

Native plants of Sydney Harbour National Park: historical records and species lists, and their value for conservation monitoring

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Abstract: Sydney Harbour National Park (lat 33° 53' S; long 151° 13' E), protects significant vegetation on the harbour foreshores close to Sydney City CBD; its floristic abundance and landscape beauty has been acknowledged since the writings of the First Fleet in 1788. Surprisingly, although historical plant collections were made as early as 1802, and localised surveys have listed species for parts of the Park since the 1960s, a detailed survey of the flora of whole Park is still needed.

This paper provides the first definitive list of the c.400 native flora species for Sydney Harbour National Park (total area 390 ha) showing occurrence on the seven terrestrial sub-regions or precincts (North Head, South Head, Dobroyd Head, Middle Head, Chowder Head, Bradleys Head and Nielsen Park). The list is based on historical species lists, records from the NSW Office of Environment and Heritage (formerly Dept of Environment, Climate Change and Water) Atlas, National Herbarium of New South Wales specimen details, and some additional fieldwork. 131 species have only been recorded from a single precinct site and many are not substantiated with a recent herbarium specimen (though there are historical specimens from the general area for many). Species reported in the sources but for which no current or historic specimen exists are listed separately as being of questionable/non-local status.

About 85% of the 400 species are recorded as being from North Head, the largest precinct, though the smallest Chowder Head does not have the fewest species. As well as size, differences indicate the different flora of inner harbour sites; inner harbour Bradleys Head and Nielsen Park include 24% of the single record species. Rare and threatened species, and regionally important species are discussed in relation to current threats which include weed invasion, fire frequency, *Phytophthora*, Black rats and tourism pressures.

Given the threats to the flora it is an appropriate time to take stock of the flora as a basic structural component of the biodiversity. What is now needed is a systematic survey (with quadrat-based methodology) to provide baseline data against which to compare state of Park trends with future resurvey. In the absence of such a survey this list at least will provide a reasonably definitive list of the species occurring in the Park regions at the beginning of the 21st Century. If only we had done this at the beginning of the 20th Century!

Key words: Sydney Harbour, native plant species lists, First Fleet observations, conservation monitoring

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Introduction

Sydney Harbour National Park encompasses much of the surviving natural vegetation on the foreshores of Sydney Harbour, on the doorstep of the Sydney City CBD, and provides the backdrop to many harbour activities. Because its precincts are located close to the homes and workplaces of a large and influential urban population, the Park has a significant role in demonstrating the value and importance of conservation management as well as protecting the diversity of a sample of Sydney's natural landscape. The

contribution of the wildlife, particularly the birds, to the harbour environment is widely recognised, but the green backdrop, the vegetation and flora, is equally important. Indeed 21st Century views of the natural harbour foreshores can provide a direct connection with the first 18th Century European visitors. ... *It suggests to the Imagination Ideas of luxuriant Vegetation and rural Scenery, consisting of gentle risings and & Depressions, beautifully clothed with variety of Verdures of evergreens, forming dense Thickets, & lofty Trees appearing above these again, and now & then a pleasant checquered Glade opens to your View.* wrote George Worgan, surgeon on the First Fleet flagship *Sirius* on entering the harbour in 1788 (Worgan 1978). A trip on a Manly Ferry can provide similar impressions today.

Scientific exploration of the Harbour vegetation has been relatively slow. During the 19th Century visiting botanists made plant collections from the general Harbour area as it was easily accessible from Sydney. The earliest specimens from Sydney Harbour National Park are probably amongst a number broadly labelled *Sydney to South Head* collected by Robert Brown in 1802. The opening of the National Herbarium of NSW in the Sydney (now Royal) Botanic Gardens in 1901 began a period of intensive collecting by its employees including Director, Joseph Maiden, and botanical assistants Ernest Betche, John Boorman and Arthur Hamilton. During the period up to World War I plant collections were made from many Harbour localities including Mosman, Manly and Rose Bay.

In the 1960s increasing public interest in protecting bushland led to the creation of Sydney Harbour National Park (under the newly formed National Parks & Wildlife Service) from existing bushland parks (Ashton Park, Bradleys Head, Nielsen Park) with gradual incorporation of former military lands at Middle Head, North Head and South Head, as well as a number of Harbour islands. There was also public interest in developing scientific bushland management techniques. Major bushland management issues from that time were the recognition of invasion of exotic weeds (generally of garden origin) as a threat, and the impact of fire intensity, particularly low intensity control burning which failed to encourage good native vegetation regrowth while allowing prolific regrowth and seedlings of weed species. Both these issues were at the core of work done by Eileen and Joan Bradley at Bradleys and Chowder Heads (Bradley & Bradley 1967, Bradley 1972) and led to influential bushland regeneration techniques being developed (e.g. Buchanan 2009). Eileen Bradley (1972) also reported the first documented occurrence of serious overall deterioration (die-back) of eucalypts particularly on the

lower eastern side of Bradleys Head (over the period 1965–1972). She also reported that the pathogen *Phytophthora cinnamomi* had been isolated from soil there, and proved capable of killing *Angophora* trees grown in pots. Tree die-back was subsequently reported to be caused by airborne pollutants from ocean sewer outfalls (Anderson et al 1981) (ocean outfalls were moved further offshore to reduce their impacts in the 1990s) but Daniel et al (2006) subsequently confirmed that *Phytophthora* was at least partially involved in the dieback of plant species at Middle Head and North Head.

On North Head vegetation research includes Clemens & Franklin's (1980) study of changes around the Fairfax walk, and Horton and Bensons' (1986) extensive site-based vegetation survey involving a grid of 180 20x20 m sites across the National Parks and Wildlife Service part of North Head. Further surveys of areas beyond the National Park were undertaken by Skelton et al (2003) when the Sydney Harbour Federation Trust took over the central area of North Head from the Army School of Artillery. Conservation measures to protect its important vegetation, including monitoring recovery of endangered Eastern Suburbs Banksia Scrub after burning, were implemented by the new management. Faunal research has concentrated on the endangered populations of Little Penguins (NSW National Parks & Wildlife Service 2000a) and Long-nosed Bandicoots (NSW National Parks & Wildlife Service 2000b), and threats posed by foxes, rabbits and Black rats (Peter Banks pers. comm.). At Nielsen Park, apart from Dorothy Holland's (1980) vegetation survey, research work has been concentrated on ensuring the survival of the Endangered shrub *Allocasuarina portuensis* whose total natural distribution is confined to this precinct of the Park.

However a review of vegetation survey of the Park to provide background data for the 2010–2020 Plan of Management

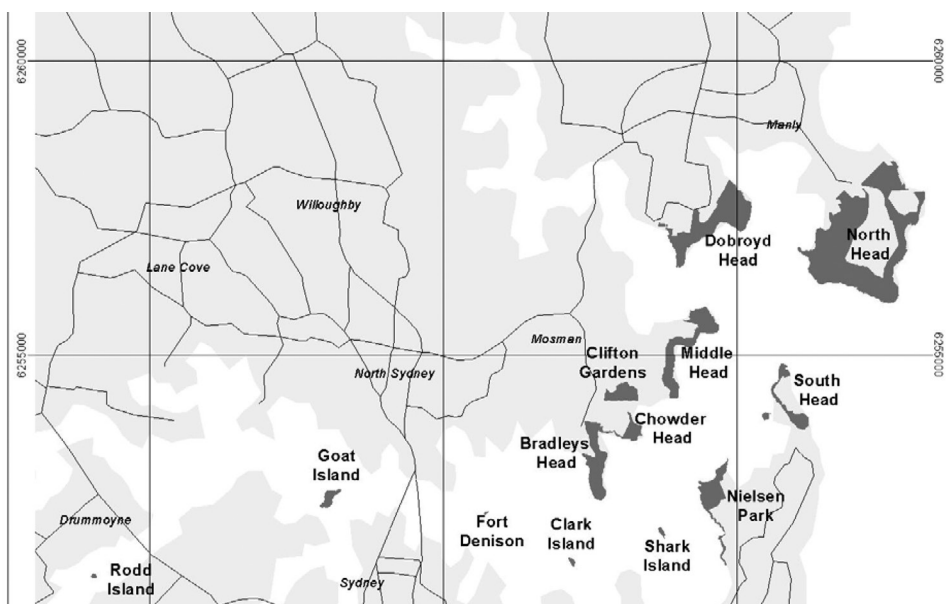


Fig. 1. Location of Sydney Harbour National Park showing separate headland precincts

Table 1 Islands of Sydney Harbour National Park, and some others, with notes and references to native vegetation (see Clark & Clark (2000) for descriptions).

Sydney Harbour NP (area in ha)	History	Notes on vegetation/remnant native species
Shark 1 ha in area	Cleared and developed as picnic grounds	A few foreshore native species
Clark 1 ha	Picnic ground, naval storage	Native vegetation, regeneration since 1970
Goat 6.5 ha	Powder magazine, quarries and shipyards, 19 th –20 th centuries	Mainly cleared but remnants of native vegetation and considerable plantings (Pratten & Benson 1985)
Fort Denison 0.2 ha	Cleared and developed by 1850s	None
Rodd 0.5 ha	Pleasure grounds	A few foreshore native species
Other islands		
Garden Island orig. about 550 m long but now joined to mainland	Naval headquarters, 19 th –20 th centuries	A few remnant species surviving around sandstone cliffs. Rodd & Benson (1977) listed 24 native species persisting in 1977.
Cockatoo orig 13 ha in area, now 18 ha	Convict gaol in 19 th Century, completely altered for shipbuilding in 20 th	A few recolonising species on cliffines eg <i>Psilotum nudum</i> ; much recent replanting
Berry Island	Bushland park, joined to mainland	Extensive native woodland
Spectacle Island <1 ha	Naval training site	A tiny rocky sandstone knoll with a few native species including <i>Acacia suaveolens</i> still remained in 2000 (DHB pers. obs.)

revision showed that although there have been surveys of parts of the park, particularly North Head, no detailed survey of the flora of whole area at a single time has been carried out. The aim of this current work has been to develop a census, listing all species that are native to the Park area (i.e. are likely to have been present at the time of European settlement of Sydney in 1788), as well as some idea of the current flora distribution across the precincts. Since 1788 some species may have disappeared, while others may have moved in. Given the high profile of the Park and the increasing threats to its flora, this is an appropriate time to take stock of current information sources and their adequacy for floristic biodiversity, and to provide guidelines for future research.

Sydney Harbour National Park description

Sydney Harbour National Park (Figure 1) (lat 33° 53'S; long 151° 13'E) occupies a significant part of the foreshores of Sydney Harbour (historically known as Port Jackson). The total land area of the Park (390 ha) is divided between a number of separate foreshore subregions or precincts, mainly Hawkesbury Sandstone headlands: North Head, Dobroyd Head, Bradleys Head, Middle Head (including Clifton Gardens), Chowder Head, South Head and Nielsen Park (Fig. 1), as well as a number of Harbour islands (total island area about 10 ha). All precincts include substantial areas of natural vegetation but also cleared areas with mown lawns, as well as buildings and old fortifications from the former military occupation. While all precincts have substantial natural foreshore margins, all adjoin some urban residential housing areas. All of the islands, except Clarke, have been essentially cleared of terrestrial native vegetation (Clark & Clark 2000) (Table 1).

Geomorphology and soils are important determinants of vegetation. While Sydney Harbour National Park is mainly of sandstone geology there are important local variations with a capping of Pleistocene sand on North Head, and increased shale influences up the harbour. Annual rainfall around the Harbour is about 1210 mm (Mosman 1221 mm, Manly 1218 mm, Observatory Hill 1213 mm), with only Rodd Island much further inland, substantially lower (Ashfield 1069 mm). Natural vegetation is mainly coastal sclerophyll heath and scrub on shallow, sandy soils on the large headlands with ocean shorelines and exposed to onshore winds (North, South and Dobroyd Heads), and eucalypt woodland on the more sheltered harbourside slopes of North Head. Perched deposits of leached white sand on the top of North Head (83 m elevation) have remnants of the Endangered Ecological Community Eastern Suburbs Banksia Scrub, structurally similar to the coastal heath but on lower nutrient sand (Benson & Howell 1990, 1994). The more sheltered foreshore headlands of the harbourside precincts, Middle, Chowder, Bradleys Heads and Nielsen Park, have more extensive areas of woodland. Recent work by NSW Dept of Environment Climate Change and Water has described fine scale map units but has not yet been finalised.

Methods

A list of all native flora species (except non-vascular plants and fungi) for Sydney Harbour National Park showing recorded occurrence within the seven major regions/ precincts (North Head, South Head, Dobroyd Head, Middle Head, Chowder Head, Bradleys Head and Nielsen Park) was compiled. This was based on available historical species lists (principally Bradley 1972, Holland (1980), Horton & Benson (1986), Skelton et al 2003), together with records from DECCW

Table 2 Mainland precinct/subregions of Sydney Harbour National Park ordered by area (ha), showing aspect, number of native plant species (including historical records), and number of single record species.

