



**BEASTS,  
BUSH  
& BUGS**

**- a FIELD GUIDE**  
**for Northeast Tasmania**

# BEASTS, BUSH & BUGS – A FIELD GUIDE FOR NORTHEAST TASMANIA

Originally prepared by S. J. Cronin, Trawmana Environmental Consultants (2003), as “Field Guide to the Natural Resources of the Dorset Region”. Prepared as an accompaniment to the *Dorset Natural Resource Management Strategy 2002*.

Edited and additional material added by Jay Wilson, 2010, and by Anna Povey, 2012.

This guide focuses on Dorset municipality, but it is applicable to much of northeast Tasmania. This is a brief guide to some terrestrial life; there is much more to find on land and in the sea and intertidal zones.

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## Cover artwork:

The ‘Caring for Catchments’ artwork, by Scottsdale artist John Gibb, is a celebration of the biodiversity of north-east Tasmania, Australia. Some of the species depicted, such as the Scottsdale Burrowing Crayfish, occur nowhere else on the planet.



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Drawing by Brody Cox



# 1 LOCATION AND DESCRIPTION

The Dorset region is an area of approximately 2,700 square kilometres, covering a coastal area from Bellingham in the west to south of Musselroe Bay in the east. The council boundary closely follows catchment area boundaries with the ridge of the southern mountain ranges of Mt. Arthur, Mt. Scott, Mt. Maurice, Mt. Victoria, Mt. Albert forming the boundary to the south before the boundary then cuts northeast to the Township of Weldborough and east to the Great Musselroe River, then east to follow Cray Creek in the Mt. William National Park.

The Great Forester River catchment is an area of 517 square kilometres, originating on the northern slopes of Mount Maurice (1,120 metres elevation). The Great Forester River flows in a northerly direction east of Scottsdale to the Waterhouse region when it turns and flows in a westerly direction and flows into Bass Strait east of Bridport. The last section of the Great Forester River was changed in 1923 by Adams Cut, which was constructed to drain marshlands for agriculture, and outflows the river in Andersons Bay instead of the original Trent Water at Bridport.

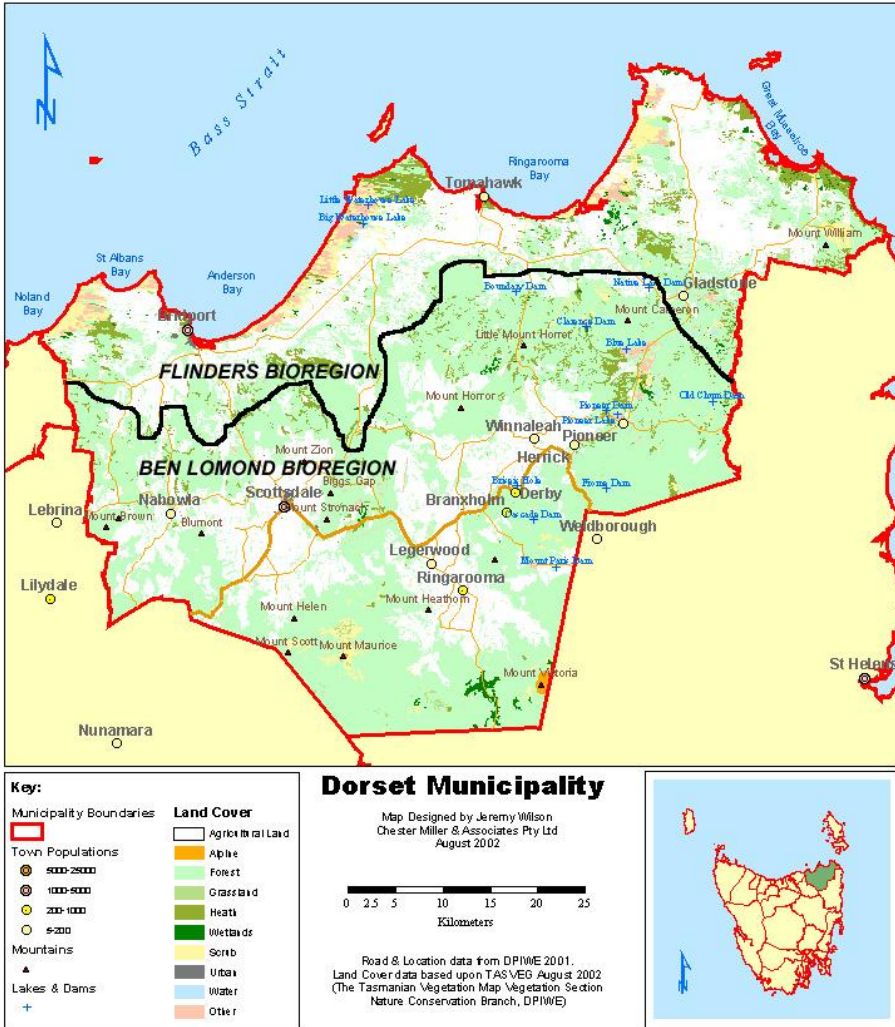
The Little Forester River catchment is an area of 342 square kilometres. The Little Forester River originates in the Sideling Range (481 metres elevation), and flows in a northerly direction east of Scottsdale and into Bass Strait west of Bridport.

The Brid River catchment is an area of 263 square kilometres, originating in the Mount Scott area (984 metres elevation) and the Brid River flows in a northerly direction west of Scottsdale to Bass Strait at Bridport.

The Boobyalla-Tomahawk catchment is an area of 388 square kilometres, with both rivers originating in the Mount Horror area (676 metres elevation) and covers the Waterhouse/Tomahawk hinterland and coastal watershed, flowing into Ringarooma Bay.

The Ringarooma River catchment is an area of 921 square kilometres and is the largest catchment in the Dorset region. The Ringarooma River originates in the Mathinna Plains, Mount Maurice and Mount Victoria areas (1200 metres elevation) and flows through a number of Townships and outfalls into the Boobyalla.

The Great Musselroe River catchment is an area of 309 square kilometres. The Great Musselroe River originates in the Blue Tier area (900 metres elevation) and flows through State Forest in the upper reaches and outfalls into the Musselroe Bay estuary. The Dorset municipal boundary cuts across the Great Musselroe River catchment, dividing the catchment nearly in half excluding the eastern part of that catchment and resulting in an area of 160 square kilometres of the catchment in the Dorset region. Each catchment is a distinct entity encompassing varying landforms, land use, vegetation, and wildlife all linked by surface and ground water drainage.



The two terrestrial bioregions in the Dorset region are Flinders and Ben Lomond. The bioregions have been developed to classify major ecosystems in Australia. Each bioregion has a set of priority vegetation types and identified threats to those communities under the Tasmanian Vegetation Management Strategy.

The Dorset Streamcare project has targeted the protection of natural resources in the Dorset region by assisting landholders to fence streamside and remnant native vegetation areas, providing off-stream stock watering points and strategic revegetation of streamside and native vegetation areas. Natural resource and catchment management groups in the Dorset region provide a strategic approach to natural resource management. On ground works in natural resource management are carried out by Landcare and Coastcare groups and Waterwatch in the region.

## DORSET NATURAL RESOURCE MANAGEMENT

## 2 VEGETATION

The vegetation of the Dorset region contains a number of vegetation communities and a considerable number of species.

This field guide deals with the dominant species in the region and shows a representative of the vegetation communities occurring in the region.

The native vegetation communities<sup>1</sup> occurring in the region have been divided into six types and a further 23 sub-communities under the six main vegetation communities, as follows:

1. Bush along watercourses or around wetlands (Riparian bush);
2. Bush that is treeless (8 sub-communities);
3. Bush with a tree layer made up of eucalypt trees (7 sub-communities);
4. Bush with a tree layer made up of trees that are not eucalypts (6 sub-communities);
5. Marine plants (2 sub-communities) and
6. Ferns and fern allies and non-vascular plants.

These vegetation community types cover broadly the existing native vegetation community environment in the region. The Tasveg community classifications of DPIWE have been used for the terrestrial vegetation communities as these community types relate to other sections in this strategy such as fire frequencies in vegetation communities and vegetation community management prescriptions for each bioregion in the Dorset region. The area of each community has been calculated by Bushcare (M. Visoiu pers. comm.) with riparian bush been considered a vast variety of vegetation types and therefore captured in the areas of other vegetation community types.



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<sup>1</sup> Kirkpatrick and Gilfedder (1999) used for the vascular terrestrial vegetation communities.



## **2.1 Vegetation Communities**

### **2.1.1 Bush along watercourses or around wetlands**

#### **Riparian bush**

Riparian bush is vegetation found along streams, creeks, rivers and wetlands. A variety of bush types make up riparian vegetation. Riparian bush may have a variety of understorey plants including native grasses, heath and scrub. On the edges of the water body there is often a strip of vegetation that is moisture-loving consisting of herbs, sedges, rushes and reeds that are periodically inundated. In the water bodies are aquatic plants (macrophytes) that may float or emerge through the water.

### **2.1.2 Bush that is treeless**

Vegetation communities that are treeless have been divided into eight main types, as follows (280 square kilometres in Dorset region):

#### **Saltmarsh**

Saltmarsh occurs in areas that are periodically inundated by the sea. Different concentrations of salt from the position of saltmarsh flats determine the vegetation species. Succulent herbs and shrubs dominate in highly saline areas. Less saline areas consist of tussock rushes, tussock sedges, tussock grasses and non-succulent herbs.

#### **Dry coastal vegetation**

A community found on well-drained soils along the coast. Dry coastal vegetation can occur on sand dunes, cliffs and rocky shores and is dominated by plants confined to the coastal zone. The most common species in this vegetation community type are sea rockets, marram grass, coast fescue, coast Spinifex, boobyalla, coast wattle, coast beard-heath and coastal tea-tree. Found on coastal sand dunes, cliffs and rocky shores.

#### **Wetland**

Areas of shallow water that are usually flooded for at least part of the year are defined as wetlands. Wetlands occur from the coast to the highlands at low and high altitudes. Areas of marsh, fen and peatland in streams and around lakes are wetland types.





*Riparian bush*  
Lower reaches of the Boobyalla River.



*Saltmarsh*  
Great Musselroe River estuary.



*Dry Coastal Vegetation*  
Waterhouse point



*Wetland*  
Rehabilitated wetland in the Mt. William National Park.



## Bush that is treeless

### Buttongrass moorland

This vegetation community is found on poorly drained and infertile soils. It occurs mostly in the lowland areas of western Tasmania. Buttongrass moorland is common in the Dorset region on poorly drained flats north of Scottsdale. Buttongrass moorland is less than two metres tall and is dominated by buttongrass hummocks with a rich mixture of shrubs, sedges and rushes in the hummock gaps.

### Lowland grassland

Two types of lowland grassland occur in Tasmania; lowland silver tussock grassland (*Poa* spp.) and kangaroo grass tussock grassland (*Themeda triandra*).

Lowland silver tussock grassland is generally found on alluvial river flats less than 600 metres above sea level, it also occurs in coastal areas on sand ridges or next to wetlands. The dominant grass is silver tussock, which forms dense tussock to one metre in height.

Kangaroo grass tussock grassland is found on well-drained, fertile valley floors in low rainfall, low altitude areas, it also occurs on shallow soils on well-drained hilltops and ridges. The dominant grass is kangaroo grass, which is a deep-rooted, summer growing, perennial grass.

### Heath

Found close to the coast on highly infertile sandy plains. The Dorset region is a stronghold of heath vegetation in Tasmania. Heath is dominated by shrubs less than two metres tall in the tallest layer, with the most common dominant species being tea-tree, paperbark, banksia, casuarina and grass-tree.

### Highland grassland

Found in fertile valleys and plains between 600 metres above sea level and the lower limit of alpine vegetation (about 1000 metres above sea level). The dominant grass is silver tussock with a rich variety of wildflowers in the gaps between the tussocks.

### Alpine vegetation

Found above the tree line in treeless areas and among subalpine forests (above 1000 metres above sea level). The vegetation is less than two metres tall and dominated by small-leaved shrubs or hard-cushioned plants with some areas dominated by grasses, herbs or sedges. Alpine vegetation occurs on the higher peaks of the mountains in the southern area of the Dorset region.





*Buttongrass moorland*  
Banca road near Tomahawk



*Silver tussock lowland grassland*



*Heath*  
Northern end of the Mt. William  
National Park.



*Kangaroo grass lowland  
grassland*  
Tobacco Hill on the Mareeba  
property, Waterhouse.



### **2.1.3 Bush with a tree layer made up of eucalypts**

Bush with a tree layer made up of eucalypt trees is divided into seven main sub-communities of which 1,370 square kilometres occur in the Dorset region.

#### **Grassy woodland and forest**

Found on fertile soils, usually in low rainfall areas. The understorey is dominated by a diversity of grasses, sags, lilies, daisies, orchids, peas and other wildflowers. A range of eucalypt species can dominate the tree layer.

#### **Grassy/heathy woodland and forest**

This forest type has an understorey in which small-leaved shrubs and grasses make up more than 30% of the cover in the layer less than two metres tall. There may be a taller understorey layer in which wattles and she-oaks dominate, but this layer is sparser than the lower layer. Typical species in the understorey are heaths, acacias and legumes with the ground layer made up of wallaby grass, plume, spear and tussock grasses. A range of eucalypt species can dominate the tree layer.

#### **Heathy woodland and forest**

This type of dry sclerophyll forest has an understorey that is less than two metres tall and is dominated by small-leaved shrubs and/or bracken. The shrub layer species are typically acacias, heaths and legumes. This community type is typically associated with nutrient-poor sandy soils. A range of eucalypt species can dominate the tree layer.

#### **Shrubby forest**

Shrubby forest is dominated by small-leaved shrubs more than two metres tall, such as wattles and tea-trees. This community is found in moist conditions between wet forests and the heathy forest or grassy woodland and forest community types. A range of eucalypt species can dominate the tree layer.





*Grassy woodland and forest*



*Grassy/heathy woodland and forest*  
Waterhouse



*Heathy Woodland and Forest*  
Gladstone



*Shrubby Forest*



## Bush with a tree layer made up of eucalypts

### Wet forest

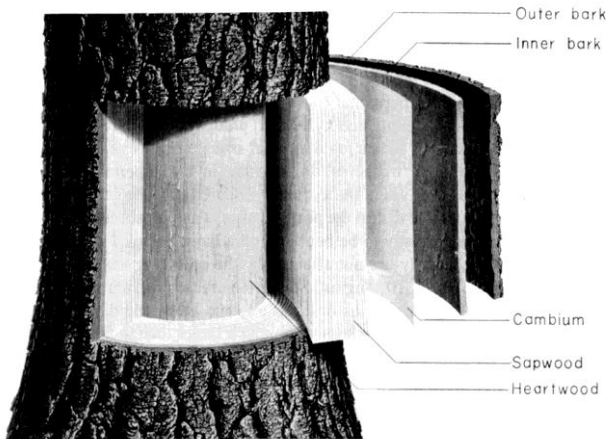
Broad-leaved tall shrubs and small trees such as dogwood, musk and blanket leaf dominate wet forest understorey. Wet forest can also have a ground layer dominated by ferns or an understorey dominated by temperate rainforest trees such as myrtle, beech, sassafras and celerytop pine. This vegetation community occurs on moderately fertile to fertile well-drained soils in areas of high rainfall. Ranges of eucalypts dominate the upper canopy.

### Mixed forest

A vegetation community with an understorey of rainforest species and an overstorey of eucalypts that becomes sparse as the community matures. The understorey is usually 10-20 metres tall and the overstorey above 30 metres tall, except in some subalpine situations. Mixed forest areas tend to be protected from fire and tend to form a band between rainforest and wet forest.

### Sheoak woodland and forest

She-oak dominates in dry areas with shallow and rocky soils on north-facing slopes. This community is common in the Dorset region, especially in the coastal areas. She-oaks can be found as the dominant trees in woodland and forest and can also form a major understorey component of eucalypt forest.



Source: US Forest Service





*Wet forest*  
Oxberry Creek



*She-Oak Woodland and Forest*  
Waterhouse Conservation Area





## **2.1.4 Bush with a tree layer made up of non-eucalypt trees**

Bush with tree layers made up of non-eucalypt species are divided into six sub-communities and covers an area of 270 square kilometres in the Dorset region.

### **Banksia scrub and woodland**

Banksia is common in the Dorset region with varying forms from a shrub or small tree from the coast to the upper hinterland areas. Banksia forms scrub and woodland on coastal sand dunes where fire frequency is low and in more suitable growing conditions can grow to a small tree.

### **Sheoak woodland and forest**

She-oak dominates in dry areas with shallow and rocky soils on north-facing slopes. This community is common in the Dorset region, especially in the coastal areas. This community type differs from the same named community in section 4.7.1 (c) by not having an overstorey of eucalypts.

### **Teatree and paperbark wet scrub and forest**

A common Dorset region vegetation community that is dominated by manuka, soft-fruited tea-tree, shiny tea-tree, woolly tea-tree, swamp paperbark and scented paperbark. This community can have an understorey of rainforest species.

### **Blackwood forest**

Blackwood forest occurs on swampland and well-drained areas. This community is widespread in lowland areas, except on the most infertile soils.

### **Dry rainforest**

A rare vegetation community type that is confined to deep, south-facing rocky gullies in the driest parts of Tasmania. This community has a dense, closed upper canopy of small trees, usually native olive, pinkwood and dogwood with occasional emergent blackwoods.

### **Temperate rainforest**

Temperate rainforest occurs predominantly in western Tasmania and the highlands of the Dorset region. The canopy in the Dorset region is dominated by myrtle, sassafras and celerytop pine. These species can occur either singularly or in combination. On the Mount Cameron range there is gully rainforest dominated by blackwood and sassafras.





*Banksia scrub and woodland*  
Waterhouse Conservation Area



*She-oak woodland and forest*  
Waterhouse Conservation Area



*She-oak woodland and forest*



*Tea-tree and paperbark wet scrub and forest*



*Temperate rainforest*  
Cuckoo Falls



## 2.2 Native Plant Species

Common or notable plant species occurring in the Dorset region have been divided into a number of categories, as follows:

1. Trees and shrubs.
2. Small plants, herbs and grasses.
3. Ferns and fern allies.

The dominant species of each category occurring in the region are described here with a photograph to assist with identification in the field. For confident identification, it may be necessary to check more comprehensive botany sources.

An excellent pictorial key to Tasmanian plants is at <http://www.utas.edu.au/dicotkey/dicotkey/key.htm>.

### 2.2.1 Trees and shrubs

There are 29 species of eucalypts in Tasmania, of which the most common in the northeast are described here. For eucalypt identification, it is often necessary to note adult leaves, juvenile leaves, buds, capsules and bark.

#### **Cabbage Gum, Weeping Gum**

*Eucalyptus pauciflora*

Medium-sized tree, generally with a weeping habit, once more common on lowland flats and high plateaus. Can be easily identified by adult leaves' veins which run almost parallel to the mid rib.

Myrtaceae

#### **White Gum, Manna Gum**

*Eucalyptus viminalis*

Large tree that occurs in a wide variety of environments. Bark is smooth cream/white, streaked with grey, with a rough, grey "stocking" on the lower parts of the trunk. Leaves are lanceolate.

Myrtaceae





*Eucalyptus pauciflora*  
Cabbage Gum



Cabbage Gum flowering



Cabbage Gum leaf showing parallel veins.



White Gum leaf



*Eucalyptus viminalis* White Gum



**Black Peppermint**

*Eucalyptus amygdalina*

Medium to large tree that is one of the most common eucalypts in Tasmania and throughout the region, especially on dry and infertile sites. Bark is finely fibrous and persists on the trunks and branches, but may be smooth on smaller branches. Leaves are narrow.

Myrtaceae

**Stringybark, Brown-top, Messmate**

*Eucalyptus obliqua*

Large tree growing to heights of 70 metres or more. Bark is finely fibrous (but more furrowed than in Black Peppermint) and persists to the small branches. Broad leaves are dark, glossy green, with an asymmetrical (“oblique”) base.

Myrtaceae

**Gum-topped Stringybark**

*Eucalyptus delegatensis*

A very large tree up to 90 metres in height. Occurs in fertile mountain and plateau soils, 400-900 metres above sea level, and forms pure stands in the Dorset region. Bark on the lower trunk is thick, reddish-brown and fibrous whereas the upper trunk and branches are smooth white and grey. Leaves are blue-green, with an asymmetrical base.

Myrtaceae





*Eucalyptus amygdalina*, Black Peppermint



Black Peppermint leaf



*Eucalyptus obliqua*, Stringybark



Stringybark leaf

*Eucalyptus delegatensis*, Gum-topped Stringybark



**Black Gum, Swamp Gum**

*Eucalyptus ovata*

Widespread in woodlands and forest on swampy ground. A large tree with smooth bark, white, cream or pink in colour, and a rough “stocking” at the base.

The adult leaves are ovate to lanceolate, leathery and usually glossy and dark green on both surfaces. Leaf margins are undulating (wavy).

Myrtaceae

**Giant Ash, Stringy Gum (northern Tas.), Swamp Gum (southern Tas.), Mountain Ash (Vic.)**

*Eucalyptus regnans*

Widespread in the mid-altitudes (200-500m ASL) and high rainfall areas of the Dorset region, found on well-drained sites with fertile soil. The tallest known flowering plant in the world, with heights up to 100 metres. Outer bark shreds in long ribbons from the trunk and branches. Resemble large White Gums with lots of ribbons.

The adult leaves are lanceolate and long, with an asymmetrical base.

Myrtaceae





*Eucalyptus ovata*, Black Gum



Black gum in flower



Black gum leaf



*Eucalyptus regnans*, Giant Ash



Giant Ash leaf





**Sheoaks** look like native pine trees, but are flowering plants, not at all related to pines. The “needles” of *Allocasuarina* are actually modified branchlets, with the leaves reduced to tiny rings of scale-like teeth. These adaptations allow sheoaks to grow in very dry environments. Sheoaks also fix nitrogen (like peas and wattles do).

**Drooping Sheoak**

*Allocasuarina verticillata*

A small tree that grows on dry, rocky, north-facing slopes. A very drought resistant species. Drooping grey-green branches. Cone valves sharply pointed.

Casuarinaceae

**Bulloak or Black Sheoak**

*Allocasuarina littoralis*

A small tree with erect green branches. More common and widespread in the region than Sheoak and occurs in dense groups.

Casuarinaceae

**Necklace Sheoak**

*Allocasuarina monilifera*

A shrub like a stunted Bulloak, about 0.5 metre tall in heathlands where it is most common (but up to 4m tall in better conditions). Found in a wide range of sites.

(The similar Scrub Sheoak, *A. paludosa*, is less common and found only in damp, poorly-drained sites of northeast Tasmania. Very small cones, 1-1.5cm long.)

Casuarinaceae





*Allocasuarina verticillata*, Sheoak



*Allocasuarina littoralis*, Bulloak



*Allocasuarina monilifera*, Necklace Sheoak  
(Photograph by A. Povey)



Tasmania has 19 wattle species, ranging from large trees to small shrubs. Many of these are found in the region, with the most common listed here. Identification of wattles is based largely on the shape of the flower heads (globular balls or cylindrical spikes), the shape of the phyllodes (most species) or bipinnate leaves (3 species only) and the presence of glands. Three threatened species of wattles are found in northeast Tasmania: *Acacia pataczekii*, *A. siculiformis* and *A. ulicifolia*.

### **Silver Wattle**

*Acacia dealbata*

A tall subcanopy tree in wet forest or a small tree in dry forest and woodland types. Common throughout the region. Flowers July to August with lemon or bright yellow globular heads of 25-30 flowers. Leaves are bipinnate and blue-green in colour. Like all wattles (as well as bushpeas and sheoaks), fixes nitrogen into the soil.

Similar Black Wattle, *A. mearnsii*, has darker green leaves and flowers in early summer.

Mimosaceae

### **Blackwood**

*Acacia melanoxylon*

Large tree up to 30 metres that is common in a wide range of habitats but growing best on moist, rich soils. A relatively slow-growing and long-lived wattle that produces excellent timber. Phyllodes (resemble but are not true leaves) are between 4 and 10 centimetres long and a dull grey-green. Flowers are pale yellow, in globular heads. Flowers August to October.

Mimosaceae

### **Coast Wattle, (“Boobialla”)**

*Acacia longifolia* subsp. *sophorae*

A common shrub of the coastal sand dunes and internal relic dunes in the region. A very robust and quick growing native that can stabilise erosion areas and provide wind shelter. Phyllodes are dark green, elliptical and blunt with prominent veins parallel to the mid rib. Flowers are in cylindrical spikes, in August and September.

The alternative common name, Boobialla, better applies to *Myoporum insulare*, an unrelated shrub also found at the coast.

A closely related subspecies, Sydney Coast Wattle, is an invasive weed in some areas, including Bridport, and is sometimes still sold in nurseries. It has longer, pointer phyllodes than the native.

Mimosaceae

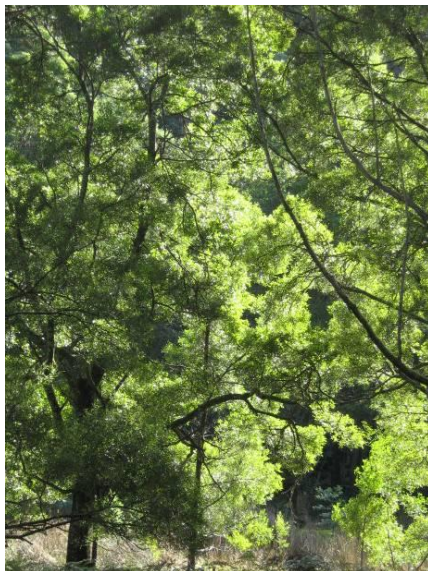




*Acacia dealbata* Silver Wattle



*Acacia melanoxylon* Blackwood



Blackwoods



*Acacia longifolia* subsp. *sophorae*  
Coast Wattle (native)  
Note short, rounded phyllodes.



*Acacia longifolia* subsp. *longifolia*  
Sydney Coast Wattle (weed).  
Note long, pointed phyllodes.

**Prickly Moses**

*Acacia verticillata*

Shrub that is widespread in damp areas. Prickly plants that can withstand grazing pressure. The spikes are phyllodes (apparent leaves) arranged in rings. Flowers are yellow and arranged in a cylindrical spike, flowering in spring and summer.

Mimosaceae

**Sweet-scented Wattle**

*Acacia suaveolens*

Early spring-flowering shrub in heaths and heathy woodlands. Phyllodes (“leaves”) are grey-green in colour and narrow-lanceolate up to 10 cm in length. Flowers are lemon-coloured, sweet-scented and ball-shaped.

Mimosaceae

**Sunshine Wattle**

*Acacia terminalis*

Flowers in winter in a variety of habitats, but mostly in inland areas in open forest, woodland and heath areas.

Bipinnate leaves are dark green, but paler on the underside. Flowers are yellow and globular.

Mimosaceae

**Spreading Wattle**

*Acacia genistifolia*

Common, prickly, small shrub, widespread in heaths and dry forests. Phyllodes (“leaves”) are variable in size, sickle-shaped and sharply pointed, with a prominent central vein, on angular stems (a ridge on the stem below each phyllode). Flowers (in spring) are in yellow balls on slender stalks, usually 2 or 3 together in leaf axils.

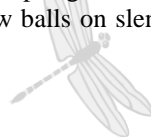
Mimosaceae

**Juniper Wattle**

*Acacia ulicifolia*

A rare plant with its stronghold in coastal heaths and woodlands of northeast Tasmania. Can be mistaken for Spreading Wattle, but phyllodes are finer and linear, tapering to a sharp point, and stems are rounded, not ridged. Early spring-flowering shrub in heaths and heathy woodlands. Flowers are in cream/yellow balls on slender stalks, usually single in leaf axil.

Mimosaceae





*Acacia verticillata* Prickly Moses  
(Photograph by Anna Povey.)



*Acacia suaveolens* Sweet-scented Wattle



*Acacia terminalis* Sunshine Wattle



(Photograph by A.Povey)



*Acacia genistifolia* Spreading Wattle  
(Photograph by A.Povey)

*Acacia ulicifolia* Juniper Wattle – rare



**Banksia**

*Banksia marginata*

Small tree or shrub. Flowers crowded into a dense spike up to 10 centimetres long, lemon-yellow to golden. Flowers spring to early winter. An important nectar source for native birds.

Proteaceae

**Prickly Box**

*Bursaria spinosa*

A tree up to 10 metres or shrub. Common throughout the region on drier sites. Can withstand considerable stock grazing pressure. Flowers between November and January, producing numerous white flowers which are important food for butterflies and many other insects in summer. Fruit is a flattened capsule with many capsules in a single seedpod.

Pittosporaceae

**Native Cherry**

*Exocarpos cupressiformis*

A tree up to 8 metres. This plant is a root parasite that feeds off other plants. Bark is brown ridged and the leaves are reduced to minute scales. Flowers in spring and fruit are succulent red and edible. Common throughout the region, especially in the drier sand areas and dry forest and woodland types.

