

Flora Surveys

Introduction

There have been few flora surveys undertaken in the Macquarie Harbour area. Data on the Natural Values Atlas (NVA) shows that observations for this area are sourced from the Herbarium, projects undertaken by DPIPW (or its predecessors) such as the Huon Pine Survey and the Millennium Seed Bank Collection project. Other data has been added to the NVA as part of composite data sets such as Tasforhab and wetforest data the sources of which are not easily traceable.

Early observations for the area go as far back as 1819 and were lodged with the Tasmanian Herbarium by A. Conningham. The most recent observations were recorded in 2002 by Micah Visoiu as part of the Millennium Seed Bank Project. Currently the NVA holds approximately 446 flora records for the area immediately surrounding the harbour, 30 of which are non-vascular flora species, 47 introduced vascular species and 369 native vascular flora species. The diversity of the species reflects the range of community types recorded: from coastal to wet forest vegetation.

The most studied island is Sarah Island. This island has had several plans developed that have included flora surveys but have focused on the historical value of the island. The NVA holds some observations but the species list is not as comprehensive as that given in the plans. The Sarah Island Visitor Services Site Plan (2006) cites a survey undertaken by Walsh (1992). The species recorded for Sarah Island have been added to some of the tables in this report.

Survey Method

Botanical surveys were undertaken for the following islands in Macquarie Harbour: Soldiers Island, Neck Island, Cat Island, Magazine Island, Elizabeth Island, Entrance Island and Philips Island. Each island was traversed and surveyed on foot. Areas with different vegetation communities were strategically targeted to ensure that as many of the species present were recorded. All vascular plant species encountered were recorded until it was evident no further species were being added to a list. Only a few non-vascular species were recorded. All data was collected using a Garmin GPS. This data was incorporated into the NVA and re-extracted using the stored biometric values for the species.

Results

A total of 122 vascular flora species from 56 families were recorded across the islands surveyed. The species are comprised of 50 higher plants (7 monocots and 44 dicots) and 13 lower plants. Of the species recorded 14 are endemic to Australia; 1 occurs only in Tasmania. Eighteen species are considered to be primitive. There were 24 introduced species found with 9 of these being listed weeds. One orchid species was found that was not known to occur in the south west of the state and this discovery has considerably increased the known range of this species. All vascular species recorded are either represented in reserves in each bioregion or are reserved in half the bioregions within which they occur.

A species list for each of the islands is provided on the following pages.

Table 1. Soldiers Island Species List

Soldiers Island Species List						
Species Name	Common Name	Family	Reservation Status	Primitive Species	Uncommon	Bio Geographic Origin
<i>Asplenium flabellifolium</i>	necklace fern	Aspleniaceae	2			
<i>Olearia argophylla</i>	musk daisybush	Asteraceae	2			
<i>Olearia stellulata</i>	sawleaf daisybush	Asteraceae	3a			
<i>Atherosperma moschatum</i> subsp. <i>moschatum</i>	sassafras	Atherospermataceae	2			
<i>Blechnum nudum</i>	fishbone waterfern	Blechnaceae	2			
<i>Blechnum watsii</i>	hard waterfern	Blechnaceae	2			
<i>Anodopetalum biglandulosum</i>	horizontal	Cunoniaceae	3a	y		endemic
<i>Ficinia nodosa</i>	knobby clubsedge	Cyperaceae	3a			
<i>Gahnia grandis</i>	cutting grass	Cyperaceae	2			
<i>Lepidosperma filiforme</i>	common rapiersedge	Cyperaceae	2			
<i>Histiopteris incisa</i>	batswing fern	Dennstaedtiaceae	2	y		
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2			
<i>Dicksonia antarctica</i>	soft treefern	Dicksoniaceae	2	y		
<i>Rumohra adiantiformis</i>	leathery shieldfern	Dryopteridaceae	2			
<i>Aristolelia peduncularis</i>	heartberry	Elaeocarpaceae	3a			endemic
<i>Leptecophylla juniperina</i>	pinkberry	Epacridaceae	2			
<i>Monotoca glauca</i>	goldey wood	Epacridaceae	2			
<i>Anopterus glandulosus</i>	tasmanian laurel	Escalloniaceae	2			endemic
<i>Pultanea daphnoides</i>	heartleaf bushpea	Fabaceae	2			
<i>Gleichenia microphylla</i>	scrambling coralfern	Gleicheniaceae	2	y		
<i>Sticherus tener</i>	silky fanfern	Gleicheniaceae	2	y		
<i>Selliera radicans</i>	shiny swampmat	Goodeniaceae	3a			
<i>Grammitis billardierei</i>	common fingerfern	Grammitidaceae	3a			
<i>Juncus kraussii</i>	sea rush	Juncaceae	3a			
<i>Prostanthera lasianthos</i> var. <i>lasianthos</i>	christmas mintbush	Lamiaceae	2			
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2			
<i>Dryophila cyanocarpa</i>	turquoise berry	Liliaceae	2			
<i>Lycopodium deuterodensum</i>	conifer clubmoss	Lycopodiaceae	2	y		
<i>Acacia melanoxylon</i>	blackwood	Mimosaceae	2			
<i>Eucalyptus nitida</i>	western peppermint	Myrtaceae	3a			endemic
<i>Leptospermum scoparium</i>	common teatree	Myrtaceae	2			
<i>Melaleuca ericifolia</i>	coast paperbark	Myrtaceae	2			
<i>Melaleuca squarrosa</i>	scented paperbark	Myrtaceae	3a			
<i>Notelaea ligustrina</i>	native olive	Oleaceae	2			