Precinct /region	Area (ha)	Aspect	No of species	Percent of flora	Single record species
North Head (Fed Trust 72 ha not incl.)	183	Ocean-influenced	351	86%	90
Dobroyd Head	65	Ocean-influenced	222	55%	15
Middle Head incl Clifton Gardens (13 ha)	52	Sheltered harbour	99	24%	6
Bradleys Head	31	Sheltered harbour	157	39%	5
Nielsen Park	24	Sheltered harbour	112	28%	11
South Head	16	Ocean-influenced	51	13%	1
Chowder Head	9	Sheltered harbour	120	29%	2
Total	380		406		131

Table 3 Number of species showing distribution by frequency classes (recorded on the seven mainland precincts/regions)

	Frequent /widespread (7, 6 or 5 sites)	Occasional (4 or 3)	Localised (2)	Single site	Total species (%)
Dicots	50	72	70	75	267 (66)
Monocots	10	25	27	50	112 (27)
Conifers	0	1	0	1	2 (<1)
Ferns	2	10	6	7	25 (6)
Total no of species (%)	62 (15%)	108 (26%)	103 (25%)	133 (33%)	406

Atlas, specimen data from the National Herbarium of New South Wales (NSW) and recent field work by the author for Bradleys, Chowder and South Heads and Nielson Park. Species names follow current PlantNet, the online listing of the National Herbarium of New South Wales.

The initial list was reviewed to remove species that were not part of the native indigenous flora, mainly exotic weed species, but also native species not indigenous to the area, but which occur there as a result of natural colonisation from planted sources or as plantings themselves e.g. *Nephrolepis cordifolia*, *Lophostemon confertus*. These were listed separately.

Based on the occurrence of species on the seven precinct headland areas, species were grouped by frequency as *Frequent/widespread* (recorded from 7, 6 or 5 areas) *Occasional* (4 or 3 areas) and *Localised* (2 areas). Species recorded from only a single site were identified as *Single* or *Single-unsubstantiated*. For these species records for the Sydney Harbour and immediate Sydney area were checked for the presence of historical herbarium specimens to confirm their indigenous status. Species recorded from a number of sites and/or sources were not checked individually unless there was a reason to confirm their indigenous status, as it was assumed the multiple site recording gave the species some conservation protection and multiple sources provided reasonable identification validity. Species reported in the

sources but for which no current or historic specimens exist were listed as being of questionable/non-local status.

Some First Fleet accounts (Bradley 1969, Worgan 1978) were specifically consulted to provide historical context to the lists but the author has been familiar with the subject of 19th Century botanical/ecological material for the Sydney area for many years and is aware of the little species specific material that is available (e.g. see Benson & Howell 1990). Indeed interesting material is likely to turn up fortuitously from obscure places by way of colleagues and interested readers, rather than being amenable to targeted searching.

Results

List of plant species indigenous to Sydney Harbour National Park

From an initial listing of c 600 species names, a final list of 406 species (taxa) was extracted. (Appendix 1). Species listed are primarily dicotyledons (66%) and monocotyledons (27%) with a few ferns (6%) and two conifers (Table 3). These species are regarded as indigenous to the bushland areas of Sydney Harbour National Park, including the Sydney Harbour Federation Trust lands on North Head (but excluding the islands) and are species that are considered likely to have been represented there in

1788. The list includes historical records; not all species are necessarily still surviving in the Park in 2010.

A list of (questionable/non-local) species which have been referred to in some literature sources but which are not likely to be part of the indigenous Sydney harbour flora for various reasons, or are unlikely and are not substantiated with a herbarium record was also compiled (Appendix 2). Species on this list may be there for a variety of reasons – some small-growing plant species may be recognised in surveys but have not been formally collected even in historic times, some species may have now disappeared from the area as a result of historical changes (they may turn up at some future time), some species are likely to have been introduced as plantings, some are misidentifications of related species, or clear misidentifications. For a number of species, deciding whether it is likely to be indigenous to the Sydney Harbour National Park area has been difficult. For example Bradley (1972) records *Telopea speciocissima* no flower Only 1 plant at Ashton Park on Bradleys Head. As this is normally a particularly prominent plant (the Waratah) and there are no collections historic or otherwise to confirm this identification, or whether it is a planting, the species has been put in the questionable/non-local list. Additional evidence is that the usual habitat (suitable deep ridgetop sandy loam) is not present in the Park. Future confirmation of these species with a specimen representing an evidently naturally occurring population may allow them to be added to the formal list.

The listings raise the issue of the role of herbarium collections in verifying changes in vegetation. In confirming some single record species it became evident that, though there are historical 19th Century specimen collections from the general Sydney harbour area for many of them, very few species are substantiated by recent herbarium collections. There has frequently been the presumption that because the area is so well known it is not necessary to collect material that would generally be collected in a similar survey of an area further afield. Given the 100 year interval and the degree of changes wrought in that time it is appropriate that a current collection of herbarium specimens be made as an update of the baseline database.

The results also highlight common collector biases. Large shrubs, distinctive species and shrubs in particular are well recorded but ground plants and particularly monocot species are likely to be under-recorded. Despite their size eucalypts are often overlooked because of difficulty of collection and identification.

Geographical distribution and species richness

The species are not distributed evenly between the seven geographical precincts of the Park. A few species are found in all subregions, many are found at only one (Appendix 1). Though only 2 species, *Banksia integrifolia* and *Allocasuarina distyla*, have been recorded at all seven precincts, 62 species (15% of the total list) were recorded to occur at 5,



Fig. 2. The entrance to Sydney Harbour, looking from South Head with heath perched above its sandstone cliffs, across to North Head, the largest Sydney Harbour National Park precinct. Photo Jaime Plaza

Table 4 Significant ecological communities and flora species recorded in Sydney Harbour National Park and listed under state or national legislation.

Scientific Name	Status	Precincts recorded
Eastern Suburbs Banksia Scrub	Endangered Ecological Community -NSW TSC Act	North Head
<i>Allocasuarina portuensis</i> (Casuarinaceae)	Endangered Species NSW-TSC Act; National-EPBC Act	Nielsen Park
<i>Acacia terminalis</i> subsp. <i>terminalis</i> (Fabaceae)	Endangered Species NSW-TSC Act; National-EPBC Act	North Head, Nielsen Park
<i>Chamaesyce psammogeton</i> (Euphorbiaceae)	Endangered Species NSW-TSC Act	North Head, needs confirmation
<i>Persoonia hirsuta</i> (Proteaceae)	Endangered Species NSW-TSC Act National-EPBC Act	North Head 1967, needs confirmation
<i>Eucalyptus camfieldii</i> (Myrtaceae)	Vulnerable Species NSW-TSC Act; National-EPBC Act	North Head
<i>Pimelea curviflora</i> (Thymelaeaceae)	Vulnerable Species NSW-TSC Act; National-EPBC Act	North Head, South Head, needs confirmation
<i>Syzygium paniculatum</i> (Myrtaceae)	Vulnerable Species NSW-TSC Act; National-EPBC Act	Crater Cove, Dobroyd Head 1987 Needs confirmation

Table 5 Regionally significant flora species of Sydney Harbour National Park

Species (family)	Status for SHNP populations	Precincts recorded
<i>Chordifex dimorphus</i> (Restionaceae)	Substantial pop. of local Sydney coastal endemic (range Broken Bay to Cataract)	North Head
<i>Melaleuca hypericifolia</i> (Myrtaceae)	Disjunct and near northern limit of range	Dobroyd Head
<i>Eucalyptus obstans</i> (Myrtaceae)	Remnant pop. of previously common coastal Sydney species	
<i>Hibbertia nitida</i> (Dilleniaceae)	Pop. of local Sydney endemic - 2RC	North Head
<i>Darwinia leptantha</i> (Myrtaceae)	Important pop. of local Sydney coastal endemic (range North Head to Cronulla)	North Head
<i>Erythrorchis cassythoides</i> (Orchidaceae)	local disjunct popn, Regionally rare -3RC	North Head
<i>Rulingia hermanniifolia</i> (Sterculiaceae)	Important populations of coastal Sydney (Broken Bay to Botany Bay) distribution	North Head
<i>Callitris muelleri</i> (Cupressaceae)	Remnant pop. of previously common coastal Sydney species	?Middle Head
<i>Gonocarpus salsoloides</i> (Haloragaceae)	Uncommon coastal species near southern limit	North Head
<i>Banksia aemula</i> (Proteaceae)	Key component of ESBS, near southern limit	North Head
<i>Styphelia</i> spp. (Ericaceae)	Local pops now rare	
<i>Pultenaea dentata</i> (Fabaceae)	Local Sydney coastal endemic (range Coogee to Bundeena) that might occur in SHNP?	Not recorded
<i>Platysace stephensonii</i> (Apiaceae)	Local Sydney coastal species (range Broken Bay to Bundeena) that might occur in SHNP?	Not recorded

6 or 7 precincts; based on their frequency these species are considered *frequent/widespread* at this regional scale (Table 3). Species recorded in 3 or 4 precincts are considered as *occasional* (108 species, 26%) and species in 2 precincts as *localised* (103 species, 25%). About 133 species (33%) were recorded at only one precinct. These species are important as they may be rare species with special habitat requirements. Alternatively they may be more common species that have been overlooked in some surveys because of their size or seasonal occurrence, or difficulty of identification.

Of the individual precincts North Head has the highest species richness with 351 species (86% of the total flora), followed by Dobroyd Head (222 species) (Table 1). It is no surprise that North Head has the greatest number of species as it has the biggest area (183 ha plus adjoining Federation Trust bushland), has a wide range of habitats, and has been the most thoroughly surveyed. The inner Harbour headland precincts

range from Bradleys Head with 157 species to Middle Head with 99. The smallest precinct Chowder Head has 120 species. South Head has 51 species (13% of the total) including a rare or threatened species, *Pimelea curviflora*.

Perhaps different past treatments contribute to species differences though this is less likely given the coarseness of the recording. Absence of some species may have resulted from the amount of past disturbance the smaller areas have received particularly from 19th Century military fortifications on Middle Head, Bradleys Head and South Head. Military activities on North Head have been substantial since establishment of the artillery school in the 1930s but have been mainly concentrated on the central area, now in the Sydney Harbour Federation Trust lands. Disturbance is generally indicated by an increased number of exotic species rather than fewer native species as many native species will still persist for some time in very disturbed sites.

Of the 132 single precinct record species, 69% (91 spp) are only recorded for North Head while Nielsen Park has 8% (11 spp) and Bradleys Head has 4% (5 spp) (Table 2). Together the four inner Harbour sites have 18% of the single record species reflecting a different range of local habitats; vegetation at North Head is mainly coastal heath and scrub while in the others is mainly harbourside woodland. An interesting observation to come out of the search of historic records is the high number of species now only recorded on North Head, mainly on deep sand in Eastern Suburbs Banksia Scrub, which were previously collected from Rose Bay in the late 19th Century, and presumably occupied the extensive sand deposit (now completely urbanised) that occurs between Rose Bay and Bondi. The high degree of correlation between clusters of species and soil/geological substrates is a major feature of vegetation patterns in eastern Australia.

Significant species

In an increasingly heavily-used recreation area such as Sydney Harbour National Park, and one that is now cut-off from other natural areas, the conservation status and condition of individual species will need to be monitored if populations of all species are to be maintained. A number of species are listed as threatened at national (*EP&BC Act*) and state (*NSW TSC Act*) level including *Allocasuarina portuensis*, *Acacia terminalis* subsp. *terminalis* and *Eucalyptus camfieldii*; management action is currently taken to ensure their longterm survival (Table 4). There are also regionally important species, based on some particular features such as unusual distribution, general uncommonness in the region, disjunct occurrences or at or near limits of range. (e.g. the population of *Melaleuca hypericifolia* in SHNP is near its northern geographical limit and is disjunct from

Table 6 Lost species: Flora species of Sydney Harbour National Park that have possibly gone locally extinct from the Park area (i.e. not recorded since 1950)

Species (family)	Last recorded
<i>Astroloma pinifolium</i> (Ericaceae)	North Head 1986, Bradleys Head 1845
<i>Botrychium australe</i> (Ophioglossaceae)	Georges Head 1914
<i>Cassinia denticulata</i> (Asteraceae)	Bradleys Head 1903
<i>Conospermum tenuifolium</i> (Proteaceae)	Manly 1902, 1880
<i>Dendrophthoe vitelina</i> (Loranthaceae)	Rose Bay 1885
<i>Dipodium roseum</i> (Orchidaceae)	Bradleys Head 1903
<i>Gompholobium grandiflorum</i> (Fabaceae)	Bradleys Head 1903
<i>Melaleuca linariifolia</i> (Myrtaceae)	Middle Head 1900
<i>Muellerina celastroides</i> (Loranthaceae)	Nielsen Park 1918
<i>Muellerina eucalyptoides</i> (Loranthaceae)	Nielsen Park 1918
<i>Notothixos subaureus</i> (Viscaceae)	Nielsen Park 1918
<i>Orthoceras strictum</i> (Orchidaceae)	Middle Head 1912
<i>Podolobium ilicifolium</i> (Fabaceae)	Middle Head 1802
<i>Stylidium graminifolium</i> (Stylidiaceae)	Bradleys Head 1903
<i>Velleia lyrata</i> (Goodeniaceae)	Bradleys Head 1903

populations in the upper Blue Mountains). These contribute to the overall importance of Sydney Harbour National Park to the national conservation reserve system. Benson and Howell (1994) included the following North Head species as having particular conservation significance; *Gonocarpus salsoloides*, *Darwinia leptantha*, *Banksia aemula*, and some additional ones are included in Table 5.