Santalaceae

**Swamp Paperbark**

*Melaleuca ericifolia*

Small tree or shrub that is common in poorly drained areas, even in slightly saline conditions. Capsules are a cluster on the stem and branches; flowers are pale yellow during spring and summer. This species can form pure stands in wet areas.

Myrtaceae





*Banksia marginata* Banksia  
(Photograph by A. Povey)



*Bursaria spinosa* Prickly Box attracts butterflies  
(Photograph by A. Povey)



Native Cherry  
fruit



*Exocarpos cupressiformis* Native Cherry  
(Photographs by A. Povey)



*Melaleuca ericifolia* Swamp Paperbark





There are 8 species of teatree (*Leptospermum*) in Tasmania, largely distinguished by capsule features. The most common are featured here. Teatree flowers are white with five round petals and five triangular sepals. Smoky Teatree, *L. glaucescens*, is also sometimes found in this region, and has red, succulent capsules. Paperbarks (*Melaleuca* species) are sometimes known as teatrees also.

**Woolly Teatree**

*Leptospermum lanigerum*

Small tree or shrub that is widespread in moist sites throughout the region. Young leaves and shoots are covered with soft silky hairs, so shrub often has a greyish look. The sepals and young capsules are also covered in silky hairs. Flowers in spring and summer.

Myrtaceae

**Common Teatree, Manuka**

*Leptospermum scoparium*

Shrub that is widespread throughout the region in a number of habitats. Usually occurs in areas that are waterlogged for part of the year and also occurs in heath and dry woodland and forest areas.); flowering in spring and summer. Leaves are more pointed than in other local teatree species, so feels somewhat prickly.

Myrtaceae

**Coast Teatree**

*Leptospermum laevigatum*

Small tree or large shrub that occurs on coastal dunes in the region. Can dominate and invade vegetation, so should be managed with care and not planted outside its natural range, but it can be a useful plant in harsh coastal environments. Leaves are grey and larger than in other species; up to 25 mm long. Flowers in spring and summer.

Myrtaceae





*Leptospermum lanigerum*  
Woolly Teatree  
(Photograph by A.Povey)



*Leptospermum scoparium* Common Teatree (Manuka)



*Leptospermum laevigatum* Coast Teatree



**Kunzea**

*Kunzea ambigua*

A common shrub of the hinterland of the Dorset region. A prolific grower and coloniser of disturbed areas. Can dominate and invade vegetation, so should be managed with care and not planted outside its natural range, but is useful in the right place. The leaves are narrow and dull green. Flowers are white and crowded into flowering heads, honey-scented flowers in September to October.

Myrtaceae

**Coast Beardheath, Currant Bush**

*Leucopogon parviflorus*

A common shrub in coastal heaths and dry forests. Leaves are dull green and 1.5-2.5 centimetres long and 4-6 mm wide with prominent parallel veins on the underside, which is an identifying characteristic of the Epacridaceae family. Flowers are white and covered in white hairs which look like a beard; hence the name Beardheath for this genus. Flowers in spring. Fruit are a cream colour and edible.

Epacridaceae

**Wedding Bush**

*Ricinocarpus pinifolius*

A beautiful shrub, with a covering of bright white flowers in early spring, which has its stronghold in this region. Common in heathlands and open woodlands. Leaves narrow, 2-3 centimetres long and 1-3 mm wide. Fruit is spherical and about 12 mm in diameter.

Euphorbiaceae

**Handsome Flatpea**

*Platylobium formosum*

A common pea flower in sandy heaths, distinguished from other bushpeas by the triangular-shaped leaves of 2-6 centimetres long with a sharp point. Flowers are brown and yellow and about 1 centimetre long, in early spring. Common on the relic dune ridges as an understorey plant.

Two other *Platylobium* species may also be found in the region and are smaller, more wiry shrubs.

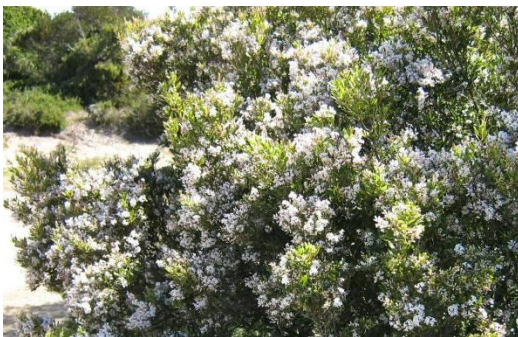
Fabaceae





*Kunzea ambigua* Kunzea

*Leucopogon parviflorus* Coast  
Beardheath



*Ricinocarpos pinifolius* Wedding Bush

Handsome Flatpea *Platylobium*  
*formosum*



**Common Dogwood**

*Pomaderris apetala*

Very common small tree, often dominating the understorey of moist forests. Leaves are large, 4-10 centimetres long, with indented veins on upper surface and dense star-shaped hairs on the undersurface. Flowers are small and numerous in clusters but an insignificant cream to greenish-brown colour, without petals; flowers in spring.

Rhamnaceae

**Yellow Dogwood**

*Pomaderris elliptica*

Shrub found in a variety of habitats of the region, especially rocky hillsides. Leaves are leathery and 1-4 centimetres long and dark green in colour. Flowers are lemon or golden yellow in large heads at the end of the branches; flowers in spring.

Rhamnaceae

**Dusty Daisybush**

*Olearia phlogopappa*

A shrub growing up to 2 metres in height. Common in dry forests. Leaves variable; elliptical, 1 - 4cm long, usually with round-toothed margins, grey-green to dark green with densely hairy undersurface. Flowers are usually white, typical “daisy-shape” and on side branches, flowers in spring to early summer.

There are many different daisybush species (as well as other daisy genera), which can be difficult to distinguish. *Olearia phlogopappa*, *O. lirata* and *O. stellulata* are three common species that are closely related and sometimes intergrade.

Asteraceae

**Erect Currantbush**

*Leptomeria druceana*

A common bush in the region, especially in dry forest and woodland areas. Leaves are small on twigs not unlike the she-oak or bull-oak leaves. Flowers are white, small (less than 3 mm across) and sweet scented. Fruit are edible and pleasantly sour. Flowers from September to December. Known as Broom Bush, Mares’ Tails and Drupe Bush.

Santalaceae





Common Dogwood  
*Pomaderris apetala*



Yellow Dogwood *Pomaderris elliptica*



Dusty Daisybush *Olearia phlogopappa*

Erect Currantbush *Leptomeria drupacea*



**Sassafras**

*Atherosperma moschatum*

A large conical tree growing to over 40 metres in height. Very common rainforest tree. The leaves and bark have a distinctive sarsaparilla smell and taste. The leaves are distinctively toothed with a green and shiny upper surface and a paler undersurface. Flowers in September-October with the fruit a woody knob.

Monimiaceae

**Myrtle**

*Nothofagus cunninghamii*

Large spreading tree that grows as tall as 50 metres. A dominant rainforest tree or shrub in alpine areas that spreads a dense canopy of leaves that shade out most plants except ferns. The leaves are small and flat with a toothed margin. Flowers in November-December and the fruits are a small winged nut with an outside husk.

Fagaceae





Sassafras leaves



*Atherosperma moschatum* Sassafras



*Nothofagus cunninghamii* Myrtle



Myrtle leaves





## 2.2.2 Small plants, herbs and grasses

### **Tiger Orchid**

*Diuris sulphurea*

A common orchid in the region in spring, in a variety of well-drained lowland habitats, from heaths and grasslands to woodlands. Flowers are bright yellow with dark blotches. Flowering is stimulated by summer fires.

There are over 200 species of orchids in Tasmania (7 *Diuris* species), so precise identification requires care and reference to detailed books.

Orchidaceae

### **Mountain Clematis**

*Clematis aristata*

A common climber with prominent white flowers in early spring. Leaves are opposite, made up of three leaflets and up to 8 centimetres long. The flowers are large with long petals.

There are several *Clematis* species in this region. *Clematis aristata* has largest leaves and tends to be found in moist forests. *C. clitorioides* is also widespread in moist to dry forests. *C. microphylla* grows close to the coast. *C. gentianoides* grows along the ground rather than climbing.

Ranunculaceae

### **Common Heath**

*Epacris impressa*

Very common, small heath plant that favours open areas, especially roadsides. Flowers can be white, pink or red. Flowers autumn-winter-spring and provides an important nectar source when other flowering plants are dormant. Leaves are short and sharply pointed.

There are 28 species of *Epacris* in Tasmania, and more genera in this family.

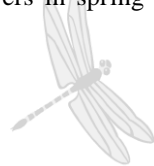
Epacridaceae

### **Candles**

*Stackhousia monogyna*

A common herb in the region occurring in a variety of habitats. Very distinctive long white flower heads that can reach 80 centimetres in length. Flowers in spring and summer.

Stackhousiaceae





*Diuris sulphurea*  
Tiger Orchid  
(Photograph by A.Povey)



*Clematis aristata* Clematis  
(Photograph by A.Povey)



*Epacris impressa* Common Heath  
(Photograph by A.Povey)



*Stackhousia monogyna* Candles



**Buzzy**

*Acaena novae-zelandiae*

Common herb in the region that forms a mat of ground cover in suitable habitat. Leaves are light green, opposite and about 15 mm long and 5 mm wide. Flowers are white on a ball shaped flower head, which later becomes the sticky head well known to fun-loving children and furry animals, flowers in spring-summer.

Rosaceae

**Blue Lovecreeper**

*Comesperma volubile*

A delicate climbing plant, often overlooked when not in flower. Leaves oblong-linear up to 30 mm in length. Flowers in terminal or axillary racemes, flowers are blue-mauve and about 10 mm wide. Flowers in spring in the region.

Polygalaceae

**Hop Native-primrose**

*Goodenia lanata*

A small herb common in open areas throughout the region. Arises from a base rosette of stalked toothed tennis racket shaped leaves. Flowers are about 2 cm long with five petals, flowers in spring and summer.

Five *Goodenia* species in Tasmania all have similar flowers.

Goodeniaceae

**Spreading Guineaflower**

*Hibbertia procumbens*

A small prostrate plant common throughout the region where light penetrates the ground in heaths and woodlands. Leaves linear with a blunt end and up to 2.5 cm long. Striking yellow flowers in spring and summer. Petals are heart-shaped, as in all *Hibbertias*, but this species' flowers have a distinctively unpleasant odour at close quarters. Most other *Hibbertia* species in the region are an erect or scrambling shrub.

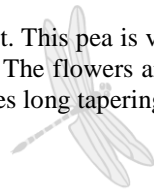
Dilleniaceae

**Showy Bossia**

*Bossiaea cinerea*

A pea in the form of a small shrub that either spreads or can be erect. This pea is very common in the Dorset region, especially on drier and sandy banks. The flowers are a mass of brown and yellow in spring. The leaves are 1 to 3 centimetres long tapering to a point.

Fabaceae





*Acaena novae-zelandiae* Buzzy



*Comesperma volubile* Blue Lovecreeper  
(Photograph by A.Povey)



*Goodenia lanata* Native Primrose



*Hibbertia procumbens*  
Spreading Guineaflower



*Bossiaea cinerea* Showy Bossia  
(Photograph by A.Povey)



**Native Pigface**

*Carpobrotus rossii*

Succulent groundcover in sandy areas and coastal environments in the region. Leaves are triangular in section with a pointed end. Flowers light purple 4-6 cm in diameter and solitary, flowers in spring and summer. Fruit is fleshy and fig-like and edible. Some similar, larger species are introduced.

Aizoaceae

**Dwarf Riceflower**

*Pimelea humilis*

A small plant common in open and dry areas in the region, especially dry forest and woodland and roadsides. Leaves are about 1 cm long in opposite pairs. Flowers are white in groups at the end of the branches, flowers in spring and summer.

There are 18 *Pimelea* species in Tasmania, which have very similar flowers. *P. humilis* is the smallest and one of the most widespread.

Thymelaeaceae

**Hairy Pinkbells, Black-eyed Susan**

*Tetralochea pilosa*

Small shrub up to 60 cm tall and with a spectacular show of purple or mauve flowers. This plant is common in the region in heaths and dry forest and woodland. Leaves are narrow-linear up to 10 mm long and soft. Flowers have 4 petals and black stamens on the end of the stems in crowded heads, flowers in spring and summer.

Several other *Tetralochea* species in the region are difficult to distinguish.

Tremandraceae

**Short Purpleflag**

*Patersonia fragilis*

A small iris with flowers and leaves arising from the ground. Leaves are long and narrow, up to 30 centimetres long with a point. The flower stalk in this species is shorter than the leaves, blue-mauve. Flowers from November to January.

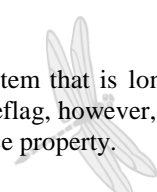
Iridaceae

**Long Purpleflag**

*Patersonia occidentalis*

Similar to the Short Purpleflag above but with a long flowering stem that is longer than the thin flat leaves. Grows in wetter areas than the Short Purpleflag, however, the two species have been found growing together on the Lakes Entrance property.

Iridaceae





*Carpobrotus rossii* Native Pigface



*Pimelea humilis* Common Riceflower



*Tetradlea pilosa* Hairy Pinkbells



Short Purpleflag *Patersonia fragilis*  
(Photograph by A.Povey)



*Patersonia occidentalis* Long Purpleflag



**Sagg**

*Lomandra longifolia*

A very common understorey tussocky plant. This species persists under heavy grazing pressure and can be an important colonising species for remnant vegetation regeneration and erosion control. Leaves with a notched end, which is a distinguishing feature of the species. Flowers are small and crowded into a spiny group of flowers, flowers are yellowish or light straw coloured.

Xanthorrhoeaceae

**White Flag-iris**

*Diplarrena moraea*

A very common iris in the region on roadsides and as an understorey plant. The white flowers on long stalks are very distinctive and it can form a carpet of plants in suitable areas. Used extensively for highly polluted areas such as highway verges and dividers. Leaves are long and narrow with parallel veins from 30-60 centimetres in length. Flowers in spring and summer.

Iridaceae

**Kangaroo Grass**

*Themeda triandra*

A large and common perennial grass that is common in the region and mostly dominates native grasslands in the region. Leaves are folded or keeled along the midrib, pale green when fresh and rusty red when dry. The red colouring in late summer and autumn is a distinguishing characteristic of this grass, apart from its length as compared to other native grasses in the region. Flowers are at the end of the stalk, which can be as high as 1 m and consist of stalked clusters of green and purple spikelets, flowers in October and November. This grass cannot tolerate overgrazing by stock and has a limited distribution in heavily stocked farmland.

Poaceae





*Lomandra longifolia* Sagg



*Diplarrena moraea* White Flag-iris  
(Photograph by A.Povey)



Kangaroo Grass seedhead



*Themeda triandra* Kangaroo Grass





**Southern Grasstree, Kangaroo Tail, Black Boy**

*Xanthorrhoea australis*

A common plant in the region in coastal heathlands, dry forests and woodlands. Stock grazing, mechanical rubbing, phytophthora and high nutrient loads adversely affect this species. Recent Landcare fencing has protected large areas containing this species on farmlands in the region. Very slow-growing, it takes 10-15 years to produce a flower spike and more than 30 years for the leaf tuft to rise above the trunk. Flowers are white and occur in a dense columnar spike that has been measured in the northeast to 4 metres tall. Flowers in spring and summer or after fire.

Two other species, *X. bracteata* and *X. arenaria*, occur in the region and both are threatened species. They can be distinguished as following:

**Southern Grasstree**

*Xanthorrhoea australis*

- Trunk
- Usually single crown
- Flowers extend for most of length of flower stem

**Shiny and Sand Grasstrees**

*X. bracteata*, *X.arenaria*

- Trunkless
- Several leafy crowns
- Flowers extend only up to halfway down flower stem

Xanthorrhoeaceae





*Xanthorrhoea australis* Southern Grasstree



*Xanthorrhoea bracteata*  
Shiny Grasstree (Photograph by S. Wood)



### 2.2.3 Ferns

Ferns and the related fern allies (such as clubmosses) are ancient plants, which still resemble their early relatives of the Carboniferous period (and make up much of coal, with conifers). There are 101 species of ferns and fern allies in Tasmania, many of which can be found in the northeast and several of which are threatened species.

Books such as “The Ferns of Tasmania” (by M. Garrett) and “Ferns and Allied Plants of Victoria, Tasmania and South Australia” (by B.D. Duncan and G. Isaac) make identifying ferns relatively easy.

#### **Soft Treefern, Man Fern**

*Dicksonia antarctica*

A large treefern, common in moist areas from sea level to high altitudes. This treefern can grow to fifteen metres in height in the right conditions. The crown spreads to 4.5 metres (refer to picture below). The trunk is densely covered with soft, fibrous roots. While Soft Treefern is most common, Rough Treefern, *Cyathea australis*, is also quite abundant. Its trunk is rough with old stipe bases (compared with the softly “hairy” roots of Soft Treefern trunks).

#### **Slender Treefern**

*Cyathea cunninghamii*

This treefern is listed as endangered in Tasmania, as there are only about 200 mature plants in 15 known locations, growing near creeks in sheltered gullies. Most are found near the coast, with the noted exception of one recently discovered population at South Springfield, about 30 km from the coast and at an elevation of nearly 400 meters. This outlier population has caused scientists to reconsider the historical and geographic Tasmanian range of the species. Slender Treefern is distinguished by its slender trunk (less than 20cm diameter and up to 8 metres tall) and other features.

#### **Southern Kingfern**

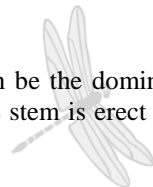
*Todea barbara*

A large fern that grows along water courses and can develop a broad, black, fibrous trunk. Unlike the true treeferns, Kingfern has several tufts of fronds.

#### **Fishbone Waterfern**

*Blechnum nudum*

A small fern that is common in moist areas, this species can often be the dominant species in damp areas. The stipes (leaf stems) are shiny black. The stem is erect and sometimes develops into a small trunk.





*Dicksonia antarctica* Man Fern



*Cyathea cunninghamii* Slender Treefern  
(Photograph by Oberon Carter)



*Todea barbara* King Fern



*Blechnum nudum* Fishbone Waterfern

## 3 FUNGI

Fungi are usually invisible! Their main growing and feeding structures, called hyphae, are a network of microscopic threads in the soil, rotting organic matter or living organisms. It is only when favourable conditions of temperature and moisture stimulates the growth of their spore bearing bodies (akin to fruit) such as the well-known field mushrooms and the less familiar coral fungi, jelly fungi, puffballs, brackets, cup fungi, earthstars and truffles, that we are even aware of their existence.

While plants obtain their energy from the sun through photosynthesis, fungi lack chlorophyll and get energy from other sources:

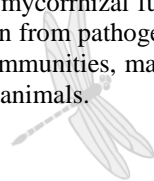
- Saprotrophic fungi extract nutrients from decaying organic matter;
- Parasitic fungi extract nutrients from living plants and animals.
- Mycorrhizal fungi (literally ‘fungus rooted’) have a symbiotic (mutually beneficial) relationship with plants.

97% of plants have a symbiotic relationship with fungi. Through modified roots (mycorrhizae), where the fungus forms a sheath around the non-woody rootlets of the host plant – effectively extending the root zone – an exchange of nutrients takes place. Thus, the fungus supplies the plant with water and valuable soil nutrients (particularly phosphorus) and in return obtains carbohydrates and sugars from the plant.

Many of these mycorrhizal fungi resemble truffles; small ball-shaped fungi with a tough outer skin that protects the spore-bearing tissue.

Unlike above ground fungi, which disperse their spores by wind and water, underground fungi use mycophagous (fungi-eating) mammals to help spread their spores. Attracted by distinctive pungent or aromatic odours, potoroos, bandicoots, bettongs and native rats dig up and eat truffles. The spores are transported in their gut and deposited elsewhere via the animals’ faecal pellets. Assisted by rain or native dung beetles, the pellets are taken underground to the roots of potential host plants. When conditions are favourable, spores germinate and the mycorrhizal associations are re-established. The fungus benefits by dispersal of its spores and the mammals benefit from the nutritional value of the fruit body.

This enhanced nutrient uptake by plants in poor soils as a result of mycorrhizal fungi ensures faster plant growth, greater drought resistance and protection from pathogens. This, in turn, encourages higher species diversity in native plant communities, makes them more resistant to weed invasion and provides habitat for small animals.



Fungi, along with bacteria, are the principal decomposers in the environment and play a crucial role in hastening the decay of logs and other organic matter, transporting, storing and releasing nutrients in the process. Many beetle larvae tunnel into logs taking with them a supply of fungi to digest the cellulose; their tunnels provide access to the interior of logs for other species of insects and fungi. Fungi are an important food source for hundreds of species of insects, which in turn are eaten by numerous birds and small mammals.

### Fungi Identification

Of the approximately 250,000 species of fungi believed to occur in Australia, only 5-10% have been named. This means that there is no comprehensive volume that covers all species, which can be frustrating for beginners attempting to identify these intriguing organisms. Persistence can be very rewarding, however.

A starting point is to group fruits according to their basic shape (mushroom, jelly fungus, bracket etc) spore bearing tissue (gills, pores or skins) and spore colour – which range from white, pink, purple, black and various rusty browns.

One of the best starting books is “**Fungi Down Under: the Fungimap Guide to Australian Fungi**”. This shows 100 of the most recognisable (and fascinating) species, which are the target species of a nationwide project, Fungimap, to learn more about our fungi. There is soon to be an online guide at the Fungimap website at [www.rbg.vic.gov.au/fungimap/fungi-field-guide](http://www.rbg.vic.gov.au/fungimap/fungi-field-guide).



This Earthstar (*Geastrum* sp.) is found singly or in groups in leaf litter. It is a saprotrophic fungus that obtains nutrients and energy from dead and decaying organic matter, facilitating decay of the substrate.



This *Russula* sp. is a mycorrhizal fungus found in eucalypt forests and woodlands. It is usually solitary or in small groups.

**3.1 Key to Fungi**

<b>Fruit Body</b>	<b>Fertile Surface</b>	<b>Texture</b>	<b>Sample Genera</b>
Agarics (Fungi with gills)	Gills	fleshy	Amanita Armillaria Cortinarius Lepiota Russula
Boletes (Fleshy Pores fungi)	Pores	fleshy	Boletus  Fistulinella Suillus
Clavarias (Coral Fungi)	Club or coral like	fleshy	Ramaria  Clavicornia Clavulina
Gasteromycetes (Puff Balls)	Internal	firm to soft	Geastrum  Scleroderma Calostoma
Phalloids (Stinkhorns)	Foul smelling slime	firm but brittle	Clathrus  Anthurus Aseroe Mutinus
Hydnoid Fungi (Spine fungi)	Spines	fleshy or leathery	Hydnum  Hericium Mycoacia
Polypores (Woody pore fungi)	Pores	tough or woody	Amauroderma  Coltricia Ganoderma
Telephores (Leather/shelf fungi)	smooth or wrinkled	leathery and pliable	Stereum  Podoserpula Podoscypha



Fruit Body	Fertile Surface	Texture	Sample Genera
Jelly Fungi	simple or branched clubs to brain-like forms	Jelly like	Tremella Heterotextus Pseudohydnum
Ascomycetes (Cup fungi and relatives)	Lining cups or discs. Sometimes spherical or club shaped	Fleshy to firm	Peziza (Cup fungi) Geoglossum (earth tongues) Primitive truffles Cyttaria (Beech orange) Morchella (morels) Cordyceps (insect parasites)

Adapted from: Fuhrer, B. (1985) A Field Guide to Australian Fungi. Field Naturalists Club of Victoria



Bracket fungi in Springfield Forest Reserve





## 4 FAUNA

The northeast region is a stronghold for many species of native fauna. A brief description follows of the main species likely to be seen, under sections:

- Mammals;
- Birds;
- Frogs;
- Reptiles;
- Fish and
- Invertebrates.

### 4.1 Mammals

Further divided into the three main distinct types:

- marsupials;
- monotremes and
- placental mammals.

The Northeast region contains 33 of the 34 existing native land mammals. The table shows the species occurring in the Dorset area. The Thylacine was once widespread in the Dorset region and is now unfortunately extinct.

MARSUPIALS	
Common name	Scientific name
Swamp Antechinus	<i>Antechinus minimus</i>
Tasmanian Bettong	<i>Bettongia gaimardi</i>
Little Pygmy Possum	<i>Cercartetus lepidus</i>
Eastern Pygmy Possum	<i>Cercartetus nanus</i>
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>
Eastern Quoll	<i>Dasyurus viverrinus</i>
Southern Brown Bandicoot	<i>Isodon obesulus</i>
Forester Kangaroo	<i>Macropus giganteus</i>
Bennett's Wallaby	<i>Macropus rufogriseus</i>
Eastern Barred Bandicoot	<i>Parameles gunnii</i>
Sugar Glider	<i>Petaurus breviceps</i>
Long-nosed Potoroo	<i>Potorous tridactylus</i>
Ringtail Possum	<i>Pseudocheirus peregrinus</i>
Tasmanian Devil	<i>Sarcophilus harrisii</i>
White-footed Dunnart	<i>Sminthopsis leucopus</i>
Tasmanian Pademelon	<i>Thylogale billardieri</i>
Brushtail Possum	<i>Trichosurus vulpecula</i>
Wombat	<i>Vombatus ursinus</i>



MONOTREMES	
Platypus	<i>Ornithorhynchus anatinus</i>
Echidna	<i>Tachyglossus aculeatus</i>
PLACENTAL MAMMALS	
Gould's Wattleed Bat	<i>Chalinolobus gouldii</i>
Chocolate Wattleed Bat	<i>Chalinolobus morio</i>
Large Forest Eptesicus	<i>Eptesicus darlingtoni</i>
King River Eptesicus	<i>Eptesicus regulus</i>
Little Forest Eptesicus	<i>Eptesicus vulturinus</i>
Great Pipistrelle	<i>Falsistrellus tasmaniensis</i>
Water Rat	<i>Hydromys chrysogaster</i>
Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>
Gould's Long-eared Bat	<i>Nyctophilus gouldi</i>
Long-tailed Mouse	<i>Pseudomys higginsii</i>
New Holland Mouse	<i>Pseudomys novaehollandiae</i>
Velvet Furred (Swamp) Rat	<i>Rattus lutreolus</i>



Drawing by Catelyn Richards



**Platypus, *Ornithorhynchus anatinus***

**Description:** Easily distinguished from other native mammals by the broad tail, webbed feet and duck like bill. The soft dense fur is grey to brown on the back and cream coloured on the underside. Length with tail about 50 cm, weighs about 2-3 kg.

**Habits:** Like most native animals the Platypus is most active at dawn and dusk in water habitats.

**Food:** Aquatic fauna like worms and small burrowing crayfish, which are stored in a cheek pouch until surfacing when they are ground between the bill structures and eaten

**Breeding:** Burrow construction and egg laying occur in late spring when usually two eggs are laid and from egg laying to weaning is a period of five months.

**Distribution:** Found in suitable habitats in the region, although the Northeast does not have a large population of Platypus.

**Status:** Wholly protected species and is susceptible to habitat loss through dam construction and pollution.

**Echidna, *Tachyglossus aculeatus***

**Description:** Easily identified by its spines that protrude through brown to black fur. A long snout and small eyes distinguish the face. Males have a venomous spur on each back leg.

**Habits:** Active in cooler periods of the day and mostly seen during the summer months. Often will cross pasture and roads and track areas between native forest remnants. Digs a hole when disturbed to show only spines above the ground.

**Habitat:** Mostly occurs in the drier heath and dry forest and woodland environments of the Northeast.

**Food:** Invertebrates, especially ants that it collects via a long and sticky tongue.

**Breeding:** Breed in spring and lay a soft-shelled egg. Egg laying to weaning is about three months. The female may use a burrow to raise the young in the early stages.

**Distribution:** Prefer the drier areas in the region where food resources and sheltering habitat is available.

**Status:** Wholly protected and little is known of the population numbers or dynamics.





Echidna



*Echidna prints*



### Spotted-tailed Quoll, *Dasyurus maculatus*

**Description:** A small animal about the size of a domestic cat. The fur is thick and coarse and golden brown to dark brown on the back with a lighter sandy colour below. The body and tail are covered in spots of different sizes. The presence of spots on the tail distinguishes this species from the Eastern Quoll. The Spotted-tailed Quoll can weigh up to 4 kilograms, which is considerably larger than the Eastern Quoll.

**Habits:** Mostly nocturnal and spends the majority of its time on the ground feeding but is also a good climber which enables it to feed on roosting birds and other arboreal mammals.

**Habitat:** Dry sclerophyll forest, scrub, heathland, rainforest and alpine areas and especially the wetter forests of the west coast and the north and northeast areas.

**Food:** Small birds, mammals, invertebrates and reptiles, as well as carrion.

**Breeding:** Breeds in late winter and early spring. The litter size is usually five, which remain in the pouch for about two weeks. The young are weaned at eighteen weeks old.