Soldiers Island Species List						
Species Name	Common Name	Family	Reservation Status	Primitive Species	Uncommon	Bio Geographic Origin
<i>Sarcochilus australis</i>	gunns tree-orchid	Orchidaceae	3a		Y	
<i>Billardiera nesophila</i>	coastal appleberry	Pittosporaceae	3a			endemic
<i>Pittosporum bicolor</i>	cheesewood	Pittosporaceae	2			
<i>Poa poiformis</i>	blue tussock grass	Poaceae	3a			
<i>Phyllocladus aspleniifolius</i>	celerytop pine	Podocarpaceae	3a	y		endemic
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>	kangaroo fern	Polypodiaceae	2	y		
<i>Samolus repens</i>	creeping brookweed	Primulaceae	3a			
<i>Cenarrhenes nitida</i>	native plum	Proteaceae	3a	y		endemic
<i>Lomatia polymorpha</i>	mountain guitarplant	Proteaceae	2	y		endemic
<i>Clematis aristata</i>	southern clematis	Ranunculaceae	2			
<i>Apodasmia brownii</i>	coarse twinerush	Restionaceae	3a			
<i>Pomaderris apetala</i>	dogwood	Rhamnaceae	2			
<i>Coprosma quadrifida</i>	native currant	Rubiaceae	2			
<i>Nematolepis squamea</i>	satin wood	Rutaceae	2			
<i>Zieria arborescens</i>	stinkwood	Rutaceae	2			
<i>Pimelea ligustrina</i>	tall riceflower	Thymelaeaceae	3a			
<i>Tasmania lanceolata</i>	mountain pepper	Winteraceae	2			

For Soldiers Island a total of 51 species from 37 families were recorded. Of these 4 were endemic, 9 were considered primitive and there were no introduced species recorded. All native species recorded had examples reserved in all bioregions in which the species occurred or were reserved in half or more of the bioregions in which the species occurs. A species of note on this island is *Sarcochilus australis*. This species

has been assessed as uncommon because it only occurs in small localised populations with no sub population with an area of occupancy greater 1ha or more than 1000 mature individuals. It is widely distributed in Tasmania, occurring in two main clusters in the north west and east coast and is recorded on King and Flinders Islands. This is the first official record for this species for the west coast. This observation extends the known geographical

range of this species considerably. There have been anecdotal reports of *Sarcochilus australis* occurring around the Pieman River area but these have yet to be confirmed.

Table 2. Cat Island Species List

Cat Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Phormium tenax</i>	new zealand flax	Agavaceae			Introduced Environmental weed on Tas Weed Act
<i>Apium prostratum</i> subsp. <i>prostratum</i>	sea celery	Apiaceae	3a		
<i>Cassinia aculeata</i>	dollybush	Asteraceae	2		
<i>Hypochoeris radicata</i>	rough catsear	Asteraceae			introduced
<i>Olearia stellulata</i>	sawleaf daisybush	Asteraceae	3a		
<i>Senecio minimus</i>	shrubby fireweed	Asteraceae	2		
<i>Sonchus</i> sp.	sowthistle	Asteraceae			
<i>Alnus</i> sp.	alder	Betulaceae			
<i>Blechnum watsii</i>	hard waterfern	Blechnaceae	2		
<i>Buddleja davidii</i>	butterflybush	Buddlejaceae			Introduced Environmental weed on Tas Weed Act
<i>Wahlenbergia</i> sp.	bluebell	Campanulaceae			
<i>Ficinia nodosa</i>	knobby clubsedge	Cyperaceae	3a		
<i>Gahnia grandis</i>	cutting grass	Cyperaceae	2		
<i>Schoenus nitens</i>	shiny bogsedge	Cyperaceae	3a		
<i>Histiopteris incisa</i>	batswing fern	Dennstaedtiaceae	2	y	
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2		
<i>Dicksonia antarctica</i>	soft treefern	Dicksoniaceae	2	y	
<i>Drosera peltata</i>	pale sundew	Droseraceae	2		
<i>Rumohra adiantiformis</i>	leathery shieldfern	Dryopteridaceae	2		
<i>Leptecophylla juniperina</i>	pinkberry	Epacridaceae	2		
<i>Leucopogon parviflorus</i>	coast beardheath	Epacridaceae	2		
<i>Monotoca glauca</i>	goldey wood	Epacridaceae	2		
<i>Genista monspessulana</i>	canary broom	Fabaceae			Introduced On Tas Weed & Quarantine Act and WRA score sheet & WONS nominated
<i>Trifolium dubium</i>	suckling clover	Fabaceae			introduced
<i>Trifolium repens</i>	white clover	Fabaceae			introduced
<i>Selliera radicans</i>	shiny swampmat	Goodeniaceae	3a		
<i>Ribes sanguineum</i>	flowering currant	Grossulariaceae			introduced in Australia, naturalised in Tasmania only
<i>Gonocarpus teucrioides</i>	forest raspwort	Haloragaceae	2		
<i>Hymenophyllum rarum</i>	narrow filmyfern	Hymenophyllaceae	2	y	
<i>Juncus kraussii</i>	sea rush	Juncaceae	3a		
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2		
<i>Drymophila cyanocarpa</i>	turquoise berry	Liliaceae	2		
<i>Acacia melanoxylon</i>	blackwood	Mimosaceae	2		
<i>Acacia verticillata</i>	prickly moses	Mimosaceae	2		
<i>Eucalyptus nitida</i>	western peppermint	Myrtaceae	3a		endemic
<i>Leptospermum nitidum</i>	shiny teatree	Myrtaceae	3a		endemic

