>
<td>Fallopia convolvulus</td>
<td>90 (cordate)</td>
<td>heart shaped</td>
</tr>
<tr>
<td>Persicaria maculosa</td>
<td>30</td>
<td>elongated: tapering at both ends</td>
</tr>
</tbody>
</table>
Acetosella vulgaris Fourr.

**Distribution:** Sorrel is found throughout the State and is one of the most common weeds in Tasmania. It is a native of Eurasia.

**Occurrence and Significance:** It occurs in all arable crops and may present a problem in poor quality pasture. It can be strongly competitive and smother other vegetation but it is itself susceptible to competition from strongly growing crops such as cereals and good pasture.

**Description:** The cotyledon is 10 to 15 mm long overall, sessile or with a short merging petiole, and is hairless. The seedling has a hypocotyl but no epicotyl. The leaves develop singly, the first being 12 to 20 mm long overall, about half of which is petiole. The leaves are hairless and have a membranous sheath at their base. The first leaves have a base angle of some 60 degrees but later leaves develop the typically hastate and/or sagittate-shaped base which is a distinguishing feature of this species. The plant develops as a loose, untidy rosette with leaves 40 to 200 mm long overall.

The mature plant has a prostrate and spreading habit with erect flowering stems. It has a proliferating root system and it is capable of extensive and rapid spread by vegetative means. The stems branch at the base and to a lesser extent along their length. The flower stems reach a height of 400 to 600 mm, are circular or polygonal in cross section with longitudinal ridges, solid, and are hairless. The lower stem leaves are 40 to 70 mm long overall, the upper stem leaves being considerably shorter than this. The leaves are petiolate - the petiole being approximately as long as the leaf blade - except for the highest stem leaves where the petiole is merging or absent altogether. The upper stem leaves may have the hastate base reduced or absent. The flowers are carried in whorls towards the ends of the branches. The plants are usually dioecious, individual plants being male or female. The flowers are small, only 2 to 4 mm in diameter, with three petal-like sepals.

See the key to the dock family on the page 120 for help in the identification of dock species.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Reproduces by seed and vegetatively via rhizomes. The seeds are dispersed by both wind and insects, and form a seed bank in the soil.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch
**Distribution:** Curled dock is one of Tasmania’s two main dock species and is found in all parts of the State. It is native to Eurasia.

**Occurrence and Significance:** It is a common weed of lucerne, orchards, hops and irrigated crops. It occurs frequently in pasture during the establishment stages and also in pasture where poor drainage or waterlogging present problems at some time during the year. It is abundant on roadsides and in waste areas and can be a serious pest in ditches or drainage channels. In crops and pasture it is often strongly competitive.

**Description:** The cotyledon is 12 to 20 mm long overall with a petiole 3 to 5 mm long, and is hairless. The seedling has a short hypocotyl and no epicotyl. The leaves arise singly, the first being 15 to 20 mm long in the blade with a petiole usually some 10 mm long though this may be considerably longer. The leaves are hairless. As the plant grows the leaves become more elongated and narrow, with wavy edges. The basal angle of the leaf is typically less than 45 degrees but this is variable. There is a membranous sheath at the base of the petiole. The plant develops as a rosette, the rosette leaves reaching 400 mm or more in length including a long petiole.

The mature plant is erect in habit. More than one stem may arise from an established root stock, but stems do not normally branch except towards the top where the inflorescences develop. The branches tend to be more or less parallel to the main stem. The mature plant reaches some 1.2 m in height but can exceed this considerably. The stem is solid with a pithy core, fluted in cross section, hairless or with very few hairs only, and may have dark striations. The lower stem leaves have a blade some 150 to 200 mm long with a long petiole while upper stem leaves are much shorter, typically some 50 to 80 mm long with a short petiole. The leaves are hairless. Flowers are produced in whorls on the upper part of the branches. The flowers are male or female, some 3 mm in diameter with three green petal-like sepals.

See the key to the dock family on page 120 for help in the identification of dock species. Hybrids between curled and broad-leaved dock (*R. obtusifolius*) occur.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Reproduces both by seed and vegetatively via rhizomes. Seeds can remain dormant in the soil for long periods forming a persistent seed bank.

**Illustrations**

A. Seedling
B. Rosette
C. Flowering branch
D. Fruit
**Rumex obtusifolius L.**

**Perennial**

**POLYGONACEAE**

**Distribution:** Broad-leaved dock occurs in all farmed areas of the State, and is found in most mainland States. The species is native to Europe.

**Occurrence and Significance:** Broad-leaved dock is common on roadsides and waste areas, and is frequently present in pastures, particularly in areas which are poorly drained, or subject to regular flooding. It is often found along creeks, drains and irrigation channels. Dock can become competitive in pastures if allowed to build up to large numbers. It is capable of obstructing water flow in drainage and irrigation channels.

