

Site 61. Coppelia Street Bushland, Wantirna South

Public park (formerly a clay pit and rubbish tip) with regenerating native vegetation. Melway ref. 63 E2.

Site Significance Level: *State*

- A remarkable example of natural regeneration of the regionally endangered vegetation type, Swampy Woodland;
- Some of the vegetation is in good ecological condition despite having been once totally destroyed;
- Eight of the plant species are rare or threatened in Knox, and four of these are rare or threatened in the whole Melbourne area;
- The site is used for monitoring and studying the regenerative capacity of Swampy Woodland and how this may be used to help this vegetation type to recover from its endangered status in the bioregion.

Aerial photograph and plan: See page 304, which covers this site and Site 60.

Boundaries

This 1.21 ha site is the whole of a single lot, outlined in red and marked 'Coppelia Street Bushland' on the aerial photograph.

Land use & tenure: Council reserve, zoned Public Park and Recreation Zone.

Site description

This site is a remarkable example of natural regeneration of a regionally endangered vegetation type, complete with rare plants, following massive disturbance.

Approximately half the site was once part of a pit used for extraction of clay, and the remainder (strips along the northern and eastern edges) was completely cleared at that time. The strip along the eastern edge was covered with an elongated mound of overburden from the pit.

The clay pit was exhausted in 1974 and then used as a rubbish tip until the mid 1980s, when it was capped with clay. Native vegetation subsequently regenerated in the clay and around the rest of the site. The only native vegetation in the reserve that seems to predate the mid 1980s is on the mound, where there are some mature trees that would have been beneficial during the operation of the clay pit and tip, for visual screening and interception of dust.

The origin of the clay in which the natural regeneration has occurred is unknown, but for practical reasons, it would have been nearby (possibly stockpiled overburden from the same clay pit). The profusion of swamp-loving plants that germinated indicates that the clay came from somewhere that once had Swampy Woodland vegetation (a regionally endangered Ecological Vegetation Class). This description fits the pre-European vegetation of the Coppelia Street Bushland, as inferred from its location on a broad drainage line with alluvial soil and a slope of only 2%. The plant species present prior to the excavation of the clay pit would have been more or less the same as those present now.

No effort was made to encourage the natural regeneration until its significance was recognised around 1997. At that stage, there was a moderate cover of weeds, but these have since been progressively reduced. There was also a large number of plants whose species are rare or threatened in Knox or the whole Melbourne area; e.g. hundreds of Salmon Sun-orchids (*Thelymitra rubra*). Part of the area was regularly mown and part had developed into dense regrowth. The dense and open areas have important, complementary roles in conserving the native vegetation; e.g. the sun-orchids thrive in the open areas whereas the Leafless Globe-pea, *Sphaerolobium minus*, and the Horned Orchid *Orthoceras strictum* are in the dense vegetation. Therefore, current management aims to retain both open areas (partly with slashing) and areas where shrubs and trees are allowed to develop naturally.

The area of dense regrowth is now at an adolescent stage, with the eucalypts still small but reproductively mature, and the dense, prickly understorey in the unmown areas is starting to thin out (accelerated by drought in recent years).

The progress of development of the regrowth has been the subject of a monitoring program by Dr Lorimer for Knox City Council since October 1998. It serves as an important case study, showing how Swampy Woodland can regenerate under the right circumstances, even after it would have been deemed totally destroyed. This sort of information could be important for helping the regional representation of this vegetation type to recover from its present endangered condition. For example, the demonstration that the vegetation has a remarkable ability to regenerate from subsoil may provide a clue about how to facilitate regeneration without allowing weeds to take over.

Until the start of the current drought, the site's history as part of a rubbish tip was apparent from bubbling springs of tip leachate water and gas welling up at several locations, with the water flowing over the ground in shallow channels that have formed.

More details about the reserve can be obtained from 'A Management Plan for Coppelia Street Bushland, Wantirna South' by G.S. Lorimer (2001) for Knox City Council.

Relationship to other land

Land use to the north, west and east of the Coppelia Street Bushland is urban residential, with negligible indigenous vegetation. The eastern part of Llewellyn Reserve (part of Site 60) adjoins to the south, with its playing fields and narrow strips of degraded native vegetation. These areas have negligible impact on the conservation values of the Coppelia Street Bushland.