Cat Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Leptospermum scoparium</i>	common teatree	Myrtaceae	2		
<i>Melaleuca ericifolia</i>	coast paperbark	Myrtaceae	2		
<i>Melaleuca squarrosa</i>	scented paperbark	Myrtaceae	3a		
<i>Chiloglottis</i> sp.	bird-orchid	Orchidaceae			
<i>Pterostylis</i> sp.	greenhood	Orchidaceae			
<i>Billardiera nesophila</i>	coastal appleberry	Pittosporaceae	3a		endemic
<i>Holcus lanatus</i>	yorkshire fog	Poaceae			introduced
<i>Poa poiformis</i>	blue tussock grass	Poaceae	3a		
<i>Muehlenbeckia gunnii</i>	forest lignum	Polygonaceae	3a		
<i>Rumex crispus</i>	curled dock	Polygonaceae			Introduced Environmental weed on Tas Weed Act
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>	kangaroo fern	Polypodiaceae	2	y	
<i>Anagallis arvensis</i>	scarlet pimpernel	Primulaceae			Introduced
<i>Samolus repens</i>	creeping brookweed	Primulaceae	3a		
<i>Banksia marginata</i>	silver banksia	Proteaceae	2	y	
<i>Apodasmia brownii</i>	coarse twinerush	Restionaceae	3a		
<i>Pomaderris apetala</i>	dogwood	Rhamnaceae	2		
<i>Malus</i> sp.	apple	Rosaceae			Introduced
<i>Prunus domestica</i>	plum or european plum	Rosaceae			Introduced
<i>Prunus persica</i>	flowering peach	Rosaceae			Introduced
<i>Rubus fruticosus</i>	blackberry	Rosaceae			Introduced
<i>Coprosma quadrifida</i>	native currant	Rubiaceae	2		
<i>Nematolepis squamea</i>	satinwood	Rutaceae	2		
<i>Zieria arborescens</i>	stinkwood	Rutaceae	2		
<i>Exocarpos syrticola</i>	coast native-cherry	Santalaceae	2		
<i>Veronica calycina</i>	hairy speedwell	Scrophulariaceae	3a		
<i>Solanum laciniatum</i>	kangaroo apple	Solanaceae	3a		
<i>Sphagnum</i> sp.	peat moss	Sphagnaceae			
<i>Pimelea ligustrina</i>	tall riceflower	Thymelaeaceae	3a		
<i>Pimelea linifolia</i>	slender riceflower	Thymelaeaceae	2		
<i>Viola hederacea</i>	ivy-leaf violet	Violaceae	1 or 2		
<i>Tasmania lanceolata</i>	mountain pepper	Winteraceae	2		

For Cat Island 67 species from 41 families were recorded. Of these 3 were endemic, 5 considered primitive and 13 were introduced, 4 of which are listed weeds. All native species recorded

had examples reserved in all bioregions in with the species occurred or were reserved in half or more of the bioregions in which the species occurs.

Table 3. Bonnet Island Species List

Bonnet Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Zantedeschia aethiopica</i>	arum lily	Araceae			Introduced Tas Weed Act & WONS nominated
<i>Senecio biserratus</i>	crosscut fireweed	Asteraceae	2		
<i>Senecio glomeratus</i>	purple fireweed	Asteraceae	3a		
<i>Sonchus oleraceus</i>	common sowthistle	Asteraceae			Introduced
<i>Ozothamnus</i> sp.	everlasting bush	Asteraceae			
<i>Raphanus raphanistrum</i>	wild radish	Brassicaceae			Introduced
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	coastal saltbush	Chenopodiaceae	2		
<i>Lepidosperma gladiatum</i>	coast sword sedge	Cyperaceae	3a		
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2		
<i>Leucopogon parviflorus</i>	coast beardheath	Epacridaceae	2		
<i>Leptecophylla juniperina</i>	pinkberry	Epacridaceae	2		
<i>Selliera radicans</i>	shiny swampmat	Goodeniaceae	3a		
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2		
<i>Acacia longifolia</i> subsp. <i>sophorae</i>	coast wattle	Mimosaceae	3a		
<i>Melaleuca ericifolia</i>	coast paperbark	Myrtaceae	2		
<i>Leptospermum nitidum</i>	shiny teatree	Myrtaceae	2		e
<i>Pittosporum bicolor</i>	cheesewood	Pittosporaceae	2		
<i>Dactylis glomerata</i>	cocksfoot	Poaceae			Introduced
<i>Holcus lanatus</i>	yorkshire fog	Poaceae			Introduced
<i>Poa annua</i>	winter grass	Poaceae			Introduced
<i>Poa poiiformis</i>	blue tussock grass	Poaceae	3a		
<i>Muehlenbeckia gunnii</i>	forest lignum	Polygonaceae	3a		
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>	kangaroo fern	Polypodiaceae	2	y	
<i>Acaena novae-zelandiae</i>	common buzzy	Rosaceae	2		
<i>Prunus cerasus caproniana</i>	kentish red cherry	Rosaceae			Introduced Naturalised in Tas only
<i>Rubus fruticosus</i>	blackberry	Rosaceae			Introduced
<i>Correa backhouseana</i> var. <i>backhouseana</i>	velvet correa	Rutaceae	2		
<i>Nematolepis squamea</i>	satin wood	Rutaceae	2		
<i>Solanum laciniatum</i>	kangaroo apple	Solanaceae	3a		

For Bonnet Island 29 species from 17 families were recorded. Of these 1 was endemic, 1 considered primitive and 8 were

introduced, 1 of which is a listed weed. All native species recorded had examples reserved in all bioregions in with the species

occurred or were reserved in half or more of the bioregions in which the species occurred.

Table 4. Entrance Island Species List

Entrance Island Species List				
Species Name	Common Name	Family	Reservation Status	Bio Geographic Origin
<i>Tetragonia implexicoma</i>	bower spinach	Aizoaceae	2	
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2	
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2	
<i>Acacia longifolia</i> subsp. <i>sophorae</i>	coast wattle	Mimosaceae	3a	
<i>Acacia verticillata</i>	prickly moses	Mimosaceae	2	
<i>Leptospermum scoparium</i>	common teatree	Myrtaceae	2	
<i>Fuchsia magellanica</i>	fuchsia	Onagraceae		Introduced Environmental weed on Tas Weed Act
<i>Pinus radiata</i>	radiata pine	Pinaceae		Introduced Environmental weed on Tas Weed Act
<i>Dactylis glomerata</i>	cocksfoot	Poaceae		Introduced
<i>Muehlenbeckia gunnii</i>	forest lignum	Polygonaceae	3a	
<i>Rubus fruticosus</i>	blackberry	Rosaceae		Introduced
<i>Coprosma repens</i>	mirrorbush	Rubiaceae		Introduced Environmental weed on Tas Weed Act
<i>Correa backhouseana</i> var. <i>backhouseana</i>	velvet correa	Rutaceae	2	
<i>Hebe</i> sp.	hebe or veronica	Scrophulariaceae		Introduced
<i>Solanum laciniatum</i>	kangaroo apple	Solanaceae	3a	

For Entrance Island 15 species from 15 families were recorded. Of these none were endemic, none considered primitive and 6 were introduced, 4 of which are listed weeds. All native vascular species recorded had examples reserved in all bioregions in which the species occurred or were reserved in half or more of the bioregions in which the species occurred.

