

Vegetation and flora of Nearie Lake Nature Reserve, far western New South Wales

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Westbrooke, M.E., Miller, J.D. and Kerr, M.K. (Centre for Environmental Management, University of Ballarat, P.O. Box 663, Ballarat, Victoria, Australia 3357) 1997 Vegetation and flora of Nearie Lake Nature Reserve, far western New South Wales. Cunninghamia 5(1): 129–137. The vegetation of Nearie Lake Nature Reserve (lat 141° 52'E, long 33° 25'N), an overflow lake of the Great Darling Ana Branch in far western New South Wales, is described and a species list provided. Five vegetation communities have been identified and 150 vascular plant species recorded during surveys in 1995 and 1996. A further ten species recorded by Lloyd (1992) but not in this survey are noted.

Introduction

Nearie Lake is one of a number of periodically flooded lakes on the Great Darling Ana Branch in far western New South Wales (141°52'E, 33°25'N). It is located 80km north of Wentworth (Figure 1) and is at a height of 38m a.s.l. The water regime of the Ana Branch has been modified since the 1870s, when weirs were first built to control flows (Withers 1992). As a result of flood mitigation and water conservation measures the flood regime within the lake had been severely modified, water being held for longer at a lower level than would be the case from natural floods (Lloyd 1992). As a result of this change the *Eucalyptus largiflorens* community was threatened. A regulator was put in place in 1995 to control entry of water to the Lake. In future the Lake will only be flooded at times when this is considered likely to have occurred naturally, thought to be approximately one year in ten (Lloyd 1992). Nearie Lake was previously part of the Avoca Para pastoral lease but in 1973 it was assigned to the NSW National Parks and Wildlife Service for dedication and management as a nature reserve.

Land systems

The lake bed consists of heavy clay with a lunette to the south and east of white bleached sand. Gently undulating plains of sandy loams occur to the south and east of the lake (Walker 1991).

Vegetation

Nearie Lake is included in the Ana Branch-Mildura 1:250 000 map sheet, the vegetation of which was described by Fox (1991). A brief vegetation description was included in an environmental study conducted by Lloyd (1992) in which fifty vascular plant species were identified. During surveys in 1995 and 1996 one hundred and fifty vascular plant species were recorded from the reserve including 43 (30%) exotics. A

further ten species recorded by Lloyd (1992) but not located and recorded during this survey are noted (Table 1).

Five vegetation communities were identified and mapped:

- Lake bed low open-herbland
- *Eucalyptus largiflorens* open-woodland
- *Atriplex nummularia* low open-shrubland
- *Maireana pyramidata* low open-shrubland
- *Nitraria billardieri* low open-shrubland

The distribution of these communities is shown in Fig. 2.