The Blind Creek habitat corridor lies 125 metres to the west, on the western edge of Llewellyn Reserve. The natural vegetation of this corridor is fairly badly degraded by weeds and loss of species, but it still provides enough cover and continuity to support movement of many bird species. The Coppelia Street bushland has lower weed coverage than the Blind Creek corridor and therefore, if it is allowed to develop as nature intended, it offers the potential to attract birds using the creek corridor. Many insects are also likely to move between the corridor and the Coppelia Street bushland.

Exchange of pollen and seeds by birds and insects should avoid most of the inbreeding problems that would otherwise occur in a bushland block as small as the Coppelia Street bushland.

However, the construction of the EastLink road through this part of the Blind Creek habitat corridor might significantly reduce the movement of birds and insects to the Coppelia Street Bushland, and thereby threaten the future of some of the indigenous plants.

Bioregion: Gippsland Plain

Habitat types

Swampy Woodland (EVC 937, **regionally Endangered**) in various stages of regrowth and subject to varying history.

The total area of native understorey is estimated to be 0.88 ha, comprising 0.20 ha in good ecological condition (rating B), 0.51 ha in fair ecological condition (rating C) and 0.17 ha in poor ecological condition (rating D).

Dominant canopy trees: *Eucalyptus ovata* with fewer *Eucalyptus cephalocarpa*, *E. viminalis* and hybrids between all these. There are also some *Acacia dealbata* as tall as most of the eucalypts.

Dominant lower trees: *Acacia melanoxylon* and *Exocarpos cupressiformis*.

Shrubs: Variable in density from very dense to very sparse, depending on the history of regeneration and slashing.

There is a tall shrub layer dominated by *Leptospermum scoparium* or *Melaleuca ericifolia* and a lower shrub layer dominated by *Goodenia ovata*.

Vines: The light twiner, *Billardiera mutabilis*, is moderately abundant.

Ferns: Absent.

Ground flora: Dominated by *Microlaena stipoides*, *Lomandra longifolia*, *Austrostipa rudis*, *Rytidosperma* species, *Lepidosperma gunnii* and *Schoenus apogon*, with patches of the open area heavily populated by *Thelymitra* species (mostly *T. pauciflora*).

Plant species

The following plant species were observed by the author in the years indicated. The column headed 'Risk' indicates the indigenous species' risk of extinction in Knox as follows: 'C'=Critically Endangered; 'E'=Endangered; and 'V'=Vulnerable.

Risk	Indigenous Species	Year	Risk	Indigenous Species	Year
	<i>Acacia dealbata</i>	2007		<i>Bursaria spinosa</i>	2007
V	<i>Acacia mearnsii</i>	2007		<i>Campylopus</i> sp.	2007
V	<i>Acacia melanoxylon</i>	2007		<i>Carex breviculmis</i>	2007
	<i>Acacia paradoxa</i>	2007		<i>Cassinia arcuata</i>	2007
V	<i>Acacia verticillata</i>	2007	E	<i>Centella cordifolia</i>	2007
	<i>Acaena novae-zelandiae</i>	2007	V	<i>Coprosma quadrifida</i>	2007
	<i>Arthropodium strictum</i>	1999	V	<i>Cotula australis</i>	2007
	<i>Austrostipa rudis</i> subsp. <i>rudis</i>	2007	V	<i>Crassula decumbens</i>	2007
	<i>Billardiera mutabilis</i>	2007	E	<i>Daviesia latifolia</i>	1998
	<i>Bossiaea prostrata</i>	2007		<i>Deyeuxia quadriseta</i>	1999
	<i>Burchardia umbellata</i>	2007		<i>Dianella admixta</i>	2007