Table 5. Elizabeth Island Species List

Elizabeth Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Tylimanthus</i> sp.	moss	Acrobolbaceae			
<i>Apium prostratum</i> subsp. <i>prostratum</i>	sea celery	Apiaceae	3a		
<i>Hydrocotyle hirta</i>	hairy pennywort	Apiaceae	2		
<i>Asplenium obtusatum</i>	shore spleenwort	Aspleniaceae	3a		
<i>Senecio</i> sp.	fireweed	Asteraceae			
<i>Blechnum watsii</i>	hard waterfern	Blechnaceae	2		
<i>Ficinia nodosa</i>	knobby clubsedge	Cyperaceae	3a		
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2		
<i>Dicksonia antarctica</i>	soft treefern	Dicksoniaceae	2		
<i>Rumohra adiantiformis</i>	leathery shieldfern	Dryopteridaceae	2		
<i>Leptecophylla juniperina</i>	pinkberry	Epacridaceae	2		
<i>Leucopogon parviflorus</i>	coast beardheath	Epacridaceae	2		
<i>Monotoca glauca</i>	goldey wood	Epacridaceae	2		
<i>Selliera radicans</i>	shiny swampmat	Goodeniaceae	3a		
<i>Juncus kraussii</i>	sea rush	Juncaceae	3a		
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2		
<i>Drymophila cyanocarpa</i>	turquoise berry	Liliaceae	2		
<i>Lycopodiella lateralis</i>	Slender clubmoss	Lycopodiaceae	3a	y	
<i>Acacia melanoxylon</i>	blackwood	Mimosaceae	2		
<i>Acacia verticillata</i>	prickly moses	Mimosaceae	2		
<i>Eucalyptus delegatensis</i>	stingy bark	Myrtaceae	2		
<i>Eucalyptus nitida</i>	western peppermint	Myrtaceae	3a		endemic
<i>Leptospermum scoparium</i>	common teatree	Myrtaceae	2		
<i>Melaleuca ericifolia</i>	coast paperbark	Myrtaceae	2		
<i>Leptospermum nitidum</i>	shiny teatree	Myrtaceae	3a		endemic
<i>Ulota</i> sp.	moss	Orthotrichaceae			
<i>Billardiera nesophila</i>	coastal appleberry	Pittosporaceae	3a		endemic
<i>Pittosporum bicolor</i>	cheesewood	Pittosporaceae	2		
<i>Poa poiformis</i>	blue tussock grass	Poaceae	3a		
<i>Rumex</i> sp.	dock	Polygonaceae			Introduced
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>	kangaroo fern	Polypodiaceae	2	y	
<i>Samolus repens</i>	creeping brookweed	Primulaceae	3a		
<i>Banksia marginata</i>	silver banksia	Proteaceae	2		
<i>Ptychomnium aciculare</i>	moss	Ptychomniaceae			
<i>Apodasmia brownii</i>	coarse twinerush	Restionaceae	3a		
<i>Pomaderris apetala</i>	dogwood	Rhamnaceae	2		

Elizabeth Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Coprosma quadrifida</i>	native currant	Rubiaceae	2		
<i>Correa backhouseana</i> var. <i>backhouseana</i>	velvet correa	Rutaceae	2		
<i>Zieria arborescens</i>	stinkwood	Rutaceae			
<i>Nematolepis squamea</i>	satinwood	Rutaceae	2		

For Elizabeth Island 40 vascular species from 25 families were recorded. Of these two were endemic, 2 considered primitive and 1 was introduced. The only weed recorded on Elizabeth Island, a dock, was found on shore at the land site and was removed and destroyed. All native vascular species recorded had examples reserved in all bioregions in which the species occurred or were reserved in half or more of the bioregions in which the species occurred.

Banksia marginata.
Illustration Brett Littleton.



Table 6. Magazine Island Species List.

Magazine Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Apium prostratum</i> subsp. <i>prostratum</i>	sea celery	Apiaceae	3a		
<i>Hedera helix</i>	ivy	Araliaceae			Introduced Environmental weed on Tas Weed Act
<i>Cassinia aculeata</i>	dollybush	Asteraceae	2		
<i>Olearia argophylla</i>	musk daisybush	Asteraceae	2		
<i>Olearia ramulosa</i>	twiggy daisybush	Asteraceae	2		
<i>Senecio linearifolius</i>	fireweed I	Asteraceae	2		
<i>Ficinia nodosa</i>	knobby clubsedge	Cyperaceae	3a		
<i>Schoenus nitens</i>	shiny bogsedge	Cyperaceae	3a		
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2		
<i>Rumohra adiantiformis</i>	leathery shieldfern	Dryopteridaceae	2		
<i>Leucopogon parviflorus</i>	coast beardheath	Epacridaceae	2		
<i>Monotoca glauca</i>	goldey wood	Epacridaceae	2		
<i>Genista monspessulana</i>	canary broom	Fabaceae			Introduced On Tas Weed & Quarantine Act and WRA score sheet & WONS nominated
<i>Pultenaea daphnoides</i>	heartleaf bushpea	Fabaceae	2		
<i>Pelargonium australe</i>	southern storksbill	Geraniaceae	2		
<i>Selliera radicans</i>	shiny swampmat	Goodeniaceae	3a		
<i>Gonocarpus teucrioides</i>	forest raspwort	Haloragaceae	2		
<i>Juncus kraussii</i>	sea rush	Juncaceae	3a		
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2		
<i>Drymophila cyanocarpa</i>	turquoise berry	Liliaceae	2		
<i>Acacia melanoxylon</i>	blackwood	Mimosaceae	2		
<i>Acacia verticillata</i>	prickly mooses	Mimosaceae	2		
<i>Leptospermum nitidum</i>	shiny teatree	Myrtaceae	3a		
<i>Leptospermum scoparium</i>	common teatree	Myrtaceae	2		
<i>Melaleuca ericifolia</i>	coast paperbark	Myrtaceae	2		
<i>Melaleuca squarrosa</i>	scented paperbark	Myrtaceae	3a		
<i>Acianthus</i> sp.	mayfly orchid	Orchidaceae			
<i>Chiloglottis</i> sp.	bird-orchid	Orchidaceae			
<i>Gastrodia procera</i>	tall potato-orchid	Orchidaceae	3a		
<i>Pterostylis</i> sp.	greenhood	Orchidaceae			
<i>Billardiera nesophila</i>	coastal appleberry	Pittosporaceae	3a		Endemic
<i>Plantago triantha</i>	salt spray plantain	Plantaginaceae	3a		Within Australia occurs only in Tasmania