These 27 species however make up only 6% of the total flora of Sydney Harbour National Park. A conservation management aim is to retain all species as healthy populations in their natural area; complementary measures to monitor the health of the other 389 species (94%) are therefore needed. While these species are generally considered to be adequately covered by general management of plant community conditions (through weed control, fire management and protection from disturbance), the high number of species and the degree of disturbance in Sydney Harbour National Park indicate that a targeting of a wider range of species to monitor for conservation adequacy is desirable.

Species abundance and conservation adequacy

The list of Sydney Harbour National Park species (Appendix 1) indicates only the presence of a species within a precinct. The list does not indicate the abundance of species within any precinct, as very little of the source material is from replicated sampling (an exception is the unpublished 1986 North Head data of Benson & Horton which listed frequency based on 180 sites). However precinct frequency can provide a measure of overall abundance applicable to conservation assessment, though it provides little specific information on ecological importance, population adequacy or health. In conservation terms the frequent/widespread and occasional species could therefore be considered as *least concern* (using IUCN classes), localised as *near threatened* and single occurrences as *vulnerable*.

Further sifting of the single-occurrence *vulnerables* could be based on field observations using criteria such as restricted location and small population size, and could further identify locally important 'indicator' species. Such uncommon species may indicate unusual habitat conditions (now localised but likely to have been previously more extensive), or a response to particular current environmental conditions (e.g. increased shading due to dense shrub overstorey growth, or unusually dry or wet conditions depending on the current climate cycle). Whether management action is required or not depends on individual cases, but such assessment should be part of a future vegetation monitoring program.

Lost species

Extracted from the main species list is a list of species (Table 6) for which there are only very old recordings, mostly pre-1920. These species may have become extinct since that time, or may still survive unnoticed. Possible reasons for localised extinctions may be that

- the Park included only marginal habitat (e.g. the species may have been formerly more widespread on the plateau and upper slopes now occupied by suburban houses – possibly applicable to *Conospermum tenuifolium*, *Velleia lyrata*, or
- the fertile creek alluvium habit now generally lost to fill for grassy lawns – *Melaleuca linariifolia*, or
- changes in local suitable habitat conditions – *Orthoceras strictum*, or
- changes in fire frequency *Podolobum ilicifolium*, *Gompholobium grandiflorum* or
- reduction of population size to unviable limits – *Cassinia denticulata*, *Stylidium graminifolium*; or
- perhaps deliberate removal *Notothixos subaureus*, *Muellerina celastroides* or
- a combination of the above.

These lost species (about 15 species) could be searched for as part of baseline audit and it would be good to find them. However reintroduction is not recommended at this stage unless the species is considered to contribute to a key ecological function and source material of appropriate genetic source is available. Given the early use of genetic testing due to lack of genetic uncertainty at this stage we should retain local provenances and concentrate our limited resources to ensuring that no more species are added to this list.

Historical evidence and trends – Sydney Harbour in 1788

In the natural eucalypt woodlands and rocky sandstone slopes of Sydney Harbour today, it is easy to recognise the Harbour landscape of 1788, as presented in the accounts of the First Fleet recorders. George Worgan, in his letter dated June 1788 continues.– *Here, a romantic rocky, craggy Precipice over which a little purling stream makes a Cascade There, a soft vivid-green shady Lawn attracts your Eye: Such are the prepossessing appearances which the country that forms Port Jackson presents successively to your View as You sail along it.* (Worgan 1978)

Surgeon Worgan and Lieutenant William Bradley visited a number of places around Sydney Harbour together and recorded aspects of the vegetation in their journals. For example the presence of heath, fire and aboriginal use on North Head was described on May 29 1788 – *a steep Rocky Hill, thickly covered with Brush-Wood.. observed a great Fire, which we found to be the burning of a Heathy brush-Wood, which we supposed the Natives has set on Fire for some Purpose* (Worgan 1978 p 49).

They recognised a number of characteristic trees including *Casuarina glauca* and *Livistona australis*, but particular eucalypts and Angophoras were not easy for them to distinguish separately. Bradley's journal includes a list of 12 trees recognised for various uses. Combined with

references to other smaller species mentioned elsewhere in his journal, this list give an idea of how the species around the harbour were seen by the European colonists within the first two years of settlement (Table 7). The list shows that the origins of some of the confusing array of vernacular names subsequently applied to eucalypts, were established in the very first days of settlement.

As to the Shrubs and Plants and Herbs of this Country "Tis beyond the Power of Botanists to number up their Tribes. – Among the useful we have discovered, Balm, Parsley, Samphire, Sorrel & a kind of Spinnage, but, all indifferent in kind... a Shrub bearing a Fruit like a a Sloe, and here is a fruit which tastes exactly like the currant when green, but these Fruits are scarce. The Woods are decorated with a Variety of prettily coloured flowers, but there is not above 2 or 3 kinds that have any Fragrance I have seen a kind of Myrtle in some Spots. Such descriptions as this by Worgan (page 12) confirm the impact of the variety of shrub and small species present around Sydney Harbour in 1788, but are not adequate to allow any assessment of change since that time.)

Table 8 Native species recorded in the Outer Domain (Maiden 1902) and at Garden Island (Rodd & Benson 1986) that have not been recorded in Sydney Harbour National Park

Dicotyledons

<i>Acacia falcata</i>	Fabaceae	Garden I. 1986
<i>Acacia maidenii</i>	Fabaceae	Domain1902
<i>Calotis cuneifolia</i>	Asteraceae	Domain1902
<i>Cassinia cunninghamii</i>	Asteraceae	Garden I. 1986
<i>Cassinia longifolia</i>	Asteraceae	Domain1902
<i>Cassinia quinquefaria</i>	Asteraceae	Domain1902
<i>Crassula sieberiana</i>	Crassulaceae	Domain1902
<i>Daviesia acicularis</i>	Fabaceae	Domain1902
<i>Eucalyptus pilularis</i>	Myrtaceae	Domain1902
<i>Eucalyptus resinifera</i>	Myrtaceae	Domain1902
<i>Euchiton sphaericus</i>	Asteraceae	Domain1902
<i>Ficus aspera</i>	Moraceae	Domain1902
<i>Goodenia paniculata</i>	Goodeniaceae	Domain1902
<i>Hypericum gramineum</i>	Clusiaceae	Domain1902
<i>Hypoxis hygrometrica</i>	Hypoxidaceae	Domain1902
<i>Lythrum hyssopifolia</i>	Lythraceae	Domain1902
<i>Myoporum acuminatum</i>	Myoporaceae	Domain1902
<i>Pelargonium australe</i>	Geraniaceae	Garden I. 1986
<i>Polymeria calycina</i>	Convolvulaceae	Domain1902
<i>Poranthera microphylla</i>	Euphorbiaceae	Domain1902
<i>Portulacca oleracea</i>	Portulacaceae	Domain1902
<i>Rumex brownii</i>	Polygonaceae	Domain1902
<i>Solenogyne bellioides</i>	Asteraceae	Domain1902

Monocotyledons

<i>Carex inversa</i>	Cyperaceae	Domain1902
<i>Cymbopogon refractus</i>	Poaceae	Domain1902
<i>Ficinia nodosa</i>	Cyperaceae	Garden I. 1986
<i>Fimbristylis dichotoma</i>	Cyperaceae	Domain1902
<i>Paspalum distichum</i>	Poaceae	Domain1902
<i>Sporobolus creber</i>	Poaceae	Domain1902

Table 7 List of Sydney trees (numbered 1–12) March 1791 compiled by William Bradley (Bradley p 232A and other species noted around the Harbour, with notes from Bradley and George Worgan (Worgan 1978)

The list shows that the origins of some of the confusing array of vernacular names subsequently applied to eucalypts, were established in the very first days of settlement. These names developed from a wide range of plant features, some recognisable in the landscape, but others noted in the working or use of the timber. Bradley uses names such as *ironwood* (ironbark), *peppermint*, *swamp mahogany* and *blue-barked gum tree* described by characters including *gum* on the outside of the trunk (as noted by Cook at Botany Bay) but also as veins in the wood; bark type as in blue-barked gum tree, timber characters as in hardness (ironwood), timber colour (mahogany); and leaf characters (peppermint taste). Names for other species used by Bradley include turpentine (named from bark characteristics) and honeysuckle (flower characteristics) and Tea tree (leaf use) and Sarsaparilla (liquorice leaf flavour).

Quotes from Bradley in italics**Likely modern species**

1. Gum Tree	<i>The wood white, fit for little but the fire; largest is lofty and thick</i>	<i>Angophora costata</i> , Large eucalypts, scribbly gums,
2. Iron Wood	<i>Grows very tall & large all about; but near Rose Hill in particular,</i>	<i>Eucalyptus crebra</i> , <i>Eucalyptus paniculata</i>
3. Corkwood	<i>Grows near the sea, just within the harbour, none in land not even so far as Sydney...very scarce</i>	? <i>Endiandra sieberi</i>
4. The Peppermint Tree		<i>Eucalyptus piperita</i>
5. The Tea tree	<i>More fit for furniture</i>	<i>Leptospermum</i> , <i>Melaleuca</i>
6. The Swamp Mahogany	<i>Grows in or close to swamps</i> <i>A species of Mahogany does not grow so straight nor as tall For building construction Worgan</i>	<i>Eucalyptus robusta</i>
7. The High ground Mahogany	<i>Grows on higher ground...best wood for furniture</i>	
8. Brown bark'd Gum Tree	<i>Kangaroo Ground, Rose Hill...to the height of 80 or 100 feet without a branch</i>	<i>Eucalyptus pilularis</i>
9. Blue bark'd Gum Tree	<i>Little different from that last mentioned</i>	<i>Eucalyptus saligna</i> , <i>Eucalyptus tereticornis</i>
10. Turpentine Tree	<i>A kind of Turpentine is found between the bark & the timber ,grows all about to 40 or 50 feet high or more</i>	? <i>Syncarpia glomulifera</i>
11. Pine Tree	<i>leaves like a Fir, is remarkably straight Bark used for canoes, Used for shingles Worgan p17</i>	Clearly <i>Casuarina</i> ; trees large enough and near water would have been <i>Casuarina glauca</i>
12. Honeysuckle	<i>Flower contains a great quantity of honey...Grows in sandy & rocky...Does not often grow to more than 10 or 12 feet high</i>	<i>Banksia serrata</i>

OTHER SPECIES

a dwarfish tree -	bearing a Rush-like Leaf, the Trunk of which yields a Quantity of a yellowish Gum,... Worgan p 12	<i>Xanthorrhoea</i>
Cabbage-Trees –	<i>Cabbage-Trees abound here...straight to the Height of 70, 80 or 90 Feet. Worgan p 11</i>	<i>Livistona australis</i>
	<i>a nut which grows in clusters</i>	<i>Macrozamia communis</i>
	<i>a kind of wild fig</i>	<i>Ficus coronata</i>
	<i>wild spinage</i>	<i>Tetragonia tetragonoides</i>
	<i>samphire</i>	<i>Sarcocornia</i>
	<i>parsley</i>	<i>Apium prostratum</i>
	<i>sorel</i>	<i>Rumex brownii</i>
	<i>wild celery</i>	<i>Apium prostratum</i>
	<i>A berry – Like a Currant</i>	<i>Leptomeria acida</i>
<i>Plant...amongst the underwood entwined –</i>	<i>taste of Liquorish & serves both for tea and sugar</i>	<i>Smilax glycyphylla</i>

Full Quote *We found a kind of wild fig & notice that the natives use it; they also use a nut which grows in clusters to the size and shape of the tops of the pine, One of the convicts was poisoned by eating them, in what manner the Natives prepare them I do not know but I tasted some at Broken Bay & thought them good. We never met with the smallest appearance of any kind of cultivated ground; we found wild spinage, samphire & parsley & small quantity of sorel & wild celery, all of which with the leaves of several kinds of bushes were used by us for want of better vegetables which were not yet supplied from the gardens... Soon after our arrival a berry in appearance like an ?insipid Currant was found in many parts of the Harbour; a very strong pure acid & of infinite use in removing the scurvy from those on board who had been attacked by that disease: we also found a plant which grew about the rocks & amongst the underwood entwined, the leaves of which boiled made a pleasant drink & was used as Tea by our Ships Company; It has much the taste of Liquorish & serves both for tea and sugar. It is recommended as a very wholesome drink & a good thing to take to sea. Bradley (1969) p 135, Oct 1788*

The formal scientific description of Sydney plants was based on specimens sent back to Europe, beginning with specimens of Banks and Solander in 1770 (see Benson & Eldershaw 2007), and then those from various First Fleet gentlemen including John White and John Hunter (some common Sydney species were described by the English botanist Sir James Edward Smith from specimens sent by White before 1790). Interestingly the French expedition of La Perouse evidently collected specimens during the stay at Botany Bay in 1788, as remains of a cone of *Banksia serrata* have been identified in archaeological material from the wreck of the ships in the Solomon Islands (Morrison & Bark 2009).