Risk	Indigenous Species	Year	Risk	Indigenous Species	Year
V	<i>Drosera peltata</i> subsp. <i>auriculata</i>	1999	E	<i>Melaleuca ericifolia</i>	2007
V	<i>Epacris impressa</i>	2002		<i>Microlaena stipoides</i>	2007
	<i>Eragrostis brownii</i>	2007		<i>Microtis parviflora</i>	1999
V	<i>Eucalyptus cephalocarpa</i>	2007	C	<i>Olearia ramulosa</i> (perhaps planted)	2007
V	<i>Eucalyptus ovata</i>	2007	V	<i>Opercularia ovata</i>	2007
E	<i>Eucalyptus viminalis</i> subsp. <i>viminalis</i>	2007	V	<i>Opercularia varia</i>	2007
V	<i>Exocarpos cupressiformis</i>	2007	C	<i>Orthoceras strictum</i>	2004
	<i>Gahnia radula</i>	1999		<i>Oxalis exilis/perennans</i>	2007
	<i>Gonocarpus tetragynus</i>	2007	E	<i>Ozothamnus ferrugineus</i>	2007
E	<i>Goodenia humilis</i>	2007	C	<i>Patersonia occidentalis</i>	2007
	<i>Goodenia ovata</i>	2007	V	<i>Platylobium obtusangulum</i>	2007
V	<i>Hemarthria uncinata</i>	2007		<i>Poa morrisii</i>	2007
	<i>Juncus amabilis</i>	2007		<i>Poranthera microphylla</i>	2007
	<i>Juncus bufonius</i>	1999		<i>Rytidosperma laeve</i>	1999
	<i>Juncus gregiflorus</i>	2007		<i>Rytidosperma linkii</i> var. <i>fulvum</i>	2007
	<i>Juncus pallidus</i>	2007		<i>Rytidosperma racemosum</i>	2007
E	<i>Juncus procerus</i>	2007	E	<i>Rytidosperma semiannullare</i>	2007
	<i>Juncus sarophorus</i>	2007		<i>Rytidosperma setaceum</i>	2007
E	<i>Juncus subsecundus</i>	2007		<i>Schoenus apogon</i>	2007
	<i>Kunzea ericoides</i> spp. agg.	2007		<i>Senecio hispidulus</i>	2007
	<i>Lachnagrostis filiformis</i>	2007	E	<i>Senecio minimus</i>	2007
V	<i>Lagenophora gracilis</i>	2007	C	<i>Sphaerolobium minus</i>	2007
E	<i>Lepidosperma filiforme</i>	1999	V	<i>Thelymitra peniculata</i>	2007
	<i>Lepidosperma gunnii</i>	2007	C	<i>Thelymitra rubra</i>	1999
V	<i>Leptorhynchus tenuifolius</i>	2007		<i>Themeda triandra</i>	2007
E	<i>Leptospermum scoparium</i>	2007		<i>Thuidiopsis furfurosa</i>	2007
	<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	2007		<i>Tricoryne elatior</i>	2007
	<i>Lomandra longifolia</i>	2007	V	<i>Veronica gracilis</i>	2007
V	<i>Lythrum hyssopifolia</i>	1999	E	<i>Xanthosia dissecta</i>	2002

Introduced Species

<i>Acacia baileyana</i>	<i>Ehrharta erecta</i>	<i>Paspalum dilatatum</i>
<i>Acacia floribunda</i>	<i>Ehrharta longiflora</i>	<i>Pennisetum clandestinum</i>
<i>Acacia longifolia</i> subsp. <i>longifolia</i>	<i>Erica lusitanica</i>	<i>Pittosporum undulatum</i>
<i>Agrostis capillaris</i>	<i>Eucalyptus</i> sp.	<i>Plantago lanceolata</i>
<i>Aira</i> sp.	<i>Fumaria officinalis</i> spp. agg.	<i>Poa annua</i>
<i>Allium triquetrum</i>	<i>Galium aparine</i>	<i>Polygonum aviculare</i> s.l.
<i>Anagallis arvensis</i>	<i>Gladiolus undulatus</i>	<i>Prunella vulgaris</i>
<i>Anthoxanthum odoratum</i>	<i>Hakea salicifolia</i>	<i>Prunus cerasifera</i>
<i>Arctotheca calendula</i>	<i>Hedera helix</i>	<i>Romulea rosea</i>
<i>Aster subulatus</i>	<i>Holcus lanatus</i>	<i>Rosa rubiginosa</i>
<i>Briza maxima</i>	<i>Hypochoeris radicata</i>	<i>Rubus anglocandicans</i>
<i>Briza minor</i>	<i>Isolepis levynsiana</i>	<i>Setaria parviflora</i>
<i>Centaurium erythraea</i>	<i>Juncus articulatus</i>	<i>Sisyrinchium iridifolium</i>
<i>Cerastium glomeratum</i> s.l.	<i>Juncus microcephalus</i>	<i>Sonchus oleraceus</i>
<i>Cicendia filiformis</i>	<i>Leontodon taraxacoides</i>	<i>Taraxacum officinale</i> spp. agg.
<i>Cortaderia seloana</i>	<i>Ligustrum lucidum</i>	<i>Trifolium repens</i>
<i>Corymbia maculata</i>	<i>Lolium perenne</i>	<i>Vicia hirsuta</i>
<i>Cotoneaster glaucophyllus</i>	<i>Lonicera japonica</i>	<i>Vulpia bromoides</i>
<i>Cynodon dactylon</i>	<i>Oxalis pes-caprae</i>	<i>Watsonia meriana</i> var. <i>bulbillifera</i>