**Description:** The cotyledon is 10 to 15 mm long overall with short merging petiole, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves develop singly, the first having a blade 12 to 18 mm with a petiole 4 to 8 mm long which tends to elongate as the leaf ages. The leaves are hairless and have a membranous sheath at the base of the petiole. As the plant grows the leaves become more elongated and the margin slightly wavy. The rosette leaves normally have a cordate base. The plant develops as a rosette, the rosette leaves measuring some 250 mm in length with a petiole of the same length. The mature plant is erect in habit, reaching a height of 1.5 m or more. The stems are branched from the base and along their length. Where branching occurs the main stem and its branch frequently form a shallow ‘V’ at the node. Several stems usually grow from an established rootstock. The stems are solid and pithy, carry a few very small hairs located principally below the node, and have dark striations. The stem cross section is irregularly polygonal with longitudinal ridges while small stems tend to be circular and fluted. Lower stem leaves are some 200 to 250 mm long with a long petiole but towards the top of the stem they are much reduced in size. The leaves are hairless or carry a few very short hairs on the underside of the veins. The stem leaves are much narrower than the rosette leaves with a base angle of approximately 45 degrees, and have a distinctly wavy margin. Flowers are produced in whorls on the upper part of the branches. The flowers are 2 to 3 mm in diameter with three small outer perianth segments and three larger inner segments, green at first but becoming red-brown and enlarging and hardening as the seeds mature.

See the key to the dock family on page 120 for help in the identification of dock species.

**Life Cycle and Dispersal:** Broad-leaved dock reproduces by seed. The seedlings germinate in autumn or spring and initially form a rosette. In late spring to early summer a central flowering stem is developed and the flowers appear during early summer. The central stem usually dies off over winter although rosette leaves may survive. The plant has a deep taproot and is capable of reproducing from root fragments. Seeds can remain dormant in the soil for long periods forming a persistent seed bank.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch  
D. Fruit enclosed in inner perianth segments
**Rumex pulcher**

**Perennial**

**POLYGONACEAE**

**FIDDLE DOCK**

(RED DICK)

**Distribution:** Fiddle dock is found in all parts of the State. It is native to the Mediterranean.

**Occurrence and Significance:** It is a weed of waste areas, pastures and turf, but unlike most other dock species is not restricted to damp situations. It can be very competitive, especially in weak pastures.

**Description:** The cotyledon has a blade 8 to 12 mm long with a petiole approximately the same length, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves develop singly, the first being some 10 mm long with a petiole of approximately the same length. The leaves are hairless and have a membranous sheath at the base of the petiole. As the plant develops the leaves become elongated and waisted. Normally there is only one restriction on each leaf but occasionally plants with two are found. The resemblance between the shape of the leaf and the body of a violin gives this species its common name. The plant develops as a rosette which does not normally exceed 150 to 250 mm in diameter.

The mature plant is erect in habit, growing to a height of 600 mm, though frequently it is much shorter than this. The stem branches from the base and along its length. The branches are often at right angles to the stem. The plant has a rather tangled appearance and is frequently flattened at the top. The stem is hollow with a pithy core, fluted in cross section, and hairless. Lower stem leaves are some 50 mm in length with a short petiole while upper stem leaves are shorter than this with the petiole considerably reduced. The stem leaves, which are hairless, are longer and narrower than the rosette leaves and are not waisted. The flowers grow in whorls towards the ends of the branches and are very small, only 1 to 2 mm in diameter.

See the key to the dock family on page 120 for help in the identification of dock species.

**Life Cycle and Dispersal:** Germination occurs mainly in autumn. Reproduces both by seed and vegetatively via rhizomes. Seeds can remain dormant in the soil for long periods forming a persistent seed bank.

**Illustrations**

A. Seedling  
B. Rosette  
C. Flowering branch  
D. Fruits
**Distribution:** Clustered dock is widespread and locally common in most parts of the State. It is native to Eurasia.

**Occurrence and Significance:** It is not so restricted to damp situations as some of the other dock species. It is principally a weed of waste areas, creeks and ditches, but in some places appears in considerable numbers in pasture where it is moderately competitive.

**Description:** The cotyledon is 6 to 10 mm long with a petiole of approximately the same length, and is hairless. The seedling has a short hypocotyl and no epicotyl. The leaves develop singly, the first having a blade 10 to 20 mm long with a petiole of about the same length. As the plant develops the leaves become more elongated and more or less pointed and have a base angle of less than 90 degrees. The leaves are hairless and have a membranous sheath at the base of the petiole. The plant develops as a rosette.

The mature plant is erect in habit, with branching stems reaching 1.3 m or more in height. The stems are fluted in cross section, the larger stems being hollow and the smaller stems being solid with a pithy core, and hairless. The stem leaves are petiolate, some 30 to 50 mm long with those towards the top being shorter, and hairless. The flowers develop in whorls towards the top of the branches.

See the key to the dock family on page 120 for help in the identification of dock species.

**Life Cycle and Dispersal:** Germination occurs in autumn. Reproduces both by seed and vegetatively via rhizomes. Seeds can remain dormant in the soil for long periods forming a persistent seed bank.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
D. Fruit
**Distribution:** Purple calandrinia is locally abundant both in the north and the south of the State. It is native to northwest North America.

**Occurrence and Significance:** It is principally a weed of cropping areas, but on occasions has been known to become dense in poor quality pasture. It can be strongly competitive.

**Description:** The cotyledon is 20 to 30 mm long and only 1 to 1.5 mm wide, sessile, and hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves grow singly, the first being 20 to 40 mm long, sessile, and hairless. The leaves may be parallel sided or spoon-shaped initially, but later leaves always have a typical spoon shape. The plant develops as a rosette 150 to 250 mm in diameter.

The mature plant is prostrate in habit with branching stems which reach 400 mm or more in length. The stems are polygonal in cross section with longitudinal ridges which originate from either side of the leaf base, solid with a pithy core, and hairless. Stem leaves are 50 to 60 mm long, sessile, hairless, and do not show the typical spoon shape of the rosette leaves. The flowers are solitary and axillary, 15 mm in diameter with five dark-purple petals.