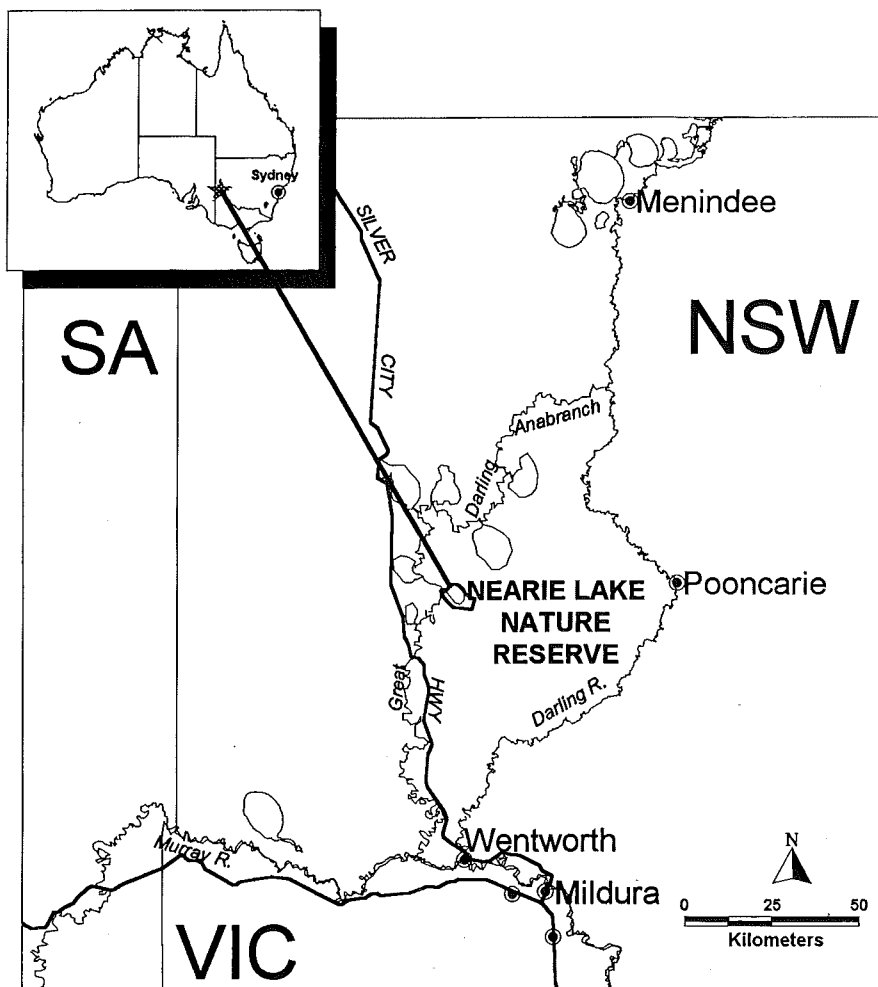


Fig 1. The location of Nearie Lake Nature Reserve.

Table 1 Vascular plant species recorded from Nearie Lake Nature Reserve.

Nomenclature according to Harden (1990-1993)

*denotes exotic species # denotes species recorded by Lloyd (1992) but not located and recorded in this study

MONOCOTYLEDONS

CYPERACEAE

Carex fascicularis
Cyperus gynocculus

LILIACEAE

**Asphodelus fistulosus*
Bulbine bulbosa

Crinum flaccidum

POACEAE

Agrostis avenacea
Bromus arenarius
 **Bromus rubens*
Danthonia setacea
Enneopogon intermedius

POACEAE Continued

Eragrostis dielsii
Eragrostis lacunaria
 **Holcus lanatus*
 **Hordeum leporinum*
 **Lamarckia aurea*
 **Polypogon monspeliensis*
 **Rostraria pumila*
 **Schismus barbatus*
Sporobolus mitchellii
Stipa mollis
Stipa trichophylla
Vulpia myuros

DICOTYLEDONS

AIZOACEAE

#*Glinus lotoides*
 **Mesembryanthemum crystallinum*
 **Mesembryanthemum nodiflorum*
Tetragonia tetragonioides

APIACEAE

Daucus glochidiatus

ASTERACEAE

Actinobole uliginosum
Brachyscome ciliaris
Brachyscome dentata
Brachyscome lineariloba
Brachyscome melanocarpa
Brachyscome perpusilla
Calotis hispidula
 **Centaurea melitensis*
 #*Centipeda cunninghamii*
 **Cirsium vulgare*

ASTERACEAE continued

**Conyza bonariensis*
 #*Epaltes australis*
 **Hypochoeris glabra*
 **Hypochoeris radicata*
Ixiolaena leptolepis
Minuria cunninghamii
Minuria intergerrima
Myriocephalus stuartii
Pseudognaphalium luteoalbum
Pycnosorus pleiocephalus
 **Reichardia tingitana*
Rhodanthe floribunda
Rhodanthe stuartiana
Senecio glossanthus
Senecio runcinifolius
 **Sonchus oleraceus*
Vittadinia cuneata
 **Xanthium spinosum*

BORAGINACEAE

**Echium plantagineum*
Heliotropium asperrimum
Heliotropium curassavicum
 #**Heliotropium supinum*
 **Heliotropium europaeum*
Omphaloplappula concava

BRASSICACEAE

**Alyssum linifolium*
Arabidella nasturtium
 **Brassica tournefortii*
 **Carrichtera annua*
 **Rapistrum rugosum*
 **Sisymbrium erysimoides*
 **Sisymbrium irio*
 **Sisymbrium orientale*
 CAMPANULACEAE
Wahlenbergia communis s.l.
Wahlenbergia gracilentia s.l.