Notes concerning some of the locally threatened plant species

Goodenia humilis (Swamp Goodenia). Many large colonies, perhaps totalling >100 individuals.

Lepidosperma filiforme (Common Rapier-sedge). Small numbers were seen by the author in 1997 but they have not been found again.

Microtis parviflora (Slender Onion-orchid). Numbers not recorded.

Orthoceras strictum (Horned Orchid). A single specimen discovered in 2004.

Patersonia occidentalis (Long Purple-flag). Six plants were found.

Sphaerolobium minus (Globe-pea). Seventeen plants were found.

Thelymitra peniculata. Many dozens in some years, fewer in other years.

Thelymitra rubra (Salmon Sun-orchid). Approximately 100 plants were found in 2001; far fewer by 2007.

Fauna of special significance

None detected.

Fauna habitat features

- The high density and diversity of shrubs in the reserve significantly improves the habitat for native insects and birds. The prickliness of many of the shrubs helps protect birds from cats;
- Fragmentation of the site's native vegetation is to some degree offset by the diversity of habitat (dense to open, damp to dry), which is beneficial to some native fauna.

Significance ratings

The following is an assessment of the site's significance against the Department of Sustainability & Environment's standard criteria (Amos 2004).

Endangered Vegetation Types

Swampy Woodland is regionally endangered. It follows from Appendix 3 of *Victoria's Native Vegetation Management - a Framework for Action* (NRE 2002a) that the reserve's native vegetation is necessarily of at least High conservation significance. This, in turn, gives the site **State** significance under criterion 3.2.3 of Amos (2004).

Rare or Threatened Flora

Many of the locally threatened plant species listed above have viable populations, thereby meeting criterion 3.1.5 for a site of **Local** significance.

Scientific and Educational Value

The site is of **Regional** significance under criterion 5.1.1 because of its importance as a site for studying and monitoring the regenerative capacity of a regionally endangered EVC and the ways that this may be encouraged, with application to other sites in the region.

Threats

- Invasion by environmental weeds, of which the greatest threats (when last inspected in 2004) are:
 - Possible reinfestation of Blackberry (*Rubus discolor*), Japanese Honeysuckle (*Lonicera japonica*), Bulbil Watsonia (*Watsonia meriana*) and Spanish Heath (*Erica lusitanica*) if not kept in check;
 - The grass weeds Brown-top Bent (*Agrostis capillaris*), Paspalum (*Paspalum dilatatum*) and Couch (*Cynodon dactylon*), although these appear not to be expanding;
 - Cat's Ear (*Hypochoeris radicata*) and Ribwort (*Plantago lanceolata*) growing in the mown sections; and
 - Annual weeds growing on the elongated, north-south mound toward the site's eastern fence;