**Distribution:** Tasmania and east and southeast mainland Australia. The Dorset region is a stronghold of this species.

**Status:** Wholly protected and common in the Dorset region.

### Eastern Quoll, *Dasyurus viverrinus*

**Description:** A small animal about the size of a small domestic cat. The Eastern Quoll can vary in colour from fawn to jet-black with white spots. It is distinguished from the Spotted-tail Quoll by having no spots on the tail and by being smaller in size (up to 1.3 kilograms).

**Habits:** Mostly nocturnal and spends the majority of its time on the ground feeding.

**Habitat:** Dry sclerophyll forest, scrub, heathland, rainforest and alpine areas are the preferred habitat. It is also common in agricultural areas where they feed on pasture pests.

**Food:** Mainly invertebrates such as cockchafer and corbie grubs. Other foods include small mammals, birds, grasses and fruits. They also feed on carrion occasionally.

**Breeding:** Mates in autumn to early winter. Litter sizes up to six when the young remain in the pouch for up to ten weeks. After about ten weeks the young are left in burrows or hollow logs so the female can hunt and forage. The young are sometimes carried on the back of the female. The young are weaned in spring of the same year.

**Distribution:** Tasmania. Now most likely extinct on the mainland. The Dorset region is a stronghold of this species.

**Status:** Wholly protected and common in the Dorset region.





Spotted-tailed Quoll. Scats are often hairy with twisted ends.



Eastern Quoll



## Tasmanian Devil, *Sarcophilus harrisii*

**Description:** A large carnivore about the size of a small dog. The devil has coarse black fur usually with white markings on the neck, shoulders and rump. Animals can weigh up to 10 kilograms.

**Habits:** A nocturnal animal that feeds mainly on carrion. The devil feeds on carcasses in groups with frequent fighting and squabbling. Young devils can climb trees in search of food.

**Habitat:** Forest, woodland and agricultural areas.

**Food:** Predominantly carrion.

**Breeding:** Mates in March and the young are born in April. The litter size is usually four with the young remaining in the pouch for fifteen weeks and weaned at thirty weeks.

**Distribution:** Tasmania. The Dorset region was a major stronghold of the devil until a massive population decline in the 1990's.

**Status:** Wholly protected and listed as 'endangered' under Tasmanian threatened species legislation as a consequence of Tasmanian Devil Facial Tumour Disease.

### Devil Facial Tumour Disease

DFTD is a fatal disease of Tasmanian Devils, characterised by facial cancers. Infected animals die within months of the lesions first appearing.

DFTD is extremely unusual as it is only one of three recorded cancers that can spread like a contagious disease. The cancer is passed from devil to devil through biting. The live tumour cells aren't rejected by their immune system because of a lack of genetic diversity among Tasmanian devils.

Populations with the disease have declined by up to 95%, especially in northeast Tasmania, where the disease was first reported. As at 2012, DFTD affects 75% of the state. Devils are now listed as endangered under both state and federal legislation, and wholly protected.

Read more at [www.tassiedevil.com.au](http://www.tassiedevil.com.au). Please tell the Save the Tasmanian Devil Program of any devil roadkill that you come across, using the form at <http://www.tassiedevil.com.au/tasdevil.nsf/f-roadkillSighting>





Tasmanian Devils  
(Photograph by P. Webb)



devil

Tasmanian devil prints



Devil scat shows hair, bones and distinctive whiteness from bone calcium.  
(Photograph by A. Povey)



### Swamp Antechinus, *Antechinus minimus*

**Description:** A small carnivorous mouse with coarse fur of a grey-reddish tinge above and greyish yellow below. This species weighs up to 55 grams with an overall length of 200 mm. The tail is short and covered with short hair (80 mm long).

**Habits:** Has long claws, which it uses to dig for food during the night and day.

**Habitat:** Buttongrass sedgeland and coastal heathland. Both of these habitats are found in the Dorset region.

**Food:** Insects and larvae. Lizards, earthworms and spiders.

**Breeding:** Breeds from September to December with a litter size of six. The males die soon after mating.

**Distribution:** Tasmania and Southeast Australia.

**Status:** Wholly protected. Too frequent burning of their preferred habitat can threaten the species locally.

### White-footed Dunnart, *Sminthopsis leucopus*

**Description:** A small carnivorous marsupial with dark brown fur above and light grey to white below. The ears are large and round, the tail is slender and the paws white. The overall length is 170 mm and weighing up to 28 grams.

**Habits:** Mostly nocturnal and quick moving.

**Habitat:** Widespread in a range of habitats. Occurs in the Dorset region in sclerophyll forest and heathland.

**Food:** Invertebrates, small reptiles and possibly small mammals.

**Breeding:** Nests are bark lined in trees and logs. The young are born in late spring with a litter size up to eight.

**Distribution:** Tasmania and Southeast Australia.

**Status:** Wholly protected.





Swamp Antechinus, showing the notched ears that are typical of many antechinuses (and different from rodents). The sharp, pointed teeth of a predator also distinguish antechinus from rodents. (Photograph by Craig Searle.)



**Eastern Barred Bandicoot, *Perameles gunnii***

**Description:** A small animal characterised by a slender elongated head that tapers to a pink nose. The fur is soft and dense, grey on top with paler bands or bars across the rump and paler underneath. It has big ears; a white tail and long claws on its forefeet. The size is small weighing about 640 grams.

**Habits:** Active at night, moving at a gallop or bound and can jump as high as one metre. Spend the days resting in nests, which are a depression in the ground covered by grasses.

**Habitat:** The preferred habitat is open grasslands and near areas of pastoral development, with some thick groundcover (e.g. tussocks or scrub) for shelter.

**Food:** Soil invertebrates, including pasture pests such as corbie grubs. It also eats berries in season, beetles, earthworms and fungi.

**Breeding:** Breeds in late May to March with a litter size up to four. The pouch is rear opening and the young are dependent for five months.

**Distribution:** Tasmania and Victoria, although the Victorian populations have been decimated by land clearance and predation by feral and domestic cats and foxes. In Tasmania the midlands grasslands were an important area, however clearing of native vegetation has led to a major decline in these areas.

**Status:** Wholly protected and listed as a threatened species.

**Southern Brown Bandicoot, *Isodon obesulus***

**Description:** A small animal with dark coarse brown fur above and creamy-white below. It has rounded ears and a long nose for digging. The tail is short and pointed. Some animals can reach 1.2 kilograms in weight.

**Habits:** A nocturnal animal that stays close to cover.

**Habitat:** All forest types but prefers scrub and low ground cover.

**Food:** Soil invertebrates, earthworms and insects and their larvae.

**Breeding:** Builds a nest of grass and other plant material, which can also include soil. Breeds between June and February with a litter size of one to four. The young are raised in a rear-opening pouch and two litters are produced each year.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected





Eastern Barred Bandicoot



Eastern Barred Bandicoot prints



### **Wombat, *Vombatus ursinus***

**Description:** Coarse fur, light brown to dark brown. Solid body with short legs, powerful claws. Ears are visible but short, eyes small and a large nose.

**Habits:** Active in cooler periods of the day and mostly seen during the night. Can travel at reasonable speeds when pressed.

**Habitat:** Mostly occurs in the drier heath and dry forest and woodland environments of the Northeast. Lives in large burrows up to 20 metres in length.

**Food:** Grasses, roots that it digs up, herbs and shrubs.

**Breeding:** Breeds in winter usually and the young remain in the pouch for six months and at foot with the mother for a further 12 months. A single young is normal.

**Distribution:** Prefer the drier areas in the region where food resources and sheltering habitat is available.

**Status:** Wholly protected and common.

### **Sugar Glider, *Petaurus breviceps***

**Description:** A small possum, which weighs up to 120 grams. The fur is blue-grey with a dark stripe down the centre of the back. The tail is bushy and sometimes tipped white. A flap of loose skin extends from the front paw to the back paw, which allows gliding up to distances of 50 metres.

**Habits:** A nocturnal animal. This species can also enter torpor when it is cold and food is scarce. Families live together in nests and a yapping call not unlike a dog can be heard at night.

**Habitat:** Dry heathlands and open forest across the State.

**Food:** Invertebrates, flowers, nectar and gum from acacias.

**Breeding:** Nests in tree hollows. Breeds in August with a litter size of two, which remain in the pouch for two to three months. A further month is spent in a group nest before full maturity.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected. This species was most likely introduced to Tasmania in the early decades of the nineteenth century.





Wombat



Sugar Glider

**Brushtail Possum, *Trichosurus vulpecula***

**Description:** Thick soft fur that ranges in colour from silver-grey, black, reddish and golden. The brushy tail is a major distinguishing feature with long oval ears. The size is about the same as a domestic cat.

**Habits:** Active and feeds at night. Feeds on the ground as well as in trees. Brushtails rub secretions from glands under their chin, on the chest and near the anus to mark home ranges and define occupancy of a home site. Studies of the a behaviour of brushtail possums showed that about 16% of their time is spent feeding, 30% travelling 44% immobile and 10% grooming.

**Habitat:** A very adaptable animal that occurs in most bush area, agricultural landscapes and urban areas.

**Food:** Grasses, herbs, acacia and eucalypt leaves, ferns and myrtle leaves.

**Breeding:** Breeds between March and June. Most females breed annually after their first year. A single young is born about 18 days after mating and spends 4 or 5 months in the pouch, attached to one of two teats. A further 1 to 2 months are spent suckling and riding on the mothers back until fully weaned.

**Distribution:** Found throughout the State in a wide variety of habitats

**Status:** Partly protected and common.

**Common Ringtail Possum, *Pseudocheirus peregrinus***

**Description:** A medium sized possum that weighs up to a kilogram. The fur is reddish brown above and lighter below. The ears are short with a white patch behind. Easily distinguished by the white tip on the prehensile tail.

**Habits:** A nocturnal animal that has a high pitched twittering call, like a bird's.

**Habitat:** All forest types and favours thick scrub and especially tea tree areas.

**Food:** Leaves, flowers and fruits.

**Breeding:** Builds a spherical nest in tree hollows and the branches of tea tree and other thick scrub. Breeds between April and November with two young usually born. The young stay in the pouch for four months and are weaned at six months. The young can be carried on the back while the mother feeds.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected. This possum was once very common but declined in the 1950's.





Brushtail Possum prints



Brushtail Possum





### Eastern Pygmy Possum, *Cercartetus nanus*

**Description:** A very small possum with pale fawn-grey fur above and lighter below. The prehensile tail is naked for most of its length. The ears are oval shaped and the feet and nose are pinkish. The distinguishing feature between this species and the Little pygmy possum is the overall size, this species weighs up to 30 grams with an overall length of 180 mm, as compared to a weight of 7 grams for the Little pygmy possum and overall length of 130 mm.

**Habits:** Nocturnal climber. Undergoes periods of torpor in the winter months.

**Habitat:** A wide range of habitats from rainforest to sclerophyll forest.

**Food:** Insects, spiders and small lizards. Nectar and pollen from banksias, bottlebrush and eucalypts.

**Breeding:** The nest is lined with shredded bark and constructed in very small tree holes or forks in trees.

**Distribution:** Tasmania and Southeast Australia.

**Status:** Wholly protected.

### Little Pygmy Possum, *Cercartetus lepidus*

**Description:** A very small animal with soft pale fawn coloured fur above and light grey below. This is the smallest possum and weighs only 7 grams. It has large eyes and a prehensile tail.

**Habits:** A nocturnal animal that undergoes periods of torpor (hibernation) in winter when food is scarce. Spends most time in the lower branches and understorey vegetation and generally nests in tree hollows.

**Habitat:** All forest types except rainforest and favours dry sclerophyll forest, which is common in the Dorset region.

**Food:** Insects, spiders and small lizards and possibly nectar, blossom and fruits.

**Breeding:** Builds a nest in tree hollows lined with bark. The young are born in spring and early summer with up to four in a litter. The young are either left in the nest or carried on the mothers back after six weeks. The young mature after three months.

**Distribution:** Tasmania and Southeast Australia. Most common in the dry forests and heathlands in the east of Tasmania.

**Status:** Wholly protected and affected by the clearing of old growth native forest.





Drawing by Isabel Gibb

## RED FOX THREAT

Many of the animals in these pages will be lost if foxes become well-established in Tasmania. Foxes are responsible for the extinction of many of the small-medium sized mammals on the mainland, some of which, like bettongs and eastern barred bandicoots, are still currently secure in Tasmania.

The fox is a great threat to Tasmanian native wildlife and to agriculture.

**Report all fox sightings or signs to the Fox Eradication Program hotline on 1300 369 688 (1300 FOX OUT)**

Find out more in section 6.3.2 and at [www.dpipwe.tas.gov.au/fox](http://www.dpipwe.tas.gov.au/fox).



**Bennetts Wallaby, *Macropus rufogriseus***

**Description:** The Bennetts Wallaby has soft thick fur, which is dark grey above and paler on the belly. The neck area is a reddish-brown colour. The distinguishing feature apart from other wallabies in the State is the black nose and paws. Males can reach 20 kilograms and stand 1.5 metres tall.

**Habits:** Mostly active and feeds at night but can be seen around dusk. They lead a solitary life but feed in groups.

**Habitat:** Prefers open forests, heathland and sedgeland areas. Rests during the day in dense patches of bush.

**Food:** Grasses and herbs.

**Breeding:** Young are born in the summer and autumn months with the majority of females giving birth in late summer. The gestation period is 30 days with the joey remaining in the pouch for nine months and weaned at 12-17 months.

**Distribution:** Found throughout Tasmania and the Bass Strait islands.

**Status:** Partly protected and common.

**Tasmanian Pademelon, *Thylogale billardierii***

**Description:** Dense fur that is dark to grey brown in colour above and reddish brown below. Males are larger than the females.

**Habits:** Active in cooler periods of the day and mostly seen during the night.

**Habitat:** Mostly occurs in areas where dense vegetation provides shelter during the day.

**Food:** Grasses, herbs and shrubs.

**Breeding:** Breeds in winter usually and the single young remain in the pouch for six months. Breeding can occur throughout the year in favourable conditions.

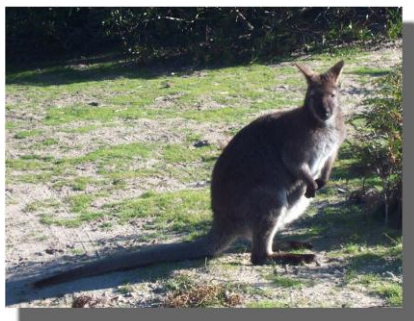
**Distribution:** Prefer the wetter areas in the region where food resources and sheltering habitat is available.

**Status:** Partly protected and very common.

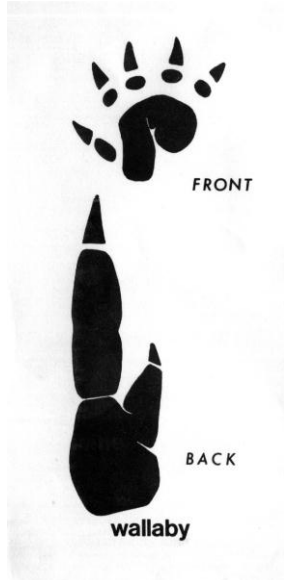


Tasmanian pademelon and hind print





Bennett's Wallaby



Bennett's Wallaby hind and fore print



## Forester Kangaroo, *Macropus giganteus*

**Description:** The largest marsupial in Tasmania. Males can reach over 60 kilograms and stand two metres tall. The fur is grey to a light brownish grey and they have large ears. Distinguishable from other kangaroo species in Tasmania purely by their large size.

**Habits:** Active in the evenings and at night. They are social animals and are often found in family groups of about four individuals. They can congregate into large groups of up to fifty at times.

**Habitat:** Found in dry sclerophyll forests, woodlands, open grassy plains and heathlands in the northeast and midlands areas. The Forester Kangaroo once occurred in an area half the size of Tasmania and is now reduced to about 10% of its former range.

**Food:** Grasses.

**Breeding:** Breeds mainly in summer with a single young born after a gestation period of 36 days which remains in the pouch for ten months. Weaning occurs at about eighteen months.

**Distribution:** Natural populations occur in the Northeast, Ross and the Nile areas of the midlands. Translocated populations exist on Maria Island, Three Hummock Island, Kempton and Narawntapu National Park.

**Status:** Wholly protected and range now depleted by 90% since European settlement.





Forester Kangaroo



### Long-nosed Potoroo, *Potorous tridactylus*

**Description:** Potoroos are smaller (up to 1.4 kg; size of small rabbit) than the Tasmanian pademelon (up to 7 kg). Pademelons are sometimes mistakenly called potoroos. The long tapering (almost “Roman”) nose and short rounded ears distinguishes a potoroo from a pademelon. Some individuals have a white tip on the relatively short tail. The back fur is red-brown to grey in colour and paler on the belly.

**Habits:** Active at night, but can be seen at dusk. It hops on hind legs when moving fast

**Habitat:** Found in sclerophyll forest, heathland and wet areas, which provide thick ground cover for day resting. They prefer areas with sandy soils where they dig for food.

**Food:** Roots, tubers, fungi, insects and soil invertebrates.

**Breeding:** Two breeding seasons, one in winter/early spring and late summer. A single young is born and remains in the pouch for four months. Gestation is 38 days and the young are weaned at about 6 months.

**Distribution:** Tasmania and Bass Strait islands in suitable habitat. Also occurs on mainland Australia.

**Status:** Wholly protected.

### Tasmanian Bettong, *Bettongia gaimardi*

**Description:** Bettongs (up to 2kg) are slightly larger than potoroos, but still much smaller than pademelons, and paler in colour; brown-grey above and white below. The tail of the bettong is long and generally has a white tip.

**Habits:** Nocturnal and build a nest in bushes or under fallen trees.

**Habitat:** The bettong prefers dry open eucalypt forests and woodlands, especially on infertile soils.

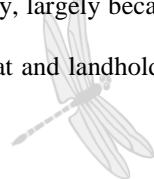
It is nocturnal, spending the hours of daylight in a domed, camouflaged nest of grass. The bettong collects suitable nesting material and carries it back to the nest site in its prehensile tail.

**Food:** The main diet is fruiting bodies of underground fungi, but also eats seeds, mushrooms, insects and gum from acacia shrubs.

**Breeding:** There is no specific breeding season with animals capable of giving birth throughout the year. Gestation is 21 days. Pouch life is about 3.5 months and weaning occurs at 5 - 6 months. Sexually maturity is reached at about 12 months of age. Longevity in the wild is 3-5 years

**Distribution:** The bettong is only found in the eastern half of Tasmania. It became extinct on the mainland in the early decades of the twentieth century, largely because of predation by foxes and large-scale land clearance.

**Status:** The bettong remains moderately common in suitable habitat and landholders in the region sometimes report high numbers of bettongs.

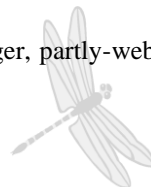




Long-nosed Potoroo prints



Water Rat tracks show small front feet with four long toes and larger, partly-webbed hind feet. (Photograph by A. Povey)





### Water Rat, *Hydromys chrysogaster*

**Description:** A medium sized animal that weighs up to 600 grams. Beautiful fur is thick and glossy, dark brown above and a golden orange below. The tail is thick and usually has a white tip. Partly webbed hind feet.

**Habits:** A nocturnal animal that is also active at twilight. Constructs tunnels in the banks of watercourses.

**Habitat:** Near watercourses and other water bodies. This species can live in either fresh or salt water and is found in estuaries and offshore islands in the sea.

**Food:** Aquatic insects, fish, crustaceans, small mammals and birds. **Breeding:** Breeds throughout the year, but mostly in spring and summer. A total of five litters of three to four young can be produced each year. The young are suckled for four weeks and then remain with the mother for a further four weeks.

**Distribution:** Tasmania and mainland Australia.

**Status:** Partly protected. This species was once trapped for its thick soft fur.

### Velvet-furred (Swamp) Rat, *Rattus lutreolus*

**Description:** A medium sized rodent that weighs up to 120 grams. This species is similar in size to the introduced Black Rat and Brown Rat but can be distinguished by a tail length much shorter than the head and body length (head and body 160 mm, tail length 110 mm), and its dark hindfeet. The fur is a dark grey-brown above and paler below. The tail is dark grey and scaly.

**Habits:** A mostly nocturnal animal that constructs tunnels beneath dense vegetation.

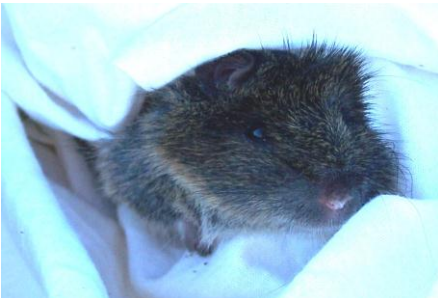
**Habitat:** Widespread in a range of habitats.

**Food:** Grasses, sedges, ferns, fungi and insects.

**Breeding:** Nests are built in burrows or grass tussocks. Breeds from early spring to autumn with three to five young in each litter, with two litters possible in each year. The young mature at four weeks.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected. This species is common and probably the most abundant and widespread native mammal in Tasmania.



Velvet-furred Rat being held in a sack by a researcher.

(Photograph by Emma Williams.)



### Long-tailed Mouse, *Pseudomys higginsii*

**Description:** A small animal with soft dark grey fur above and paler below. This species weighs up to 70 grams and has a long tail, which is grey above, and white below.

**Habits:** A mostly nocturnal animal that makes runways below forest debris and scree slopes.

**Habitat:** All forest types and favours the wetter areas of the State including sub-alpine scree areas.

**Food:** Fungi, insects, spiders, seeds and fruits.

**Breeding:** Builds its nest in tree stumps or log hollows. Breeding occurs from late spring to late summer. Up to two litters of three to four young can be produced each year. The young remain with the mother until mature at three months old.

**Distribution:** Tasmania only.

**Status:** Wholly protected.

### New Holland Mouse, *Pseudomys novaehollandiae*

**Description:** A small mouse about the size of a house mouse. The fur is a grey-brown above and grey-white below. The tail is brown above and white below. The species can be distinguished from the house mouse by its heavier build and large ears and eyes. The best way to distinguish the two species is to smell the animal - the house mouse smells musky and the New Holland Mouse has no pungent musky smell.

**Habits:** A nocturnal animal.

**Habitat:** Dry heathlands and open forest in the northeast on sandy soils.

**Food:** Seeds, insects, flowers, leaves and fungi. This species moves on to recently burnt heathlands in search of food.

**Breeding:** Nests in burrows and breeds in late winter to early spring. The litter size varies from two to six and the young mature at seven weeks.

**Distribution:** Northeast Tasmania, Flinders Island and southeast mainland Australia.

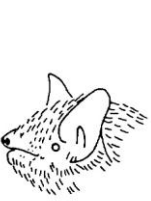
**Status:** Wholly protected. This species is listed as threatened in Tasmania.



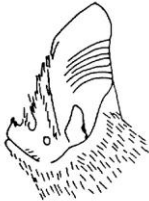
### 4.1.1 Bats of Tasmania

Insectivorous bats are tiny, but burn an enormous amount of energy. To fuel this, an average 8 gram Tasmanian bat could eat 4000 mosquitoes in a night! In agricultural areas, most of the insects consumed may be pest species. There are 8 species of insectivorous bats in Tasmania but no fruitbats. Bats need places to roost during the day and to hibernate through winter – hollows in old trees, flakes of bark, and sometimes house eaves can shelter a small colony of bats.

Facial profiles of four genera



Eptesicus



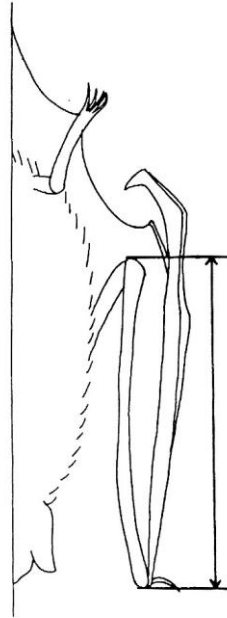
Nyctophilus



Chalinolobus



Falsistrellus



Forearm length measurement

Source: Tasmanian Conservation Trust (used with their permission).



### Greater Long-eared Bat, *Nyctophilus timoriensis*

**Description:** Large ears joined over the head. Fur dark brown above and lighter brown below.

Forearm length: 43.5-48 mm.

**Habits:** Nocturnal and hibernates from late autumn to early spring.

**Habitat:** A wide range of habitats where it roosts in trees during the day. Often roosts with others of the same species.

**Food:** Insects that it collects off vegetation and the forest floor. It feeds by flying slowly close to the ground and amongst undergrowth.

**Breeding:** The young are born in late spring or early summer with a litter of up to two. The young are weaned by mid-summer.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected.

### Lesser Long-eared Bat, *Nyctophilus geoffroyi*

**Description:** Large ears joined above the forehead. Fur light grey-brown above and paler below. Has a well developed Y-shaped nose leaf.

Forearm length: 36.5-42.6 mm.

**Habits:** Nocturnal and hibernates from late autumn to early spring.

**Habitat:** A wide range of habitats where it roosts in trees during the day. Often roosts with others of the same species. Has also been recorded foraging and roosting in towns.

**Food:** Insects that it collects on the wing close to the forest floor.

**Breeding:** The young are born in late spring or early summer with a litter of up to two. The young are weaned by mid-summer.

**Status:** Wholly protected.

### Gould's Wattled Bat, *Chalinolobus gouldii*

**Description:** Small ears with fleshy lobes at the base of the ear and corner of the mouth. Fur dark brown trending to black on the head and shoulders, lighter below.

Forearm length: 44-48.7 mm.

**Habits:** Nocturnal and hibernates from late autumn to early spring.

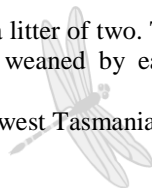
**Habitat:** A wide range of habitats where it roosts in trees during the day. Often roosts with others of the same species.

**Food:** Insects that it collects on the wing in the upper canopy of trees or above the canopy.

**Breeding:** The young are born in late spring or early summer with a litter of two. The young attach to the nipples while the mother is flying and are weaned by early February.

**Distribution:** Tasmania and mainland Australia. Not found in southwest Tasmania.

**Status:** Wholly protected.



### Chocolate Wattled Bat, *Chalinolobus morio*

**Description:** Small ears with lobes not as conspicuous as the Gould's wattled bat. Fur chocolate brown coloured all over the body.

Forearm length: 36.2-43 mm.

**Habits:** Nocturnal and hibernates in winter for shorter periods than other Tasmanian bats.

**Habitat:** A wide range of habitats including rainforest.

**Food:** Insects that it collects on the wing in the middle canopy layers and understorey.

**Breeding:** The young are born in late spring or early summer with a litter of one. The young are weaned by February.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected.

### Tasmanian Pipistrelle, *Falsistrellus tasmaniensis*

**Description:** Long and pointed ears with a notch at the top. Fur reddish-brown above and a paler brown below.

Forearm length: 46-52.2 mm.

**Habits:** Nocturnal and hibernates from late autumn to early spring. Flies fast and direct.

**Habitat:** A wide range of habitats and roosts in urban environments.

**Food:** Insects, mainly beetles. Feeds in the upper canopy layers of forest.

**Breeding:** The single young is born in late spring or early summer. The young are weaned by early February.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected.

### King River Eptesicus, *Eptesicus regulus*

**Description:** Medium sized ears. Fur reddish-brown above and lighter brown below.

Forearm length: 31-35.6 mm.

**Habits:** Nocturnal and roosts in trees communally.

**Habitat:** A wide range of habitats.

**Food:** Insects collected in the upper layers of forest understorey.

**Breeding:** The single young is born in late spring or early summer. The young are weaned by mid February.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected.



**Little Forest Eptesicus, *Eptesicus vulturinus***

**Description:** Medium sized ears. The smallest Tasmanian bat. Fur mid-dark grey above and grey with distinct pale tips below.

Forearm length: 27.2-31.7 mm.

**Habits:** Nocturnal and roosts communally.

**Habitat:** A wide range of habitats and favours lowlands.

**Food:** Insects collected from the top of the forest canopy.

**Breeding:** The single young is born in late spring or early summer. The young are weaned by mid February.

**Distribution:** Tasmania and mainland Australia.

**Status:** Wholly protected.

**Large Forest Eptesicus, *Eptesicus sagittula***

**Description:** Medium sized ears. Fur dark brown or almost black above and paler below.

Forearm length: 32-37 mm.

**Habits:** Nocturnal and roosts in trees communally.

**Habitat:** A wide range of habitats.

**Food:** Insects collected in the middle layers of forest between the upper canopy and understorey.

**Breeding:** The single young is born in late spring or early summer. The young are weaned by mid February.

**Status:** Wholly protected.



## 4.2 Birds

The Dorset region has a wide variety of habitats for land and sea birds, with most of the Tasmanian species found in this region. The reader is referred to the many excellent bird field guides for identifying birds. Over 200 species are resident or regularly visit Tasmania, and 12 of these are endemic (found nowhere else). Below is a Tasmanian ticklist, excluding rarely-sighted species.