During the 19th Century visiting botanists including Robert Brown, James Backhouse, Allan Cunningham and Ludwig Leichhardt made collections from the general Harbour area as it was easily accessible from Sydney. Such work led to a scattering of species records from the 19th Century but no lists for a particular area at a particular time. The earliest list applicable to Sydney Harbour is a list of plants from the Outer Domain compiled by the Director of the Botanic Gardens Joseph Maiden in 1902 (Maiden 1902), which he compiled as a record anticipating that it would be cleared away after his time; it was. Although not part of Sydney Harbour National Park it included Mrs Macquaries Point, which would have had similar vegetation to Bradleys Head or Nielsen Park. Of the 95 species listed about 80% have been recorded in Sydney Harbour National Park. However interestingly 25 species occur that are not in Sydney Harbour

National Park (Table 8). These are mostly small plants some indicative of open grassy sites (*Hypericum gramineum*, *Hypoxis hygrometrica*, *Lythrum hyssopifolium*, *Poranthera microphylla*, *Rumex brownii*, *Fimbristylis dichotoma* and *Sporobolus creber*. This most likely indicates a localised shale-influenced soil capping on the ridge along Mrs Macquaries Point but could be influenced by a particular management regime, such as light animal grazing or slashing as would be appropriate park management at that time. There are two tree species *Eucalyptus pilularis* (remnant trees still survive near the National Herbarium building) and *Eucalyptus resinifera*. There are four Asteraceae species including three *Cassinia* species – as Sydney Harbour National Park now only includes seven Asteraceae there appears to have been a significant loss of Asteraceae. The list also includes a few foreshore species (*Ficinia nodosa*, *Pelargonium australe*).

Non-indigenous native and exotic species

Changes over the last 100–150 years have clearly influenced the native flora. The clearing and sandstone earthworks associated with the 19th Century gun emplacements and fortifications, clearly destroyed local vegetation but the absence of exotic species would have allowed native species to colonise disturbed areas or persist in remnant bush, and subsequently recolonise when the areas became parkland. However with the development of adjacent suburbs such as Mosman in the early 20th Century, propagules of exotics of garden origin would have become available.



Fig. 3. A well-constructed track leads through *Angophora costata* woodland on sheltered harbour headland of Bradleys Head. Photo Jaime Plaza

The presence of exotic species in lists recorded since the 1960s (exotic weed species are not mentioned by Maiden in 1902) is evidence of the impact that naturalised exotic species are having on the natural habitats. Exotic weed species such as *Asparagus densiflorus*, *Crassocephalum crepidioides*, *Chrysanthemoides monilifera*, *Lantana camara*, *Ligustrum sinense* and *Ochna serrulata*, were all established at Bradleys Head – Chowder Head by 1972 (Bradley 1972). Generally regarded as originating as garden escapes, these species and others were probably also planted in gardens of military residences associated with the 19th Century military fortifications or the Ashton Park picnic areas in the early 20th Century. Impacts associated with suburban development particularly increased silt and nutrients in watercourses, and general spread of weeds in animal dung, provided habitats that suited the generally higher nutrient favouring exotics. Exotic birds as well as native ones provided dispersal for exotic fleshy fruits.

A number of native, but non-local species have also invaded parts of Sydney Harbour National Park as a result of changes providing new habitats, and/or cultivation in suburban gardens providing propagules (Appendix 3). These include *Nephrolepis cordifolia*, *Lophostemon confertus*, *Cyathea cooperi*, *Ficus macrophylla* and *Melia azedarach* which are clearly non-local. For some species that could be native to the area—*Christella dentata*, *Crinum pedunculatum*, *Cupaniopsis anacardioides*, *Cymbidium suave*, *Dendrobium speciosum*, *Pellaea falcata* and *Platyserium bifurcatum* – there are

recent records but no evidence of historic occurrence. Some of these species may be a response to gardens as a source of propagules (*Cupaniopsis*, *Dendrobium*, *Cymbidium*, *Crinum* and /or the creation of new habitats such as road cuttings and quarries (*Christella* and *Platyserium*). These species are currently included in Appendix 2 as unsubstantiated.

In general the use of species lists to measure vegetation change is too coarse a measurement for specific ecological issues. The lists give no indication of abundances and rates of change. For example *Asparagus densiflorus* in particular has become a major weed along the harbour foreshores over the last 30 years (and is spreading in Pittwater) according to the author's observations. The increase in abundance of *Pittosporum undulatum* over a similar time has been much discussed (Howell 2003) but is native to Sydney and not a weed; though its relative abundance in absence of fire may inhibit less common native species.

Associated with suburban spread have come changes in fire frequency; initially an increase in burning and, as management becomes organised, a subsequent decrease. Bradley (1972) provides evidence of the problems with bush management in the 1970s Bradleys Head. Since that time a large amount of effort has gone into weed removal (by professional and volunteer groups), and control of stormwater, improvement of roads and walking tracks, now with often raised boardwalks to minimise disturbance and pathogens, and regeneration of disturbed sites in many parts of Sydney Harbour National Park.



Fig. 4. One of the largest precincts of Sydney Harbour National Park, Dobroyd Head has extensive areas of coastal sandstone heath; shrubs of *Allocasuarina distyla* and *Banksia serrata* predominate in the foreground. Photo Jaime Plaza

The application of an appropriate fire regime in many areas is still problematical. After her experiences at Bradleys Head, Eileen Bradley (1972) wrote *Regardless of the time of year at which they occurred, high intensity fires have consistently induced such a powerful resurgence of native growth that reasonable time spent in weeding has resulted in vigorous clean bush, which, in itself, inhibits weed germination.* Because of small size of bushland areas, landscape features or proximity of housing, many areas of bushland have remained unburnt for 40 years or more. Since that time burns at Dobroyd Head and North Head in 2002 and at Bradleys Head in 2009, have been followed by good native regeneration and similar burns should be carried out elsewhere.

Discussion

Sydney Harbour has been acknowledged for its floristic abundance and landscape beauty since the writings of the First Fleet in 1788. For two centuries the sandstone cliffs of North Head and the woodlands of Bradleys Head and other harbour foreshores introduced ship-borne travellers to the landscape of New South Wales. Though arrivals are now by plane over Botany Bay (another icon area of Australian botany- see Benson & Eldershaw 2007), Sydney Harbour National Park now protects landscapes familiar to travellers on ferries and recreational boats, and suburban residents who

are fortunate to overlook its areas; as well as providing the backdrop to many Harbour celebratory events. The tracks, lookouts and beaches are used by and familiar to many people. It is not surprising that issues impacting on its bushland (Bradley bushland techniques, weeds, low intensity burning, tree dieback from pollution, little penguins, bandicoots, *Phytophthora* and bushland volunteers) soon become part of Sydney's day-to-day knowledge.

Does the bushland of Sydney Harbour National Park deserve this attention?

For its size Sydney Harbour National Park has a rich diversity of plant species. The list of 416 native species from a 400 ha area is high; compare with Lane Cove National Park with 520 species in 600 ha (Kubiak 1983) or Ku-ring-gai Chase National Park with 566 spp in about 15 000 ha (Thomas & Benson 1985). Sydney Harbour also includes some rare species and locally restricted species, while clues in the lists also highlight the close relationship between native species and habitats, particularly through the fine geological and geomorphic variation originally evident in the landscape. Sydney Harbour National Park is a good example of the coastal sandstone parks of the Sydney Basin, and although its coastal landscape is less extensive than the larger Ku-ring-gai or Royal National Parks, it includes a range of vegetation types similar to the other Parks, and is more accessible.



Fig. 5. There are spectacular views over the ocean and harbour from of the tracks and lookouts in Sydney Harbour National Park such as from Watsons Bay near South Head. Photo Jaime Plaza

As a key conservation area, are trends noted in Sydney Harbour National Park likely to promote responses further afield?

Sydney Harbour National Park has similar threat issues to other Sydney sandstone parks - weeds, low intensity burning, tree dieback from pollution etc. The work of Eileen and Joan Bradley in the 1970s was instrumental in highlighting the importance of weed control and bush regeneration, as well as drawing attention to fire in conservation reserves. Both issues were soon taken up for bushland areas in other parts of Sydney. Tree die-back at Bradleys Head, as well as impacting the famous Manly Beach Norfolk Island Pines provided impetus to improve the offshore sewage disposal. Listing of Endangered populations (Little Penguins and Bandicoots) and the Eastern Suburbs Banksia Scrub Endangered Ecological Community provided considerable publicity to the NSW Threatened Species Conservation Act soon after its passing in 1995. More recently the potential of *Phytophthora* to damage bushland in Mosman has led to further surveys in the wider Sydney area and Blue Mountains. Perhaps impacts of climate change on natural populations will be noted and first publicised through impacts around Sydney Harbour? Records from Fort Denison (now part of Sydney Harbour National Park) document a rise in sea level since the 1920s, while the need for increasing repairs to stonework at water-level are an indication of future costs.

The isolated positions of Sydney Harbour National Park's seven separate terrestrial headland precincts, each with large adjoining urban interfaces, differs from the contiguous areas of the large national parks, but pose similar problems to those of many small reserves, particularly council areas in other parts of Sydney such as Middle Harbour, Botany Bay, Georges River and Port Hacking. However the Harbour headlands are not as impacted as reserves which are totally surrounded by developed areas, as natural harbour foreshore margins may make up more than half of their perimeters and although not allowing terrestrial plant and animal movement, nevertheless is a natural water connection and continues to allow natural movement of birds and invertebrates. Thus pollen and seed can still be transferred over water by birds or insects moving between the different precincts.

Indeed the different precincts may be used to highlight particular ecological and landscape differences between the ocean and harbour headlands, e.g. more coastal heath, particular coastal species *Westringia fruticosa*, *Melaleuca nodosa*, *Melaleuca hypericifolia* on coastal headlands contrasts with woodland on harbour headlands. Otherwise their individual isolated *island* status may be used as advantage e.g. the North Head Sanctuary proposal, reintroduction of native rats to Bradleys Head /Middle Head (Peter Banks pers.comm.); maintenance of *Phytophthora* free zones where walkers disinfect footwear etc. The establishment of formal boundaries between natural bushland and garden/lawn (often heritage) areas is an issue that needs future consideration particularly near bushland rehabilitation projects.

There are few records of the vegetation of the actual islands, but it is reasonable to assume that it was similar to nearby headlands; possible differences might have been different fire histories during aboriginal times, or different bird nesting regimes. Reestablishment of native vegetation on some of them will maintain of connectivity for birds and invertebrates crossing the harbour;

Therefore how good is our current flora database? And is it adequate for an icon site?

No other part of Australia has had such a long history of continuous European contact, including the collecting of specimens and description of landscape, as Sydney Harbour. For most of this time, data collection has been unsystematic, but a considerable body of material including photographic and pictorial records exists. While Botany Bay has earlier collections (in the 1770 collections of Banks and Solander (see Benson & Eldershaw 2007)), 19th Century Botany Bay collections come from a wider, less clearly defined area, and that area (except for the Kurnell Peninsula) has been more thoroughly cleared for suburban development than the foreshores of Sydney Harbour. Similarly areas such as the Blue Mountains and Royal National Park have only limited historical collections (generally beginning from the late 19th Century) from widely dispersed sites.