The cotyledon is similar to that of narrow-leaf plantain (*Plantago lanceolata*) and spurry (*Spergula aervensis*). Narrow-leaf plantain has a median depression on the cotyledon which is not present in purple calandrinia, and spurry has a cotyledon with a circular cross section while that of purple calandrinia is flattened. Once leaves develop these three species are not likely to be confused.

**Life Cycle and Dispersal:** Germination occurs in autumn and spring. Spread is by seed.

**Illustrations**

A. Seedling
B. Rosette
C. Flowering branch
**Montia fontana L.**  
Annual  
**PORTULACACEAE**

**Distribution:** Montia occurs in all parts of the State, possibly being more common in the north than in the south. It is native to Australia.

**Occurrence and Significance:** It is found as a weed in crops but it is of little or no economic importance.

**Description:** The cotyledon is 8 to 15 mm long overall, of which half is petiole, and is hairless. The seedling has a short hypocotyl and a short epicotyl though this may not develop until the seedling has grown beyond the two-leaf stage. The leaves are paired. The early leaves have a blade 4 to 8 mm long with a petiole about the same length or rather longer, are hairless, and like the cotyledons somewhat succulent in appearance. The plant forms a loose untidy rosette-like clump.

Young plants are usually semi-erect in habit but become prostrate as they grow older. The stems branch from the base reaching 200 mm in length, or more where there is little or no competition. The stem is solid, circular in cross section, and hairless. Stem leaves are some 15 mm long and have a short petiole or are sessile. They are hairless. The flowers are terminal and have five white petals. They are small, being only some 1 to 2 mm in diameter.

The seedling of montia resembles that of chickweed (*Stellaria media*), the mouse-ear chickweeds (*Cerastium glomeratum* and *C. fontanum* spp. *vulgare*), and scarlet pimpernel (*Anagallis arvensis*). Montia is completely hairless, does not have a mid-rib groove on the leaves, and has a broader petiole while chickweed has some hairs on the petiole and often on the base of the leaf, has a distinct groove along the base of the mid-rib, and has a very thin petiole. The mouse-ear chickweeds are distinguished from montia by their hairy leaves. Scarlet pimpernel has a kite-shaped cotyledon with a short merging petiole, and sessile leaves.

**Life Cycle and Dispersal:** Germination occurs in autumn and to a lesser extent in spring.

**Illustrations**

A. Seedling  
B. Young plant (x2)  
C. Flower (x4)
**Distribution**: Scarlet pimpernel occurs throughout the State. It is native to the Mediterranean.

**Occurrence and Significance**: It is mainly a weed of waste areas and gardens and also occurs in small numbers in arable crops. It is not normally of major economic importance but has been known to poison stock.

**Description**: The cotyledon is 3 to 5 mm long overall with a short merging petiole, and is hairless. The seedling has both hypocotyl and epicotyl. The leaves are paired, the pairs being at right angles to each other. The first leaves are 5 to 10 mm long, hairless, and initially sessile though as they age a short petiole develops. There are usually black spots present on the under surface of the early leaves. The plant does not form a rosette.

The plant initially has an erect habit but becomes prostrate as it increases in size. Stems reach 600 mm in length and are much branched at the base but less so towards the top. Rooting may occur at the nodes. The stems are square in cross section with a wing on each corner, solid and apparently hairless but minute scattered glandular hairs, which can only be seen under high magnification, are present. The stem leaves are 15 to 25 mm long, sessile, hairless on the upper surface and apparently hairless on the lower but have minute hairs. The flowers arise singly, borne on a long stem in the leaf axil. They are 10 to 15 mm in diameter with five scarlet petals.

A sub-species, *A. arvensis* ssp. *foemina*, which has a blue flower, occurs but is not common. Scarlet pimpernel has a superficial resemblance to chickweed (*Stellaria media*) and montia (*Montia fontana*). The paired sessile leaves distinguish it in the young stage. The flower is quite different to those of the other species.

**Life Cycle and Dispersal**: Germination occurs in autumn and spring. Spread by seed. Common impurity in crop seed. Seed can remain viable in soil for at least 10 years.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch
**SHARP BUTTERCUP**

*Ranunculus muricatus* L.  
Annual  
RANUNCULACEAE

**Distribution:** Sharp buttercup is found in all parts of the State. It is native to the Mediterranean and east to India.

**Occurrence and Significance:** It is principally a weed of waste areas but may occur in both arable crops and pastures. It is not found in dry areas but is less restricted to moist situations than creeping buttercup (*R. repens*). It can be moderately competitive. It is toxic to stock.

**Description:** The cotyledon has a blade 8 to 12 mm long with a petiole slightly shorter than this, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves develop singly, the first being 6 to 8 mm long in the blade with a petiole about half this length. The initial leaf has a terminal and one or two lateral lobes but as the plant grows the leaves tend to become trifoliately lobed with the lobes themselves much divided. The leaves are hairless. The plant develops as a rosette.

The mature plant is erect with branched stems up to 400 mm long. The stems are solid, fluted in cross section, and may be hairless or more or less hairy especially towards the top of the stem and around the sheath at the base of the leaf petiole. The stem leaves are 25 to 30 mm long with a long petiole, and are hairless. The single flowers are terminal and axillary, carried on a long stem. They are 12 to 20 mm in diameter with five yellow petals.