Magazine Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Holcus lanatus</i>	yorkshire fog	Poaceae			Introduced
<i>Poa poiformis</i>	blue tussock grass	Poaceae	3a		
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>	kangaroo fern	Polypodiaceae	2	y	
<i>Samolus repens</i>	creeping brookweed	Primulaceae	3a		
<i>Banksia marginata</i>	silver banksia	Proteaceae	2	y	
<i>Apodasmia brownii</i>	coarse twinerush	Restionaceae	3a		
<i>Leptocarpus tenax</i>	slender twinerush	Restionaceae	3a		
<i>Pomaderris apetala</i>	dogwood	Rhamnaceae	2		
<i>Rubus fruticosus</i>	blackberry	Rosaceae			Introduced
<i>Coprosma quadrifida</i>	native currant	Rubiaceae	2		
<i>Nematolepis squamea</i>	satin wood	Rutaceae	2		
<i>Veronica calycina</i>	hairy speedwell	Scrophulariaceae	3a		
<i>Solanum laciniatum</i>	kangaroo apple	Solanaceae	3a		
<i>Pimelea linifolia</i>	slender riceflower	Thymelaeaceae	2		
<i>Viola hederacea</i>	ivy-leaf violet	Violaceae	1 or 2		

For Magazine Island 48 vascular species from 31 families were recorded. Of these 1 was endemic, 1 occurs only in Tasmania, 2 are considered primitive and 4 are introduced, 2 of which are listed weeds. All native vascular species recorded had examples reserved in all bioregions in with the species occurred or were reserved in half or more of the bioregions in which the species occurred.

Table 7. Neck Island species list.

Neck Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Olearia stellulata</i>	sawleaf daisybush	Asteraceae	3a		
<i>Senecio biserratus</i>	crosscut fireweed	Asteraceae	2		
<i>Lobelia anceps</i>	angled lobelia	Campanulaceae	3a		
<i>Wahlenbergia</i> sp.	bluebell	Campanulaceae			
<i>Cladia</i> sp.	coral lichen	Cladoniaceae			
<i>Gahnia grandis</i>	cutting grass	Cyperaceae	2		
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2		
<i>Drosera peltata</i>	pale sundew	Droseraceae	2 or 3a		
<i>Leptecophylla juniperina</i>	pink berry	Epacridaceae	2		
<i>Leucopogon ericoides</i>	pink beardheath	Epacridaceae	2		
<i>Leucopogon parviflorus</i>	coast beardheath	Epacridaceae	2		
<i>Monotoca glauca</i>	goldey wood	Epacridaceae	2		
<i>Aotus ericoides</i>	golden pea	Fabaceae	2		
<i>Genista monspessulana</i>	canary broom	Fabaceae			Introduced On Tas Weed & Quarantine Act and WRA score sheet & WONS nominated
<i>Gleichenia microphylla</i>	scrambling coralfern	Gleicheniaceae	2	y	
<i>Sticherus tener</i>	silky fanfern	Gleicheniaceae	2	y	
<i>Selliera radicans</i>	shiny swampmat	Goodeniaceae	3a		
<i>Gonocarpus teucrioides</i>	forest raspwort	Haloragaceae	2		
<i>Hypopterygium rotulatum</i>	moss	Hypopterygiaceae			
<i>Juncus kraussii</i>	sea rush	Juncaceae	3a		
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2		
<i>Drymophila cyanocarpa</i>	turquoise berry	Liliaceae	2		
<i>Acacia genitifolia</i>	spreading wattle	Mimosaceae	2		
<i>Acacia longifolia</i> subsp. <i>sophorae</i>	coast wattle	Mimosaceae	3a		
<i>Acacia melanoxylon</i>	blackwood	Mimosaceae	2		
<i>Acacia verticillata</i>	prickly moses	Mimosaceae	2		
<i>Eucalyptus nitida</i>	western peppermint	Myrtaceae	3a		Endemic
<i>Leptospermum scoparium</i>	common teatree	Myrtaceae	2		
<i>Melaleuca ericifolia</i>	coast paperbark	Myrtaceae	2		
<i>Melaleuca squarrosa</i>	scented paperbark	Myrtaceae	3a		
<i>Chiloglottis</i> sp.	bird-orchid	Orchidaceae			
<i>Pterostylis</i> sp.	greenhood	Orchidaceae			
<i>Billardiera nesophila</i>	coastal appleberry	Pittosporaceae	3a		Endemic
<i>Pittosporum bicolor</i>	cheesewood	Pittosporaceae	2		
<i>Distichlis distichophylla</i>	australian saltgrass	Poaceae	3a		

Neck Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Poa poiformis</i> var. <i>poiformis</i>	coastal tussockgrass	Poaceae	2		
<i>Phyllocladus aspleniifolius</i>	celerytop pine	Podocarpaceae	3a	y	Endemic
<i>Banksia marginata</i>	silver banksia	Proteaceae	2	y	
<i>Baloskion tetraphyllum</i> subsp. <i>tetraphyllum</i>	tassel cordrush	Restionaceae	3a		
<i>Apodasmia brownii</i>	coarse twinerush	Restionaceae	3a		
<i>Pomaderris apetala</i>	dogwood	Rhamnaceae	2		
<i>Coprosma quadrifida</i>	native currant	Rubiaceae	2		
<i>Zieria arborescens</i>	stinkwood	Rutaceae	2		
<i>Exocarpos syrticola</i>	coast native-cherry	Santalaceae	2		
<i>Schizaea fistulosa</i>	narrow forkfern	Schizaeaceae	2	y	
<i>Sphagnum</i> sp.	peat moss	Sphagnaceae			
<i>Thuidium</i> sp.	moss	Thuidiaceae			
<i>Pimelea linifolia</i>	slender rice-flower	Thymelaeaceae	2		
<i>Tasmania lanceolata</i>	mountain pepper	Winteraceae	2		

For Neck Island 49 vascular species from 29 families were recorded. Of these 3 are endemic, 5 considered primitive and 1 is a listed introduced species. All native vascular species recorded had examples reserved in all bioregions in which the species occurred or were reserved in half or more of the bioregions in which the species occurred.