However our current information database for Sydney Harbour National Park, tied strongly to lists and censuses, has limitations. Lists need to relate to a specific time period to be useful, not just a continual accretion of species. Species lists are frequently confounded with multiple listings of misidentifications of the same species, which in the absence of specimen material are impossible to delete without at least reasonably targeted sampling for checking. However lists are very useful for promotion of conservation issues and public awareness feedback to support evidence-based adaptive management strategies. Lists can provide summaries of biodiversity values, rare and threatened species, regionally rare species, keystone species, conservation flags, and provide a basis for production of booklets/databases e.g. see Bear (2010) for Kurnell Peninsula.

A major emerging issue is the way in which we go about intergenerational transfer of knowledge. In biodiversity conservation there is a trend from individual expert-based systems with limited but flexible knowledge, to institutional databases with more extensive data (though not in this case so far), but lacking on-the-ground expert judgement and temporal experience. There is also a separation between databases (in institutions) and the body of public knowledge (distributed between various local knowledgeable people and organisations such as the North Head Sanctuary Foundation). Data needs to be shared both ways and acted upon through common understanding. A common body of data is needed that can be updated through both professional and community input

Conclusion

Sydney Harbour National Park is a key conservation site in terms of public prominence and accessibility. Its plant species and natural vegetation condition is the major asset but is vulnerable to an ongoing range of encroaching threats and warrants a higher amount of monitoring and management than is currently the case. Its current resource information base for plant biodiversity is limited and money spent on research, and development of monitoring programs in Sydney Harbour National Park are likely to result in high profile publicity and application in similar areas elsewhere.

This list provides a reasonably definitive list of the species occurring in the Park regions at the beginning of the 21st Century, but what is primarily needed is a systematic survey with site/quadrat based methodology available for future resurvey for State of Park trends.

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Appendix 1. Native plant species recorded for Sydney Harbour National Park by precincts indicating distribution and historical period of record

1=19th cent record; 2= 1900–1949; 3=1950–1999; 4=2000–2010

Compiled from NSW National Herbarium and other records by Doug Benson, December 2010

PLANT GROUP/ Family	Species	Occurrence /single location/ unsubstantiated record	North Head	Dobroyd Head	Middle Head	Chowder Head	Bradleys Head	South Head	Nielsen Park
FERNS									
Adiantaceae	<i>Adiantum aethiopicum</i>	occasional	3,4	4	2		3,4		
Aspleniaceae	<i>Asplenium australasicum</i>	occasional	3,4	4			3,4		3
Aspleniaceae	<i>Asplenium flabellifolium</i>	occasional	4		2		4		
Blechnaceae	<i>Blechnum ambiguum</i>	localised	3,4	2					
Blechnaceae	<i>Blechnum cartilagineum</i>	occasional	4	4			4		
Blechnaceae	<i>Doodia caudata</i>	single locality-uns rec	4	4			4		
Cyatheaceae	<i>Cyathea australis</i>	localised	4						3
Davalliaceae	<i>Davallia solida</i> var. <i>pyxidata</i>	occasional	3,4	4					
Dennstaedtiaceae	<i>Histiopteris incisa</i>	occasional	3,4	4					3,4
Dennstaedtiaceae	<i>Pteridium esculentum</i>	frequent/widespread	3,4	4	4		3,4	4	3,4
Dicksoniaceae	<i>Calochlaena dubia</i>	frequent/widespread	3,4	4	2,4		3,4		3,4
Gleicheniaceae	<i>Gleichenia dicarpa</i>	occasional	3,4	4	4				
Gleicheniaceae	<i>Gleichenia microphylla</i>	single locality-uns rec	4						
Gleicheniaceae	<i>Gleichenia rupestris</i>	occasional	3,4	4				4	
Gleicheniaceae	<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	localised	4						
Lindsaeaceae	<i>Lindsaea linearis</i>	occasional	3,4	2					
Lindsaeaceae	<i>Lindsaea microphylla</i>	single locality-uns rec	4	4					
Ophioglossaceae	<i>Botrychium australe</i>	single locality			2				
Osmundaceae	<i>Todea barbara</i>	localised	3,4	4					
Polypodiaceae	<i>Pyrrosia rupestris</i>	occasional	4	4					3
Psilotaceae	<i>Psilotum nudum</i>	occasional	4						
Schizaeaceae	<i>Schizaea bifida</i>	single locality-uns rec	3,4						
Schizaeaceae	<i>Schizaea dichotoma</i>	single locality-uns rec	4						
Selaginellaceae	<i>Selaginella uliginosa</i>	localised	3,4		4				
Sinopteridaceae	<i>Cheilanthes sieberi</i>	localised-uns rec	3						3
CONIFERS									
Cupressaceae	<i>Callitris muelleri</i>	single locality							
Podocarpaceae	<i>Podocarpus spinulosus</i>	occasional	3,4	4			4	3,4	
DICOTYLEDONS									
Aizoaceae	<i>Tetragonia tetragonooides</i>	occasional	4	4					3
Apiaceae	<i>Actinotus helianthi</i>	frequent/widespread	3,4	3,4			3,4	2,4	3
Apiaceae	<i>Actinotus minor</i>	occasional	3,4	1,4	1				
Apiaceae	<i>Centella asiatica</i>	frequent/widespread	3,4	4	1,4		4		3
Apiaceae	<i>Hydrocotyle peduncularis</i>	frequent/widespread	3,4	4	4			4	3,4
Apiaceae	<i>Platysace ericoides</i>	localised-uns rec	4	4					
Apiaceae	<i>Platysace lanceolata</i>	frequent/widespread	3,4	4	3		3,4	4	3,4
Apiaceae	<i>Platysace linearifolia</i>	occasional	3,4	4			2,4		3,4
Apiaceae	<i>Pomax umbellata</i>	frequent/widespread	3,4	4			3,4		3,4
Apiaceae	<i>Xanthosia pilosa</i>	frequent/widespread	3,4	4	1		3,4	4	3,4

PLANT GROUP/ Family	Species	Occurrence /single location/ unsubstantiated record	North Head	Dobroyd Head	Middle Head	Chowder Head	Bradleys Head	South Head	Nielsen Park
Apiaceae	<i>Xanthosia tridentata</i>	occasional	3,4	4		3	3,4		
Apocynaceae	<i>Marsdenia suaveolens</i>	localised	3,4			3			
Apocynaceae	<i>Parsonsia straminea</i>	single locality-uns rec	4						
Araliaceae	<i>Astrotricha floccosa</i>	occasional	3,4		4		3,4		3
Araliaceae	<i>Polyscias sambucifolia</i>	frequent/widespread	4			3,4	3,4		3,4
Asteraceae	<i>Conula denticulata</i>	localised		4			2,4		
Asteraceae	<i>Cassinia australis</i>	single locality-uns rec	3,4						
Asteraceae	<i>Epaltes australis</i>	single locality-uns rec	4			3	3		
Asteraceae	<i>Helichrysum scorioides</i>	localised		4		4		4	
Asteraceae	<i>Olearia tomentosa</i>	occasional	3,4	4			3,4		3
Asteraceae	<i>Ozothamnus diosmifolius</i>	occasional		4		3	3		
Asteraceae	<i>Senecio hispidulus</i>	localised				3,4	4		
Baueriaceae	<i>Bauera rubioides</i>	occasional	3,4	4					
Bignoniaceae	<i>Pundorea pandorana</i>	frequent/widespread	3,4	4		3,4	3,4	4	3,4
Campanulaceae	<i>Wahlenbergia gracilis</i>	single locality-uns rec	4						
Casuarinaceae	<i>Allocasuarina distyla</i>	frequent/widespread	3,4	3,4	3,4	3,4	4	2	3,4
Casuarinaceae	<i>Allocasuarina littoralis</i>	frequent/widespread	3,4	4	2,4	2,4	4		3
Casuarinaceae	<i>Allocasuarina portuensis</i>	single locality				4			4
Casuarinaceae	<i>Casuarina glauca</i>	occasional	3,4	4		4	4		3
Chenopodiaceae	<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	single locality-uns rec		4					
Chloanthaceae	<i>Chloanthus stoechadis</i>	occasional	3,4	4			4		4
Convolvulaceae	<i>Dichondra repens</i>	localised	3,4	4					
Crassulaceae	<i>Crassula decumbens</i> var. <i>decumbens</i>	localised	4				3		
Cunoniaceae	<i>Callitoma serratifolia</i>	occasional	3,4	4		3,4	3,4		3
Cunoniaceae	<i>Ceratopetalum gummiferum</i>	frequent/widespread	4	4	3	3,4	3,4		
Dilleniaceae	<i>Hibbertia aspera</i>	single locality-uns rec	3,4	4					
Dilleniaceae	<i>Hibbertia dentata</i>	frequent/widespread	4	4	2,4	3,4	3,4	4	
Dilleniaceae	<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	localised	3,4	4					
Dilleniaceae	<i>Hibbertia fasciculata</i>	localised	3,4	4					
Dilleniaceae	<i>Hibbertia linearis</i>	occasional	3,4	4		3	4		
Dilleniaceae	<i>Hibbertia scandens</i>	frequent/widespread	3,4	4	2	3	3,4	4	
Droseraceae	<i>Drosera auriculata</i>	single locality-uns rec	3						
Droseraceae	<i>Drosera binata</i>	single locality-uns rec	3,4			3			
Droseraceae	<i>Drosera peltata</i>	localised	3,4						
Droseraceae	<i>Drosera spatulata</i>	single locality-uns rec	3,4			3			
Elaeocarpaceae	<i>Elaeocarpus reticulatus</i>	frequent/widespread	3,4	4	2	2,3,4	3,4		3,4
Elaeocarpaceae	<i>Tetralochea ericifolia</i>	single locality-uns rec	4						
Ericaceae	<i>Astroloma humifusum</i>	single locality-uns rec	3,4				1		
Ericaceae	<i>Astroloma pinifolium</i>	localised	3						
Ericaceae	<i>Brachyloma daphnoides</i>	localised	3,4	4					
Ericaceae	<i>Epacris crassifolia</i>	single locality-uns rec	3,4						
Ericaceae	<i>Epacris longiflora</i>	frequent/widespread	3,4	4		3,4	3,4	4	3,4
Ericaceae	<i>Epacris microphylla</i>	localised	3,4	3,4	4				
Ericaceae	<i>Epacris obtusifolia</i>	single locality-uns rec	3,4						
Ericaceae	<i>Epacris pulchella</i>	localised-uns rec	4	4			3		
Ericaceae	<i>Leucopogon amplexicaule</i>	localised	4	4					
Ericaceae	<i>Leucopogon ericoides</i>	localised	3,4	4					
Ericaceae	<i>Leucopogon esquamatus</i>	localised	3,4	4					
Ericaceae	<i>Leucopogon microphyllus</i>	localised	3,4	4					
Ericaceae	<i>Leucopogon parviflorus</i>	localised	3,4	4					
Ericaceae	<i>Monotoca scoparia</i>	single locality	3,4		4	3,4	4	4	3,4
Ericaceae	<i>Monotoca elliptica</i>	frequent/widespread	3,4				3,4		
Ericaceae	<i>Sprengelia incarnata</i>	single locality-uns rec	3,4						
Ericaceae	<i>Syphelia longifolia</i>	occasional	4		4	2	3,4		