Sharp buttercup is very similar in appearance to creeping buttercup (*R. repens*) in the seedling stage, but the latter can be distinguished by its hairy leaves. In the rosette and mature stages creeping buttercup is distinguished by its trifoliately or pinnately divided and pale-veined leaves, and its spreading stems. The petals of sharp buttercup have a space between them while those of creeping buttercup overlap.

**Life Cycle and Dispersal:** Germination occurs in the autumn. Spread is by seed.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flowering branch  
D. Seedhead  
E. Seed
**Distribution:** Creeping buttercup is found in all parts of the State but is somewhat less common in the Tasmanian Midlands. It is native to Eurasia.

**Occurrence and Significance:** It is a species of waste areas and is found particularly along creeks and in roadside ditches. It is not uncommon in weak, poorly drained pastures. It may become important in good quality irrigated pasture. It is generally restricted to damp situations. It can reduce pasture productivity, and may impede water flow in drains. It is toxic to stock.

**Description:** The cotyledon is 8 to 12 mm long overall with a short petiole, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves arise singly, the first being 12 to 16 mm long overall with a petiole about 5 mm long. The leaves are hairy. The leaves are initially lobed but, as the plant grows, they become trifoliate or pinnate and much divided. The plant develops as a loose rosette.

The mature plant is spreading in habit with erect flower stems. The stems are much branched and root at the nodes. The flower stems reach a height of some 600 mm, while the spreading stems may extend over several metres and cover a considerable area. The stems are hollow, circular in cross section, and hairy. The stem leaves have long petioles and are 100 to 200 mm long. They have hairs on the upper and lower surface and on the petiole, and usually have veins which are distinctly pale in colour and have pale areas on the leaf surface. The lobes are much divided. Towards the top of the flowering stems the leaves are reduced in size and have fewer lobes. The flowers are axillary, carried on long stems. They are 20 to 30 mm in diameter with five overlapping yellow petals.

Creeping buttercup is distinguished from other buttercups by its spreading perennial stems, by the trifoliate or pinnate leaf, and by the distinct pale colour of the veins. In the flower the petals overlap, while in sharp buttercup (R. muricatus) there are spaces between the petals.

**Life Cycle and Dispersal:** Germination occurs in the autumn. Spreads by seed and long branching stolons or runners which root at the nodes. The seed can remain viable in the soil for many years.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
There are eight species and nine subspecies in Tasmania included in the *Rubus fruticosus* aggregate.

**Distribution:** Widely distributed in the north and the south of the State and where annual rainfall exceeds 700 mm. In the drier Tasmanian Midland areas the plant is generally confined to creek beds and rivers. Blackberry occurs in several mainland States, being particularly prolific in Victoria. It is a native of Europe.

**Occurrence and Significance:** Blackberry occurs as a weed on roadsides and waste areas, creek and river banks and in cleared but neglected farm land and in orchards, forestry plantations and conservation areas. Blackberry is an invasive plant capable of colonising cleared land, pasture, forest plantations and orchards unless excluded by control or management practices. It is a major weed on roadsides and neglected areas and is becoming increasingly significant as an intruder in conservation and natural undeveloped areas.

The plants create a serious fire hazard, harbour rabbits, feral cats and foxes, and cause deterioration of fences. On the credit side the fruit is palatable and nutritious and the flowers are a useful source of nectar for bees.

**Description:** The cotyledon is oval, about 10 mm long with short petiole. The first leaves are simple, spade or heart-shaped, 20 to 25 mm long and 20 to 25 mm wide with a toothed margin and a long distinct petiole. There are fine hairs on the petiole and upper leaf surface, and on the lower leaf surface, particularly along the mid-rib. There are spines on the mid-rib and petiole. The seedling does not form a rosette.

The mature plant is erect or spreading in habit. Erect plants commonly reach 1.5 to 2 m tall while spreading stems may exceed 3 m in length. The stems carry strongly recurved spines and are frequently branched. The adult leaves are petiolate and compound with 3 to 5 leaflets. In the case of cutleaf blackberry (*R. laciniatus*) these leaflets are also divided. There is considerable variation between the different subspecies in their characteristics. The flowers are white or bluish, about 20 mm in diameter with 5 petals. The fruit is a berry which is initially green but turns black as it ripens. The stems or canes live for 2 or 3 years before dying off. Blackberry thickets may consist of up to 70 per cent dead canes.

The divided leaflets of cutleaf blackberry distinguish it from other blackberry varieties found in Tasmania, but distinguishing between other species and subspecies within the blackberry aggregate is extremely difficult. Blackberry also resembles several other fruit-bearing *Rubus* species (e.g. boysenberry, *R. ursinus* x). Many hybrids exist, but none are known to have become naturalised in Tasmania. There are also two native *Rubus* species. Native strawberry (*R. gunnianus*) is a tiny alpine herb that lacks thorns. Native raspberry (*R. parvifolius*) resembles blackberry, but has smaller pinnate leaves, with the leaflets less than 40 mm long. Its fruit is red when ripe.

**Life Cycle and Dispersal:** Seedlings germinate from late summer through autumn, apparently depending on available moisture. Further germinations may occur in spring. During its first season the plant makes only limited growth. Flowering is very variable depending on season and locality. It normally starts in early December and is completed by late January. The earliest fruit is ripe in February or early March. In Tasmania blackberry often retains its leaves well into or even through winter.