In 1999, the worst weeds included (in addition to the ones above) Blackberry (*Rubus discolor*), Japanese Honeysuckle (*Lonicera japonica*), Bulbil Watsonia (*Watsonia meriana*) and Spanish Heath (*Erica lusitanica*), but Council has since brought these under control.
- Critically small population sizes of several plant species, including the rare Horned Orchid, *Orthoceras strictum*;
- Potential suppression or elimination (perhaps temporary) of some indigenous plant species by out-competition from the dense scrub-forming shrubs. If this becomes a problem by about 2010, regeneration may have to be stimulated by fire or other means;
- Damage to dense scrub vegetation by children and Marijuana growers creating small clearings;
- Garden waste dumping by neighbours (although this problem has abated since 1999, when it was serious);
- The effects of tip leachate percolating through and over the soil (although the effects so far seem minor);
- Fragmentation of habitat caused by the newly constructed EastLink road, leading to reduced visitation by small insect-eating birds and hence a risk of worsening plant pests and diseases.

Management issues

- Guidance for management of the reserve's habitat is discussed in detail in '*A Management Plan for Coppelia Street Bushland, Wantirna South*' by G.S. Lorimer (1999) for Knox City Council;
- Knox City Council's current management regimen is part of a regular monitoring program; see '*Monitoring of Bushland Reserves in Knox*' and '*Monitoring of Bushland Reserves in Knox – 2002 Review*', both by Dr Lorimer for Knox City Council;
- As noted under 'Threats' above, if too many plant species become threatened by out-competition from dense shrubs by about 2010, regeneration may have to be stimulated by fire or other means;

- The plight of some scarce plant species should be improved by planting more individuals after propagating them from seeds collected on-site and/or nearby. This applies to *Lepidosperma filiforme*, *Patersonia occidentalis* and *Veronica gracilis*;
- All propagations and plantings should be precisely documented in Council's files about the reserve. This is particularly important because of the site's role in long-term ecological monitoring and the study of how to help Swampy Woodland recover from its endangered condition in the bioregion.

Administration matters

- This site is worthy of inclusion within the proposed Environmental Significance Overlay, ESO2, because of the matters considered under the heading, 'Significance ratings';
- The site is not included under the existing Vegetation Protection Overlay of the Knox Planning Scheme and was not recognised in the report by Water Ecoscience (1998);
- The Planning Scheme zoning is Public Park and Recreation Zone (PPRZ).

Information sources used in this assessment

- The 1997 report, '*Vegetation Survey of Linear Reserves – A Management Strategy for Riparian and Flood Plain Vegetation*', by Reid, Moss and Lorimer for Knox City Council, along with the supporting field data. This included descriptions of vegetation composition, compilation of a list of indigenous and introduced plant species, incidental fauna observations, and checks for fauna habitat, ecological threats and management issues. The fieldwork was conducted by Dr Lorimer in March and April 1997 and data from the Coppelia Street Bushland were partly aggregated with data from Llewellyn Reserve;
- Site surveys by Dr Lorimer on 17/10/98, 24/10/98 and 25/6/99 for '*A Management Plan for Coppelia Street Bushland, Wantirna South*' and '*Monitoring of Bushland Reserves in Knox*', both for Knox City Council in 1999. This included:
 - Compilation of lists of indigenous and introduced plants within each of five parts of the reserve;
 - Detailed mapping and documentation of rare species populations and the ecological condition of the vegetation;
 - A description of the vegetation's structural and floristic composition;
 - Compilation of detailed data from a quadrat;
 - Incidental fauna observations;
 - Checks for fauna habitat, ecological threats and management issues;
 - Recommendations for the care and maintenance of the vegetation, including weed control; and
 - Taking six photographs of scenes that capture the main ecological features of the reserve and that will be useful for long-term monitoring of the reserve;
- Surveys of the site by Dr Lorimer in 2002 and 2007 for '*Monitoring of Bushland Reserves in Knox – 2002 Review*' (Lorimer 2002) and '*Monitoring of Bushland Reserves in Knox – 2007 Review*' (Lorimer 2007a) for Knox City Council;
- A brief visit to the reserve to inspect the newly-discovered *Orthoceras strictum* on 14/1/04;
- Brief visits by Dr Lorimer in November of several other years since 1998 to examine the sun-orchids;
- Aerial photography from February 2001, April 2003 and February 2007;
- Satellite imagery of the district;
- The Department of Sustainability & Environment's BioMaps of the area;
- Maps of geology and topography produced by agencies of the Victorian government.