\* = endemic

\*\* = listed as rare or threatened

- |                                                     |                                                      |
|-----------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> Hoary-headed Grebe         | <input type="checkbox"/> Chestnut Teal               |
| <input type="checkbox"/> Australasian Grebe         | <input type="checkbox"/> Grey Teal                   |
| <input type="checkbox"/> Great-crested Grebe **     | <input type="checkbox"/> Australasian Shoveler       |
| <input type="checkbox"/> Little (Fairy) Penguin     | <input type="checkbox"/> Pacific Black Duck          |
| <input type="checkbox"/> Black-browed Albatross     | <input type="checkbox"/> Musk Duck                   |
| <input type="checkbox"/> Grey-headed Albatross      | <input type="checkbox"/> Cape Barren Goose           |
| <input type="checkbox"/> Shy Albatross **           | <input type="checkbox"/> Australian Wood Duck        |
| <input type="checkbox"/> Wandering Albatross        | <input type="checkbox"/> Black Swan                  |
| <input type="checkbox"/> Light-mantled Albatross ** | <input type="checkbox"/> Blue-billed Duck            |
| <input type="checkbox"/> Cape Petrel                | <input type="checkbox"/> Australian Shelduck         |
| <input type="checkbox"/> Blue Petrel                | <input type="checkbox"/> Collared Sparrowhawk        |
| <input type="checkbox"/> Southern Giant-petrel      | <input type="checkbox"/> Brown Goshawk               |
| <input type="checkbox"/> Northern Giant-petrel      | <input type="checkbox"/> Grey Goshawk                |
| <input type="checkbox"/> Antarctic Prion            | <input type="checkbox"/> Swamp Harrier               |
| <input type="checkbox"/> Fairy Prion                | <input type="checkbox"/> Whistling Kite              |
| <input type="checkbox"/> White-headed Petrel        | <input type="checkbox"/> White-breasted Sea Eagle ** |
| <input type="checkbox"/> Soft-plumed Petrel         | <input type="checkbox"/> Wedge-tailed Eagle **       |
| <input type="checkbox"/> Sooty Shearwater           | <input type="checkbox"/> Brown Falcon                |
| <input type="checkbox"/> Short-tailed Shearwater    | <input type="checkbox"/> Australian Kestrel          |
| <input type="checkbox"/> Black-bellied Storm-petrel | <input type="checkbox"/> Australian Hobby            |
| <input type="checkbox"/> Grey-backed Storm-petrel   | <input type="checkbox"/> Peregrine Falcon            |
| <input type="checkbox"/> White-faced Storm-petrel   | <input type="checkbox"/> Painted Button-quail        |
| <input type="checkbox"/> Common Diving-petrel       | <input type="checkbox"/> Brown Quail                 |
| <input type="checkbox"/> Australian Pelican         | <input type="checkbox"/> Stubble Quail               |
| <input type="checkbox"/> Australasian Gannet        | <input type="checkbox"/> Eurasian Coot               |
| <input type="checkbox"/> Black-faced Cormorant      | <input type="checkbox"/> Tasmanian Native Hen *      |
| <input type="checkbox"/> Great Cormorant            | <input type="checkbox"/> Dusky Moorhen               |
| <input type="checkbox"/> Little Pied Cormorant      | <input type="checkbox"/> Purple Swamphen             |
| <input type="checkbox"/> Little Black Cormorant     | <input type="checkbox"/> Australian Crake            |
| <input type="checkbox"/> White-faced Heron          | <input type="checkbox"/> Baillons Crake              |
| <input type="checkbox"/> Cattle Egret               | <input type="checkbox"/> Spotless Crake              |
| <input type="checkbox"/> Australasian Bittern       | <input type="checkbox"/> Lewins Rail                 |
| <input type="checkbox"/> Great Egret                | <input type="checkbox"/> Buff-banded Rail            |
| <input type="checkbox"/> Little Egret               | <input type="checkbox"/> Pied Oystercatcher          |
| <input type="checkbox"/> Intermediate Egret         | <input type="checkbox"/> Sooty Oystercatcher         |
| <input type="checkbox"/> Nankeen Night Heron        | <input type="checkbox"/> Double-banded Plover        |



- |                                                  |                                                       |
|--------------------------------------------------|-------------------------------------------------------|
| <input type="checkbox"/> Black-fronted Dotterel  | <input type="checkbox"/> Common Bronzewing            |
| <input type="checkbox"/> Lesser sand Plover      | <input type="checkbox"/> Brush Bronzewing             |
| <input type="checkbox"/> Hooded Plover           | <input type="checkbox"/> Sulphur-crested Cockatoo     |
| <input type="checkbox"/> Red-capped Plover       | <input type="checkbox"/> Galah                        |
| <input type="checkbox"/> Red-kneed Dotterel      | <input type="checkbox"/> Yellow-tailed Black Cockatoo |
| <input type="checkbox"/> Pacific Golden Plover   | <input type="checkbox"/> Musk Lorikeet                |
| <input type="checkbox"/> Grey Plover             | <input type="checkbox"/> Swift Parrot                 |
| <input type="checkbox"/> Masked Lapwing          | <input type="checkbox"/> Orange-bellied Parrot **     |
| <input type="checkbox"/> Banded Lapwing          | <input type="checkbox"/> Blue-winged Parrot           |
| <input type="checkbox"/> Ruddy Turnstone         | <input type="checkbox"/> Ground Parrot **             |
| <input type="checkbox"/> Sharp-tailed Sandpiper  | <input type="checkbox"/> Green Rosella *              |
| <input type="checkbox"/> Sanderling              | <input type="checkbox"/> Eastern Rosella              |
| <input type="checkbox"/> Dunlin                  | <input type="checkbox"/> Horsfields Bronze-cuckoo     |
| <input type="checkbox"/> Red Knot                | <input type="checkbox"/> Shining Bronze-cuckoo        |
| <input type="checkbox"/> Curlew Sandpiper        | <input type="checkbox"/> Pallid Cuckoo                |
| <input type="checkbox"/> Pectoral Sandpiper      | <input type="checkbox"/> Fan-tailed Cuckoo            |
| <input type="checkbox"/> Little Stint            | <input type="checkbox"/> Southern Boobook             |
| <input type="checkbox"/> Red-necked Stint        | <input type="checkbox"/> Masked Owl                   |
| <input type="checkbox"/> Great Knot              | <input type="checkbox"/> Tawny Frogmouth              |
| <input type="checkbox"/> Lathams Snipe           | <input type="checkbox"/> Australian Owlet-nightjar    |
| <input type="checkbox"/> Bar-tailed Godwit       | <input type="checkbox"/> Fork-tailed Swift            |
| <input type="checkbox"/> Black-tailed Godwit     | <input type="checkbox"/> White-throated Needletail    |
| <input type="checkbox"/> Eastern Curlew          | <input type="checkbox"/> Azure Kingfisher             |
| <input type="checkbox"/> Little Curlew           | <input type="checkbox"/> Fairy Martin                 |
| <input type="checkbox"/> Whimbrel                | <input type="checkbox"/> Tree Martin                  |
| <input type="checkbox"/> Grey-tailed Tattler     | <input type="checkbox"/> Welcome Swallow              |
| <input type="checkbox"/> Wood Sandpiper          | <input type="checkbox"/> Richards Pipit               |
| <input type="checkbox"/> Common Sandpiper        | <input type="checkbox"/> Black-faced Cuckoo-shrike    |
| <input type="checkbox"/> Common Greenshank       | <input type="checkbox"/> Bassian Thrush               |
| <input type="checkbox"/> Marsh Sandpiper         | <input type="checkbox"/> Dusky Robin *                |
| <input type="checkbox"/> Terek Sandpiper         | <input type="checkbox"/> Pink Robin                   |
| <input type="checkbox"/> Great Skua              | <input type="checkbox"/> Flame Robin                  |
| <input type="checkbox"/> Arctic Jaeger           | <input type="checkbox"/> Scarlet Robin                |
| <input type="checkbox"/> Pomarine Jaeger         | <input type="checkbox"/> Olive Whistler               |
| <input type="checkbox"/> White-winged Black Tern | <input type="checkbox"/> Golden Whistler              |
| <input type="checkbox"/> Caspian Tern            | <input type="checkbox"/> Grey Shrike-thrush           |
| <input type="checkbox"/> Kelp Gull               | <input type="checkbox"/> Satin Flycatcher             |
| <input type="checkbox"/> Silver Gull             | <input type="checkbox"/> Grey Fantail                 |
| <input type="checkbox"/> Pacific Gull            | <input type="checkbox"/> Spotted Quail-thrush         |
| <input type="checkbox"/> Little Tern             | <input type="checkbox"/> Clamorous Reed Warbler       |
| <input type="checkbox"/> Crested Tern            | <input type="checkbox"/> Golden-headed Cisticola      |
| <input type="checkbox"/> Fairy Tern              | <input type="checkbox"/> Little Grassbird             |
| <input type="checkbox"/> White-fronted Tern      | <input type="checkbox"/> Superb Fairy-wren            |
| <input type="checkbox"/> Antarctic Tern          | <input type="checkbox"/> Southern Emu-wren            |





- Yellow-rumped Thornbill
- Tasmanian Thornbill \*
- Brown Thornbill
- Tasmanian Scrubwren \*
- Striated Fieldwren
- Scrubtit \*
- Eastern Spinebill
- Little Wattlebird
- Yellow Wattlebird \*
- Yellow-throated Honeyeater \*
- Noisy Miner
- Black-headed Honeyeater \*
- Strong-billed Honeyeater \*
- Tawny-crowned Honeyeater
- New Holland Honeyeater
- Crescent Honeyeater
- White-fronted Chat
- Spotted Pardalote
- Forty-spotted Pardalote \* \*\*
- Striated Pardalote
- Silvereye
- Beautiful Firetail
- Dusky Woodswallow
- Grey Butcherbird
- Australian Magpie
- Black Currawong \*
- Grey Currawong
- Little Raven
- Forest Raven

### **Introduced Species**

- Emu
- Mallard
- Mute Swan
- California Quail
- Indian Peafowl
- Common Pheasant
- Weka
- Rock Dove
- Spotted Turtle-dove
- Little Corella
- Long-billed Corella
- Cockatiel
- Budgerigar
- Laughing Kookaburra
- Superb Lyrebird
- Skylark
- Blackbird
- European Greenfinch
- European Goldfinch
- House Sparrow
- Common Starling

The following bird information comes from Sarah Lloyd of Birds Tasmania.

### **4.2.1 Birds on farms**

Apart from the pleasure they give us, research has shown that birds are vital to the health and productivity of farms. Native birds consume large numbers of leaf-eating insects and pasture grubs and are important for the pollination and seed dispersal of many plants. They are also good indicators of the health of native ecosystems. A farm that has a rich diversity of native birds will have a diversity of other native wildlife such as mammals, reptiles, amphibians and invertebrates – all of which have important functions in a healthy landscape.



## How to maintain a diversity of bird species on the farm.

- Any remnant vegetation on the farm will provide habitat for some native birds. Fencing to exclude stock will enhance its chances of survival and give grasses, herbs, shrubs and trees a chance to recover. (The effect can be dramatic!) Streams and waterways are important for wildlife. Riparian vegetation provides shelter for fauna and stabilises streambanks. It also keeps the water cool and shaded and provides nutrients for fish and other aquatic life.
- Large old trees – dead or alive – provide birds with nest hollows, other nest sites and places to forage. Trees take over 80 years to form suitable hollows so are essentially irreplaceable in our lifetime. Many birds also require a vantage point to survey the landscape for potential predators or a high perch from which to sing to attract a mate. Fencing around big live trees will prolong their life and allow replacement seedlings to flourish.
- When leaf litter, fallen branches and logs are left to break down to release their bounty of nutrients, hundreds of species of insects feed on the fungi that speed up this process. As most birds eat insects at some stage in their life, this organic material is essential for their survival.
- Rocks and logs provide shelter for insects and seedlings and a warm spot on which skinks can bask.
- A mixture of local native trees and shrubs – preferably of various ages - has the structural complexity that provides places to forage, nest sites and places to shelter for many birds. Seasonal variation in flowering and fruiting times ensures a continuous supply of food for many species.
- Many birds use spiders' webs in the construction of their nests. Spiders are an important component of any ecosystem – some feed on seed-eating insects that are responsible for poor germination. Small web-building spiders rely on the intricate architecture of fallen twigs and leaves in the understorey to build and maintain their snares.
- Large patches of native vegetation are more viable than small ones, and blocks (rather than linear strips) lessen the 'edge effect' which favours weeds. Ideally corridors at least 100m wide link remnant bush. This provides birds with the protection they need to establish their social systems and breed in safety.

Tawny Frogmouths eat many insects, mice and other small animals at night. (Photograph by A. Povey.)



**Birds that depend on large old trees**

White-faced Heron  
 White-bellied Sea-eagle  
 Brown Goshawk  
 Grey Goshawk  
 Wedge-tailed Eagle  
 Brown Falcon  
 Nankeen Kestrel  
 Australian Hobby  
 Tawny Frogmouth  
 Yellow Wattlebird  
 Noisy Miner  
 Strong-billed Honeyeater  
 Black-headed Honeyeater  
 Satin Flycatcher  
 Black-faced Cuckoo-shrike  
 Dusky Woodswallow  
 Grey Butcherbird  
 Australian Magpie  
 Black Currawong  
 Grey Currawong  
 Forest Raven

**Birds that use a tree hollow or cavity**

Australian Shelduck  
 Australian Wood Duck  
 Yellow-tailed Black-Cockatoo  
 Sulphur-Crested Cockatoo  
 Musk Lorikeet  
 Swift Parrot  
 Green Rosella  
 Eastern Rosella  
 Blue-winged Parrot  
 Southern Boobook  
 Masked Owl  
 Australian Owlet-nightjar  
 Laughing Kookaburra  
 Forty-spotted Pardalote  
 Striated Pardalote  
 Flame Robin  
 Dusky Robin  
 Grey Shrike-thrush  
 Dusky Woodswallow  
 Tree Martin

**Birds that use understorey shrubs or small trees**

Common Bronzewing  
 Brush Bronzewing  
 Superb Fairy-wren  
 Southern Emu-wren  
 Tasmanian Scrubwren  
 Scrubtit  
 Striated Fieldwren  
 Brown Thornbill  
 Tasmanian Thornbill  
 Little Wattlebird  
 Yellow-throated Honeyeater  
 Black-headed Honeyeater  
 Crescent Honeyeater  
 New Holland Honeyeater  
 Tawny-crowned Honeyeater  
 Eastern Spinebill  
 White-fronted Chat  
 Scarlet Robin  
 Flame Robin  
 Pink Robin  
 Dusky Robin  
 Olive Whistler  
 Golden Whistler  
 Grey Shrike-thrush  
 Grey Fantail  
 Grey Butcherbird  
 Beautiful Firetail  
 Silvereye  
 Bassian Thrush

**Parasitic nesters**

Pallid Cuckoo  
 Fan-tailed Cuckoo  
 Horsfield's Bronze-Cuckoo  
 Shining Bronze-Cuckoo



**Water and marsh birds**

Musk Duck  
 Black Swan  
 Australian Shelduck  
 Australian Wood Duck  
 Pacific Black Duck  
 Australasian Shoveler  
 Eurasian Coot  
 Little Grassbird  
 Hoary-headed Grebe  
 White-faced Heron  
 Cattle Egret  
 Lewin's Rail  
 Australian Spotted Crake  
 Spotless Crake  
 Dusky Moorhen  
 Purple Swamphen

**Ground nesting birds**

Tasmanian Native-hen  
 Painted Button-quail  
 Black-fronted Dotterel  
 Masked Lapwing  
 Banded Lapwing  
 Ground Parrot  
 Superb Fairy-wren  
 Spotted Pardalote  
 Striated Pardalote  
 Tasmanian Scrubwren  
 Spotted Quail-thrush  
 Richard's Pipit

**4.2.2 Birds on beaches**

Beach-nesting birds are under threat, with some species having trouble raising young successfully, and numbers declining. Hooded Plovers, Red-capped Plovers, Pied and Sooty Oystercatchers and threatened Little and Fairy Terns nest directly on the beach, above the high tide mark and in the dunes. They nest September-March, which unfortunately is also the busiest time of year on our beaches. Their simple nest-scrapes in the sand and well-camouflaged eggs are very hard to see, and therefore at great risk of being stepped on. With proximity of people, dogs or vehicles, adult birds abandon the nest to keep it hidden, and will not return until the disturbance ends, during which time the eggs may succumb to heat or predation. The tiny chicks cannot fly from danger for their first five weeks. Frightened chicks will crouch and hide, “playing dead”, and may be stepped on.

People, unleashed dogs, vehicles and horses are the greatest threat to these birds.

**Ways to help beach-nesting birds**

- Keep on the wet sand near the water's edge, and preferably visit at low tide. Nests are located above the high-tide mark.
- Please keep off the dunes.
- Walk your dog on a leash, or instead visit a non-ocean beach or park where dogs are allowed.
- Don't litter the beach. Fishing line can entangle wildlife, and rubbish can attract nest predators.

## 4.3 Amphibians

The Dorset region has nine of the eleven frog species in Tasmania. The Dorset region is a stronghold for two threatened species\*\*, the Green and Gold Bell Frog and the Striped Marsh Frog. Calls are an easy way of identifying frogs in your area. An excellent CD of calls and natural history of frogs is available from the Central North Field Naturalists (<http://www.disjunctnaturalists.com>).

Common Name	Scientific Name	Body length / Call	Distinctive features
Eastern Banjo Frog	<i>Lymnodynastes dumerili</i>	65mm/ <b>banjo like bong</b>	Conspicuous oval gland on thigh. Metatarsal tubercle large and shovel-like. Back pale brown and chocolate.
Brown Tree Frog	<i>Litoria ewingi</i>	45mm/ <b>ree-ree-ree-ree</b>	Round metatarsal tubercle. No head fold. Orange patches on thighs.
**Green and Gold Bell Frog	<i>Litoria raniformis</i>	90mm/ <b>craw-aw-aw-awk</b>	Fingers wider than finger pads. Prominent tympanum. Pointed snout. Green and gold colouration with blue inside thighs.
Spotted Marsh Frog	<i>Lymnodynastes tasmaniensis</i>	45mm/ <b>ick-ick like two stones been struck together</b>	Prominent flap of skin over cloaca. Back usually olive green with darker spots.
Smooth Froglet	<i>Geocrinia laevis</i>	30mm/ <b>creeeek-crek-crek-crek</b>	Sole of foot smooth. Pink colouration on flanks and thighs.
Common Froglet	<i>Crinia signifera</i>	30mm/ <b>craak-craak-craak</b>	Ventral skin surface grainy, with black blotches.
Tasmanian Froglet	<i>Crinia tasmaniensis</i>	30mm/ <b>baa-aa-aaaa</b>	Conspicuous red patches on flanks and thighs.
Southern Toadlet	<i>Pseudophryne semimarmorata</i>	35mm/ <b>creg-uk, creg-uk</b>	Prominent tubercles on soles of feet. Posterior abdomen and underside of thighs orange.
**Striped Marsh Frog	<i>Limnodynastes peronii</i>	70mm/ <b>whuck</b>	Back with brown and tallow stripes.

### 4.3.1 Field key to the frogs of the Dorset region

**1a** Discs on tips of fingers and toes: Go to **2**

**1b** Fingers and toes are pointed and lack discs: Go to **3**

**2a** Length up to 90 mm; Fingers webbed, toes partly webbed. Colour green marked gold. Thighs blue, under surface white. Call: long modulating growl followed by a series of grunts. **Green and Gold Bell Frog** *Litoria raniformis*.

**2b** Length up to 40 mm; colour grey or brown with dark stripe down middle of back, orange patches on thighs; under surface pale cream. Call: ree-ree-ree-ree.

**Brown Tree Frog** *Litoria ewingii*

**3a** Length approximately 27-30 mm: Go to **4**

**3b** Length approximately 45-75 mm: Go to **6**

**4a** Tympanum present: Go to **5**

**4b** Tympanum absent: Go to **7**

**5a** Granular skin. Colour brown or grey, usually with ornate markings. Under surface grey, marked with black (sometimes spotted). Call: rapid short grating “Chirp”.

**Common Froglet** *Crinia signifera*

**5b** Granular skin. Colour brown or grey, usually with ornate markings. Under surface grey or black with bright red patch near the thighs. Call: quavering “Bleat”

**Tasmanian Froglet** *Crinia tasmaniensis*

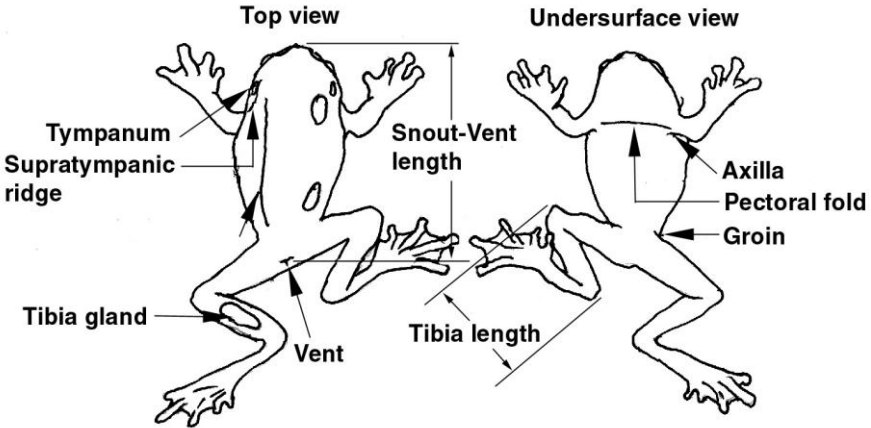
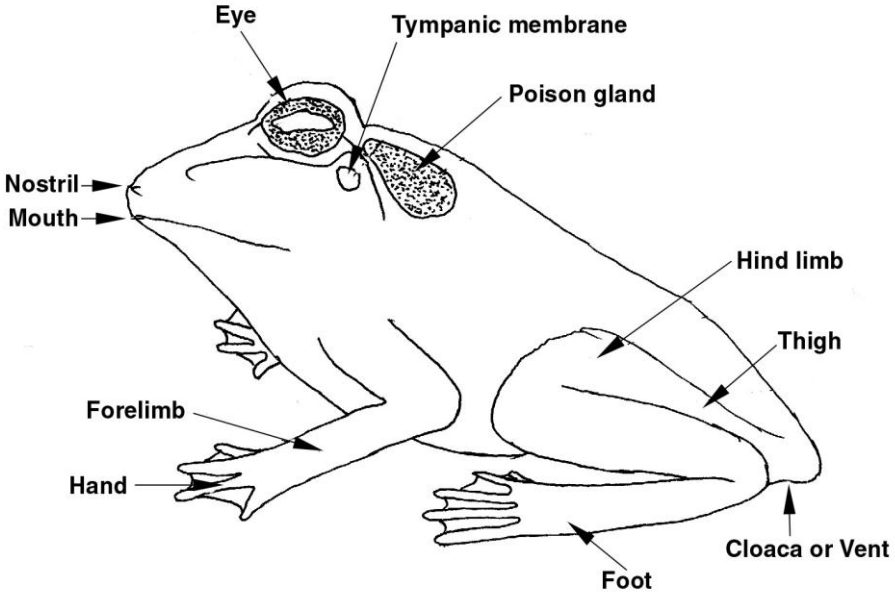
**5c** Smooth skin. Colour slate grey with irregular red or yellow spots. Under surface white marbled black. Thighs pinkish. Call: “Cra-a-a-a-ack, cra-a-a-a-ack, crack, crack,…” **Smooth Froglet** *Geocrinia laevis*

**6a** Length up to 45 mm. Colour yellowish brown to grey with dark oval spots. Yellowish dorsal stripe. Under surface whitish. Call: loud, sharp “Click” like two stones being struck together. **Spotted Marsh Frog** *Limnodynastes tasmaniensis*

**6b** Length up to 70 mm. Colour brownish or olive above with black spots merging into longitudinal stripes. Under surface spotted with brown. Call: soft explosive “Whuck”. **Striped Marsh Frog** *Limnodynastes peronii*

**6c** Length up to 75 mm. Colour brown irregularly marked or spotted. Under surface whitish or lightly spotted with brown or blue. Call: banjo like “Plonk”. **Eastern Banjo Frog** *Limnodynastes dumerili*

**7** Warty skin. Length up to 27 mm. Colour brown to grey spotted with black. Under surface boldly marked with a bluish white and black colour. Thighs bright orange-yellow. Call: harsh grating “Cre-e-ek”. **Southern Toadlet** *Pseudophryne semimarmorata*



## Green and Gold Bell Frog, *Litoria raniformis*

**Description:** Tasmania's largest frog, up to 90 mm long, weighs up to 40 g.

**Habits:** Active during the day and the only Tasmanian frog that basks in the sun.

**Habitat:** Live in or near permanent or temporary bodies of water. They prefer shallow water with diverse vegetation in and around the water body.

**Food:** Invertebrates and other frogs and tadpoles.

**Breeding:** Breeds in summer between September and January. Eggs are laid in a mat that sinks to the bottom.

**Distribution:** Southeastern Australia, in Tasmania they occur in coastal regions in the north, north-east (the stronghold of the species) and the southeast.

**Status:** Listed as vulnerable in Tasmania.



Green and Gold Bell Frog  
Photograph by Jay Wilson



## Brown Tree Frog, *Litoria ewingi*

**Description:** Small frog, up to 45 mm long. Orange patches on thighs.

**Habits:** An agile climber.

**Habitat:** Widespread in a range of habitats and often found in suburban gardens under logs and rocks.

**Breeding:** Breeds year round with the larval stage 4-5 months.

**Distribution:** State wide.

**Status:** Common and widespread.



Brown Tree Frog

## Common Froglet, *Crinia signifera*

**Description:** Small frog, up to 30 mm long. Granular skin. Under-surface grey, with black blotches.

**Habitat:** Widespread in a range of habitats except parts of the northwest and some offshore islands.

**Breeding:** Breeds May to December. Larval stage 1.5-3 months.

**Distribution:** Statewide.

**Status:** Common and widespread.

Common Froglet

Photograph by Anna Povey.





**Tasmanian Froglet,**  
*Crinia tasmaniensis*

**Description:** Small frog, up to 30 mm long. Granular skin. Colour brown or grey with ornate markings. Under surface grey or black. Bright red patch near thighs.

**Habitat:** Widespread in a range of habitats except parts of the east coast and offshore islands.

**Breeding:** Breeds August to December. Larval stage 3-4 months.

**Distribution:** Nearly state-wide including highland areas.

**Status:** Common and widespread, found only in Tasmania.



**Smooth Froglet, *Geocrinia laevis***

**Description:** Small frog, up to 30 mm long. Undersurface white marbled black. Thighs pinkish.

**Habitat:** Wet and dry forests.

**Breeding:** Breeds February to April. Larval stage 6-8 months.

**Distribution:** North coast and midlands.



**Spotted Marsh Frog,**  
*Limnodynastes tasmaniensis*

**Description:** Medium-sized frog, up to 45 mm long. Yellowish to reddish dorsal stripe, undersurface whitish.

**Habitat:** Widespread in a range of habitats from wetlands to open forest. Most common in lowland areas.

**Breeding:** Breeds October to December. Larval stage 4-5 months.

**Distribution:** Eastern half of State.



**Striped Marsh Frog,**  
*Limnodynastes peroni*

**Description:** Large frog, up to 70 mm long. Undersurface spotted brown.

**Habitat:** Swamps and weedy lagoons.

**Breeding:** Breeds November with the larval stage 9-11 months.

**Distribution:** Restricted to the northwest and north east of the State.

**Status:** Uncommon.



**Eastern Banjo Frog,**  
*Limnodynastes dumerili*

**Description:** Large sized frog, up to 65 mm long. Colour brown irregularly marked or spotted. Under surface whitish or lightly spotted with brown or blue.

**Habitat:** Dams, lagoons and coastal wetlands.

**Breeding:** Breeds October to February with the larval stage 12-15 months.

**Distribution:** North, northwest and eastern half of the State.



Banjo Frog

**Southern Toadlet,**  
*Pseudophryne semimarmorata*

**Description:** Small frog, up to 35 mm long. Colour brown to grey, spotted with black. Under surface boldly marked with a bluish white and black colour. Thighs bright orange-yellow.

**Habitat:** Dry forests, breeds in temporary pools.

**Breeding:** Breeds March to April with the larval stage 6-8 months.

**Distribution:** Eastern half of the State.



Southern Toadlet (Source:DPIW)



Drawing by Nathan Saunders



## 4.4 Reptiles

The reptiles in the Dorset region consist of the three Tasmanian snakes, one dragon and twelve of the seventeen skinks (Blue-Tongues are a large skink). Many of Tasmania's reptiles have adapted to the cold by giving birth to live young, rather than laying eggs.