CARYOPHYLLACEAE

Herniaria cinerea*Spergularia rubra*

CHENOPODIACEAE

*Atriplex acutibractea**Atriplex angulata**Atriplex holocarpa**Atriplex leptocarpa**Atriplex lindleyi**Atriplex nummularia**Atriplex semibaccata**Atriplex stipitata**Atriplex vesicaria**Chenopodium cristatum**Chenopodium curvispicatum**Chenopodium desertorum***Chenopodium murale*#*Chenopodium pumilio**Chenopodium nitrariaceum**Dissocarpus biflorus**Dissocarpus paradoxus**Einadia nutans**Enchylaena tomentosa* var.
*tomentosa**Maireana appressa**Maireana brevifolia**Maireana georgei**Maireana pyramidata**Maireana turbinata**Malacocera tricornis**Neobassia proceriflora**Osteocarpum acropterum* var.
*deminutum**Rhagodia spinescens**Salsola kali**Scleroblitum atriplicinum**Sclerochlamys brachyptera**Sclerolaena bicornis**Sclerolaena diacantha**Sclerolaena divaricata*

CHENOPODIACEAE continued

*Sclerolaena intricata**Sclerolaena muricata**Sclerolaena obliquicuspis**Sclerolaena stelligera**Sclerolaena tricuspis**Sclerolaena ventricosa**Suaeda australis*

CONVOLVULACEAE

Convolvulus erubescens

CRASSULACEAE

Crassula colorata

CUCURBITACEAE

Citrullus lanatus*Cucumis myriocarpus*# *Zehneria micrantha*

EUPHORBIACEAE

Chamaesyce drummondii

FABACEAE

*Desmodium varians**Glycyrrhiza acanthocarpa***Medicago minima***Medicago polymorpha***Medicago tornata***Melilotus indicus**Swainsona reticulata**Swainsona* sp.*Trigonella suavissima*

GERANIACEAE

Erodium cicutariumErodium crinitum*

GOODENIACEAE

Goodenia pinnatifida

HALORAGACEAE

#*Myriophyllum verrucosum*#*Limosella australis*

LAMIACEAE

Marrubium vulgareTeucrium racemosum* var.
racemosum

LORANTHACEAE

Amyema miquelii

MALVACEAE

*Lavatera plebeia***Malva parviflora*

MYRTACEAE

Eucalyptus largiflorens

PLANTAGINACEAE

*Plantago drummondii**Plantago varia*

PLUMBAGINACEAE

**Limonium lobatum*

POLYGONACEAE

*Muehlenbeckia diclina**Muehlenbeckia florulenta**Muehlenbeckia horrida*#*Persicaria lapathifolium**Polygonum plebeium***Rumex crispus*

PORTULACACEAE

Calandrinia eremaea

SCROPHULARIACEAE

Morgania floribunda

SOLANACEAE

Nicotiana glaucaNicotiana velutina***Solanum nigrum*

URTICACEAE

**Urtica urens*

VERBENACEAE

Verbena officinalis*Verbena supina*

ZYGOPHYLLACEAE

*Nitraria billardieri**Zygophyllum ammophilum*#*Zygophyllum glaucum*

The plant communities

1. Lakebed low open-herbland (Fig. 3)

The composition of this community is subject to change during and after periods of flooding. The persistent dominant, however, is *Muehlenbeckia horrida*. Associated species include the natives *Atriplex lindleyi*, *A. leptocarpa*, *Scleroleana divaricata*, *S. muricata*, *Osteocarpum acropterum* var. *deminutum*, *Vittadinia cuneata* and *Erodium crinatum* along with the exotics *Bromus rubens*, *Hordeum leporinum*, *Sisymbrium erysimoides* and *Medicago* spp. During the drying of Nearie Lake in 1995 this community was dominated by dense *Lavatera plebeia*. *Glycorrhiza acanthocarpa* occurs along Stoney Creek, the channel leading from the Ana Branch to the lake bed.

2. *Eucalyptus largiflorens* open-woodland (Fig. 4)

Around the edge of Nearie Lake is a semi-continuous open-woodland dominated by *Eucalyptus largiflorens* with a variable shrubby understorey including *Chenopodium nitrariacium*, *Muehlenbeckia horrida* and *Enchyleana tomentosa*. The herb layer consists largely of exotic weeds including *Medicago* spp., *Melilotus indicus*, *Sisymbrium erysimoides* and *Hordeum leporinum*. A high proportion of the *Eucalyptus largiflorens* are infected with the mistletoe *Amyema miquelii*.