PLANT GROUP/ Family	Species	Occurrence /single location/ unsubstantiated record	North Head	Dobroyd Head	Middle Head	Chowder Head	Bradleys Head	South Head	Nielsen Park
Ericaceae	<i>Syphelia triflora</i>	localised	3,4				3		
Ericaceae	<i>Syphelia tubiflora</i>	occasional	3,4				4		
Ericaceae	<i>Syphelia viridis</i> subsp. <i>viridis</i>	single locality-uns rec	4						
Ericaceae	<i>Woolisia pungens</i>	localised	3,4				4		
Euphorbiaceae	<i>Amperea xiphioclada</i> var. <i>xiphioclada</i>	localised	3,4			3			
Euphorbiaceae	<i>Brevnia oblongifolia</i>	frequent/widespread	3,4		3,4				3
Euphorbiaceae	<i>Chamaesyce psammogeton</i>	TSC Endang. single locality-uns rec	4		3,4			4	3,4
Euphorbiaceae	<i>Glochidion ferdinandii</i>	frequent/widespread	3,4				3,4		
Euphorbiaceae	<i>Micranthum ericoides</i>	occasional	3,4				4		
Euphorbiaceae	<i>Monoitax linifolia</i>	single locality-uns rec	4						
Euphorbiaceae	<i>Omalanthus populifolius</i>	frequent/widespread	3			3,4		4	3,4
Euphorbiaceae	<i>Phyllanthus hirtellus</i>	frequent/widespread	3,4		2	2,3,4			
Euphorbiaceae	<i>Poranthera ericifolia</i>	localised	3,4			3			
Euphorbiaceae	<i>Pseudanthus orientalis</i>	single locality-uns rec	3,4						
Euphorbiaceae	<i>Ricnocarpus pimifolius</i>	occasional	3,4	3,4	2	2,3,4			
Fabaceae	<i>Acacia implexa</i>	localised	3,4	4	4	4	4		
Fabaceae	<i>Acacia linifolia</i>	frequent/widespread	3,4	4	2	2,3,4			
Fabaceae	<i>Acacia longifolia</i> subsp. <i>longifolia</i>	occasional	3,4	4	2,4	2,3,4			3,4
Fabaceae	<i>Acacia longifolia</i> subsp. <i>sophorae</i>	occasional	3,4	4			4		
Fabaceae	<i>Acacia myrtilifolia</i>	occasional	3,4	4		3			
Fabaceae	<i>Acacia parramattensis</i>	localised	4	4					
Fabaceae	<i>Acacia quadrilateralis</i>	localised	4	4					
Fabaceae	<i>Acacia suaveolens</i>	frequent/widespread	3,4	4	2,3	2,3,4		2	4
Fabaceae	<i>Acacia terminalis</i> incl. <i>subsp terminalis</i>	frequent/widespread	3,4	4	4	3,4		4	3,4
Fabaceae	<i>Acacia ulicifolia</i>	frequent/widespread	3,4	4	2,4	2,3			3
Fabaceae	<i>Aotus ericoides</i>	single locality-uns rec	4	4					
Fabaceae	<i>Bossiaea ensata</i>	occasional	4	4	1				
Fabaceae	<i>Bossiaea heterophylla</i>	localised	3,4	4					
Fabaceae	<i>Bossiaea scolopendria</i>	single locality-uns rec	3,4	4					
Fabaceae	<i>Dillwynia floribunda</i>	localised	3,4	4					
Fabaceae	<i>Dillwynia retorta</i> species complex	frequent/widespread	3,4	4	3	3,4			3
Fabaceae	<i>Glycine clandestina/tabacina</i>	occasional	3,4	4			3,4		3
Fabaceae	<i>Glycine microphylla</i>	localised	4	4		3			
Fabaceae	<i>Gompholobium glabratum</i>	single locality-uns rec	4	4					
Fabaceae	<i>Gompholobium grandiflorum</i>	single locality-uns rec	3,4	4					
Fabaceae	<i>Gompholobium latifolium</i>	occasional	3,4	4		4			3
Fabaceae	<i>Hardenbergia violacea</i>	frequent/widespread	3,4	4	1	3,4			3,4
Fabaceae	<i>Hovea linearis</i>	single locality-uns rec	4	4					
Fabaceae	<i>Hovea longifolia</i>	single locality	3,4	4	2	3,4		4	3,4
Fabaceae	<i>Kemedia rubicunda</i>	frequent/widespread	3,4	4	3				
Fabaceae	<i>Mirbelia rubiifolia</i>	localised	3,4	4					
Fabaceae	<i>Oxylobium cordifolium</i>	single locality	3,4	4					3
Fabaceae	<i>Phyllotoa phyllicoides</i>	single locality-uns rec	4	4	2	3,4			3
Fabaceae	<i>Playlobium formosum</i>	frequent/widespread	3,4	4	3				3
Fabaceae	<i>Pultenaea daphnoides</i>	occasional	3,4	4			4		
Fabaceae	<i>Pultenaea flexilis</i>	occasional	4	4					
Fabaceae	<i>Pultenaea limophylla</i>	single locality-uns rec	4	4					3
Fabaceae	<i>Pultenaea retusa</i>	localised	3,4	4					
Fabaceae	<i>Pultenaea stipularis</i>	localised	4	4					
Fabaceae	<i>Pultenaea tuberculata</i>	occasional	3,4	4			4		
Fabaceae	<i>Viminaria juncea</i>	frequent/widespread	3,4	4		3			3
Goodeniaceae	<i>Dampiera stricta</i>	occasional	3,4	4					
Goodeniaceae	<i>Goodenia bellidifolia</i>	localised	3,4	4					
Goodeniaceae	<i>Goodenia heterophylla</i> subsp. <i>eglandulosa</i>	localised	4	4					3

PLANT GROUP/ Family	Species	Occurrence /single location/ unsubstantiated record	North Head	Dobroyd Head	Middle Head	Chowder Head	Bradleys Head	South Head	Nielsen Park
Goodeniaceae	<i>Goodenia stelligera</i>	single locality-uns rec	3,4						
Goodeniaceae	<i>Vellata lyrata</i>	single locality					2		3
Haloragaceae	<i>Gonocarpus micranthus</i> subsp. <i>ramosissimus</i>	localised	3,4						
Haloragaceae	<i>Gonocarpus salsoloides</i>	single locality-uns rec	3,4						3
Haloragaceae	<i>Gonocarpus tetragynus</i>	localised	3,4			3,4			3,4
Haloragaceae	<i>Gonocarpus teucrioides</i>	frequent/widespread	3,4	4	4		3,4		
Lamiaceae	<i>Hemigenia purpurea</i>	occasional	3,4	3,4			2		
Lamiaceae	<i>Plectranthus parviflorus</i>	occasional	3,4			3	4		3,4
Lamiaceae	<i>Westringia fruticosa</i>	frequent/widespread	3,4	4	3	4	3,4	4	3,4
Lauraceae	<i>Cassytha glabella</i>	localised	3,4				2	4	3,4
Lauraceae	<i>Lauracens</i>	occasional	3,4	1,4	4	4			3
Lauraceae	<i>Endiandra sieberi</i>	localised	3,4						
Lentibulariaceae	<i>Utricularia dichotoma</i>	single locality-uns rec	3,4						
Lobeliaceae	<i>Lobelia alata</i>	localised	3						3
Lobeliaceae	<i>Lobelia gracilis</i>	occasional	4			3	3		
Lobeliaceae	<i>Pratia purpurascens</i>	occasional		4					3
Loganiaceae	<i>Mitrasacme polymorpha</i>	localised	3,4	4					
Loranthaceae	<i>Amyema congener</i>	localised	3,4	4					
Loranthaceae	<i>Dendrophthoe vitellina</i>	single locality							2
Loranthaceae	<i>Loranthaceae</i>	single locality							2
Loranthaceae	<i>Muellerina celastroides</i>	single locality							2
Loranthaceae	<i>Muellerina eucalyptoides</i>	single locality							2
Meliaceae	<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	occasional	3,4	4	4				
Menispermaceae	<i>Sarcopetalum harveyanum</i>	localised	3,4			3			
Menispermaceae	<i>Stephania japonica</i> var. <i>discolor</i>	occasional	3,4	4		4		4	
Moraceae	<i>Ficus rubiginosa</i>	occasional	3,4	4			4		3,4
Myoporaceae	<i>Myoporum boninense</i> subsp. <i>australe</i>	single locality	3						3
Myrtaceae	<i>Myrsine variabilis</i>	occasional	3,4	4	4	4	4		3,4
Myrtaceae	<i>Acmena smithii</i>	occasional	3,4	4	4	4	4		
Myrtaceae	<i>Angophora costata</i>	frequent/widespread	3,4	4	4	4	4		
Myrtaceae	<i>Angophora hispida</i>	occasional	3,4	4	4	3,4	3,4		3,4
Myrtaceae	<i>Baeckea brevifolia</i>	occasional	3,4	4	4		2,4		
Myrtaceae	<i>Baeckea diosmifolia</i>	single locality-uns rec	3,4	4					
Myrtaceae	<i>Baeckea imbricata</i>	occasional	3,4	3		4		4	3,4
Myrtaceae	<i>Callistemon citrinus</i>	single locality-uns rec	3,4	3,4				4	
Myrtaceae	<i>Callistemon linearis</i>	occasional	3,4	4	1		3	4	3
Myrtaceae	<i>Callistemon rigidus</i>	localised	3,4	4					
Myrtaceae	<i>Calytrix tetragona</i>	occasional	3,4	4	1		4		3
Myrtaceae	<i>Corymbia gunnifera</i>	occasional	3,4	3,4			4		
Myrtaceae	<i>Darwinia diminuta</i>	single locality-uns rec	4					4	
Myrtaceae	<i>Darwinia fascicularis</i>	occasional	3,4	4	1				
Myrtaceae	<i>Darwinia leptantha</i>	single locality-uns rec	3,4	4					
Myrtaceae	<i>Eucalyptus botryoides</i>	frequent/widespread	3,4	4	4		3,4		3,4
Myrtaceae	<i>Eucalyptus camfieldii</i>	single locality-uns rec	3,4	4		3,4			
Myrtaceae	<i>Eucalyptus capitellata</i>	localised-uns rec	4	4					
Myrtaceae	<i>Eucalyptus haemastoma</i>	localised		4					3
Myrtaceae	<i>Eucalyptus obstans</i>	localised	3,4			3,4		2	
Myrtaceae	<i>Eucalyptus piperita</i>	occasional		4			4		3,4
Myrtaceae	<i>Eucalyptus punctata</i>	localised		4			4		
Myrtaceae	<i>Eucalyptus scias</i> subsp. <i>scias</i>	single locality-uns rec	4						3
Myrtaceae	<i>Eucalyptus tereticornis</i>	single locality							3
Myrtaceae	<i>Eucalyptus umbra</i>	occasional	3,4	3,4					
Myrtaceae	<i>Euryomyrtus ramosissima</i>	single locality-uns rec	3,4	3,4					
Myrtaceae	<i>Myrtaceae</i>	frequent/widespread	3,4	3,4	3,4		3,4	4	3,4
Myrtaceae	<i>Kunzea ambigua</i>	localised	3,4	4					
Myrtaceae	<i>Kunzea capitata</i>	localised							

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Myrtaceae	<i>Leptospermum arachnoides</i>	localised	3,4	3,4					
Myrtaceae	<i>Leptospermum juniperinum</i>	single locality-uns rec	3,4						
Myrtaceae	<i>Leptospermum laevigatum</i>	frequent/widespread	3,4	4			4	4	3,4
Myrtaceae	<i>Leptospermum polygalifolium</i>	occasional	3,4	3,4			3,4		3
Myrtaceae	<i>Leptospermum squarrosum</i>	occasional	3,4	3,4	2		4		
Myrtaceae	<i>Leptospermum trinervium</i>	frequent/widespread	3,4	3,4	2	2,3,4	3,4	1,4	
Myrtaceae	<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	occasional	3,4	4			3		
Myrtaceae	<i>Melaleuca hypericifolia</i>	localised	4	3,4	2				
Myrtaceae	<i>Melaleuca linariifolia</i>	localised	4						
Myrtaceae	<i>Melaleuca nodosa</i>	occasional	3,4					4	3,4
Myrtaceae	<i>Melaleuca quinquerivra</i>	occasional	3,4	4			1		
Myrtaceae	<i>Micromyrtus ciliata</i>	localised	4				2,4		
Myrtaceae	<i>Syncarpia glomulifera</i>	localised	3,4						3
Myrtaceae	<i>Syzygium paniculatum</i>	single locality-uns rec	3,4	3,4					
Oleaceae	<i>Olax stricta</i>	localised	3,4	4					
Oleaceae	<i>Notelaea longifolia</i> f. <i>longifolia</i>	occasional	3,4	4		4	4		3,4
Oleaceae	<i>Notelaea ovata</i>	occasional	4	4					3
Oxalidaceae	<i>Oxalis perennans</i>	single locality						3	
Peperomiaceae	<i>Peperomia blanda</i> var. <i>floribunda</i>	single locality							3
Pitosporaceae	<i>Billardiera scandens</i>	frequent/widespread	3,4	4		3,4	3,4		3
Pitosporaceae	<i>Pitiosporum revolutum</i>	frequent/widespread	3,4	4	2,4	3,4	3,4		3,4
Pitosporaceae	<i>Pitiosporum undulatum</i>	frequent/widespread	3,4	4	3,4	2,3,4	3,4		3,4
Polygalaceae	<i>Comesperma ericinum</i>	single locality-uns rec	3,4	4					
Polygalaceae	<i>Comesperma volubile</i>	single locality-uns rec		4					
Polygonaceae	<i>Persicaria decipiens</i>	single locality-uns rec		4					
Proteaceae	<i>Banksia aemula</i>	single locality-uns rec	3,4						
Proteaceae	<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	single locality-uns rec	3,4	3,4	4				4
Proteaceae	<i>Banksia integrifolia</i>	frequent/widespread	3,4	4	3,4	3,4	4	4	3,4
Proteaceae	<i>Banksia marginata</i>	occasional	3,4					2	2
Proteaceae	<i>Banksia oblongifolia</i>	occasional	3,4	3,4			4		3
Proteaceae	<i>Banksia robur</i>	localised	3,4	4					
Proteaceae	<i>Banksia serrata</i>	frequent/widespread	3,4	4		3	3,4		3
Proteaceae	<i>Banksia spinulosa</i>	occasional		4	3	4	3		
Proteaceae	<i>Conospermum ellipticum</i>	localised	4	4	1			1	
Proteaceae	<i>Conospermum ericifolium</i>	occasional	4		1				
Proteaceae	<i>Conospermum longifolium</i> subsp. <i>longifolium</i>	single locality-uns rec	3,4						
Proteaceae	<i>Conospermum taxifolium</i>	single locality-uns rec	3,4						
Proteaceae	<i>Conospermum tenuifolium</i>	single locality			1				
Proteaceae	<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	single locality-uns rec	4	4					3
Proteaceae	<i>Grevillea linearifolia</i>	occasional	4	4	4				
Proteaceae	<i>Grevillea sericea</i>	occasional	4	4	4	3,4			
Proteaceae	<i>Grevillea speciosa</i>	occasional	3,4	3,4	1				
Proteaceae	<i>Hakea dactyloides</i>	localised-uns rec	4						
Proteaceae	<i>Hakea laevipes</i>	localised	3,4				3,4		
Proteaceae	<i>Hakea gibbosa</i>	occasional	3,4	3,4			4	2	
Proteaceae	<i>Hakea sericea</i>	localised	4				3		
Proteaceae	<i>Hakea teretifolia</i>	frequent/widespread	3,4	4	1,4		4	2,4	
Proteaceae	<i>Isopogon anemonifolius</i>	single locality		3					
Proteaceae	<i>Lambertia formosa</i>	occasional	3,4	4	1	4	3,4		
Proteaceae	<i>Lomatia silaifolia</i>	occasional	3,4	4	4		3		
Proteaceae	<i>Persoonia hirsuta</i>	single locality-uns rec	4						
Proteaceae	<i>Persoonia lanceolata</i>	frequent/widespread	3,4	3,4			4	2	3,4
Proteaceae	<i>Persoonia laurina</i> subsp. <i>laurina</i>	single locality-uns rec	4						
Proteaceae	<i>Persoonia levis</i>	frequent/widespread	3,4	4	2	2,3,4	3,4		