Dispersal of blackberry seed is mainly from birds but to a lesser extent by creeks and rivers. It can also be spread through the movement of root fragments by machinery. Spread within an infestation is by proliferation from the roots and tip layering of the shoots.

**Status:** Declared weed.
Illustrations

A. Flowering branch
B. Lower leaf
C. Leaf of cut-leaf Blackberry
D. Fruit
**Distribution:** Parsley piert occurs in all parts of the State, being generally common in the north and northwest and locally common in the south. It is native to Europe.

**Occurrence and Significance:** It can be found in most crops but is of little or no economic significance.

**Description:** The cotyledon is almost circular, approximately 3 mm in diameter with a short petiole, and hairless. The seedling has a very short hypocotyl and no epicotyl. Leaves develop singly, the early leaves being approximately 10 mm overall in length of which approximately half is petiole. The upper leaf surface has slender hairs and there are few or no hairs on the lower surface. The initial leaf has three lobes. Later leaves become more lobed with the lobes subdivided. The plant forms an untidy rosette 100 to 200 mm in diameter.

The mature plant is erect or semi-erect when small but longer stems are prostrate. The stems branch from the base and normally reach 150 mm in length though under non-competitive conditions the plant is capable of growing to a much larger size. The stem is circular in cross section, hollow, and carries long downy hairs. The stem leaves are 5 to 10 mm long with stem-clasping stipules, and have long downy hairs on the upper and lower surfaces. The flowers are sessile and occur in small clusters in the leaf axils. They are dioecious, only 1 mm or thereabouts in diameter, and without petals.

The young plant has a superficial resemblance to fumitory (*Fumaria muralis*), crowsfoot, common cotula (*Cotula australis*), and lesser swinecress (*Lepidium didymum*), but is readily differentiated from these by its circular and very small cotyledon, and by the shape of the leaves.

**Life Cycle and Dispersal:** Spreads by seed. Can be spread in cattle droppings. Seed can remain dormant in the soil for several years.

**Illustrations**

A. Seedling  
B. Cotyledon, 1st and 2nd true leaves  
C. Young plant  
D. Flowering branch  
E. Flowers
**Distribution:** Present in all areas. Locally heavy infestations of up to 1 ha or more are found in parts of the Tasmanian Midlands and the north. On the mainland sweet briar occurs in most States. It is native to Europe and western Asia.

**Occurrence and Significance:** Sweet briar occurs on roadsides and in run country and grazing areas. Seldom a problem in improved pasture, it can compete with species suitable for grazing. The hips of fruits have a high vitamin C content and are sometimes collected and processed for human consumption.

**Description:** The mature plant is an erect woody shrub up to 2 m tall. Short branches are carried towards the top of the stem which tends to curve over. Suckering occurs freely from the crown and bushes often exceed 1 m in diameter at the base. Stems carry backwardly directed thorns. The leaves are compound, pinnate, with five to seven oval leaflets 10 to 20 mm long. The leaf margins are serrated and the leaf stem spiny. The leaves have a sweet fragrance. The sweet scented flowers are carried on the end of the stems singly or in small clusters, 30 to 45 mm in diameter with five pink petals.

Can be distinguished from the similar dog rose (*R. canina*) by the presence of hairs on the underside of the leaf surface.

**Life Cycle and Dispersal:** The plant reproduces from seed. Germination occurs in autumn and spring. The young plants are relatively tender and can be grazed off by sheep (or rabbits). Plants do not normally flower until they are two or three years old. Flowering starts in late spring and continues into summer. The hips ripen in autumn and are held on the bushes into winter after the leaves have shed.

**Illustrations**

A. Flowering branch
B. Mature fruits

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*SWEET BRIAR*

*Rosa rubiginosa* L.  
Perennial  
ROSACEAE
**Distribution:** Cleavers can be found in most parts of the State. It is native to Eurasia.

**Occurrence and Significance:** It is predominantly a weed of waste land and gardens, but occurs occasionally in crops. In Europe it is a major weed of crops and is capable of being strongly competitive. Its climbing habit allows it to overwhelm crops and cause lodging, while the mature stems impede harvesting.

**Description:** The cotyledon is 12 to 20 mm long overall with a petiole measuring approximately 5 mm. It is hairless and has a distinctive apical notch. The seedling has a long hypocotyl and a long epicotyl. The leaves develop as a whorl with initially four leaves to a whorl but later whorls have six to eight leaves.

The mature plant has a prostrate or scrambling and climbing habit though in the early stages stems are semi-erect. The stems are much branched and reach a length of 1.5 m or more. They are square in cross section with ridges on the corners, hollow, and carry stout downwardly directed curved spines. The leaves are sessile and reach a maximum length of approximately 50 mm. On the upper surface they carry stout hooked hairs and on the margin backwardly directed spines similar to those on the stem. The whole plant has a distinctive sticky feeling. The flowers are axillary, carried on a stem approximately 2 mm long. They have four petals, are white in colour, and are approximately 2 mm in diameter. The fruits are distinctive and produced in pairs. They are covered in spiny hairs and have a sticky feeling. They adhere readily to clothing or animals.

Cleavers can be distinguished from field madder (*Sherardia arvensis*) by the shape of the cotyledon in the young stage, and in more advanced plants by the size of the leaves and the number in a whorl, and the colour of the flowers. There are two closely related species that are declared in Tasmania. These are false cleavers (*G. spurium*) and three-horned bedstraw (*G. tricornutum*). Neither has been discovered in Tasmania.