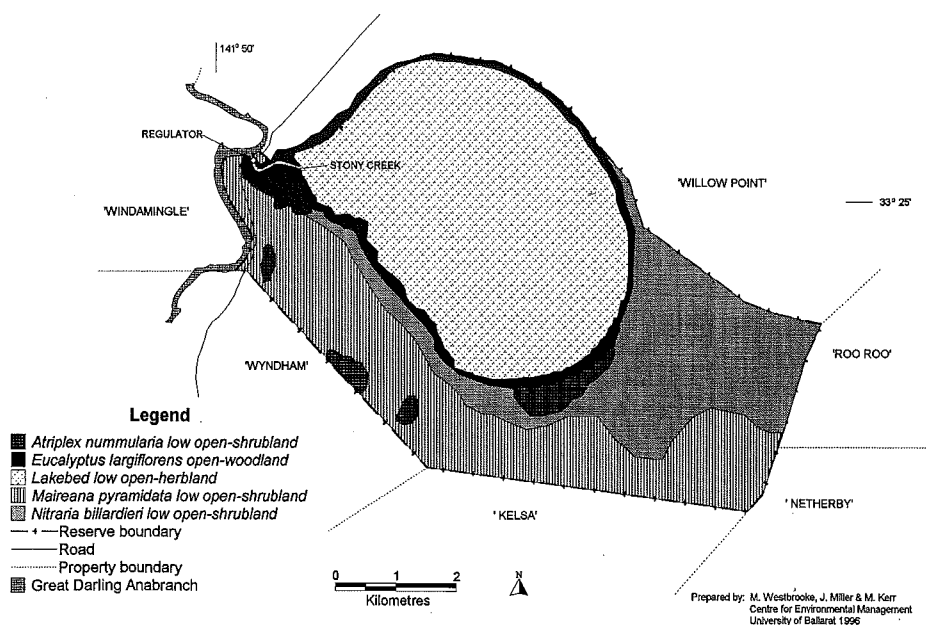


Fig 2. Vegetation of Nearie Lake Nature Reserve



Fig. 3. The lakebed community dominated by *Lavatera plebeia* following drying of Nearie Lake in 1995.



Fig. 4. Nearie Lake is fringed by *Eucalyptus largiflorens* open-woodland with a shrubby understorey.

3. *Atriplex nummularia* low open-shrubland (Fig. 5)

In depressions across the undulating plains to the south of Nearie Lake are areas dominated by *Atriplex nummularia* to a height of 2 m. Associated lower shrubs (to 1 m) include *Chenopodium curvispicatum*, *Nitraria billardieri*, *Scleroleana ventricosa* and *Enchyleana tomentosa*. The ground layer includes *Atriplex lindleyi* and *Osteocarpum acropterum* var *deminutum* along with the exotics *Schismus barbatus*, *Hordeum leporinum*, *Bromus rubens* and *Medicago* spp.

4. *Maireana pyramidata* low open-shrubland (Fig. 6)

On the undulating plains to the south of Nearie Lake are extensive areas of *Maireana pyramidata* low open-shrubland to 2 m. Associated shrubs include *Chenopodium curvispicatum*, *Maireana pyramidata*, *M. appressa* and *Atriplex lindleyi*. Following rains, the ground layer includes the natives *Plantago varia*, *Minuria intergerrima*, *Senecio runcinifolius*, *Tetragonia tetragonioides*, *Brachyscome lineariloba*, *Sclerochlamys brachyptera* and *Crassula colorata* along with the exotics *Hordeum leporinum*, *Bromus rubens*, *Schismus barbatus* and *Medicago* spp.

5. *Nitraria billardieri* low open-shrubland (Fig. 7)

To the east of Nearie Lake are extensive areas dominated by *Nitraria billardieri* to 2 m with associated shrubs including *Maireana pyramidata*, *M. turbinata*, *Scleroleana divaricata* and *Atriplex lindleyi*. The ground layer following rain is dominated by exotic herbs including *Sisymbrium erysimoides*, *Sonchus oleraceus*, *Bromus rubens* and *Medicago* spp.



Fig. 5. *Atriplex nummularia* low open-shrubland occurring in depressions to the south of Nearie Lake.



Fig. 6. *Maireana pyramidata* low open shrubland dominating the undulating plains to the south of Nearie Lake.



Fig. 7. *Nitraria billardieri* dominated low open-shrubland occurring to the east of Nearie Lake.

Discussion

Despite the high percentage of weediness in all communities (25–35%) and an overall weediness of 30%, Nearie Lake Nature Reserve is significant in protecting examples of the plant communities associated with the Darling Ana Branch. As a result of the water control measures, it provides a reference area for other parts of the river subject to a modified flooding regime.

Acknowledgments

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