PLANT GROUP/ Family	Species	Occurrence /single location/ unsubstantiated record	North Head	Dobroyd Head	Middle Head	Chowder Head	Bradleys Head	South Head	Nielsen Park
Proteaceae	<i>Persoonia linearis</i>	frequent/widespread	3,4	4			3	1	3
Proteaceae	<i>Petrophile pulchella</i>	single locality-uns rec	3,4						
Proteaceae	<i>Xylomelum pyriforme</i>	single locality-uns rec	3,4						
Ranunculaceae	<i>Clematis aristata</i>	occasional	3,4	4		3	3		
Rhamnaceae	<i>Cryptandra amara</i>	single locality-uns rec	3,4						
Rhamnaceae	<i>Cryptandra ericoides</i>	localised-uns rec	3,4	4					
Rhamnaceae	<i>Pomaderris ferruginea</i>	occasional	4	4		3			
Rhamnaceae	<i>Pomaderris intermedia</i>	single locality-uns rec	3,4	4					
Rubiaceae	<i>Morinda jasminoides</i>	single locality-uns rec	3,4	4					
Rubiaceae	<i>Opercularia aspera</i>	occasional	3,4	4		3,4			3
Rubiaceae	<i>Opercularia varia</i>	localised	4						3
Rubiaceae	<i>Acronychia oblongifolia</i>	single locality					4		
Rubiaceae	<i>Boronia ledifolia</i>	localised	3,4						
Rubiaceae	<i>Boronia parviflora</i>	single locality-uns rec	4						
Rubiaceae	<i>Boronia serrulata</i>	single locality-uns rec	3,4						
Rubiaceae	<i>Correa alba</i>	single locality-uns rec	3,4						
Rubiaceae	<i>Correa reflexa</i>	frequent/widespread	3,4	4	2	2,3,4	3	4	3,4
Rubiaceae	<i>Crocea saligna</i>	frequent/widespread	3,4	4	4	3,4	4		
Rubiaceae	<i>Eriostemon australasius</i>	single locality		4					
Rubiaceae	<i>Philotheca busifolia</i> subsp. <i>buxifolia</i>	occasional	3,4	3,4		4			3
Rubiaceae	<i>Philotheca busifolia</i> subsp. <i>obovata</i>	localised-uns rec	4	4					
Rubiaceae	<i>Philotheca salsolifolia</i>	localised	3,4	1					
Rubiaceae	<i>Zieria laevigata</i>	localised	3,4	3,4					
Rubiaceae	<i>Zieria pilosa</i>	occasional	3,4	4			4		
Rubiaceae	<i>Zieria smithii</i>	single locality-uns rec		4					
Santalaceae	<i>Exocarpos cupressiformis</i>	occasional	3,4	4			3		3
Sapindaceae	<i>Dodonaea triquetra</i>	frequent/widespread	3,4	4	2,4	2,3,4	3		3,4
Scrophulariaceae	<i>Veronica plebeia</i>	localised	3,4	4	4		4		
Sterculiaceae	<i>Lasiopetalum ferrugineum</i> var. <i>ferrugineum</i>	frequent/widespread	3,4	4	4	4	4		4
Sterculiaceae	<i>Lasiopetalum rufum</i>	single locality-uns rec	4						
Sterculiaceae	<i>Rulingia hermannifolia</i>	localised	3,4	3					
Sterculiaceae	<i>Styliidium graminifolium</i>	single locality					2		
Sydlidiaceae	<i>Styliidium lineare</i>	localised	3,4	4					
Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>curviflora</i>	localised-uns rec	3,4	4				4	
Thymelaeaceae	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	occasional	3,4	4	2	2,3,4			
Verbenaceae	<i>Clerodendrum tomentosum</i>	occasional	4	4					
Violaceae	<i>Viola hederacea</i>	occasional	3,4	4	4	4		4	
Viscaceae	<i>Notothixos subaureus</i>	single locality		4					2
Vitaceae	<i>Cissus antarctica</i>	occasional	3,4	4			4		
Vitaceae	<i>Cissus hypoglauca</i>	frequent/widespread	3,4	4		3,4	4		3,4
MONOCOTYLEDONS									
Anthericaceae	<i>Sowerbaea juncea</i>	single locality-uns rec	4						
Blandfordiaceae	<i>Blandfordia nobilis</i>	single locality-uns rec	3,4						
Centropodiaceae	<i>Centrolepis fascicularis</i>	single locality-uns rec	3,4						
Centropodiaceae	<i>Centrolepis strigosa</i>	localised	3,4		3				
Colchicaceae	<i>Burchardia umbellata</i>	single locality-uns rec	3,4						
Commelinaceae	<i>Commelina cyanea</i>	frequent/widespread	3,4	4	3,4	3,4	4	4	4
Commelinaceae	<i>Schellhammeria undulata</i>	occasional	3,4	4	3		3		
Cyperaceae	<i>Baumea acuta</i>	localised	3,4	4					

PLANT GROUP/ Family	Species	Occurrence /single location/ unsubstantiated record	North Head	Dobroyd Head	Middle Head	Chowder Head	Bradleys Head	South Head	Nielsen Park
Cyperaceae	<i>Baumea juncea</i>	single locality-uns rec	3,4						
Cyperaceae	<i>Baumea teretifolia</i>	localised-uns rec	4	4					
Cyperaceae	<i>Carex appressa</i>	single locality-uns rec	4						
Cyperaceae	<i>Causis flexuosa</i>	localised	3,4	1,4					
Cyperaceae	<i>Causis pentandra</i>	occasional	3,4	4	4				
Cyperaceae	<i>Causis recurvata</i>	localised	4	4					
Cyperaceae	<i>Chorizandra sphaerocephala</i>	single locality-uns rec	3,4						
Cyperaceae	<i>Cyathochaeta diandra</i>	single locality-uns rec	3,4						
Cyperaceae	<i>Cyperus polystachyos</i>	occasional	3,4	3,4					3
Cyperaceae	<i>Ficinia nodosa</i>	frequent/widespread	3,4	4		4	4	2,4	3
Cyperaceae	<i>Gahnia clarkii</i>	occasional	3,4	4			3,4		
Cyperaceae	<i>Gahnia sieberiana</i>	occasional	3,4	4					
Cyperaceae	<i>Gymnoschoenus sphaerocephalus</i>	single locality-uns rec	4						
Cyperaceae	<i>Isolopis inundata</i>	single locality-uns rec	3,4	4					
Cyperaceae	<i>Lepidosperma concavum</i>	single locality-uns rec	3,4	4		3,4	3,4		
Cyperaceae	<i>Lepidosperma filiforme</i>	localised	3,4	4					
Cyperaceae	<i>Lepidosperma laterale</i>	occasional	3,4	4			4		
Cyperaceae	<i>Lepidosperma neesii</i>	single locality-uns rec	3,4						
Cyperaceae	<i>Lepidosperma viscidum</i>	single locality-uns rec	3,4						
Cyperaceae	<i>Ptilothrix densa</i>	localised	3,4	3,4					
Cyperaceae	<i>Schoenus apogon</i>	single locality-uns rec	3,4						
Cyperaceae	<i>Schoenus brevifolius</i>	single locality-uns rec	3,4						
Cyperaceae	<i>Schoenus ericetorum</i>	single locality-uns rec	4						
Cyperaceae	<i>Schoenus imberbis</i>	localised	3,4	4					
Cyperaceae	<i>Tricostularia pauciflora</i>	single locality	3,4						
Eriocaulaceae	<i>Eriocaulon scariosum</i>	single locality-uns rec	4						
Haemodorraceae	<i>Haemodorum corymbosum</i>	single locality-uns rec	4	4					
Haemodorraceae	<i>Haemodorum planifolium</i>	localised	3,4	4		3			
Iridaceae	<i>Patersonia glabrata</i>	localised	3,4	4					
Iridaceae	<i>Patersonia sericea</i>	occasional	3,4	4		3			
Juncaceae	<i>Juncus continuus</i>	occasional	3,4	4					
Juncaceae	<i>Juncus planifolius</i>	single locality-uns rec	3,4	4			3		
Juncaceae	<i>Juncus prismatocarpus</i>	single locality-uns rec	4						
Juncaceae	<i>Juncus usitatus</i>	occasional	3,4		4				
Lomandraceae	<i>Lomandra cylindrica</i>	occasional	4	4		3	3		
Lomandraceae	<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	occasional	3,4	4		3,4			
Lomandraceae	<i>Lomandra glauca</i>	localised	3,4	4					
Lomandraceae	<i>Lomandra gracilis</i>	single locality-uns rec	4						
Lomandraceae	<i>Lomandra longifolia</i>	frequent/widespread	3,4	4		3,4		4	3,4
Lomandraceae	<i>Lomandra obliqua</i>	frequent/widespread	4	4	2	2,3,4	4		
Orchidaceae	<i>Acianthus fornicatus</i>	localised	3,4	4		3			
Orchidaceae	<i>Caladenia catenata</i>	single locality-uns rec	4						
Orchidaceae	<i>Calceana major</i>	single locality-uns rec	4						
Orchidaceae	<i>Calochilus campestris</i>	single locality	4						
Orchidaceae	<i>Cryptostylis erecta</i>	occasional	3,4	4	3				
Orchidaceae	<i>Cryptostylis subulata</i>	localised	3,4	4					
Orchidaceae	<i>Dendrobium linguiforme</i>	occasional	3,4	4					3
Orchidaceae	<i>Dipodium punctatum</i>	localised	3,4	4		3	3		
Orchidaceae	<i>Dipodium roseum</i>	single locality	3			2			
Orchidaceae	<i>Erythrorchis cassyphoides</i>	single locality-uns rec	3,4						
Orchidaceae	<i>Orthoceras strictum</i>	localised	4		2				
Orchidaceae	<i>Prasophyllum</i> sp.	single locality-uns rec							