Common Name	Scientific Name
SNAKES	
Lowland Copperhead Snake	<i>Austrelaps superbus</i>
White-lipped Snake	<i>Drysdalia coronoides</i>
Tiger Snake	<i>Notechis ater</i>
LIZARDS	
Three-Lined Skink	<i>Acritoscincus (Bassiana) duperreyi</i>
She-oak Skink	<i>Cyclodomorphus casuarinae</i>
White's Skink	<i>Egernia whitii</i>
Delicate Skink	<i>Lampropholis delicata</i>
Bougainville's Skink	<i>Lerista bougainvillii</i>
Metallic Skink	<i>Niveoscincus metallicus</i>
Spotted Skink	<i>Niveoscincus ocellata</i>
Tasmanian Tree Skink	<i>Niveoscincus pretiosus</i>
Southern Grass Skink	<i>Pseudomoia entrecasteauxii</i>
Tussock Skink	<i>Pseudomoia pagenstecheri</i>
Glossy Grass Skink	<i>Pseudomoia rawlinsoni</i>
Blotched Blue-tongue Lizard	<i>Tilqua nigrolutea</i>
Mountain Dragon	<i>Rankinia (Tympnanocryptis) diemensis</i>

### 4.4.1 Snakes

All three of Tasmania's snakes are venomous, though they are generally shy. They should not be handled or harassed, and any bite should be treated as serious, but from a distance they can be admired. Tiger Snakes are useful predators of mice and rats. All three species vary in colour. Tiger Snakes are usually black above, may have a yellow throat, and may or may not have cross bands. They have broad heads, compared with the tapered head of the Copperhead. Copperheads have rusty-coloured lower sides, and pale lips and chin (but not striped). White-lipped Snakes (or "Whip Snakes") are small and slender, with a black-edged white stripe on the upper lip.



Tiger Snake, showing the broad head.

(Photograph by Anna Povey)

### 4.4.2 Key to the lizards of Tasmania.

To use this key, start at the beginning (1a) and read both parts (a and b) of each couplet to make a decision. The information is cumulative, so if you do not start at the beginning and work your way through, you risk misidentifying the lizard. This key comes from the DPIWE web site and includes all the lizards occurring in Tasmania.

1a.	Scales smooth, without a fold of skin under the throat: Go to 2.
1b.	Scales rough, with a fold of skin under the throat: Mountain Dragon.
2a.	Parietal scales completely separated by the interparietal, not contacting each other: Go to 3.
2b.	Parietal scales in contact behind the interparietal scale: Go to 5.
3a.	Stocky build, two narrow lines of spots down the back, limbs not noticeably short: Go to White's skink.
3b.	Very short legs, without two narrow lines of spots down the back: Go to 4.
4a.	Heavily built, head much wider than neck, broad blue tongue: Blotched Blue-tongue.
4b.	Build slender, snake-like. Narrow tongue, long tail, head not much wider than neck: She-oak skink.
5a.	Limbs short, nasal scales contacting, lower lips barred: Bougainville's skink.
5b.	Limbs well developed, nasal scales separated, lips not barred: Go to 6.
6a.	Frontoparietals fused into a single large scale: Go to 7.
6b.	Frontoparietals separated, two distinct scales: See key to identifying grass skinks.
7a.	Rich brown above, without spots, strong stripes or bands of colour running through or around the ear. No trace of a vertebral stripe. Ear tiny, toes short: Delicate skink.
7b.	Other colour patterns. If rich brown above, side of neck spotted, banded or striped around the ear: Go to 8.
8a.	Pattern consisting of strong, longitudinal stripes including a strong pale dorsolateral stripe in the middle of scale row three and an elongate body. Found in eastern and northern Tasmania at low altitudes: Three-lined skink.
8b.	Pattern consisting of flecks, spots, stripes, or a combination. Well-developed limbs. If strongly striped, occurring in south-west Tasmania: See key to identifying Snow skinks, Niveoscincus.



**Key to identifying the genus *Pseudomoia* (grass skinks)**

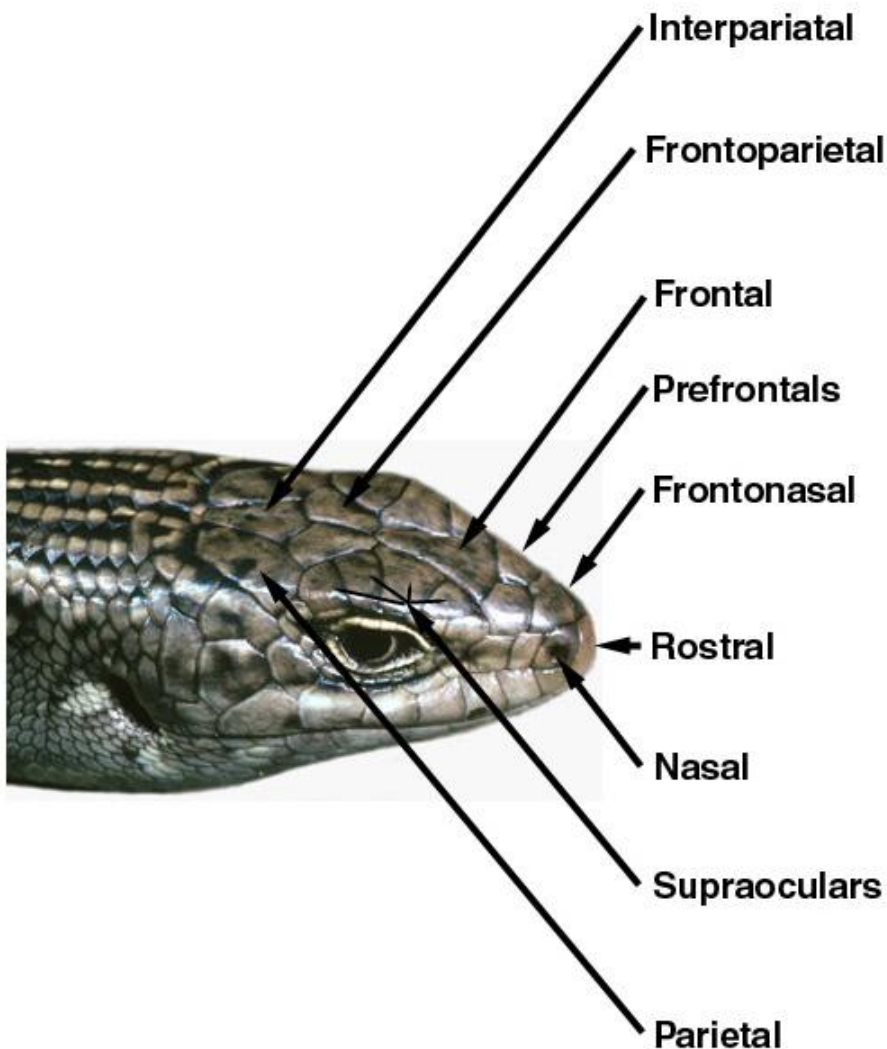
1a.	Pale dorsolateral stripe, if present, on scale row 4 or both scale rows 3 and 4: Scales on back matt or metallic-iridescent and either smooth or faintly triple-keeled, with curved posterior margins in plan view: Five supraciliary scales. Go to 2.
1b.	Pale dorsolateral stripe always present and only on scale row 3; dorsal scales highly glossy and strongly triple keeled, with straight posterior margins in plan view; Six supraciliaries. Found amongst dense vegetation in damp areas. Glossy Grass skink.
2a.	Dorsal surface pale olive, grey brown or dark brown, without metallic lustre; pale lateral stripes clearly defined and straight-edged, without darker or lighter lateral speckling; black lower edge of pale midlateral stripe, if present, broken and on some scale margins only; red colouring in breeding males limited to the midlateral stripe. Tussock grasslands only, does not climb to bask. Tussock skink.
2b.	Variable; dorsal colouring often with a metallic lustre and lateral striped pattern often broken by darker and lighter speckling; strongly striped specimens usually have a distinct black lower margin on the pale midlateral stripe; red colouring in breeding males includes both the midlateral stripe and the belly. Woodlands as well as grasslands, basks on rocks, stumps and logs. Southern Grass skink.

**Key to identifying the Genus *Niveoscincus* (snow skinks)**

1a.	Six wide scales across the flat of the back: Metallic Skink.
1b.	More than six scales across the flat of the back: Go to 2.
2a.	Pattern consisting of a pale bronze or green spot on each scale on the back, often forming narrow, longitudinal stripes, without any indication of a vertebral or midlateral stripe: Northern Snow skink.
2b.	Other patterns: Go to 3.
3a.	Pale centred dark spots on flanks, no indication of longitudinal striping on body. Pattern on the back crossways rather than lengthways: Spotted skink.
3b.	No pale centred dark spots on flanks, usually a dark upper lateral zone. Go to 4.
4a.	Vertebral stripe and some indication of white midlateral stripe present on flanks: Go to 5.
4b.	No indication of a white midlateral stripe. Vertebral stripe, if present, no wider than one scale width. Southern and western Tasmania. Southern Snow skink.
5a.	Black stripe running from side of snout along the flanks, bordered below by a ragged edged white midlateral stripe. White flecks present on back. Tasmanian tree skink.
5b.	Some indication of both a white midlateral stripe and a narrow dark vertebral stripe, no pale flecks on back. Found in alpine and sub-alpine south and south-west Tasmania. Mountain skink.



Head scale identification for Tasmanian lizards



Source: Adapted from DPIWE GIS Webserver  
Photograph by Alex Dudley



## 4.5 Invertebrates

The 10,000 invertebrate species presently known from Tasmania form just a fraction of the species that probably exist within the state, and of which an unusually high proportion is endemic (found only here).

A useful beginner field guide to some of the insects is “Wings”, by Elizabeth Daley. A selection of stream invertebrates, terrestrial invertebrates and our special freshwater crayfish is provided below.

### Key to stream invertebrates

Sourced from Gould League web site.

---

1a. Organism enclosed within a hard shell . . . . .	2
b. Organism not enclosed within a hard shell. . . . .	3

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2a. Organism enclosed within two shells . . . . .	Clams and Mussels
b. Organism enclosed within one shell. . . . .	Snails

---

3a. Body wormlike, segmented (divided into parts); without legs and a head . . . . .	Worms
b. Body segmented, with a head (may be very small), legs generally present though could be very small . . . . .	Leeches 4

---

4a. More than 6 legs . . . . .	5
b. 6 legs or less . . . . .	7

---

5a. Eyes on stalks, hard covering on back . . . . .	Crayfish
b. Eyes not on stalks, no hard covering on back . . . . .	6

---

6a. Sides appear to be squeezed together, swims on side . . . . .	Amphipod
b. Sides not squeezed together, does not swim will walk on bottom . . . . .	Isopod

---

7a. Wings or wing pads (very small underdeveloped wings) present . . . . .	8
b. Wings or wing pads absent . . . . .	13

---

8a. Mouth is like a tube and is used for sucking . . . . .	True Bugs
b. Mouth is not like a tube and is used for chewing . . . . .	9

---

9a. Fully formed wings present, top wings hard. . . . .	Adult Beetle <sup>2</sup>
b. Fully formed wings absent, wing pads present, no harden wings . . . . .	10

---

<sup>2</sup> The beetles are the largest single order of insects, they total a staggering 360 000 + named species and in 1977 1 in 4 or 25 percent of all animal species was a beetle.

- 10a. Lower mouthpart elbowed, can be extended and used for catching prey.. . . . 11
- b. Lower mouthpart not elbowed. . . . . 12

---

- 11a. Leaf like gills sticks out from abdomen . . . . . Damselfly
- b. No leaf like gills . . . . . Dragonfly

---

- 12a. Usually have 3 long tail filaments, gills on sides of abdomen . . . . . Mayfly
- b. 2 long tail filaments, gills mainly under legs. . . . . Stonefly

---

- 13a. No jointed legs, may be hard to see head . . . . . True Flies
- b. With jointed legs and head easily seen. . . . . 14

---

- 14a. Many filaments coming off the sides of the abdomen . . . . . 15
- b. No filaments coming off sides . . . . . 16

---

- 15a. Last segment either with 2 small claws or a single long tail filament . . . . . Dobsonfly/Fishfly
- b. If the last segment has a small claw it has only 1, if it has a filament at the end there are 2. . . . . Beetle Larva

---

- 16a. Cannot see antennae, often with stringlike gills on abdomen, and small legs at the end of their abdomen, many live in a case. . . . . Caddisfly
- b. Can see antennae, do not live in cases, no stringlike gills. . . . . Beetle Larva

**Macroinvertebrate water quality ratings**

Water bugs show different levels of sensitivity to sewage, food wastes, and manure, etc (organic pollution). This is indicated by a "grade level" which varies from 10 (very sensitive) to 1 (very tolerant of pollution). The grade given to each waterbug represents the average for the families in the group (i.e. order, class or phylum) for Australia (Chessman, B. SIGNAL 2 A Scoring System for Macro-invertebrates in Australian Rivers, November 2001.) Note: drawings are not to scale. This information has been supplied by Waterwatch Tasmania and used with their permission. Illustrations are from Williams W. D., Australian Freshwater Life. McMillan, 1980. The different species can be quickly collected from any water body and an easy assessment made of the quality of the water by the species found and their tolerance level to pollutants. High rated species means clean water.



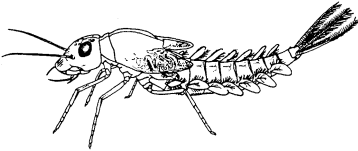
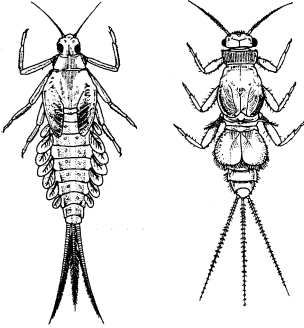


A. Mayflies:

**EPHEMEROPTERA**

They have three pairs of legs and a pair of antennae and generally have three long tail filaments. Many have feathery or plate-like gills on their abdomen.

*Very Sensitive-grade level 9.*



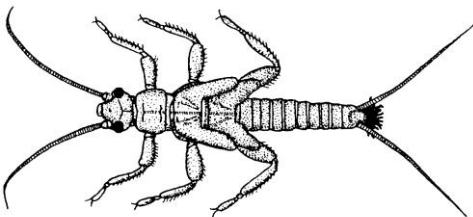
Mayfly nymphs

B. Stoneflies:

**PLECOPTERA**

They have three pairs of legs and a pair of antennae and generally have two long tail filaments. Many have string-like gills under their legs.

*Very Sensitive-grade level 10.*



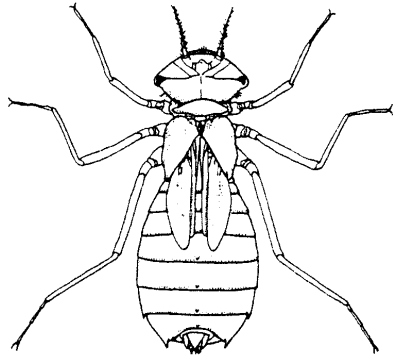
Stonefly nymph

C. Dragonflies and Damselflies:

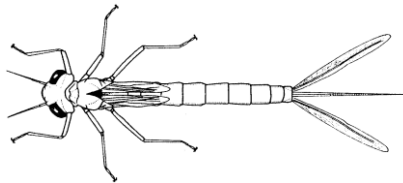
**ODONATA**

They have three pairs of legs, a pair of antennae and generally very evident wing pads. Both of these groups are found in the slower moving areas of a stream either on plants or buried in the bottom. They use the lower mouthpart (Labium) for catching prey. One easy way to tell these closely related groups apart is that the Damselflies have feathery gills protruding from their abdomen.

*Tolerant-grade level 3.*



Dragonfly larva



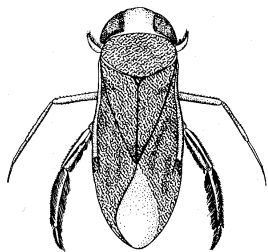
Damselfly larva

D. True Bugs:

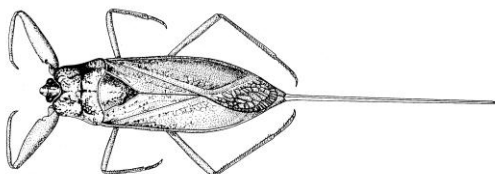
**HEMIPTERA**

Wings or wing pads present. Their mouthparts are united into a beak or tube.

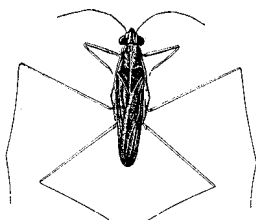
*Very tolerant-grade level 2.*



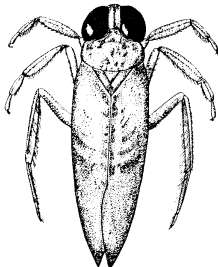
Water boatman



Water scorpion



Water strider



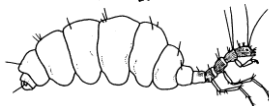
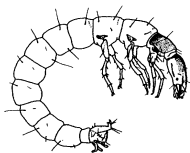
Back swimmer

E. Caddisflies:

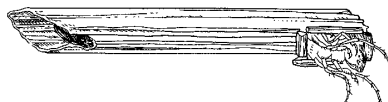
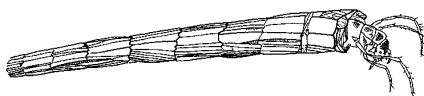
**TRICHOPTERA**

Some of these live in cases made out of sticks, gravel or sand. Their antennae can't be seen. They have three pairs of legs and often string like gills found on their abdomen. These larvas have hooks on the end of their abdomen. No wings or wing pads present.

*Very Sensitive-grade level 8.*



Caddisfly larvae (without cases)



Caddisfly larvae (with cases)

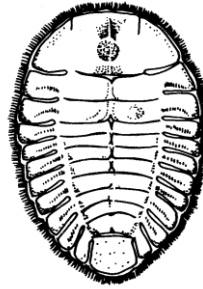


F. Alderflies & Dobsonflies:

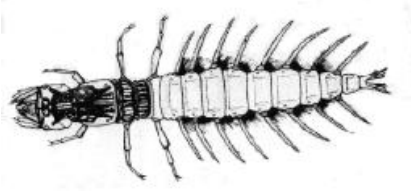
**MEGALOPTERA**

Off the sides of these larvae are projections or filaments. They have no wings and at the end of their body is either a long filament (Alderfly) or a pair of hooks (Dobsonfly).

*No Sensitivity data.*



Water penny larvae



Riffle beetle larvae

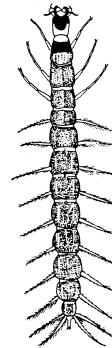
G. Beetles

**COLEOPTERA**

1. Larva:

Some are similar to Megaloptera, off their sides are lateral filaments and they also have no wings. The differences are if they have a hook at the end of their body it is not paired, and if they have a long filament protruding from the end it is paired. The ones that do not have lateral filaments have visible antennae and no string-like gills.

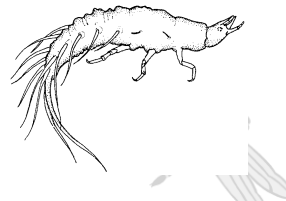
*Medium tolerance-grade level 5.*



Whirligig beetle larvae



Diving beetle larvae



Water scavenger beetle larvae

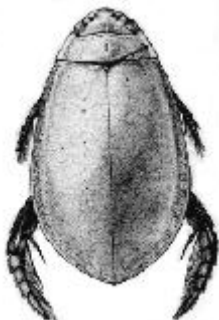
G. Beetles

**COLEOPTERA**

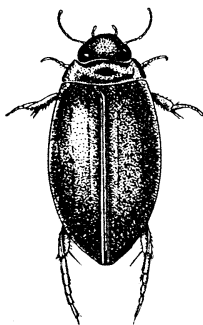
2. Adult:

Mouth is not tubelike, hard outer wings often black in colour.

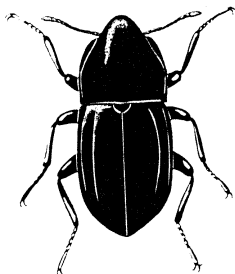
*Medium tolerance-grade level 5.*



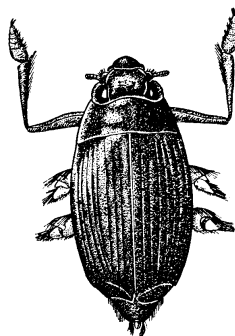
Water tiger



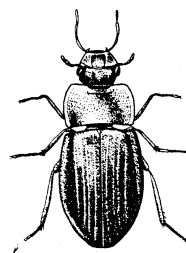
Diving beetle



Riffle beetle



Whirligig beetle



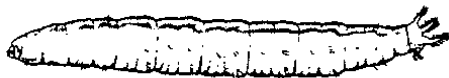
Water scavenger beetle

H. True Flies:

**DIPTERA**

Without jointed legs, sometimes they don't have a distinct head. Some common stream true flies are Black Flies, Snipe Flies, Midges, Deer and Horse Flies, and Crane Flies.

*Tolerant-grade level 3.*



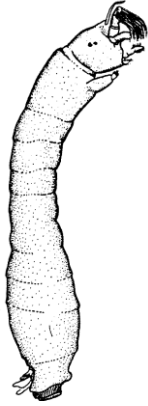
Cranefly larva



Biting midge larva



Common Stream Non-Insect Invertebrates



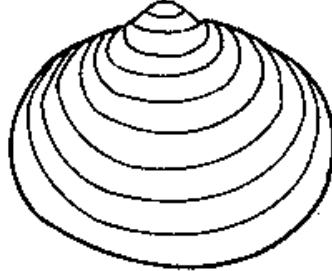
Blackfly larvae

A. Clams:

**BIVALVIA**

Organism enclosed within two shells.

*Tolerant-grade level 3.*



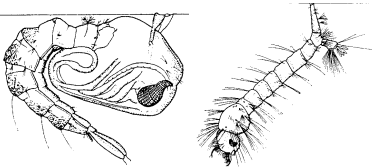
Bivalve mussel

B. Snails:

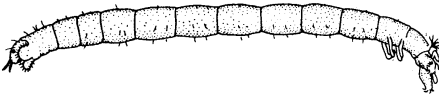
**GASTROPOD**

Organism can be enclosed within one shell.

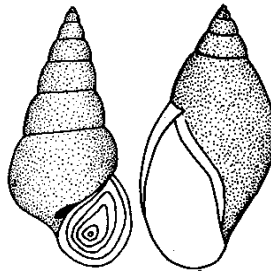
*Very tolerant-grade level 1.*



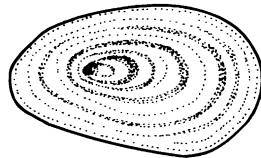
Mosquito pupa and larva



Chironomid larva



Snails



Limpet

**FRESHWATER SNAILS**

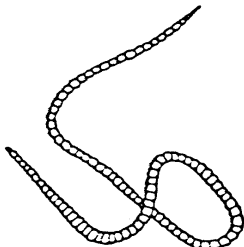
There are 47 species of *Beddomeia* freshwater snails in Tasmania. All species are listed as rare or vulnerable under Tasmanian legislation, as they are typically found at a single site and are intolerant of disturbances. The Dorset region has several of these threatened snail species. Protection of streams and streamside vegetation is vital for these tiny snails.

C. Aquatic Worm:

**OLIGOCHAETA**

Body is wormlike, segmented, legless and they have no head. Leeches are included in this grouping but are flat.

*Very tolerant-grade level 2.*



Segmented worm

D. Crustacea:

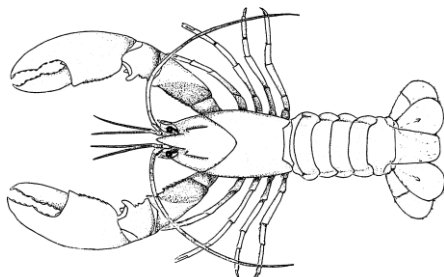
**DECAPOD**

They have more than 3 pairs of legs and 2 pairs of antennae.

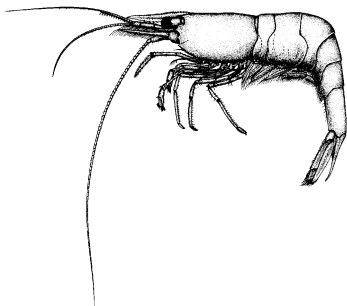
1. Crayfish:

Eyes on stalks, hard covering on back.

*Medium tolerance-grade level 4.*



Yabby



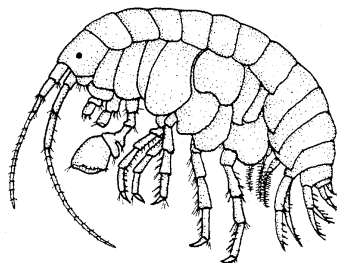
Freshwater shrimp

2. Amphipods:

**AMPHIPOD**

Eyes not on stalks, sides appear to be squeezed together.

*Tolerant-grade level 3.*



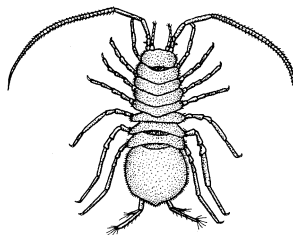
Side swimmer or scud

3. Isopods:

**ISOPOD**

Eyes not on stalks, top and bottom appear to be squeezed together.

*Very tolerant-grade level 2.*

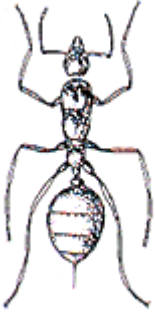


Freshwater slater



**Key to terrestrial invertebrates**

Ants  
 Earthworms  
 Slaters  
 Snails and slugs  
 Spiders



Ants  
Phylum: Arthropoda



Earthworms  
Phylum: Annelida



Slaters  
Phylum: Arthropoda



Snails and slugs  
Phylum: Mollusca



Spiders  
Phylum: Arthropoda

### LAND SNAILS

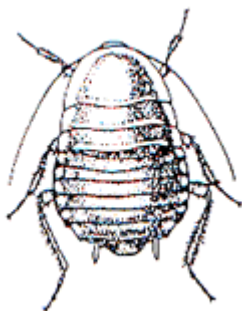
The Dorset region has one species of land snail listed as rare under the *Tasmanian Threatened Species Protection Act 1995*, the Skemps snail (undescribed species in the family Charopidae). The Northeast forest snail has recently been delisted and occurs extensively in the region.



Earwigs  
Phylum: Arthropoda



Centipedes  
Phylum: Arthropoda



Cockroaches  
Phylum: Arthropoda



Millipedes  
Phylum: Arthropoda



Leeches  
Phylum: Annelida



Peripatus (Velvet worm)  
Phylum: Arthropoda



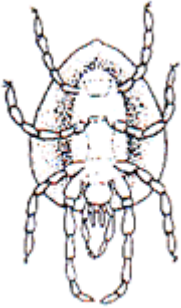




Springtails  
Phylum: Arthropoda



Beetles  
Phylum: Arthropoda

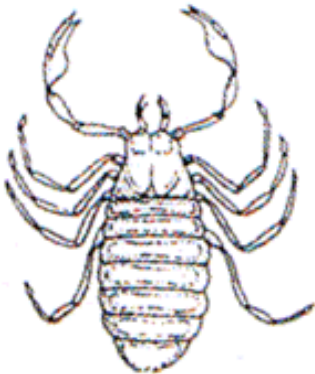


Mites  
Phylum: Arthropoda



True bugs

Phylum: Arthropoda



Pseudoscorpions  
Phylum: Arthropoda

**NORTHEAST STAG BEETLES**

Three species of stag beetles in this area are listed as vulnerable or endangered. These attractive, big-jawed beetles favour large, rotting logs in wet forest.





Antlions  
Phylum: Arthropoda



Scorpions  
Phylum: Arthropoda



Flatworms  
Phylum: Platyhelminthes



Cicadas  
Phylum: Arthropoda  
Little Waterhouse Lake  
January 2000



Amphipods  
Phylum: Arthropoda



## Freshwater crayfish

Tasmania has a rich freshwater crayfish fauna, with about 37 species, including the world's largest, the Giant Freshwater Lobster, *Astacopsis gouldi*. Two species of *Astacopsis* occur in the Dorset region. The Giant Freshwater Lobster is a threatened species. The other species, *A. franklinii*, is distinguishable by a narrow, flat and 'V' shaped head while *A. gouldi* has a prominent raised ridge on the forehead between the eyes.

Much smaller than these are the burrowing crayfish (up to 10cm long), *Engaeus*, of which six species are found in the Dorset region. While most freshwater crayfish live in flowing water, the burrowing crayfish live their entire life within their burrow systems, only venturing out occasionally at night or in damp, overcast conditions. As they are typically no longer free-swimming, many of the species have much reduced tails. Other features include claws that open vertically rather than horizontally to the body, allowing for larger claws in the confined space of narrow tunnels.