Table 8. Phillips Island Species List.

Phillips Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>pium prostratum</i> subsp. <i>prostratum</i>	sea celery	Apiaceae	3a		
<i>Hydrocotyle</i> sp.	pennywort	Apiaceae			
<i>Olearia argophylla</i>	musk daisybush	Asteraceae	2		
<i>Olearia stellulata</i>	sawleaf daisybush	Asteraceae	3a		
<i>Atherosperma moschatum</i> subsp. <i>moschatum</i>	sassafras	Atherospermataceae	2		
<i>Blechnum watsii</i>	hard waterfern	Blechnaceae	2		
<i>Cyathea australis</i> subsp. <i>australis</i>	rough treefern	Cyatheaceae	3a	y	
<i>Carex appressa</i>	tall sedge	Cyperaceae	2		
<i>Ficinia nodosa</i>	knobby clubsedge	Cyperaceae	3a		
<i>Gahnia grandis</i>	cutting grass	Cyperaceae	2		
<i>Schoenus nitens</i>	shiny bogsedge	Cyperaceae	3a		
<i>Carex</i> sp.	sedge	Cyperaceae			
<i>Pteridium esculentum</i>	bracken	Dennstaedtiaceae	2		
<i>Dicksonia antarctica</i>	soft treefern	Dicksoniaceae	2	y	
<i>Rumohra adiantiformis</i>	leathery shieldfern	Dryopteridaceae	2		
<i>Aristolelia peduncularis</i>	heartberry	Elaeocarpaceae	3a		Endemic
<i>Leptecophylla juniperina</i>	pink berry	Epacridaceae	2		
<i>Monotoca glauca</i>	goldey wood	Epacridaceae	2		
<i>Eucryphia lucida</i>	leatherwood	Eucryphiaceae	3a	y	Endemic
<i>Nothofagus cunninghamii</i>	myrtle beech	Fagaceae	2	y	
<i>Gleichenia microphylla</i>	scrambling coralfern	Gleicheniaceae	2	y	
<i>Sticherus tener</i>	silky fanfern	Gleicheniaceae	2	y	
<i>Selliera radicans</i>	shiny swampmat	Goodeniaceae	3a		
<i>Hymenophyllum rarum</i>	narrow filmyfern	Hymenophyllaceae	2	y	
<i>Juncus krausii</i>	sea rush	Juncaceae	3a		
<i>Prostanthera lasianthos</i> var. <i>lasianthos</i>	christmas mintbush	Lamiaceae	2		
<i>Dianella tasmanica</i>	forest flaxlily	Liliaceae	2		
<i>Drymophila cyanocarpa</i>	turquoise berry	Liliaceae	2		
<i>Lycopodium deuterodensum</i>	conifer clubmoss	Lycopodiaceae	2	y	
<i>Acacia melanoxylon</i>	blackwood	Mimosaceae	2		
<i>Acacia verticillata</i>	midlands wattle	Mimosaceae	2		
<i>Eucalyptus brookeriana</i>	brookers gum	Myrtaceae	3a		Endemic
<i>Eucalyptus nitida</i>	western peppermint	Myrtaceae	3a		Endemic
<i>Leptospermum scoparium</i>	common teatree	Myrtaceae	2		
<i>Melaleuca ericifolia</i>	coast paperbark	Myrtaceae	2		

Phillips Island Species List					
Species Name	Common Name	Family	Reservation Status	Primitive Status	Bio Geographic Origin
<i>Notelaea ligustrina</i>	native olive	Oleaceae	2		
<i>Chiloglottis gunnii</i>	tall bird-orchid	Orchidaceae	3a		Endemic
<i>Gastrodia sesamoides</i>	short potato-orchid	Orchidaceae	3a		
<i>Pterostylis nutans</i>	nodding greenhood	Orchidaceae	2		
<i>Pterostylis</i> sp.	greenhood	Orchidaceae			
<i>Billardiera nesophila</i>	coastal appleberry	Pittosporaceae	3a		Endemic
<i>Pittosporum bicolor</i>	cheesewood	Pittosporaceae	2		
<i>Poa poiformis</i>	blue tussock grass	Poaceae	3a		
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>	kangaroo fern	Polypodiaceae	2	y	
<i>Tmesipteris obliqua</i>	common forkfern	Psilotaceae	2	y	
<i>Clematis aristata</i>	southern clematis	Ranunculaceae	2		
<i>Apodasmia brownii</i>	coarse twinerush	Restionaceae	3a		
<i>Pomaderris apetala</i>	dogwood	Rhamnaceae	2		
<i>Coprosma quadrifida</i>	native currant	Rubiaceae	2		
<i>Nematolepis squamea</i>		Rutaceae	2		
<i>Pimelea linifolia</i>	slender rice-flower	Thymelaeaceae	2		
<i>Tasmannia lanceolata</i>	mountain pepper	Winteraceae	2		

For Phillips Island 53 vascular species from 36 families were recorded. Of these 6 were endemic and 10 considered primitive. No introduced species were recorded. All native vascular species recorded had examples reserved in all bioregions in which the species occurred or were reserved in half or more of the bioregions in which the species occurred. A species of note for this island is *Cyathea*

australis subsp. *australis*. It is the most common of the three *Cyathea* species which occur in Tasmania. There are currently 484 observations for this species in the NVA. Its distribution is concentrated in the northwest, north and north east of the state, and extends down the east coast to the south east. There are few observations for this species in the west and southwest where it is relatively uncommon.