PLANT GROUP/ Family	Species	Occurrence /single location/ unsubstantiated record	North Head	Dobroyd Head	Middle Head	Chowder Head	Bradleys Head	South Head	Nielsen Park
Orchiaceae	<i>Pterostylis curta</i>	single locality			3				
Orchiaceae	<i>Pterostylis nutans</i>	occasional			3		4		4
Orchiaceae	<i>Thelymitra ixiooides</i> var. <i>ixiooides</i>	single locality-uns rec	4			3			
Philesiaceae	<i>Eustrephus latifolius</i>	frequent/widespread	3,4	4	3,4	3,4	4		3
Philesiaceae	<i>Geitonoplesium cymosum</i>	frequent/widespread	3,4	4	4	4	4		3
Phylidraceae	<i>Philydrium lanuginosum</i>	single locality-uns rec	4						3,4
Phormiaceae	<i>Dianella caerulea</i> var. <i>caerulea</i>	single locality	4		2				
Phormiaceae	<i>Dianella caerulea</i> var. <i>producta</i>	localised	4	4					
Phormiaceae	<i>Dianella revoluta</i>	localised	3,4			3,4			3
Phormiaceae	<i>Dianella caerulea</i>	occasional	3,4	4	4	3,4	3,4		3
Phormiaceae	<i>Thelionema caespitosum</i>	frequent/widespread	3,4	4	4				
Phormiaceae	<i>Thelionema umbellatum</i>	single locality-uns rec	3,4						
Phormiaceae	<i>Thelionema avenaceus</i>	single locality-uns rec	3,4	4		3			
Poaceae	<i>Anisopogon amplexus</i>	occasional	3,4	4		3			
Poaceae	<i>Austrodanthonia tenuior</i>	occasional	4	4		3			
Poaceae	<i>Austrostipa pubescens</i>	single locality	4		3				
Poaceae	<i>Dichelachne crinita</i>	single locality-uns rec	4						
Poaceae	<i>Dichelachne micrantha</i>	single locality-uns rec	3,4						
Poaceae	<i>Digitaria didactyla</i>	single locality-uns rec	3,4	4					
Poaceae	<i>Digitaria parviflora</i>	occasional	4	4	2	3,4	4		4
Poaceae	<i>Echinopogon caespitosus</i>	occasional	4	4					
Poaceae	<i>Entolasia marginata</i>	occasional	3,4	4		3,4			
Poaceae	<i>Entolasia stricta</i>	occasional	3,4	4	4	3			
Poaceae	<i>Eragrostis brownii</i>	single locality-uns rec	3,4						
Poaceae	<i>Eragrostis sororia</i>	single locality	3,4			2			
Poaceae	<i>Hemarthria uncinata</i> var. <i>uncinata</i>	single locality-uns rec	3,4	4	4	3,4	3,4	4	3
Poaceae	<i>Imperata cylindrica</i> var. <i>major</i>	frequent/widespread	3,4						
Poaceae	<i>Lachnagrostis aemula</i>	single locality	4		4				
Poaceae	<i>Lachnagrostis filiformis</i>	localised	4		4				
Poaceae	<i>Leersia hexandra</i>	single locality-S limit	4		1				
Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>	occasional	4	4	4				4
Poaceae	<i>Oplismenus aemulus</i>	localised	3,4						3,4
Poaceae	<i>Oplismenus imbecillis</i>	localised	3,4	4			4		
Poaceae	<i>Panicum simile</i>	localised	3,4	4					
Poaceae	<i>Poa affinis</i>	occasional	3,4			3			
Poaceae	<i>Spinifex sericeus</i>	single locality-uns rec	4						
Poaceae	<i>Sporobolus virginicus</i>	localised	4	4					
Poaceae	<i>Themeda australis</i>	frequent/widespread	3,4	2,4	2	2,3,4	3,4	4	3
Restionaceae	<i>Balostion tetraphyllum</i> subsp. <i>meiostachyum</i>	single locality-uns rec	3,4						
Restionaceae	<i>Chordifex dimorphus</i>	single locality-uns rec	3,4						
Restionaceae	<i>Chordifex fastigiatius</i>	single locality-uns rec	3,4	3,4					
Restionaceae	<i>Empodisma minus</i>	localised	3,4						3
Restionaceae	<i>Eurychorda complanata</i>	localised	3,4						
Restionaceae	<i>Hypolaena fastigata</i>	single locality-uns rec	3,4						
Restionaceae	<i>Leptocarpus tenax</i>	single locality-uns rec	3,4	4		4	4		
Restionaceae	<i>Leptrodia scariosa</i>	localised	3,4	4	4	3,4	4		3,4
Smilacaceae	<i>Smilax glycyphylla</i>	frequent/widespread	3,4	4	4	3,4	4		
Typhaceae	<i>Typha orientalis</i>	single locality-uns rec	3,4	4		3,4	4		
Xanthorrhoeaceae	<i>Xanthorrhoea arborea</i>	occasional	3,4	4		3,4	3,4		
Xanthorrhoeaceae	<i>Xanthorrhoea media</i>	localised	3,4						3,4
Xanthorrhoeaceae	<i>Xanthorrhoea resinosa</i>	localised	3,4	4			3,4		3,4
Xyridaceae	<i>Xyris operculata</i>	single locality-uns rec	3,4						

Appendix 2. Plant species for which there is currently no substantiated record, nor any historical record, but could be regarded as native to Sydney Harbour National Park (i.e. added to Appendix 1) if confirmed with a specimen evidently from a naturally-occurring population

Species	Family	Precinct
FERNS		
<i>Christella dentata</i>	Thelypteridaceae	NH,DH
<i>Hypolepis muelleri</i>	fern	NH
<i>Pellaea falcata</i>	Adiantaceae	NH
<i>Platyserium bifurcatum</i>	Polypodiaceae	NH
<i>Pteris umbrosa</i>	Pteridaceae	NH
DICOTYLEDONS		
<i>Acacia binervata</i>	Fabaceae	NH
<i>Acacia binervia</i>	Fabaceae	NH
<i>Acacia brownii</i>	Fabaceae	NH
<i>Acacia floribunda</i>	Fabaceae	NH,DH
<i>Acacia irrorata</i>	Fabaceae	NH
<i>Acacia longissima</i>	Fabaceae	NH,DH
<i>Angophora floribunda</i>	Myrtaceae	BH
<i>Backhousia myrtifolia</i>	Myrtaceae	DH
<i>Bauera capitata</i>	Cunoniaceae	DH
<i>Callistemon salignus</i>	Myrtaceae	NH
<i>Carpobrotus glaucescens</i>	Aizoaceae	NH
<i>Cayratia clematidea</i>	Vitaceae	DH
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	Ranunculaceae	NH,DH
<i>Coronidium elatum</i>	Asteraceae	NH
<i>Crowea exalata</i>	Rutaceae	NH
<i>Cupaniopsis anacardioides</i>	sapindaceae	NP
<i>Cuscuta australis</i>	Convolvulaceae	NH
<i>Dillwynia glaberrima</i>	Fabaceae	NH,DH
<i>Drosera pygmaea</i>	Droseraceae	NH
<i>Eucalyptus multicaulis</i>	Myrtaceae	NH
<i>Gompholobium minus</i>	Fabaceae	NH
<i>Grevillea mucronulata</i>	Proteaceae	NH
<i>Hakea salicifolia</i>	Proteaceae	DH
<i>Hibbertia asterotricha</i>	Dilleniaceae	BH
<i>Hibbertia cistiflora</i> subsp. <i>cistiflora</i>	Dilleniaceae	NH
<i>Hibbertia diffusa</i>	Dilleniaceae	NH
<i>Hibbertia serpyllifolia</i>	Dilleniaceae	DH
<i>Hibbertia stricta</i>	Dilleniaceae	NH
<i>Hydrocotyle tripartita</i>	Apiaceae	DH
<i>Leptospermum grandifolium</i>	Myrtaceae	MH
<i>Leucopogon juniperinus</i>	Ericaceae	NH
<i>Lissanthe strigosa</i>	Ericaceae	NH
<i>Marsdenia rostrata</i>	Apocynaceae	NP
<i>Melaleuca styphelioides</i>	Myrtaceae	BH
<i>Micranthemum hexandrum</i>	Euphorbiaceae	NH,DH
<i>Opercularia diphylla</i>	Rubiaceae	NH
<i>Opercularia hispida</i>	Rubiaceae	NP
<i>Persoonia mollis</i>	Proteaceae	BH
<i>Petrophile sessilis</i>	Proteaceae	NH
<i>Philotheca buxifolia</i>	Rutaceae	DH
<i>Podolobium ilicifolium</i>	Fabaceae	MH
<i>Polyscias elegans</i>	Araliaceae	NP
<i>Pomaderris discolor</i>	Rhamnaceae	BH
<i>Pseuderanthemum variabile</i>	Acanthaceae	CH
<i>Pseudognaphalium luteoalbum</i>	Asteraceae	NH
<i>Pultenaea ferruginea</i>	Fabaceae	NH

Species	Family	Precinct
<i>Pultenaea hispidula</i>	Fabaceae	DH
<i>Pultenaea scabra</i>	Fabaceae	NH
<i>Rubus moluccanus</i> var. <i>trilobus</i>	Rosaceae	NH
<i>Stackhousia spathulata</i>	Stackhousiaceae	NH
<i>Syzygium australe</i>	Myrtaceae	DH
<i>Tasmania insipida</i>	winteraceae	MH
<i>Telopea speciosissima</i>	Proteaceae	BH
<i>Tetradlea neglecta</i>	tremandraceae	NP
<i>Trema tomentosa</i> var. <i>viridis</i>	Ulmaceae	DH
<i>Tristaniopsis laurina</i>	Myrtaceae	DH
<i>Wikstroemia indica</i>	Thymelaeaceae	NH
<i>Wilkiea huegeliana</i>	Monimiaceae	DH

MONOCOTYLEDONS

<i>Caesia parviflora</i> var. <i>parviflora</i>	Anthericaceae	DH
<i>Carex breviculmis</i>	Cyperaceae	NH
<i>Chiloglottis trapeziformis</i>	Orchidaceae	NH
<i>Chloris acicularis</i>	Poaceae	NH
<i>Chorizandra cymbaria</i>	Cyperaceae	NH
<i>Crinum pedunculatum</i>	Amaryllidaceae	DH
<i>Cymbidium suave</i>	Orchidaceae	BH
<i>Dendrobium speciosum</i>	Orchidaceae	NP
<i>Dianella congesta</i>	Phormiaceae	DH
<i>Eleocharis sphacelata</i>	Cyperaceae	NH
<i>Gahnia aspera</i>	Cyperaceae	NH
<i>Gahnia erythrocarpa</i>	Cyperaceae	NH,DH
<i>Gahnia melanocarpa</i>	Cyperaceae	NH
<i>Gahnia radula</i>	Cyperaceae	DH
<i>Lepidosperma flexuosum</i>	Cyperaceae	NH
<i>Lepidosperma limicola</i>	Cyperaceae	NH
<i>Lepidosperma squamatum</i>	Cyperaceae	NH
<i>Lomandra brevis</i>	Lomandraceae	DH
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Lomandraceae	DH
<i>Microtis rara</i>	Orchidaceae	MH
<i>Notodanthonia longifolia</i>	Poaceae	NH
<i>Paspalidium distans</i>	Poaceae	NH,BH
<i>Patersonia fragilis</i>	Iridaceae	NH
<i>Plinthanthesis paradoxa</i>	Poaceae	NH
<i>Poa labillardierei</i>	Poaceae	MH
<i>Sacciolepis indica</i>	Poaceae	NH
<i>Schoenus paludosus</i>	Cyperaceae	NH
<i>Tetragia capillaris</i>	Cyperaceae	NH
<i>Tricoryne elatior</i>	Anthericaceae	NH
<i>Typha domingensis</i>	Typhaceae	NH
<i>Xanthorrhoea concava</i>	Xanthorrhoeaceae	NH
<i>Xyris gracilis</i>	Xyridaceae	NH

Appendix 3. Potential weed species: Non-local native species that are becoming naturalised or have been planted in Sydney Harbour National Park

Species	Family	Precinct	Native to Sydney Harbour NP
Ferns			
<i>Cyathea cooperi</i>	Cyatheaceae	DH	non-local native becoming weed
<i>Nephrolepis cordifolia</i>	Davalliaceae	NH,DH	non-local native becoming weed
Dicotyledons			
<i>Acacia baileyana</i>	Fabaceae		non-local native becoming weed
<i>Acacia pycnantha</i>	Fabaceae		non-local native becoming weed
<i>Castanospermum australe</i>	Fabaceae	DH	non-local native, probably planted
<i>Corymbia eximia</i>	Myrtaceae	NH	non-local native, probably planted
<i>Ficus macrophylla</i>	Moraceae		non-local native becoming weed
<i>Grevillea longifolia</i>	Proteaceae	DH	non-local native, probably planted
<i>Lophostemon confertus</i>	Myrtaceae	NH,DH	non-local native becoming weed
<i>Melia azedarach</i>	Meliaceae	NH	non-local native, probably bird-dispersed
<i>Eucalyptus saligna</i>	Myrtaceae	DH	local native but probably planted
Monocotyledons			
<i>Archontophoenix cunninghamiana</i>	Areaceae	DH	non-local native, probably planted or bird-dispersed
<i>Doryanthes excelsa</i>	Doryanthaceae	DH	non-local native, probably planted
<i>Cynodon dactylon</i>	Poaceae	DH	exotic, invasive weed
<i>Livistona australis</i>	Areaceae	DH,BH	local native but probably planted