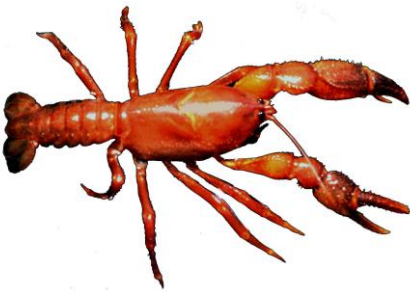
(Information from DPIPWE website

[www.dpipwe.tas.gov.au/inter.nsf/WebPages/LJEM-73J92W?open](http://www.dpipwe.tas.gov.au/inter.nsf/WebPages/LJEM-73J92W?open)).

### *Burrowing crayfish, Engaeus species*

*Engaeus* are characterised by their ability to burrow, and the characteristic 'chimneys' made from balls of mud at the entrance of their burrow. All crayfish are dependent on water to breathe; typically burrows are connected to groundwater tables, streams or rely on water runoff, and tunnels may go to depths of 2-3 metres. Crayfish burrows are often a good indication of shallow aquifer groundwater. Crayfish eat invertebrates, plant material and detritus.

The Scottsdale Burrowing Crayfish, *Engaeus spinicaudatus*, is only found near Scottsdale and is listed as vulnerable. Threats to all burrowing crayfish species include stock trampling, drainage of wet areas, dam construction, clearing streamside vegetation, ploughing and water pollution.



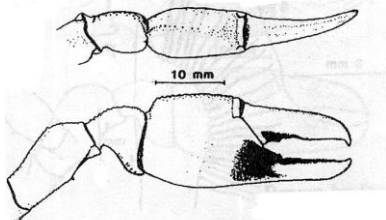
Scottsdale Burrowing Crayfish.  
(Photograph by J. Nelson)



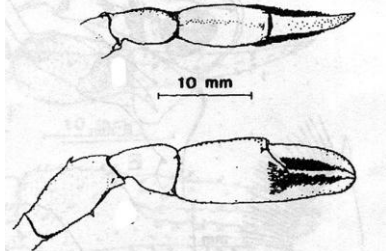
*Engaeus* species burrow

**Key to six *Engaeus* species**

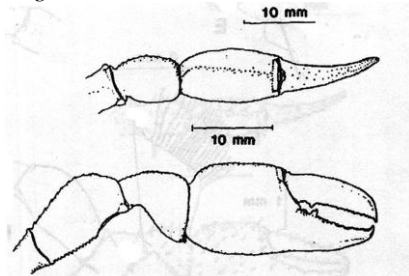
The side and top view of the right claw of the six *Engaeus* species that occur in the Dorset region has been used for an easy identification tool for adult burrowing crayfish (from P. Horwitz and illustrations used with permission of the author). The claws are often found after birds or water rats have eaten the rest of the crayfish, so they provide an easy way to get some indication of the species in the field.



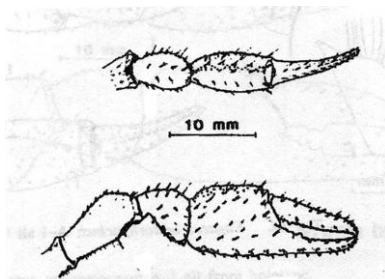
*Engaeus spicicaudatus*



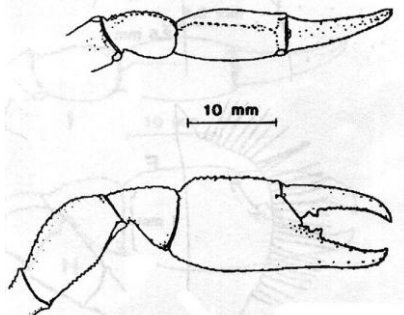
*Engaeus laevis*



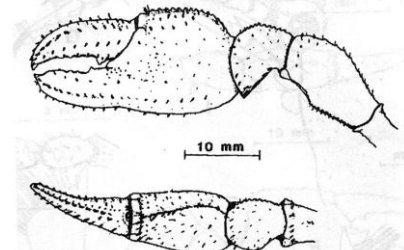
*Engaeus mairener*



*Engaeus tayatea*



*Engaeus spinicaudatus* Scottsdale burrowing crayfish



*Engaeus leptorhynchis*



## 4.6 Fish

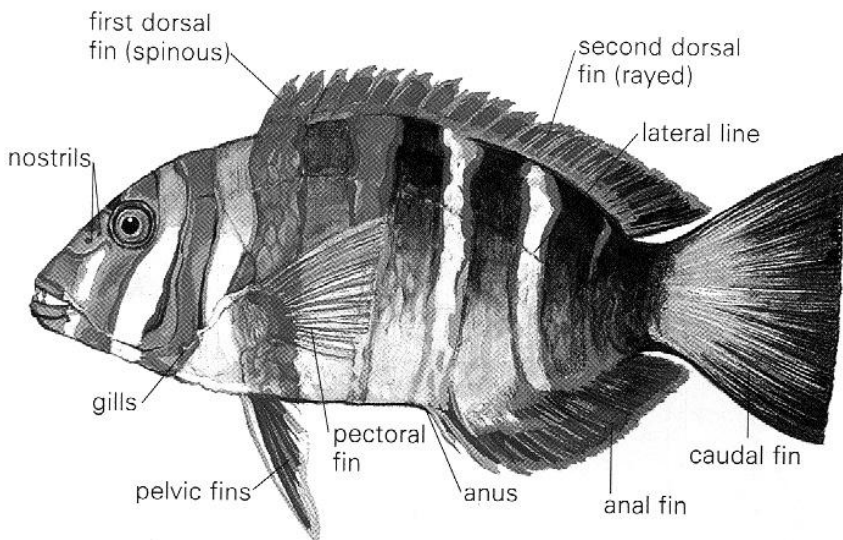
The fish species in the Dorset region consist of 15 native species and three introduced species.

Common Name (* introduced)	Scientific Name
Short-finned Eel	<i>Anguilla australis</i>
Long-finned Eel	<i>Anguilla reinhardtii</i>
Blackfish	<i>Gadopsis marmoratus</i>
Climbing Galaxias	<i>Galaxias brevipinnis</i>
Tasmanian Mudfish	<i>Galaxias cleaveri</i>
Jollytail	<i>Galaxias maculatus</i>
Spotted Galaxias	<i>Galaxias truttaceus</i>
Dwarf Galaxias	<i>Galaxiella pusilla</i>
Pouched Lamprey	<i>Geotria australis</i>
Tasmanian Whitebait	<i>Lovettia sealii</i>
Short-headed Lamprey	<i>Mordacia mordax</i>
Pygmy Perch	<i>Nannoperca australis</i>
Rainbow Trout*	<i>Oncorhynchus mykiss</i>
Australian Grayling	<i>Prototroctes maraena</i>
Sandy	<i>Pseudaphritis urvillii</i>
Tasmanian Smelt	<i>Retropinna tasmanica</i>
Atlantic Salmon*	<i>Salmo salar</i>
Brown Trout*	<i>Salmo trutta</i>

The fifteen species of native fish occurring in the Dorset region are described here to allow some identification in the field. This information has been sourced from the Tasmanian Inland Fisheries Service fish fact sheets with their permission.

The following diagram shows the typical features of a bony fish to assist in field identification.





## Climbing Galaxias, *Galaxias brevipinnis*

**Other Names:** Broad-finned galaxias

**Distinguishing Features:** Small elongated fish that have a single soft-rayed dorsal fin on their back. There are no scales present, but they do have a lateral line. The anal fin origin begins behind the dorsal fin origin. They have large pectoral and pelvic fins.

**Colour:** Colour and pattern variation is common, ranging from bold bands to irregular patches and blotches. Generally they are medium to dark brown with a lighter background and belly. Gold iridescence is often apparent on the back and sides.

**Size:** Commonly from 80 to 160 mm, but up to 270 mm

**In General:** Native to Tasmania and also south-east Australia and New Zealand. It is the most widespread of the Tasmanian galaxias. It has both riverine and landlocked populations, and the juvenile especially is noted for its climbing ability using its large pectoral and pelvic fins. Consequently it is often found in the upper reaches of streams, past barriers blocking other fishes' upstream movements. It is also the largest of the Tasmanian galaxias.

**Life Cycle:** In riverine populations spawning takes place in autumn, although little study has been done, this is probably near their normal habitat. The larvae are swept to sea and return 5-6 months later as part of the whitebait run in spring. Landlocked populations breed in spring.

**Preferred Habitat:** Adult fish are secretive and solitary, and are rarely seen in the lower reaches of the rivers. They tend to inhabit the headwaters of clear bouldery streams with riffles and cascades, where they can be found under stones. Juveniles can be found in large schools around lake margins and near mouths of tributaries, where they are a food source for trout.

**Diet:** Carnivores feeding on a wide range of invertebrates, but also including some terrestrial insects taken from the water surface.

**Tasmanian Distribution:** Widespread in coastal drainages as well as numerous landlocked populations in inland lakes.



Photograph by: Brett Mawbey

## River Blackfish, *Gadopsis marmoratus*

**Other Names:** Marble cod

**Distinguishing Features:** The pelvic fins have evolved into a single branched ray; they have long low dorsal and anal fins and minute scales. Their lateral line follows the profile of their back.

**Colour:** Usually dark on the back and sides and covered with regular dark patches and blotches.

**Size:** Commonly to 450 mm, but up to 750 mm and 5.5 kg.

**In General:** Native to streams on the states north coast as well as south east Australia. They have been established in several other waterways around the state through introductions. They will spawn in introduced habitat such as PVC pipes.

**Life Cycle:** Their full life cycle is spent in fresh water. Spawning occurs around November, with eggs hatching after 16 days, this is then followed by a further embryonic stage. Spawning takes place generally close to instream cover, inside submerged hollow logs where water speed is low. The male will guard the eggs until they hatch. Spawning appears to be temperature dependent.

**Preferred Habitat:** Nocturnal fish that are relatively sedentary, with no apparent migration. They tend to stay on the river bottom where their normal home range is only about 20 metres. They generally inhabit slow flowing sections of streams that are well oxygenated, with abundant cover such as snags and boulders. A variety of river depths is important as larger fish tend to occupy deeper water.

**Diet:** They are opportunistic carnivores feeding on a variety of aquatic insects, crustaceans, terrestrial invertebrates and occasionally other fish.

**Tasmanian Distribution:** Naturally from the Arthur River in the north-west, along the north coast to Ansons River on the east coast. Introduced populations present in the Huon and Derwent catchments.

**Direct Threats To Population:** Increased water flows; Extensive stream siltation from erosion; Removal of instream habitat, particularly woody debris; Reductions in water temperatures during spawning seasons.



Photograph by: Brett Mawbey



**Sandy, *Pseudaphritis urvillii***

**Other Names:** Freshwater flathead, congolli, roach, pike

**Distinguishing Features:** The body shape is usually elongated and cylindrical in form. They have two dorsal fins; the first is short whilst the second is long and low. The eyes are set close together and located almost on top of the head. They have moderate sized scales and a lateral line is present.

**Colour:** Colour is variable depending on substrate. The body is usually dark brown on the back, breaking into blotches on the sides with a white to yellow belly.

**Size:** Commonly from 100 to 240 mm, but up to 350 mm

**In General:** Native to Tasmania and the Bass Strait islands and south east Australia. It is abundant in coastal streams around the state and can be found in both fresh and salt water. There may be some habitat differences between the males and females.

**Life Cycle:** It is believed adult fish migrate from the upper reaches down to the estuaries in spring to breed. It is believed adult fish then migrate back upstream. Juveniles are more abundant in the lower reaches, with the adults more common further upstream. It is believed to live to at least five years of age.

**Preferred Habitat:** Primarily benthic, preferring slow moving lowland coastal streams, often found partially buried in leaf litter and debris or sand. Also found amongst rocks and under sunken logs and overhanging banks. They are capable of rapid bursts of swimming if disturbed.

**Diet:** Their diet consists of insect larvae, worms, small crustaceans and fish. Some plant material is also consumed.

**Tasmanian Distribution:** It is common and widespread in coastal streams around the state, and can move considerable distances upstream.

**Direct Threats To Population:** Destruction of instream habitat; Stream channel damage from sand and gravel extraction; Loss of riparian vegetation; Channelisation leading to increased flow velocities.



Photograph by: R. H. Kuitert

## Jollytail, *Galaxias maculatus*

**Other Names:** Common galaxias, minnow

**Fishing Status:** This species may not be taken without a permit, unless captured by the use of a bush pole. A bush pole is defined as a length of wood that is not less than one metre in length and does not have a reel and running line. Juveniles are often found in whitebait runs, for which there is a restricted recreational season requiring a Whitebait Licence.

**Distinguishing Features:** Small elongated fish that have a single soft-rayed dorsal fin on their back. There are no scales present, but they do have a lateral line. The dorsal fin and anal fin begin directly above and below each other, and the tail is distinctly forked.

**Colour:** Generally translucent olive-green on the back and upper sides with regular sparse speckling along the sides, with a silver belly.

**Size:** Commonly from 40 to 120 mm, but up to 180 mm.

**In General:** Native to Tasmania and one of the most commonly occurring, and best known of the galaxias. Juveniles form a substantial part of the whitebait runs. It also has a much wider distribution than other Tasmanian galaxias, occurring in south-east Australia, New Zealand, South America and some Pacific islands. They can occur in both riverine and landlocked populations.

**Life Cycle:** In coastal populations, the adult fish migrate downstream in autumn to spawn in estuarine marshes. Eggs are deposited amongst vegetation on the margins of river estuaries when inundated at the peak of high tide, leaving the eggs exposed until hatching on the next spring tide. Four to five month old fish return from the sea and migrate up the rivers the following spring as part of the whitebait run. They generally mature after one year, and most adults die after spawning. Landlocked populations spawn in late winter.

**Preferred Habitat:** Adults are commonly found in the lower reaches of coastal streams and rivers, in still or slow moving water. They are also found around lake and lagoon margins, usually in small to moderate schools. They can tolerate a wide range of habitat conditions.

**Diet:** Will feed on a wide variety of small aquatic and terrestrial insects, also aquatic crustaceans and molluscs.

**Tasmanian Distribution:** Common and widespread around coastal Tasmania.

**Direct Threats To Populations:** Loss of in-stream habitat; In-stream barriers preventing migration; Contaminants entering rivers and streams, Bank and stream-bed erosion leading to increased turbidity and sedimentation; Loss of tidal spawning habitat.



Photograph by: Brett Mawbey



## Spotted Galaxias, *Galaxias truttaceus*

**Other Names:** Spotted mountain trout

**Distinguishing Features:** Small elongated fish that have a single soft-rayed dorsal fin on their back. There are no scales present, but they do have a lateral line. The anal fin origin begins behind the dorsal fin origin.

**Fishing Status:** This species may not be taken without a permit, unless captured by the use of a bush pole. A bush pole is defined as a length of wood that is not less than one metre in length and does not have a reel and running line. Juveniles are often found in whitebait runs, for which there is a restricted recreational season requiring a Whitebait Licence.

**Colour:** Colour pattern is variable depending on habitat and location, but generally adults have regular small spots with surrounding halos on their sides, and black edges on their dorsal, pelvic and anal fins. They have a distinct stripe passing back and down through the eyes. Body colour varies from black on the back with brown sides to a dark purplish colour all over.

**Size:** Commonly from 70 to 140 mm, but up to 200 mm.

**In General:** Native to Tasmania and the southern mainland, they are one of the more common galaxias. They occur in both landlocked and riverine populations. Maturity is not reached until at least two years of age.

**Life Cycle:** In riverine populations spawning takes place in autumn, probably near their normal habitat. They are believed to spawn amongst roots of emergent vegetation below the water surface. The larvae are swept to sea and return 5-6 months later as part of the whitebait run in spring. Landlocked populations breed in spring.

**Preferred Habitat:** Riverine populations appear to prefer lower elevation quiet streams where they are found in pools with cover from log debris, overhanging banks and boulders. Landlocked lake populations are often at higher elevations. Juveniles will form schools that are often seen in late summer.

**Diet:** A carnivorous fish feeding on a wide range of aquatic and terrestrial invertebrates.

**Tasmanian Distribution:** Common and widespread in coastal drainages as well as numerous landlocked populations in inland lakes.

**Direct Threats To Populations:** Loss of instream habitat; In-stream barriers preventing migration; Contaminants entering rivers and streams; Bank and stream-bed erosion leading to increased turbidity and sedimentation; Loss of riparian vegetation.



Photograph by: Brett Mawbey



## Dwarf Galaxias, *Galaxiella pusilla*

**Conservation Status:** Listed as Rare under Tasmania's Threatened Species Protection Act 1995 and Vulnerable under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999.

**Fishing Status:** This species is totally protected and may not be taken without a permit.

**Other Names:** Eastern little galaxias

**Distinguishing Features:** Small elongated fish that has a single soft-rayed dorsal on their back. There are no scales present, but they do have a lateral line. The dorsal fin origin is slightly behind the anal fin origin.

**Colour:** They are more or less transparent with dark colouration along the back and three black stripes running along their sides. Males have a bright orange stripe between the middle and lower stripe.

**Size:** Females to 40 mm, males to 34 mm.

**In General:** Native to north-eastern and north-west Tasmania, Flinders Island and parts of the south-east Australia. The females grow larger than the males. They are capable of surviving for several months in existing burrows or under logs and stones if their water source dries up. Habitat loss from wetland draining is limiting its available habitat.

**Life Cycle:** Spawning occurs around August, when eggs are deposited singly on aquatic plants, stones and leaves. It is believed to live for only one year, with the adults dying after spawning. Their whole life cycle is spent in fresh water.

**Preferred Habitat:** Adults occur mostly in still or slow moving waters in the shallows around the margins of creeks, drains and swamps that are usually heavily overgrown with aquatic macrophytes. They have been observed to burrow into the mud during unfavourable conditions. Juveniles congregate in groups at the water surface in pools free of vegetation. They are generally active throughout the day.

**Diet:** It is carnivorous, and feeds mainly on small crustaceans from the water column as well as animals off the bottom.

**Tasmanian Distribution:** Far north-east coast and the north-west coast.

**Direct Threats To Populations:** Drainage of large areas of swamp and wetlands; Channelisation of rivers and streams; Removal of aquatic and riparian vegetation; Interaction and predation from introduced fish species; Inundation of habitat by dams.



Photograph by: Jay Wilson

### **Tasmanian Mudfish, *Neochanna cleaveri***

**Other Names:** Formally known as *Galaxias cleaveri*; Mud galaxias

**Distinguishing Features:** Small elongated fish that have a single soft-rayed dorsal fin on their back. There are no scales present, but they do have a lateral line. The anal fin starts a little behind the dorsal fin.

**Colour:** It is usually brown to greenish-brown on the back and sides with numerous darker stripes and patches. The belly is usually greyish in colour.

**Size:** Commonly about 80 mm, but up to 125 mm.

**In General:** Native to Tasmania and southern Victoria. They are capable of living in marginal swamps and ditches with no noticeable flow. The swampy areas that they inhabit is under continual threat from drainage and marsh reclamation practices.

**Life Cycle:** Spawning habits are unstudied, but it is believed to spawn in winter. The juvenile fish then form part of the whitebait run returning in spring after about two or three months at sea. They then take up residence in the lower reaches of coastal streams.

**Preferred Habitat:** A secretive fish that is rarely seen except for feeding. Found mostly in still waters in heavily vegetated mud-bottom swampy areas near the coast, and the lower parts of coastal streams. Tends to be mostly nocturnal. During dry periods it is able to burrow into the mud, or hide under logs and stones, and survive for extended periods.

**Diet:** Although unstudied, it is presumed to feed on terrestrial and aquatic insects and other small animals.

**Tasmanian Distribution:** Reasonably common at low elevations all around the coast, although adults are not often seen.

**Direct Threats To Populations:** In-stream barriers preventing migration runs; Drainage of large areas of swamp and wetlands; Contaminants entering rivers and streams; Loss of instream and marsh habitat.



Photograph by: Ron Mawbey

## Pygmy Perch, *Nannoperca australis*

**Other Names:** Southern pygmy perch

**Distinguishing Features:** They are generally small fish, which are distinctly scaled. They have one deeply notched dorsal fin and a lateral line divided into two parts.

**Colour:** Brown along the back and sides and golden yellow underneath. They have irregular dark brown blotches along the side interspersed with hints of red.

**Size:** Commonly to 65 mm, but up to 80 mm

**In General:** They are native to streams of the north coast as well as the south-east Australia. Because of the introduction of trout, their range has been reduced. The female typically grows larger than the males, and during the breeding season the males become much more brightly coloured, with red dorsal and anal fins as well as the tail.

**Life Cycle:** Breeding occurs during spring or early summer when water temperatures are over 16°C and there may be multiple spawnings. The males become territorial of their breeding site while the female randomly lays several hundred eggs scattered on the bottom, in fairly still waters. The eggs hatch after 2-4 days, and juveniles reach sexual maturity in their first year. They can live for more than 5 years, but most fish are typically 1 or 2+ years old. Their whole life cycle is spent in fresh water.

**Preferred Habitat:** They are generally found in small loose schools in weedy, slow flowing or still waters; this can include habitats from streams to irrigation ditches. They prefer cover to open water habitats and are rarely found in fast flowing stretches of streams.

**Diet:** They are a carnivorous fish, eating crustaceans and aquatic and terrestrial insects.

**Tasmanian Distribution:** Found widely in northern Tasmania in rivers draining north.

**Direct Threats To Populations:** Introduced non-native fish species; Reductions in flows dewatering preferred habitat; Loss of instream habitat; Loss of riparian vegetation; Drainage of swamps and other wetlands.



Photograph by: R. H. Kuitert

**Australian Grayling, *Prototroctes maraena***

**Other Names:** Cucumber mullet, cucumber herring

**Distinguishing Features:** The dorsal fin starts high on the back just behind the pelvic fin origin, they have an adipose fin, thin scales and no lateral line. They have a strong cucumber smell when caught and first taken from the water.

**Colour:** Usually dark greenish to greyish olive along the back, with a dark mid-lateral streak separating lighter sides and a whitish belly.

**Size:** Commonly 170 to 180 mm, but up to 300 mm.

**In General:** They are native to Tasmania and south east mainland Australia. It is thought that overfishing and habitat loss has caused a reduction in numbers to the point of being uncommon, although they are still quite widespread. They are closely related to the Tasmanian smelt.

**Life Cycle:** Spawning is believed to occur in late spring to early summer in fresh water. Larval fish are swept downstream by the river current to the sea. Juveniles return to the rivers from the sea at about 6 months of age, where they spend the rest of their lives. They have a life expectancy of up to three years, and mature during their second year. They are believed to spawn in the same portion of the river that they inhabit.

**Preferred Habitat:** It is a mid-water species that occurs most commonly in clear, gravelly streams with a moderate flow. Prefers deep, slow flowing pools. Occurs in fast moving schools and seems a shy fish that flees when disturbed.

**Diet:** It is an opportunistic omnivore, feeding on a mixed diet of aquatic algae and insects as well as terrestrial insects.

**Tasmanian Distribution:** Occurs widely in Tasmania, although uncommon. Mainly in northern and eastern rivers, at lower elevations.

**Direct Threats To Populations:** Loss of riparian and instream habitat; In-stream barriers preventing dispersal; High temperatures during low flows; River regulation with loss of dry weather flow and suppression of minor flooding; Extensive stream siltation from erosion; Stream channel damage from sand and gravel extraction; Possible predation by salmonids on the whitebait stage of their life cycle.



Photograph by: R. H. Kuitert

## Short-headed Lamprey, *Mordacia mordax*, and Pouched Lamprey, *Geotria australis*

**Distinguishing Features:** Lampreys don't have a jaw or paired fins, but they have a distinct oral sucking disk for their mouth. Juvenile lampreys have no eyes and are worm like. The adult male of the pouched lamprey develops a large pouch below the head during the upstream spawning run.

**Colour:** Juvenile lampreys are brown, and the adults are bluish grey on top and more silvery underneath, but this may change to more of a dull brown after some time in fresh water.

**Size:** Pouched Lamprey - Juveniles from 80 mm, and the adults 500-700 mm long. Short Headed Lamprey - Juveniles from 110 mm, and the adults commonly to 330 mm.

**In General:** They are native to Tasmania and south-east Australia. Lampreys together with hagfishes are the sole surviving representatives of jawless vertebrates. The adult lampreys are parasitic, attaching themselves to a host sea fish, and then extracting blood and muscle tissue. The returning migrating adults are capable of climbing wet vertical faces.

**Life Cycle:** Lampreys have several distinct stages in their life cycle. Filter feeding short-headed lamprey larvae bury themselves in the substrate of streams for up to 3 years, pouched lampreys larvae for up to 4 years. After a metamorphosis, the juveniles then migrate downstream to the sea where they become parasitic feeders. After 1-2 years at sea the adult lampreys return to the streams to spawn. They require waters with sand, gravel or pebble substrates for spawning. They die after spawning.

**Preferred Habitat:** Larvae prefer slower flowing water where they can burrow into mud, sand or silt. Adults are found in faster flowing water on the sides of rivers with suitable burrowing habitat and shelter that they tend to burrow into at night. During the day they can be found beneath loose stones.

**Diet:** The larvae are filter feeders, feeding on algae, detritus and micro-organisms. Adults during their marine stage are parasitic on marine fish, and returning adults do not feed when they enter freshwater.

**Tasmanian Distribution:** Reasonably common in many rivers around the state, although the extent of their distribution is still not known.

**Direct Threats To Populations:** Instream barriers preventing migration; Loss of instream habitat; Stream channel damage from sand and gravel extraction.



Photograph by: S. Moore





## Long-finned Eel, *Anguilla reinhardtii*

**Other Names:** Spotted eel

**Distinguishing Features:** Elongated cylindrical form, with continuous dorsal-caudal-anal fins. The dorsal fin origin is clearly in front of the anal fin origin.

**Colour:** Adults are dark greenish-brown to black with a mottled or spotted appearance on the back and sides with a lighter belly.

**Size:** Commonly up to 1 m, but can reach 1.5 m and in excess of 20 kg.

**In General:** Native to Tasmania and south east Australia, New Zealand and some Pacific Islands, although in Tasmania it is more common in the north east. Females grow larger than males and both sexes can probably exceed 30 years of age. They are taken in small quantities by commercial eel fishermen, but consumer demand is not as high compared to the short-finned eel.

**Life Cycle:** It is believed adult eels migrate downstream upon sexual maturity to breed at great depth in or near the Coral Sea. Spawning time is unknown, but they are believed to die after spawning. Larval eels are then swept back to the coast by ocean currents, where they transform into glass eels and move into the estuaries from February to April, where they become pigmented elvers. These elvers then move into the lower reaches of streams.

**Preferred Habitat:** Occurs in a wide variety of wetland habitats including rivers and creeks and swamps but is not as common in lakes. Generally prefers still water.

**Diet:** Feeds on a variety of aquatic fauna including insects, crustaceans, molluscs and fish, and has been known to take juvenile waterfowl.

**Tasmanian Distribution:** Reasonably common in coastal streams and swamps on the northern and eastern coast.

**Direct Threats To Populations:** Large instream barriers, including hydro dams; Commercial over fishing.



Photograph by: R. H. Kuiter

## Short-finned Eel, *Anguilla australis*

**Other Names:** Silver eel, yellow eel

**Distinguishing Features:** Elongated cylindrical form, with continuous dorsal-caudal-anal fins. The dorsal fin origin is located about level or slightly in front of the anal fin.

**Colour:** Adults vary in colour from dark brown to black on backs and sides, with a lighter or even silvery belly; a silver belly is common in mature migratory adults.

**Size:** Up to 1.1 m long and 3.2 kg in weight, but more commonly smaller.

**In General:** Native to Tasmania and south east Australia and New Zealand. Females grow larger than the males, and both sexes probably exceed 30 years of age. Sexual maturity for males is between 8 and 12 years, for females it is between 10 and 20 years. Large females can contain as many as 10 million eggs. In Tasmania and Victoria the adults form the basis of a commercial eel fishery.

**Life Cycle:** It is believed adult eels migrate downstream upon sexual maturity to breed at great depth in or near the Coral Sea. Spawning time is unknown, but they are believed to die after spawning. Larval eels are then swept back to the coast by ocean currents, where they transform into glass eels and move into the estuaries from March to November, where they become pigmented elvers. Elvers then move upstream over several years.

**Preferred Habitat:** Occurs in a wide variety of wetland habitats including rivers and creeks as well as lakes and swamps, but generally prefers still water.

**General Behaviour:** They have nocturnal and cryptic habits, but may be seen moving into shallow areas on dusk to feed. Feeding eels are believed to occupy a definite home range. They can also hibernate or enter a period of dormancy over winter due to low temperatures. They have also been known to bury themselves in damp mud when the water dries up.