**Life Cycle and Dispersal:** Germination occurs mainly in autumn. Reproduces by seed only. Hooked hairs on leaves, stems and fruits attach to passing animals or humans and assist dispersal. A single plant can produce over 1000 seeds which can survive ingestion by livestock and birds. Seeds will float on water and can also be spread in manure. Can occur as a contaminant in crop seed.

**Illustrations**

A. Seedling
B. Flowering and fruiting branch
C. Flower (x2)
FIELD MADDER

*Sherardia arvensis* L.  
Annual  
**RUBIACEAE**

**Distribution:** Field madder is found in all parts of the State but is less common in the south than in the north. It is native to the Mediterranean and western Asia.

**Occurrence and Significance:** It is principally a weed of waste areas but occurs occasionally in crops. It is not of great economic significance.

**Description:** The cotyledon is 6 to 9 mm long overall, sessile or with only a very short merging petiole, and is hairless. The seedling has a long hypocotyl and a long epicotyl. The leaves arise in whorls, the first whorls containing four leaves. The first leaves are 3 to 5 mm long and sessile, with short hairs on the top and margin and a few, mostly on the veins, on the underside. The plant does not develop as a rosette.

The mature plant is erect in habit when small but as it grows becomes semi-erect and spreading with the ends of the branches erect. The stems are much branched, 200 to 300 mm long, hollow, cruciform or square with ridged corners in cross section, and hairy. The stem leaves, which arise in whorls of five to six, are 4 to 9 mm long, sessile and have short stout hairs on the upper surface and margin, and a few hairs on the lower surface mostly confined to the veins. The inflorescence is terminal, consisting of four to eight flowers together. The flowers, 3 to 4 mm in diameter, have four lilac petals which are fused together at the base to form a cone.

Field madder is similar in general appearance to cleavers (*Galium aparine*) but smaller. It is distinguished from cleavers in the seedling stage by the difference in cotyledon shape and, in the mature plant, by the difference in the flower colour and by the leaves which are much smaller, more distinctly pointed, and fewer in the whorls.

**Life Cycle and Dispersal:** Germination occurs mainly in the autumn but also in the spring. Spread by seed. Seeds are a common contaminant in clover and grass seed.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flowering branch (x3)
BUXBAUM’S SPEEDWELL

Veronica persica Poir. in Lam.

Annual

SCROPHULARIACEAE

**Distribution:** Buxbaum’s speedwell occurs throughout the State. It is rather less common in the Tasmanian Midlands than the north or the south. It is native to Eurasia.

**Occurrence and Significance:** It is a weed of waste areas and gardens and is frequently found in both cereal and vegetable crops. It can be competitive in the early stages of a crop.

**Description:** The cotyledon is 7 to 10 mm long overall with a petiole 2 to 3 mm long, and is hairless. The seedling has both hypocotyl and epicotyl. The leaves are paired, the pairs being at right angles to each other. The early leaves have a blade 6 to 10 mm long with a petiole approximately 3 mm long and have hairs on the upper and lower surfaces and on the petiole. The number of lateral lobes on the early leaves is variable, normally being three but ranging from two to four. In later leaves the lobes are more numerous and subdivided. The plant does not form a rosette.

The mature plant is erect if small, but prostrate and spreading in habit with the ends of the stems semi-erect if large. The stems branch at the lowest nodes, and reach 600 mm in length. They are solid and pithy, circular in cross section, and have long and short simple hairs. The stem leaves are 20 to 25 mm long with a short petiole and have fine hairs on the upper and also the lower surface where they are rather more numerous, particularly on the veins. The petiole is hairy. Upper stem leaves on flowering plants are not paired. The flowers arise singly in the axil and are carried on a long stem. They are 8 to 12 mm in diameter with four petals. The top petal is dark blue, the bottom petal pale blue, and the lateral petals intermediate in tone. The petals have dark longitudinal stripes.

Buxbaum's speedwell is most likely to be confused with stagger-weed (*Stachys arvensis*) in the seedling stage. In Buxbaum’s speedwell both cotyledons and the first leaves are spade shaped while in stagger-weed they are more circular. The first leaf of the closely related ivy-leaf speedwell (*V. hederifolia*) is also spade shaped, but in this species the leaf tends to have a shiny surface and the cotyledon is oval. As mature plants the two speedwells are distinguished by the larger flower and the much more divided leaf margin in Buxbaum’s speedwell. Henbit (*Lamium amplexicaule*), which also superficially resembles Buxbaum’s speedwell, has an oval cotyledon with a distinctive semi-circular notch at its base, and long thin petioles which are practically at right angles to the blade on both cotyledon and first leaf.

**Life Cycle and Dispersal:** Germination occurs in autumn and to a lesser extent in spring. Spreads by seed. Seed can be spread as an impurity in crop seed, manure and fodder. Ants are said to transport the seeds.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
D. Flower (x2)
E. Fruit
**Distribution:** Ivy-leaf speedwell occurs locally in parts of the north and south of the State. It is native to Europe, western Asia, North Africa, Madeira and Canary Islands.

**Occurrence and Significance:** It is a plant of waste areas and gardens, and occurs occasionally in crops. It is of little economic importance.

**Description:** The cotyledon has a blade 8 to 12 mm long with a petiole approximately the same length or slightly longer. There are hairs present on the petiole but not on the blades of the cotyledon. The seedling has a hypocotyl and an epicotyl. The early leaves are paired but later leaves, particularly towards the top of flowering stems, grow singly. The first leaves have a blade 6 to 9 mm long with a petiole slightly shorter than this. The surface is rather shiny and white hairs are present on the upper surface of the petiole. The lobes on the early leaves are shallow but as the plant grows the lobes become larger.