Cyathea australis on Phillips Island.
Photo Naomi Lawrence.



Figure 1 shows a comparison of the percentage composition of family groupings, higher plants (then divided by dicots and monocots) and lower plants, to give an indication if there were any marked differences in the species composition between Islands. This shows that the composition is similar between Magazine, Neck, Cat, Bonnet and Entrance Islands (those Islands closest to the open sea), while Soldiers, Philips and Elizabeth Island, which were further east, are very similar. The main difference between these island groups is that those closest to the sea ward (western) end of the harbour had fewer fern species recorded and more higher plant species than those further east. The percentage of monocots to dicots is similar between all islands.

Figure 2 is a comparison of the number of species with biometric values between the islands. Soldiers and Philips Islands had no weed species recorded and had the highest number of endemics and primitive species recorded. Cat Island had the highest number of weed species recorded, followed by Bonnet, Entrance, Magazine, Neck and Elizabeth Islands. Entrance Island had no endemic or primitive species recorded. Sarah Island (according to Walsh 1992) has had a higher number (17) of weed species recorded.

Figure 3 shows that Cat, Philips and Neck Islands had the largest number of native vascular species recorded and Entrance and Bonnet Islands the least.

Figure 1. Comparison of the Percentage Composition by Family Groupings between islands.

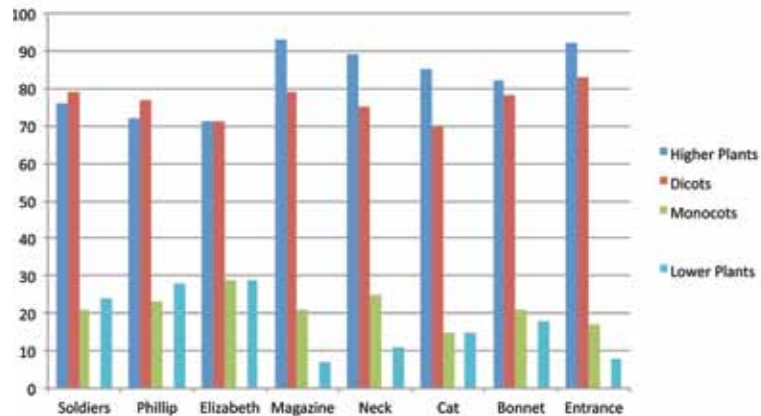


Figure 2. Comparison of the number of species for each of the biometric values recorded between islands.

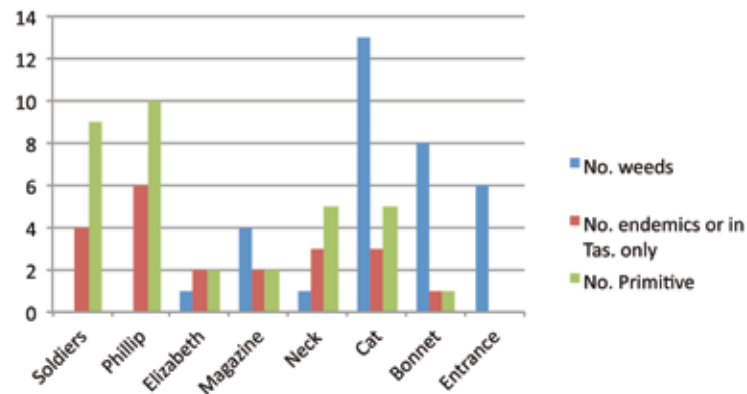


Figure 3. Number of native vascular species recorded for each island surveyed.

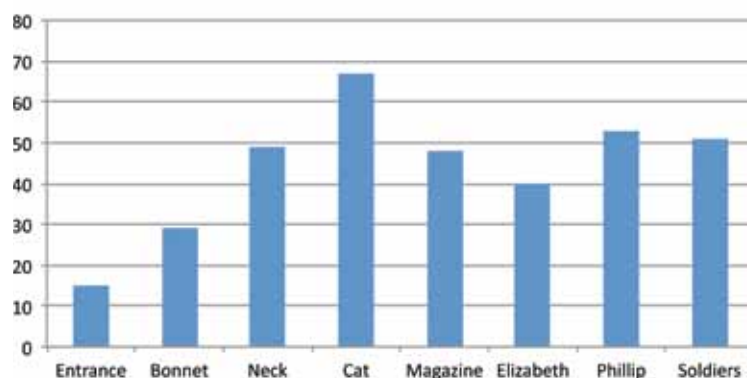


Table 9 Presence/absence data for the occurrence of the native vascular species on all islands.

SPECIES NAME	Entrance	Bonnet	Neck	Cat	Magazine	Elizabeth	Philips	Soldiers	Sarah
<i>Acacia dealbata</i>									
<i>Acacia longifolia</i> subsp. <i>sophorae</i>									
<i>Acacia melanoxylon</i>									
<i>Acacia verticillata</i>									
<i>Acaena novae-zelandiae</i>									
<i>Acianthus</i> sp.									
<i>Anodopetalum</i> <i>biglandulosum</i>									
<i>Anopterus</i> <i>glandulosus</i>									
<i>Aotus ericoides</i>									
<i>Apium prostratum</i> subsp. <i>prostratum</i>									
<i>Apodasmia brownii</i>									
<i>Aristotelia</i> <i>peduncularis</i>									
<i>Asplenium</i> <i>flabellifolium</i>									
<i>Asplenium obtusatum</i>									
<i>Atherosperma</i> <i>moschatum</i> subsp. <i>moschatum</i>									
<i>Baloskion</i> <i>tetraphyllum</i> subsp. <i>tetraphyllum</i>									
<i>Banksia marginata</i>									
<i>Billardiera nesophila</i>									
<i>Blechnum nudum</i>									
<i>Blechnum watsii</i>									
<i>Carex appressa</i>									
<i>Cassinia aculeata</i>									
<i>Cenarrhenes nitida</i>									
<i>Chiloglottis gunnii</i>									
<i>Chiloglottis</i> sp.									
<i>Clematis aristata</i>									
<i>Coprosma quadrifida</i>									
<i>Correa backhouseana</i> var. <i>backhouseana</i>									
<i>Cyathea australis</i> subsp. <i>australis</i>									