**Diet:** Feed on a variety of aquatic fauna including insects, crustaceans, molluscs and fish.

**Tasmanian Distribution:** Common and widespread in coastal and lowland rivers.

**Direct Threats To Populations:** Large instream barriers - hydro dams; Commercial over fishing.



Photograph by: R. M. McDowall

**Tasmanian Smelt, *Retropinna tasmanica***

**Distinguishing Features:** Small, slender, silvery fish, with the dorsal fin origin slightly ahead of the anal fin. Freshly caught fish have a characteristic cucumber smell. Thin scales are present as well as an adipose fin. They have no lateral line.

**Colour:** Uniform translucent golden bronze along back and sides with a white/silver belly. They have a pigmented lateral line but it is not a true lateral line.

**Size:** Commonly 55-60 mm, but up to 70 mm.

**In General:** Endemic to Tasmania, occurring in the lower reaches of coastal streams. Landlocked populations occur in lowland areas. They are closely related to the southern graylings. They are very fragile fish with easily dislodged scales.

**Life Cycle:** Little is known about their spawning habits, but they are believed to spawn in spring in the lower reaches of coastal streams, where the eggs develop on the sandy substrates. Larvae once hatched are washed to sea where most growth takes place. Juveniles and adults may also be found with schools of whitebait.

**Preferred Habitat:** Unstudied, but likely to be slow flowing water with cover provided by logs and aquatic plants.

**Diet:** They are predators feeding on small aquatic insects and crustaceans such as mosquito, beetle and caddis larvae and amphipods.

**Tasmanian Distribution:** Widespread at low elevations and close to the coast, especially in the north and south-west, but also in eastern and western drainages.

**Direct Threats To Populations:** Loss of instream habitat; In-stream barriers preventing migration runs; Predation from introduced species.



Photograph by: R. M. McDowall



**Tasmanian Whitebait, *Lovettia sealii***

**Other Names:** Whitebait

**Distinguishing Features:** Small fish with their dorsal fin positioned approximately mid-length along their back, just behind the origin of the pelvic fins. A lateral line and adipose fin is present, but they have no scales.

**Colour:** The adults when first entering estuaries from the sea have a transparent body with their gonad and swim bladder visible. After spawning they are almost black, with no distinct pattern.

**Size:** Commonly to 60 mm, but up to 77 mm.

**In General:** Endemic to Tasmania, where they once formed the basis for a large commercial fishery. At certain times in most rivers today, their upstream spawning migrations still form a large component of the whitebait run.

**Life Cycle:** Adult fish migrate upstream into the upper estuaries in late winter to early spring to spawn and then die. Eggs are attached to submerged logs, branches and rocks etc, the young hatch after 2-3 weeks and are swept downstream to the sea, where they live for most of their life.

**Preferred Habitat:** Freshwater habitat includes lowland estuarine reaches of rivers with suitable spawning habitat. They form large schools during breeding time.

**Diet:** Unstudied, most feeding takes place at sea.

**Tasmanian Distribution:** Occurs only in coastal streams, mainly along the north coast, but also in rivers of the west and far south-east.

**Direct Threats To Populations:** Loss of instream habitat; In-stream barriers preventing migration runs; Overfishing; Contaminants entering waterway; Salmonid predation.

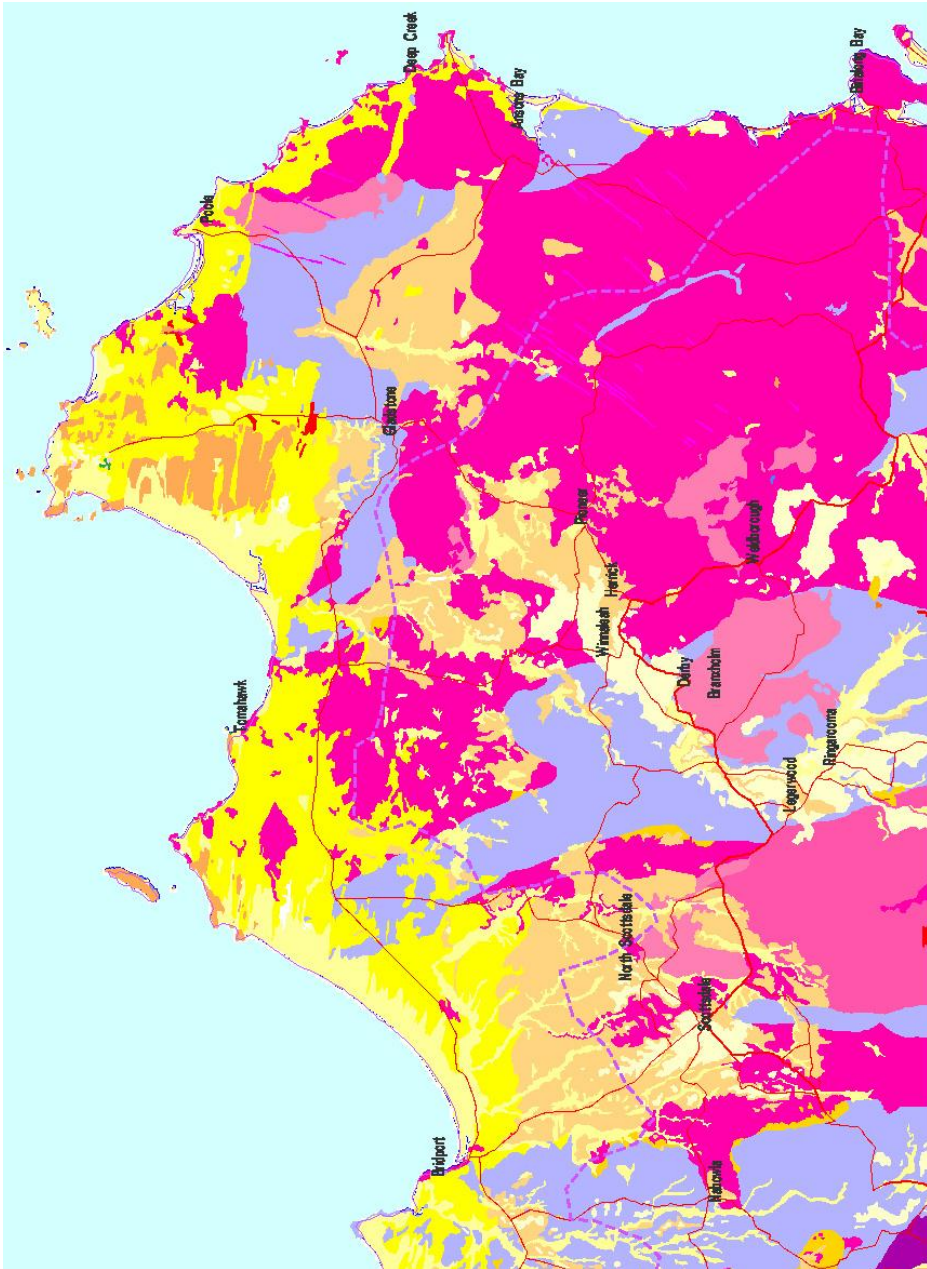


Photograph by: Wayne Fulton






















# 5 GEOLOGY AND SOILS

## 5.2 Geology



Source: DPIWE GIS Websserver.

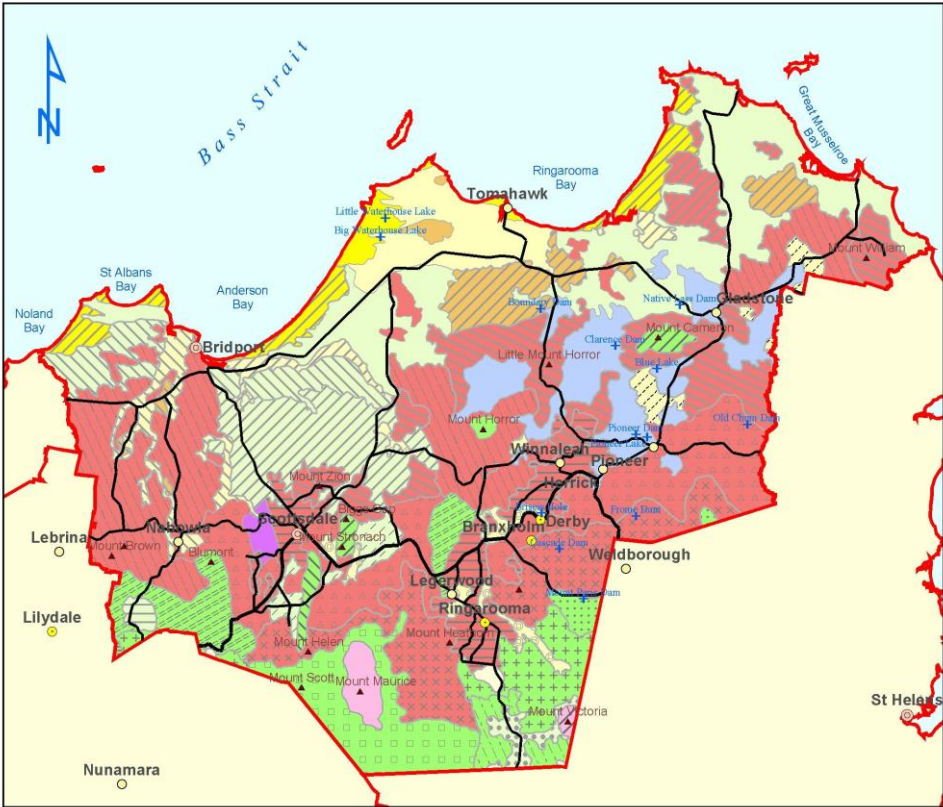
Map colour	Geology type
	Dolerite dykes
	Dominantly adamellite/granite and associated dykes
	Alkali-feldspar granite
	Dominantly granodiorite/adamellite
	Dominantly granodiorite
	Dolerite and related rocks
	Appinite
	Mudstone sequences
	Micaceous quartzwacke turbidite sequence
	Undifferentiated Permo- Carboniferous sediments
	Lower glaciomarine sequences of mudstone, pebbly mudstone, pebbly sandstone, minor limestone and Tasmanite oil shale
	Freshwater and paralic sandstone and mudstone with some coal measures
	Upper glaciomarine sequences of pebbly mudstone, pebbly sandstone and limestone
	Sand gravel and mud of alluvial, lacustrine and litoral origin
	Coastal sand and gravel
	Talus, till and scree of probable Pleistocene age
	Dominantly quartz sandstone
	Basalt
	Dominantly non-marine sequences of gravel, sand, silt, clay and regolith



## 5.3 Soils and Land Systems

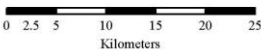
A number of land systems have been identified for the Dorset region based on zones with significant differences in one or more major environmental features, such as topography, parent material and vegetation (Pinkard, 1980).

### 5.3.1 Land systems



### Dorset Municipality Landsystems

Map Designed by Jeremy Wilson  
Chester Miller & Associates Pty Ltd  
August 2002



Landsystem data supplied by DPIWE 2002.

Key:		Landsystems	
Municipality Boundaries	A1	D10	F4
Lakes & Dams	A2	D12	F5
Mountains	B5	D14	F6
Town Populations	B7	D16	F14
1000-5000	B10	D17	F18
200-1000	B11	E1	F20
5-200	B17	E3	G8
	C6	E5	H5
	D3	F2	H10
		H11	H12
		H18	H19
		H20	H21
		H22	J3
		J4	

Table 5: Land system descriptions

LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>3</sup>
<i>A: Quaternary coastal dune and beach deposits. Deep calcareous and non-calcareous, pale siliceous sands. Scrub and tussock grassland vegetation.</i>	
A1: BLACKMANS LOOKOUT	<p>Recent calcareous sand deposits constitute coastal dunes and beaches along the north coast. Similar to the Waterhouse Beach land system with the main difference being climatic conditions.</p> <p>The sands are undifferentiated on the beach and fore-dunes and only weakly differentiated on the hind-dunes as in the Waterhouse Beach land system. An iron-inorganic layer restricts drainage on the flats.</p>
A2: WATERHOUSE BEACH	<p>Long tongues of coastal dunes and beaches formed on deposits of recent calcareous sands extending inland with their long axes parallel to the prevailing winds. These dunes are most extensive along the coastlines having a westerly aspect.</p> <p>Deep sand soils have developed on all components. The calcareous sands on the beach and fore-dunes are undifferentiated, while those on the hind-dunes are weakly differentiated.</p>



<sup>3</sup> Pinkard, 1980.



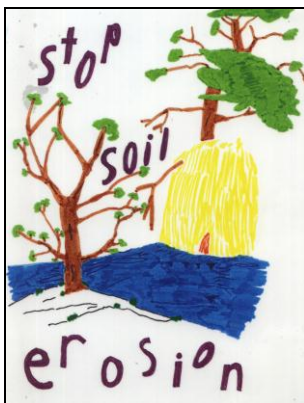
LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>4</sup>
<b>B: Plains. Quaternary and Triassic siliceous sand, clay and gravel deposits. Duplex or uniform clay soils. Woodland and scrub vegetation.</b>	
B5: TOMAHAWK	A narrow sandy undulating plain formed on Quaternary sands and clays along the Northeast coast. Restricted drainage is evidenced by strong mottling of all soils and a layer of coffee-rock at a depth of about one and a half metres on the terraces. Sand soils are found on the terraces and duplex soils in the drainage lines.
B7: GREAT FORESTER	Floodplain areas at the mouth of the Great Forester and Ringarooma Rivers. The areas are flat plains of Quaternary clays, sands and gravels. The soil is silty clay overlaying deep grey sand, which appears at about one metre deep. The proportion of silt in the clay decreases with depth.
B10: TAMAR RIVER	Quaternary clays and gravels. These deposits have formed river terraces and floodplains with small areas of mudflats. Soils vary with distance from the river mouth. The river terraces and floodplains are consistently occupied by a deep clay soil and below the shallow water table in these soils there is often a dark greenish-grey sticky gley <sup>5</sup> horizon. The areas of this component in the Dorset region are found on river terraces and floodplains of the Little Forester and Brid Rivers and form a low open-shrubland of predominantly Paperbark ( <i>Melaleuca ericifolia</i> ), Black Gum ( <i>Eucalyptus ovata</i> ) and a native reed ( <i>Phragmites</i> sp.).
B11: ANSONS BAY	Undulating plains on Quaternary sands and clays. Intermittent swamps are found on the plains in the system and the soils are deep and sandy with a cemented B-horizon on the lower components, which restricts drainage. The vegetation is Paperbark and Teatree on the upper slopes and sedgeland on the plains.

<sup>4</sup> Pinkard, 1980.

<sup>5</sup> A soil horizon in which the material is bluish-grey or blue-grey, more or less sticky, compact, and often structureless. It is developed under the influence of excessive moisture.



LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>6</sup>
B12: UPPER ESK	Undulating plains formed on Quaternary clays and sands. Soils are deep mottled gradational and uniform clay soils. Vegetation is Black Peppermint and White Gum-dominated in the overstorey.
B17: TONGANAH	Undulating plains and creek flats formed on Quaternary clays and sands in the Scottsdale-Derby area. The colour and gravel content of the duplex soils on the upper and lower terraces have been strongly influenced by the granites, sandstones and mudstones of the adjoining West Scottsdale and Sideling land systems. The soil profile on the creek flats and drainage lines is a complex one, with a uniform clay soil overlying a gley. The open forest and woodland vegetation on this system is dominated by Stringybark and Black Peppermint.
B18: NUNAMARA	Flat plains formed on Quaternary fluvial sands and clays. Deep clay soils with poor drainage have developed on these deposits with mottled soils with a coarse structure on the upper components of the system.
<b>C: Plains. Permian and Tertiary argillaceous deposits. Soils diverse, mostly sandy and mottled. Woodland vegetation.</b>	
C6: GLADSTONE	An area of undulating plains formed on Tertiary clays and gravels. Whole coloured or mottled duplex soils have developed on the plains. Small areas of white gravel do occur in this system.



Drawing by Jessie Mather



<sup>6</sup> Pinkard, 1980.

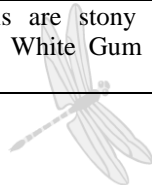
LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>7</sup>
<i>D: Forested plains. Quaternary, Tertiary and Permian deposits. Soils diverse with eucalypt forest vegetation.</i>	
D3: CAPE PORTLAND	<p>Undulating plains formed on Quaternary siliceous marine sands and clays. These plains are generally formed directly behind the present coastal dunes of the Waterhouse Beach land system, but in some cases form on the coastline itself. Small patches of Jurassic dolerite are scattered throughout the system.</p> <p>The soils are deep. Ridges of pale yellow sand are generally found close to the coastline and are sometimes in the form of low coastal dunes. The sand soil on the flats has an iron-inorganic layer at depth, while sands on the gently sloping plains are mottled. A duplex soil with an iron-inorganic B-horizon has developed in the drainage lines.</p>
D 10: BRIDPORT ROAD	<p>An area of undulating plains formed on Tertiary gravels and clays. Has a large white gravel component in the system. Soils are deep, a cemented gravel layer occurs at about 1.2 metres deep. Mottled duplex soils have developed on the upper and mid slopes, while a clay soil has developed on the lower slopes and swales.</p>
D 12: DALRYMPLE	<p>A series of undulating plains formed on Quaternary fluvial sands, clays and gravels. Uniform sand and clay soils have formed on the highest and lowest components respectively. Mottled duplex and gradational soils have developed on the upper and mid terraces. The sandy duplex soil on the upper terrace has an organic B-horizon. Gravely phases are scattered through the three upper components and consist of quartzite gravel found up to 0.8 metres in depth.</p>
D 14: SPRINGFIELD	<p>A small area of undulating plains on Tertiary clays, gravels and sands occurring near Springfield and to the east of Scottsdale. All soils are deep and a white gravel soil has developed on the upper slopes. A cemented gravel layer has formed at about 1.2 metres depth in this gravel soil. The gradational<sup>8</sup> soil on the mid slopes overlays sand at depth. The main vegetation type on this land system is open forest dominated by Black peppermint and White Gum (<i>Eucalyptus viminalis</i>) and the understorey includes Silver Wattle (<i>Acacia Dealbata</i>), Teatree (<i>Leptospermum scoparium</i>) and Heath (<i>Epacris</i> sp.).</p>

<sup>7</sup> Pinkard, 1980.

<sup>8</sup> Gradational has moderate texture contrast.



LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>9</sup>
D 16: MATHINNA PLAINS	Undulating plains of Permian mudstones and sandstones. The soils are sandy, mottled or whole coloured duplex soils. The vegetation is dominated by Gum-topped Stringybark, Black Peppermint, Stringy Gum and White Gum with understorey plants of Teatree and <i>Olearia</i> sp.
D 17: ST. PATRICKS	Flat plains formed on Quaternary fluvial sands and clays derived from the surrounding mudstone and sandstone deposits of the Barrow Falls Land System. There is a small occurrence of this land system near Lisle in the Little Forester Dorset region. All soils are deep. Mottled gradational soils on the upper terrace give way to coarse structured cay soils on the mid and lower slopes. The system is typically flat, poorly drained lower terrace with a vegetation cover of pin-rush ( <i>Juncus</i> sp.) and Paperbark. Some open forest occurs in the system and is dominated by Black Gum, Black Peppermint and Swamp Peppermint ( <i>Eucalyptus rodwayi</i> ).
<b>E: Low hills. Devonian and Tertiary rocks. Stony or gravely gradational soils with woodland vegetation.</b>	
E1: TOBACCO HILL	Occurring in the Waterhouse Point area, formed on a granite outcrop forming low rounded hills. The crests and upper slopes are mostly rock outcrops, some gritty mottled duplex soils, similar to those on the lower slopes, are present. Gradational soils are found in the drainage lines.
E3: WHITEROCK TIER	Low rounded hills formed on Lower Carboniferous-Upper Devonian granite. The soils are generally stony with gravely surfaces, and rock outcrops are frequent. In places the granite soils are overlain with windblown sands.
E 5: PIPERS	Small-scattered areas along the Little Forester River consisting of low hills formed on Tertiary basalt. The gradational soil on the small plateaux and scarps gives way to a stony gradational soil on the mid slopes and plateaux. A stony clay soil has developed on the lower slopes and swales. Also included are small areas of river alluvium. The system has open forest and woodland vegetation dominated by White Gum, Black Gum and Black Peppermint.
E7: TAYENE	Low hills formed on Tertiary basalt. Soils are stony and gradational. The vegetation is dominated by White Gum and Silver Wattle.

<sup>9</sup> Pinkard, 1980.

LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>10</sup>
<b>F: Forested low hills. Various siliceous materials. Mostly yellowish red, red or reddish brown gradational soils with eucalypt forest vegetation.</b>	
F2: SHEOAK HILL	Scattered areas of low hills formed on deposits of sandstone and mudstones (commonly referred to as the Mathinna Beds). Rock outcrops are a feature of the crests and upper slopes. The duplex soils on the mid slopes and the clay soil on the lowest component are markedly mottled.
F 4: LOW HEAD	Low hills formed on Jurassic dolerite scattered along the north coast. These low hills are characterised by their flat crests. The gradational soils support an open forest dominated by White Gum and Black Peppermint.
F 5: MT. WILLIAM	An extensive area of low hills formed on Devonian granite and granodiorite. Gradational soils have developed on the four components; those on the upper slopes and crests are gravelly, while those on the lower component are mottled.
F 6: RETREAT	Low hills trending north-north-west formed on sandstone and mudstone deposits in the north and northeast region. The sandstone and mudstone deposits are commonly referred to as the Mathinna Beds. A characteristic of this system is the sandy soils, which are loose and ‘snuffy’ when dry, but soft and boggy when wet. A coarse structured gradational soil has developed on the sharp crests and upper slopes and the stony mottled duplex soil on the mid slopes has an iron-organic B-horizon. The mottled gradational soil on the lower slopes and swales is often poorly drained.
F 14: WEST SCOTTSDALE	Low hills formed on Devonian granite and granodiorite. Gradational soils with gravelly surfaces have developed on all components except the lower slopes, where there is a gritty duplex soil. Rock outcrops are common on the rugged steep upper slopes. The system carries open forest vegetation dominated by Stringybark, Stringy Gum ( <i>Eucalyptus regnans</i> ) and Black Peppermint.



<sup>10</sup> Pinkard, 1980.

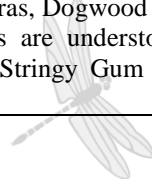
LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>11</sup>
F 18: ELLIOTT (Rich basalt soils)	Formed on Tertiary basalt are low hills trending north-east/south-west. This system is characterised by the deep red gradational soils on the crests, scarps and slopes. The soils on the crests and scarps are often stony, with floaters of basalt scattered throughout the soil profile. The clay soil in the drainage lines has a low permeability. Minor areas of yellowish brown duplex soils with a coarse structure occur throughout the system. The vegetation on this system has been largely cleared for cropping and grazing due to the soil fertility. Original vegetation consisted of tall closed forest dominated by White Gum, Stringybark and Black Gum with an understorey of Blackwood ( <i>Acacia melanoxylon</i> ) and Silver Wattle.
F 20: DIDDLEUM PLAINS	An area of low hills formed on Devonian granite and granodiorite. This system forms the watershed between several of the major river systems in the region and is prominent in the upper Dorset region of the Great Forester and Brid Rivers. Rock outcrops are common and the highest parts of the system are consistently occupied by gradational soils. The two lower components of this system have developed clay soils. The vegetation types on the gentle slopes of this system are dominated by tall closed forest dominated by Myrtle ( <i>Nothofagus cunninghamii</i> ), Sassafras ( <i>Atherosperma moschatum</i> ), Dogwood ( <i>Pomaderris apetala</i> ) and Stinkwood ( <i>Zieria arborescens</i> ). The steeper slopes are dominated by open forest consisting of Gum-topped Stringybark ( <i>Eucalyptus delegatensis</i> ), Stringy Gum and Stringybark.
F22: HIGHCLERE	Low hills formed on Tertiary basalt. The soils are gravely, gradational and duplex. Soils on the lower slopes of the system are deep. The soils are fertile and used extensively for grazing and cropping. The vegetation is closed forest dominated by Stringybark, Blackwood, Myrtle, Sassafras and Black Peppermint.

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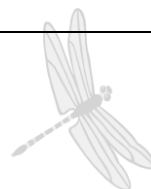
<sup>11</sup> Pinkard, 1980.



LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>12</sup>
<b>G; Forested low hills with various clay materials. The soils are duplex or gradational with Eucalypt forest vegetation.</b>	
G 8: LIETINNA	An area of low hills formed on Tertiary clays and gravels. This system is closely associated with the Elliott land system but is much steeper. Deep gradational soils have developed on these deposits with soils on the lower slopes and swales poorly drained and mottled. The drainage lines consist of small pockets of grey clay soil. Similar to the Elliott system most of the system has been cleared for agricultural purposes with the original vegetation type a low open forest consisting of White Gum, Blackwood, Silver Wattle and <i>Ozothamnus ferrugineus</i> .
<b>H: Geologically diverse hills. Mostly stony yellowish red, yellowish brown or brown gradational soils with mixed forest vegetation.</b>	
H 5: GOLDEN GATE	Sharp ridges and steep upper slopes characterise this land system, which is formed on sandstone-mudstone deposits. These deposits are the Mathinna Beds. In the Dorset region the only occurrence is on Mt. Horror on the east side of the Great Forester Dorset region. Soils are sandy gradational, ranging in colour from yellowish red to brownish yellow, although those on the mid slopes are mottled. The crests on this system are covered with tall open forest vegetation dominated by Tasmanian Ironbark ( <i>Eucalyptus sieberi</i> ) and Black Peppermint in the overstorey and Native Cherry ( <i>Exocarpi cupressiformis</i> ), Bulloak ( <i>Allocasuarina littoralis</i> ) and Silky Hakea ( <i>Hakea decurrens</i> ). The steep upper slopes of this land system are covered with closed forest vegetation dominated by Myrtle, Dogwood, <i>Ozothamnus ferrugineus</i> and Blanketleaf ( <i>Bedfordia salicina</i> ) and Waratah ( <i>Telopea truncata</i> ). Stringy Gum, Stringybark and Black Peppermint dominate the mid and lower slopes, swales and drainage lines of this system.
H 10: ST. COLUMBA FALLS	Hills formed on Devonian granite and granodiorite found east of Scottsdale in the Dorset region. The soils are gradational and red to strong brown in colour; rock outcrops are common on the relatively steep upper slopes. The upper slopes of the system are tall closed forest dominated by Myrtle, Sassafras, Dogwood and Stinkwood and in some areas these species are understorey vegetation to an overstorey of Stringybark, Stringy Gum and Gum-topped Stringybark.

<sup>12</sup> Pinkard, 1980.

LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>13</sup>
H 11: AVENUE RIVER	<p>An area of rugged hills formed on sandstone and mudstone occurring in the South Springfield area of the Dorset region. The soils are sandy mottled or whole coloured gradational soils. The vegetation on the upper components of the land system is tall open forest dominated by Tasmanian Ironbark, White Gum and Black Peppermint. The mid and lower slopes in the system are open forest dominated by Stringybark, White Gum and Black Peppermint.</p>
H 12: SIDELING	<p>Relatively steep hills formed on the sandstone-mudstone sequence of deposits of the Lower Devonian-Tremadocian-Cambrian period. The land system occurs in the upper Dorset region of the Little Forester River in the Dorset region. The soils have developed a stony duplex and gradational soil on the three upper components. The lower slopes and swales have developed a mottled clay soil. The soils on the steeper slopes are generally redder than those on the gentler slopes. The sharp ridge tops are covered with tall open forest dominated by Tasmanian Ironbark, Stringy Gum and rainforest species. The mid and lower slopes of the system are dominated by Stringy Gum, White Gum and Stringybark in the overstorey and dominated by Prickly Mimosa (<i>Acacia verticillata</i>), Native Hop (<i>Dodonaea viscosa</i>) and <i>Hakea</i> spp.</p>
H 18: BURNS CREEK	<p>An area of rounded hills formed on Devonian granite and granodiorite with a rugged topography. The system has many small rivers and creeks forming steep-sided gullies and swales. Rock outcrops are common especially on the upper slopes and crests. The system occurs in the upper Dorset region at the Mt. Maurice and Mt. Scott areas. The slopes have developed stony gradational soils and the upper swales are clay soil. The soils on the steeper slopes are redder than those on the gentler slopes. The vegetation on the upper components of the system is dominated by Stringy Gum, Stringybark and Gum-topped Stringybark. The lower slopes and swales of the system are dominated by rainforest species.</p>



<sup>13</sup> Pinkard, 1980.



LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>14</sup>
H 19: BARROW FALLS	Hills formed on sandstone-mudstone sequence deposits of the Lower Devonian-Tremadocian-Cambrian period and occurring in the upper Dorset region of the Little Forester River near Mt Arthur. The soils are sandy and have shallow surfaces that are loose and 'snuffy' when dry but boggy when wet. The steep upper slopes have uniform clay soils and the lower slopes and swales are coarse structured gradational soils.
H 20: ALBERTON	Steep and deeply dissected hills formed on sandstone-mudstone deposits. The soils are stony duplex with mottled gradational soils on the lower slopes. The soil surface is generally shallow. The vegetation is dominated by Gum-topped Stringybark, Stringybark and Stringy Gum with open forest areas dominated by White Gum, Stringybark and Black Peppermint. Rainforest occurs on gentle slopes and sheltered gullies.
H 21: EAGLE HAWK TIER	Hills formed on Jurassic dolerite and found in the upper Dorset region of the Little Forester River near Mt. Arthur. The upper components of the system have stony gradational soils and a stony clay soil in the drainage lines has formed on doleritic alluvium. The upper components of the system are dominated by Gum-topped Stringybark and White Gum. The drainage lines of the system are dominated by Stringybark and Black Peppermint with the main understorey vegetation consisting of Waratah, Pink Mountainberry ( <i>Cyathodes juniperina</i> ), Blanketleaf and Daisybush ( <i>Olearia phlogopappa</i> ).
H 22: POIMENA	Hills formed on Devonian granite and granodiorite. The soils are shallow and stony and contain quartz grit and decomposing mica and feldspar with rock outcrops on the crests. Stony gradational soils on the steeper upper slopes give way to clay soil on the lower component. Vegetation varies from wet eucalypt dominated forest to rainforest.



<sup>14</sup> Pinkard, 1980.

LAND SYSTEM AND MAP REFERENCE	MAIN FEATURES <sup>15</sup>
J: <i>Mountains of Jurassic dolerite or Devonian granite with mostly shallow and stony gradational soils. The vegetation is forest and scrub.</i>	
J 3: MOUNT MAURICE	<p>Mountains formed on lower Carboniferous-Upper Devonian granodiorite at Mt. Maurice, which is the upper Dorset region of the Great Forester River. The area is rocky and the whole system averages 950 metres in altitude.</p> <p>Shallow stony gradational soils have developed in the upper components of the system.</p> <p>The forest is dominated by Gum-topped Stringybark and Stringy Gum in the overstorey and wattles, Blanketleaf and Daisybush in the understorey.</p>
J 4: BARROW	<p>Mountains formed on Jurassic dolerite and occurring at Mt. Arthur in the upper Dorset region of the Little Forester River.</p> <p>Rock outcrops characterise the upper component of the system with some small areas of shallow, stony mountain soil. Rock flows of dolerite boulders form the upper slopes as scree. The lower slopes of the system are a stony clay soil.</p> <p>The crests and steep upper slopes is a closed alpine heath of <i>Leptospermum rupestre</i>, <i>Richea scoparia</i>, <i>Orites revoluta</i>, <i>Richea sprengelioides</i>, <i>Olearia ledifolia</i> and Yellowbush (<i>Orites acicularis</i>). The plateaux and gentler slopes of the system have closed scrub vegetation, which is dominated by stunted Gum-topped Stringybark, Myrtle and Waratah, and there is a closed rainforest vegetation community, which is dominated by Myrtle, Sassafras and Stinkwood.</p>

### 5.3.2 Acid sulfate soils

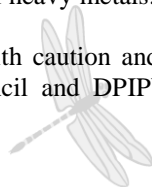
Northern coastal Tasmania is of particular concern for potential acid sulfate soils<sup>16</sup>, which can occur in coastal plains, wetlands and estuaries. They can also exist in some inland areas such as peat bogs, salt lakes and wetlands.

When these soil layers are exposed to air, they can oxidise to form sulfuric acid. If released, this acid can be extremely damaging to the environment, to infrastructure and to human health. There can also be release of toxic quantities of heavy metals.

Any significant excavation or drainage works need to be done with caution and in consultation with relevant authorities. Contact the Dorset Council and DPIPW (6336 5293) for more information and specialist advice.

<sup>15</sup> Pinkard, 1980.

<sup>16</sup> Tasmanian Planning Commission, 2009



## 6 MANAGEMENT

### 6.1 Fire Frequencies for Bush Types

Management of fire in native vegetation communities will entail the following:

- burn a variety of areas within the recommended fire frequency;
- identify areas for fire exclusion;
- burn to suit threatened species, if present;
- maintain a diversity of fire regimes and intensities in the community type and
- maintain fire history records on a fire map.

Vegetation community type <sup>17</sup>	Fire frequency <sup>18</sup>
Heathy forest and woodland	10-30 years
Shrubby forest	20-40 years
Lowland grassland	2-5 years
Riparian bush	Exclude fire
Saltmarsh	Exclude fire
Dry coastal vegetation	Exclude fire
Buttongrass moorland	5-20 years
Sphagnum bog	Exclude fire
Heath	10-30 years
Grassy woodland	4-10 years
Grassy forest	6-18 years
Highland grassland	5-20 years
Grassy/heathy woodland and forest	8-20 years
Wet forest	For regeneration after logging if needed
Banksia scrub and woodland	Natural fires only
Dry and temperate rainforest	Exclude fire
Alpine vegetation	Exclude fire
She-oak woodland and forest	Not necessary

<sup>17</sup> Refer to vegetation communities section.

<sup>18</sup> Wood, R. & Knee, A. in Kirkpatrick & Gilfedder, 1999.



## 6.2 Water Quality Ratings

The following water quality parameters give an indication of the quality of water. The Waterwatch water testing kit held by the Northeast Coast Landcare Group can test the following parameters:

- conductivity;
- turbidity;
- ortho-phosphate and
- temperature.

PARAMETER	EXCELLENT	GOOD	FAIR	POOR	DEGRADED
<b>Conductivity</b> ( $\mu\text{S}/\text{cmEC}$ )					
Valley	< 80	< 240	< 400	< 600	> 600
Plain	< 100	< 250	< 500	< 750	> 750
<b>Turbidity</b> (NTU)					
Valley	< 10	< 12.5	< 15	< 22.5	> 22.5
Plain	< 15	< 17.5	< 20	< 30	> 30
<b>pH</b>	6.0-7.5	5.5-6 or < 8.0	8.0- 8.5	5.0-5.5 or 8.5-9.0	< 5.0 or > 9.0
<b>Ortho-Phosphate</b> (mg/L)	< 0.008	< 0.02	< 0.04	< 0.08	> 0.08
<b>Nitrates</b> (mg/L)	< 0.05	< 0.1	< 0.2	< 0.4	> 0.4
<b>Temperature</b> ( $^{\circ}\text{C}$ )	Maximum recommended increase in the natural temperature of any inland water is 2 $^{\circ}\text{C}$				



## 6.3 Weeds, Pests and Diseases

### 6.3.1 Weed management



The information here is based on prioritisation of weed species in the Dorset region for the Dorset NRM Strategy (Cronin, 2002), and updated by Dorset NRM (2012). This list is not comprehensive and priorities will vary depending on local circumstances. Some management information<sup>19</sup> is suggested in the table for high prioritised weeds, but further advice should be obtained. Control information is available from the Dorset Council, the DPIPWE ([www.dpipwe.tas.gov.au](http://www.dpipwe.tas.gov.au); Weed Officer 1300 368 550) and [www.weeds.asn.au](http://www.weeds.asn.au). An excellent book on weeds and their control is “**Bush Invaders of South-East Australia**” (Muyt, 2001).

Photographs in this table by Anna Povey.





ALWAYS READ THE LABEL BEFORE USING HERBICIDES AND FOLLOW LABEL INSTRUCTIONS. ALWAYS FOLLOW BEST PRACTICE GUIDELINES.

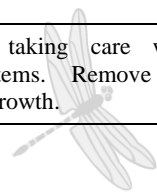
“**Cut-paint**” – cut off plant close to the ground then immediately (within 10 seconds) paint /spray/dab the stump with systemic herbicide (usually glyphosate, neat or 50%).




**WoNS** – Weed of National Significance




Weed species	Comments	Management
African Boxthorn <i>Lycium ferocissimum</i> 	WoNS	Drill-fill or cut-paint. Selective herbicides most effective; spray when good foliage cover.
Arum Lily <i>Zantedeschia aethiopica</i> 	Garden escape that is extremely invasive in damp bushland. POISONOUS	Dig out rhizomes carefully. Metsulfuron-methyl spray (with penetrant) in winter-early spring can be effective.
Asparagus “Fern” <i>Asparagus scandens</i>	WoNS Bridport	Dig out rhizomes carefully and dispose of safely. Or spray winter-early spring.
Barberry <i>Berberis darwinii</i>	Little Forester catchment, Brid River, other outliers.	Cut-paint

<sup>19</sup> Muyt 2001, Kirkpatrick & Gilfedder 1999


Weed species	Comments	Management	
Blackberry <i>Rubus fruticosus</i>	WoNS	See comprehensive control information at <a href="http://www.dpipwe.tas.gov.au">www.dpipwe.tas.gov.au</a>	
Blue Butterfly Bush <i>Psoralea pinnata</i> 	Garden escape, especially coastal, invades bushland.	Cut-paint Long-lived seeds; follow-up control.	
Boneseed <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>		WoNS Widespread in Bridport.	Easy to handpull, or cut-paint.
Bridal Creeper <i>Asparagus asparagoides</i>		WoNS Bridport.	Dig out rhizomes carefully and dispose of safely. Or spray winter-early spring.
Brooms: Montpellier <i>Genista monspessulana</i> English/Scotch <i>Cytisus scoparius</i> 	WoNS	Handpull small plants. Cut-paint. Or spray. Long-lived seeds; require ongoing follow-up. Burn can stimulate seed germination.	
Elisha's Tears (Himalayan honeysuckle) <i>Leycesteria formosa</i>	Animals spread seeds. Invasive in moist forest.	Cut-paint, taking care with layered stems. Remove to prevent regrowth.	



Weed species	Comments	Management
<p>Gorse <i>Ulex europaeus</i></p>	<p>WoNS. Not yet extensive in Dorset; high priority control.</p>	<p>Handpull or cut-paint small infestations. Herbicide and other methods described at <a href="http://www.dpipwe.tas.gov.au">www.dpipwe.tas.gov.au</a>. Long-lived seed; requires ongoing follow-up control.</p>
<p>Holly <i>Ilex aquifolium</i></p>	<p>Birds spread seeds far into forest.</p>	<p>Cut-paint.</p>
<p>Japanese Knotweed <i>Fallopia japonica</i></p> 	<p>Scottsdale. Extremely difficult and invasive weed, must be eradicated.</p>	<p>Contact DPIPWE Weeds Officer (1300 368 550)</p>
<p>Mirror Bush <i>Coprosma repens</i></p> 	<p>Invasive garden escape, especially in coastal areas. Birds carry seeds.</p>	<p>Cut-paint.</p>
<p>Pampas Grass <i>Cortaderia</i> spp.</p>	<p>Attempts to eradicate from state should be followed up.</p>	<p>Remove flower stems before seeding. Herbicide (e.g. glyphosate) effective. Old foliage may need to be removed/burnt, then regrowth sprayed.</p>
<p>Paterson's Curse <i>Echium plantagineum</i></p> 	<p>Reported in Dorset. Aim to eradicate.</p>	<p>Contact DPIPWE Weeds Officer (1300 368 550).</p>
<p>Radiata Pine <i>Pinus radiata</i></p>	<p>Invades bushland, radically altering ecology. Should be taken more seriously as a weed.</p>	<p>Handpull seedlings. Cut trees below lowest branch. Drill-fill, frill or ringbark trees that may be left standing.</p>
<p>Ricegrass <i>Spartina anglica</i></p>	<p>Continue aim to eradicate from Bridport area.</p>	<p>Dig out small infestations. Herbicide use in aquatic areas needs close consultation with authorities.</p>

Weed species	Comments	Management
<p>St John's Wort <i>Hypericum perforatum</i> and other <i>Hypericum</i> species.</p> 	<p>Reported in Ringarooma catchment.</p>	<p>Easy to hand-pull, or cut-paint. Very invasive.</p>
<p>Seaspurge <i>Euphorbia paralias</i></p> 	<p>POISONOUS milky sap; keep away from eyes. Wear protective clothing (gloves etc). Eradication zone south of Musselroe Point.</p>	<p>Hand pull. Large plants can be dug out or cut-painted. Spray larger infestations with metsulfuron methyl (and penetrant) but avoid off-target damage to native plants.</p>
<p>Spanish Heath <i>Erica lusitanica</i></p> 	<p>Growing problem on roadsides, also invades bushland.</p>	<p>Complementary action by road managers and landholders needed. Avoid slashing when in seed. Handpull small plants. Cut-paint, with followup. Spray with selective herbicides (e.g. metsulfuron-methyl).</p>
<p>Sycamore Maple <i>Acer pseudoplatanus</i></p>		<p>Cut-paint</p>
<p>Thistle species:</p>		<p>Vegetation management is critical for any thistle control,</p>
<p>~ California <i>Cirsium arvense</i></p>		<p>with healthy, vigorous pasture less vulnerable to invasion.</p>
<p>~ Nodding <i>Carduus nutans</i></p>		<p>Control options include:</p>
<p>~ Slender <i>Carduus pycnocephalus</i></p>		<p>Hand-hoeing, slashing Cultivation</p>
<p>~ Scotch/Spear <i>Cirsium vulgare</i></p>		<p>Herbicides (best at seedling &amp; rosette stage)</p>
<p>~ Variegated <i>Silybum marianum</i></p>	<p>Can be POISONOUS to stock.</p>	<p>Hygiene practices and control planning. Detailed information for each thistle species at <a href="http://www.dpipwe.tas.gov.au">www.dpipwe.tas.gov.au</a></p>



Weed species	Comments	Management
<p>Wattle species:</p> <p>~ Cape Wattle <i>Paraserianthes lophantha</i></p>  <p>- has very large leaves, seedpods</p> <p>~ Cootamundra Wattle <i>Acacia baileyana</i></p> <p>~ Ovens Wattle <i>Acacia pravissima</i></p>	<p>Many mainland wattle species can be invasive in Tasmania. All wattles have seeds that can live for decades.</p>	<p>Cut-paint</p>
<p>Water Hawthorn (Cape Pondweed) <i>Aponogeton distachyos</i></p>	<p>Very invasive aquatic weed. Ringarooma catchment, from about Derby to the Ramsar site.</p>	<p>NB Similar native aquatic plants. Obtain control advice from Weed Officer (1300 368 550).</p>
<p>Willows (Crack) <i>Salix fragilis</i></p>	<p>WoNS. Obstruct stream channels, increase flooding, cause erosion, greatly alter instream and riparian habitats. Ringarooma Ramsar site and McKerrows Marsh Nature Reserve.</p>	<p>Frill-cut or drill-fill herbicide into sapwood. Excavation or cutting produces problems of regrowth from broken fragments. Glyphosate products without surfactant are the only herbicides registered for use in aquatic areas. Revegetate riverbanks after willow removal.</p>

Other significant weeds which have been noted in Dorset municipality, and should be controlled where possible, include:

Blue Periwinkle, *Vinca major*; Briar Rose, *Rosa rubiginosa*, *R. canina*; Capeweed, *Arctotheca calendula*; Cotoneaster, *Cotoneaster* spp.; Cumbungi/Bulrush, *Typha latifolia*; Dock, *Rumex* spp.; Foxglove, *Digitalis purpurea* (POISONOUS); Hawthorn, *Crataegus monogyna*; Hemlock (carrot weed), *Conium maculatum*; Horehound, *Marrubium vulgare*; Ivy (Cape), *Delairea odorata* (POISONOUS); Ivy (English), *Hedera helix* (POISONOUS); Lupins, *Lupinus* spp.; Nightshade, *Solanum* spp. (some species POISONOUS. NB native Kangaroo Apple); Poplar, *Populus* spp.; Ragwort, *Senecio jacobaea* (POISONOUS. NB Many similar native species); Willows (Grey Sallow, “Pussy Willow”), *Salix cinerea*.

To avoid introducing new weeds, avoid planting species that may spread. Plants with berries or wind-blown seeds are most likely to spread a great distance.

## 6.3.2 Foxes

Substantial physical evidence, including confirmed scats in northeast Tasmania, indicates that European red foxes are present and threaten the state's wildlife, agriculture, tourism and economy. Foxes are recognised nationally as the single most devastating introduced pest and threat to Australia's native wildlife. It would be an unmitigated disaster if they were allowed to establish in Tasmania.

The fox is a highly mobile, intelligent and elusive animal that is nearly impossible to detect using conventional methods while populations are in low numbers.

Evidence indicates that the density of the Tasmanian fox population might be as low as one fox per 500 km<sup>2</sup>.

Research in other parts of the world shows that once foxes are at a density of one per 25 km<sup>2</sup> they are almost impossible to find, and at one per 40 km<sup>2</sup> the chances of finding them virtually collapse. Tasmania is trying to achieve something that has not been achieved anywhere else in the world by eradicating foxes (with a baiting program) before they have become established and are more readily visible in the landscape.

The FOX OUT hotline receives around 6 calls per week from people who are reporting fox sightings or possible evidence of fox activity. Over 3020 hotline reports have been received since 2002 (as at August 2012).



(Image courtesy of DPIPW E.)

Find out more at [www.dpipwe.tas.gov.au/fox](http://www.dpipwe.tas.gov.au/fox) , on which website this information was based.

**Report all fox sightings or signs to the Fox Eradication Program hotline on 1300 369 688 (1300 FOX OUT).**

### 6.3.3 Feral cats

Feral cats are reported to have greatly increased in numbers recently, perhaps due to the reduction in devil numbers.

Cats, both feral and domestic, are formidable hunters. Feral cats prefer live prey but do occasionally scavenge carrion or human food scraps. Their diet generally reflects the fauna present in their area. Rabbits are usually the staple prey in Tasmania, but they also eat small mammals, birds, reptiles (particularly skinks) and other animals. Unfortunately native birds well outnumber introduced birds in the diet of feral cats in most areas of the state. Domestic cats also impact native wildlife. They often continue to hunt even when fed on a regular basis.

Cats are the definitive host of the parasite *Toxoplasma gondii* which causes **toxoplasmosis** and is known to induce abortion in sheep and to infect humans and wildlife species. It is a particular risk to unborn babies. Toxoplasmosis can lead to death in bandicoots and other wildlife species.

Another parasitic disease spread by cats, sarcosporidiosis, appears to be increasing, with Tasmanian abattoirs rejecting more and more affected sheep carcasses (ABC Rural 3/2/12).

Some north-eastern communities have established feral cat management programmes.

#### How can you help?

- Desex your cat.
- Keep your cat in at night.
- Fit your cat with a collar and two bells, one on either side of the name tag.
- If you purchase a cat, visit a centre that re-homes abandoned cats.
- Support landowners to do targeted trapping.
- Contact Dorset NRM (6352 6537) or the Invasive Species Branch, DPIWPE (6336 5320), for support in establishing a community-based cat management programme.

Further information at Parks and Wildlife Service website (<http://www.parks.tas.gov.au/index.aspx?id=9135>), on which this section is based.

Since 1 July 2012, cat management laws apply throughout Tasmania. Under the **Cat Management Act 2009**, cats found in a prohibited, rural or remote area may be trapped and returned to their owners, seized or humanely destroyed.

### 6.3.4 Phytophthora rootrot

Phytophthora rootrot, *Phytophthora cinnamoni*, is one of the major threats to Dorset's native vegetation, and it can be introduced to new areas simply with the transport of soil.

Phytophthora rootrot is an introduced fungal pathogen that attacks the roots of susceptible plants. Much of the local vegetation may be affected, especially heathland, dry sclerophyll forest, moorlands and scrub. The susceptible species tend to be many of the most attractive flowering shrubs and herbs. Grasstrees collapse dramatically once infected. Heathy vegetation can be decimated, with only resistant sedges, grasses and few wildflowers remaining.

People can transport the fungus to new areas in dirt adhering to vehicles and machinery, items they are carrying or footwear, or in imported soil or gravel. Unfortunately this fungus is hidden from view within plant roots and its symptoms can be difficult to recognise in the field. It is best to assume that any dirt may be infected.

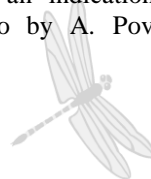
#### What you can do

- Avoid transporting dirt to natural areas.
- Keep your car or 4WD clean, not forgetting the underside, wheel arches, etc.
- Washdown machinery, vehicles and tools before moving to another site.
- Keep your bushwalking gear and boots clean.
- Dispose of dirty washing water down a drain that connects to a septic tank or a sewage system. Clean at a commercial carwash.

More information at <http://www.dpiw.tas.gov.au/inter.nsf/themenodes/egil-53y2zc?open>



Yellowing foliage can be the first sign of a phytophthora infection. Grasstrees are amongst the most susceptible species, and a progressing “front” of dying grasstrees is an indication of phytophthora. (Photo by A. Povey.)



## 6.4 Climatological Summary

The present climate in the Dorset region is greatly dominated by the maritime influence, altitude and distance from the sea.

The coastal region enjoys a mild maritime climate that is drier than the hinterland and upper Dorset region. These mild conditions are the effect of heat absorption and storage by the ocean, and they are lessened by increases in both distance from the coast and altitude.

To effectively cover the Dorset region it is necessary to analyse three weather observation station data from the coast, hinterland and upper mountainous reaches of the Dorset region. The available data comes from the stations Bridport, Scottsdale and Diddleum.

### 6.4.1 Lower Dorset region

The climate is mild with a strong maritime influence. Climate data is available from the Bridport Post Office observation station (86 years of rainfall data and 9 years of temperature, cloud cover and wind information) and Emma Street observation station (7 years of temperature, rainfall, cloud cover and wind information). The climate data shows the area enjoys a mild climate with few frosts in winter and mild winter and summer temperatures.

The most reliable data is the Bridport Post Office with the longest period of observations. These observations show an annual rainfall of 766 mm, with February being the hottest month with an average of 22.6 °C and July the coldest month with an average of 13.2 °C. Swan Island observation station has long-term data with some of the observations up to 128 years. Swan Island and Bridport are very similar with the highest temperatures in February (20.3°C-17 years of records) with a winter-dominated rainfall of 613 mm mean rainfall (128 years of records).

The rainfall figures illustrate the winter-dominated rainfall, especially during the months of July and August.

Strong winds and gales tend to occur predominantly from September to December during the spring period with December the windiest month of the year in Bridport and on Swan Island.



## 6.4.2 Mid Dorset region

The average annual rainfall for the mid Dorset region is 1040 mm (Scottsdale-West Minestone Road observation station, 25 years of records).

The maritime influence on temperatures is less than the lower Dorset region resulting in more severe and frequent frosts in winter and lower temperature averages in winter and higher summer temperatures.

The highest mean daily maximum temperature is 23.1°C and occurs in February. The lowest mean daily minimum temperature is 3.4 °C and occurs in July.

## 6.4.3 Upper Dorset region

The average annual rainfall in the upper Dorset region is 1536 mm (Diddleum-Sowers Road observation station, 5 years of observations).

The distance from the coast and increase in altitude (and resulting lack of maritime influence) of the upper Dorset region results in lower average temperatures in winter and summer with severe frosts and snow in winter months.

## 6.4.4 Climate change

Climate change and sea level rise are having impacts on Tasmania's weather and coastlines, and will do so increasingly in future<sup>20</sup>. Local government area climate profiles, developed by the Antarctic Climate and Ecosystems Cooperative Research Centre ([www.dpac.tas.gov.au/divisions/climatechange/adapting/climate\\_futures](http://www.dpac.tas.gov.au/divisions/climatechange/adapting/climate_futures)) say that Dorset can expect increased temperatures, and increased annual average rainfall but with greater extremes.

These changes threaten some natural resources in northeast Tasmania. Much of northeast Tasmania's coastlines are vulnerable to flooding and erosion due to sea level rise and storm tides (Sharples 2006). South-east Australia is a marine global warming hotspot. More tropical marine species are being found off Tasmania as the Eastern Australian Current extends further south, while some temperate species are retreating southwards. Alpine regions are expected to be hard hit by warming. Warmer temperatures are also expected to increase the spread of invasive species such as weeds, phytophthora root rot and the spiny sea urchin<sup>21</sup>. Other likely impacts of climate change on natural values are many<sup>22</sup>.

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<sup>20</sup> Grose et al 2010.

<sup>21</sup> Resource Management and Conservation, 2008

<sup>22</sup> DPIIWE, 2010



## 6.5 Aboriginal Land Management and Heritage

The Tasmanian Aboriginals in the Dorset areas were made up of about seven bands which have been called the Northeast tribe. A band consisted of 50-80 people.

The indigenous people kept the heaths and plains behind their coast open by firing. The coastline and associated lagoons and estuaries provided abundant seasonal food resources, such as muttonbirds, swans, ducks and seals. These coasts and hinterlands were capable of supporting a high population during most of the year and other tribes from the Ben Lomond and the North Midlands used to visit in summer (Ryan, 1981).

The northeast coast is a region of great significance to Aboriginal Tasmanians because of the historical association with many of their women who were taken from there by the sealers in the early 1800's. Most of the Aboriginal Tasmanian community can trace their ancestry directly back to these women who were taken to the Bass Strait islands by the sealers (West, 2000).

The protection of Aboriginal heritage sites is of vital importance as Aboriginal archaeological resources are diminishing as a result of modern land use patterns (Kee 1987).



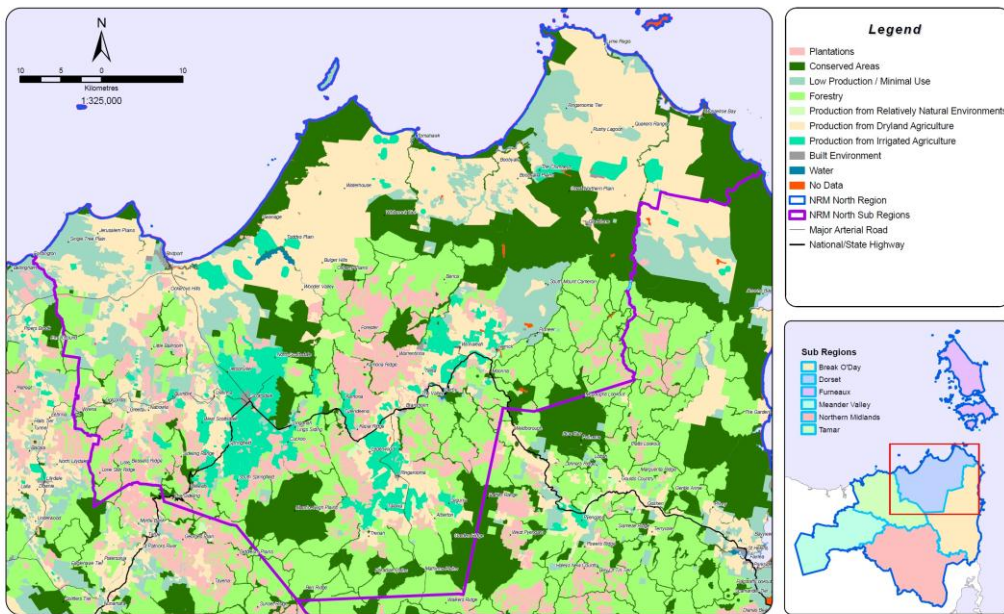
Large middens may have taken hundreds of years to accumulate. They can reveal information about ancient people's lives, and about the fauna of past times.

(Photograph by A. Povey)



## 6.6 Land Use and Reserves

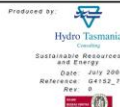
The following map shows land use in the Dorset region (NRM North, 2008), including conserved areas, production from dryland and irrigated agriculture, plantations and other forestry.



Dorset Sub Region

Map 14 - Land Use in the Northern NRM Region

Data Note: Plantation data has been extracted from Provisional TASVEG 2008 (DPIW 2008)  
 Land Use data (DPIW, 2003). Version 6 of the Australian Land Use and Management (ALUM) is used to attribute the land uses.





## 7 REFERENCES AND INFORMATION

Useful **wildlife** websites include <http://www.parks.tas.gov.au/index.aspx?base=430> and <http://www.dpipwe.tas.gov.au/inter.nsf/ThemeNodes/LBUN-5362MH?open>.

**Frog** calls and information can be found on the DPIPWE website (<http://www.dpipwe.tas.gov.au/inter.nsf/ThemeNodes/BHAN-54B9CJ?open>). An excellent CD of calls and natural history of frogs is available from the Central North Field Naturalists (<http://www.disjunctnaturalists.com>). Interesting **wildlife and habitat** information is found in “Birds, Bugs, Bettongs and Bush” [http://www.dpiw.tas.gov.au/inter/nsf/attachments/ljem-6g2uj2/\\$file/kit10.pdf](http://www.dpiw.tas.gov.au/inter/nsf/attachments/ljem-6g2uj2/$file/kit10.pdf). **Bush management** is addressed concisely in the “Tasmanian Bushcare Toolkit” at <http://www.dpiw.tas.gov.au/inter.nsf/publications/lbun-6b23w5?open>.

An excellent pictorial **key to Tasmanian plants** is at <http://www.utas.edu.au/dicotkey/dicotkey/key.htm>.

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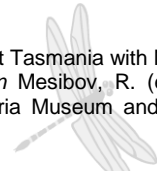
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