The mature plant is prostrate in habit, with the ends of the branches semi-erect. The stems reach a length of 200 to 300 mm and are branched from the base. They are circular in cross section, ridged, and hairy. The stem leaves are 20 to 25 mm long with a petiole of approximately the same length. They are hairy on the upper and lower surfaces and on the petiole. The leaves normally have a terminal, and usually two, occasionally three, lateral lobes on each side. The flowers are axillary, carried on moderately long stems. They are 3 to 4 mm in diameter with four pale-lilac petals.

Ivy-leaf speedwell can be distinguished from Buxbaum’s speedwell (*V. persica*), stagger-weed (*Stachys arvensis*) and henbit (*Lamium amplexicaule*) by its large oval cotyledons and by the small lobes of the first leaf. The mature plant can be distinguished from these species by the small size of its flower, and by its leaves which have relatively few, but individually large, lobes.

**Life Cycle and Dispersal:** Germination occurs in spring and probably also in autumn. Spreads by seed. Seed can be spread as an impurity in crop seed.

**Illustrations**

A. Seedling  
B. Flowering plant  
C. Flowering branch
**Distribution:** African boxthorn occurs in most parts of the State. Heaviest infestations are found along the north and northwest coast and on King Island and Cape Barren Island. On the mainland it occurs in most States. The species is native to southern Africa.

**Occurrence and Significance:** African boxthorn occurs in waste areas and along roadsides and spreading into pastures. It is capable of invading grazing areas and excluding stock.

**Description:** The mature plant is a woody shrub reaching 4 m or more in height. The branches are much divided and terminate in a spine. There are spines up to 100 mm long on the main branches and smaller spines on the smaller branches. The leaves are fleshy, oval or rather elongated and tapering at the base, 15 to 35 mm long and arise in small clusters. The flowers are about 12 mm in diameter with five waxy white petals with a purplish base. The fruit is globular and a bright orange-red when ripe.

African boxthorn is distinguished from prickly native shrubs by the combination of stout spines and bright green slightly succulent foliage. The presence of spines distinguishes African boxthorn from the superficially similar native coastal shrub *Rhagodia*, with which it frequently occurs.

**Life Cycle and Dispersal:** The plant reproduces from seed and can regenerate from root segments. Seedlings probably germinate in autumn and spring, the plant taking two years to reach flowering size. The main method of dispersal is probably via seed carried by birds.

**Status:** Declared weed.

**Illustrations**

A. Flowering and fruiting branch
B. Detail of flowers
**Distribution:** Black nightshade is common in southern and northern parts of the State but found less frequently in the Tasmanian Midlands. It is native to Eurasia.

**Occurrence and Significance:** It is found in waste areas, home gardens and is common in vegetable crops. It occurs occasionally during the establishment stage of pasture. It appears to have become more common and widespread in recent years. It can be competitive, and in pea crops is a particular problem since its black berries cannot be distinguished from peas by processing equipment. Black nightshade has, on occasions, been the cause of stock deaths. However the plant does not appear to be toxic at all times, and toxicity may be restricted only to certain stages of growth, be influenced by particular growing conditions, or be a characteristic of only certain strains of what is a somewhat variable species.

**Description:** The cotyledon is 13 to 17 mm long overall with a petiole 4 to 5 mm long. Glandular hairs are normally present on the upper and lower surfaces of the blade and on the petiole. The seedling has a hypocotyl but no epicotyl. The leaves grow singly, the first being 18 to 25 mm long overall with a petiole 5 to 8 mm long. Glandular hairs are present on the upper and lower surfaces and on the petiole, while short stout non-glandular hairs occur on the upper leaf surface. Later leaves are generally similar in shape to the first leaf, though as the plant grows they become kite rather than spade shaped. The plant does not develop as a rosette.

The mature plant is erect and bushy in habit, reaching a height of about 1 m. The stems branch from the base and along their length, are solid and circular or polygonal in cross section with one or more longitudinal ridges which often carry tubercles. Few or no hairs are present. The stem leaves are some 60 mm long in the blade with a petiole 20 mm long, but become smaller towards the top of the stem. They carry short stout hairs on the upper and lower surfaces. The inflorescences are extra axillary. The flowers, 8 to 12 mm in diameter, have five white petals. The fruit is normally dull black in colour. This plant is often misidentified as the highly toxic deadly nightshade (*Atropa bella-donna*), which does not occur in Tasmania.

Young black nightshade has a superficial resemblance to *Amaranthus*. Black nightshade is generally darker in colour while its cotyledons, first leaves, and flowers are completely different from those of *Amaranthus*. There are three species of *Solanum* declared in the State: *S. elaeagnifolium*, *S. marginatum* and *S. sodomaeum*.

**Life Cycle and Dispersal:** Germination occurs mainly in spring. Spread by seed, with up to 178,000 seeds produced by one plant. The fruit is readily spread by birds.

**Illustrations**

A. Seedling
B. Young plant
C. Flowering branch
D. Fruiting branch
Three species of Typha are found in Tasmania, two of which are native. Broadleaf cumbungi (T. orientalis) is recorded from all parts of the State except the highlands. Narrowleaf cumbungi (T. domingensis) appears to be restricted to the northeast of the State. The introduced cumbungi (T. latifolia), a species native to Europe, is widespread. Cumbungi species occur in the mainland States and are widely distributed throughout the temperate parts of the world.

Cumbungi colonises still or slow-flowing fresh water up to 2 or 3 m in depth. It is found up to an altitude of about 800 m above sea level. The dense stands and rapid growth of cumbungi make it one of the most troublesome of the emergent aquatic weeds, causing restricted water flow, siltation, reduction of water storage capacity in dams and an increased risk of flooding in streams and slow-flowing rivers. It is claimed, though not proved, that its transpiration accelerates the loss of water from storage dams during summer. Decaying top growth can lead to anaerobic conditions which foul the water.

Cumbungi is a perennial rhizomatous plant. The leaves are grass-like and thick and spongy at the base. Flowering stems may reach a height of over 2 m, with leaves in two rows on opposite sides. The uppermost leaves overtop the flowering head. Each stem produces one flower head. This is divided into an upper or male spike which is separated from the dense cylindrical spike of female flowers which is at first buff coloured but later matures to dark brown or almost black. Broadleaf cumbungi (T. domingensis) may be distinguished by its narrow, cinnamon-coloured flower and relatively unclasping junction of the leaf-blade and sheath. Distinguishing between cumbungi (T. latifolia) and narrowleaf cumbungi (T. orientalis) is difficult in the field, although generally the mature flower spike of T. latifolia is blackish-brown rather than chestnut coloured.

Most new colonies arise from the germination of seed carried by the wind or in mud on the feet of birds, livestock or people, or on agricultural implements. Once a plant has survived its initial establishment stage it begins to produce rhizomes which may extend the plant to a diameter of 3 m in its first year. In this first year many vegetative aerial shoots are produced as well as buds for the following year’s growth. With the onset of winter vegetative growth ceases and the aerial growth withers. In spring growth starts again from buds on the rhizomes. Stems bearing immature inflorescences emerge fairly early in the growing season.

Flowering, which is made obvious by the production of large amounts of pollen in the upper (male) part of the flowering head, occurs in early summer. After pollination the lower (female) portion of the flowering head darkens in colour and increases in diameter. As the seeds mature, bristle hairs at the base of the individual florets dry out and tend to spread, the floret breaks away from its stalk and the accumulated pressure of hundreds of thousands of the bristle hairs is suddenly released, ejecting the seed, with its parachute of hairs, either singly or in dense mats.

Illustrations

A. Young shoot and rhizome
B. Base of leaf showing sheathing base and spongy texture
C. Young inflorescence, group of male flowers above, female below
D. Maturing seed head
**FIELD PANSY**

*Viola arvensis* Murr.  
Annual  
**VIOLACEAE**

**Distribution:** Field pansy is locally common in many parts of the north and south of the State. It is native to Europe and the Mediterranean.

**Occurrence and Significance:** It occurs in waste areas and crops but is usually of only minor importance.

**Description:** Germination normally occurs in spring but can also occur in autumn. The cotyledon has a blade 5 to 6 mm long with a short petiole, and is hairless. The seedling has a very short hypocotyl and no epicotyl. The leaves arise singly, the first being 4 to 6 mm long in the blade with a short petiole. The early leaves are hairless and have a terminal and one lateral lobe on each side. As the plant grows the leaves become larger and have a terminal and two or three lateral lobes per side. The plant forms a rosette.

The mature plant is erect in habit, growing to a height of 200 to 300 mm, and may have branching stems although in many cases the stem is unbranched. The stems are hollow, circular in cross section with fine longitudinal ridges, and carry short hairs. Two forms of this plant are found in Tasmania. In one the stem leaves are an elongated oval, lobed and usually hairless. In the other the leaves are elongated with tooth-like lobes which tend to be forwardly directed, and are more or less hairy, particularly towards the margin and on the veins on the underside. However, both oval and elongated leaves may occur on the same plant. The flowers are axillary and carried on long stems. They are some 10 mm in diameter with five petals; the upper four petals are cream in colour and the bottom petal cream with a yellow-orange centre.

The lobed leaf of the seedling is not unlike that of the speedwells, stagger-weed (*Stachys arvensis*) and henbit (*Lamium amplexicaule*), but field pansy is easy to distinguish from the seedlings of these species because it has leaves that are not paired and it grows initially as a rosette.

**Life Cycle and Dispersal:** Spread by seed, as a contaminant of cereal seed and straw and in bird droppings. Seed can remain dormant in the soil for several years.

**Illustrations**

A. Seedling  
B. Young plant  
C. Flowering branch  
D. Narrow Leaf form
FURTHER INFORMATION
RESOURCES

Books and Booklets


Internet

Dept. of Primary Industries, Parks, Water and Environment, Tasmania
(weed information sheets can be found by following links at this site).
http://www.dpipwe.tas.gov.au

Tamar Valley Weed Strategy
http://www.weeds.asn.au/

Tasmanian Weed Society
http://www.angelfire.com/nb/tasweeds

National Weeds Strategy and Information on Weeds of National Significance (WoNS)
http://www.weeds.org.au

Natural Resource Management in Tasmania
http://www.nrmtas.org/

Dept. Agriculture, Fisheries and Forestry

Dept. of the Environment, Water, Heritage and the Arts
http://www.environment.gov.au

Australian Quarantine Inspection Service
http://www.aqis.gov.au

Weedbuster Week
http://www.weedbusters.info

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