SPECIES NAME	Entrance	Bonnet	Neck	Cat	Magazine	Elizabeth	Philips	Soldiers	Sarah
<i>Dianella tasmanica</i>									
<i>Dicksonia antarctica</i>									
<i>Distichlis distichophylla</i>									
<i>Drosera peltata</i>									
<i>Dryophila cyanocarpa</i>									
<i>Epacris impressa</i>									
<i>Eucalyptus brookeriana</i>									
<i>Eucalyptus delegatensis</i>									
<i>Eucalyptus nitida</i>									
<i>Eucryphia lucida</i>									
<i>Exocarpos syrticola</i>									
<i>Ficinia nodosa</i>									
<i>Gahnia grandis</i>									
<i>Gastrodia procera</i>									
<i>Gastrodia sesamoides</i>									
<i>Gleichenia microphylla</i>									
<i>Gonocarpus teucrioides</i>									
<i>Grammitis billardierei</i>									
<i>Histiopteris incisa</i>									
<i>Hydrocotyle hirta</i>									
<i>Hydrocotyle sp.</i>									
<i>Hymenophyllum rarum</i>									
<i>Juncus kraussii</i>									
<i>Lepidosperma filiforme</i>									
<i>Lepidosperma gladiatum</i>									
<i>Leptecophylla juniperina</i>									
<i>Leptocarpus tenax</i>									
<i>Leptospermum glaucescens</i>									
<i>Leptospermum nitidum</i>									
<i>Leptospermum scoparium</i>									

SPECIES NAME	Entrance	Bonnet	Neck	Cat	Magazine	Elizabeth	Philips	Soldiers	Sarah
<i>Leucopogon ericoides</i>									
<i>Leucopogon parviflorus</i>									
<i>Lobelia anceps</i>									
<i>Lomatia polymorpha</i>									
<i>Lycopodiella lateralis</i>									
<i>Lycopodium deuterodensum</i>									
<i>Melaleuca ericifolia</i>									
<i>Melaleuca squarrosa</i>									
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>									
<i>Monotoca glauca</i>									
<i>Muehlenbeckia gunnii</i>									
<i>Nematolepis squamea</i>									
<i>Notelaea ligustrina</i>									
<i>Nothofagus cunninghamii</i>									
<i>Olearia argophylla</i>									
<i>Olearia ramulosa</i>									
<i>Olearia stellulata</i>									
<i>Ozothamnus</i> sp.									
<i>Pelargonium australe</i>									
<i>Phyllocladus aspleniifolius</i>									
<i>Pimelea ligustrina</i>									
<i>Pimelea linifolia</i>									
<i>Pittosporum bicolor</i>									
<i>Plantago triantha</i>									
<i>Poa poiformis</i>									
<i>Pomaderris apetala</i>									
<i>Prostanthera lasianthos</i> var. <i>lasianthos</i>									
<i>Pteridium esculentum</i>									
<i>Pterostylis nutans</i>									
<i>Pterostylis</i> sp.									
<i>Pultenaea daphnoides</i>									
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>									

SPECIES NAME	Entrance	Bonnet	Neck	Cat	Magazine	Elizabeth	Philips	Soldiers	Sarah
<i>Rumohra adiantiformis</i>									
<i>Samolus repens</i>									
<i>Sarcophilus australis</i>									
<i>Schizaea fistulosa</i>									
<i>Schoenus nitens</i>									
<i>Selliera radicans</i>									
<i>Senecio biserratus</i>									
<i>Senecio glomeratus</i>									
<i>Senecio linearifolius</i>									
<i>Senecio minimus</i>									
<i>Senecio sp.</i>									
<i>Solanum laciniatum</i>									
<i>Sphagnum sp.</i>									
<i>Sticherus tener</i>									
<i>Tasmania lanceolata</i>									
<i>Tetragonia implexicoma</i>									
<i>Tmesipteris obliqua</i>									
<i>Veronica calycina</i>									
<i>Viola hederacea</i>									
<i>Wahlenbergia sp.</i>									
<i>Zieria arborescens</i>									

Table 10 shows the presence/absence of the native vascular species recorded on the islands which includes the list of species recorded for Sarah Island by Walsh (1992). This information was used to help determine the similarity or difference of the suit of species which were recorded for each island. Of the species recorded, only two, *Pteridium esculentum* and *Dianella tasmanica* were present on all the islands surveyed. However, *D.*

Tasmanica was not recorded by Walsh (1992) for Sarah Island. A number of species were only recorded on 1 island. Table 10 provides a list of these species. The islands that recorded the greatest number of species occurring on no other island were Philips (8) while Cat and Entrance Islands each recorded the presence of only one species that did not occur on any of the other islands. A comparison was done with the species recorded

around the harbour on the mainland (records extracted from the NVA) with those recorded on the islands. All species record on the islands (except for *Sarcophilus australis*) were also recorded on the mainland however not all the species recorded on the mainland were recorded on the islands.

Table 10. List of species which were recorded on only one of the Macquarie Harbour Islands.

Species	Island
<i>Acacia dealbata</i>	Sarah
<i>Acianthus</i> sp.	Magazine
<i>Anodopetalum biglandulosum</i>	Soldiers
<i>Anopterus glandulosus</i>	Soldiers
<i>Aotus ericoides</i>	Neck
<i>Asplenium obtusatum</i>	Elizabeth
<i>Atherosperma moschatum</i> subsp. <i>moschatum</i>	Philips
<i>Baloskion tetraphyllum</i> subsp. <i>tetraphyllum</i>	Neck
<i>Cenarrhenes nitida</i>	Soldiers
<i>Chiloglottis gunnii</i>	Philips
<i>Distichlis distichophylla</i>	Neck
<i>Epacris impressa</i>	Sarah
<i>Eucalyptus brookeriana</i>	Philips
<i>Eucalyptus delegatensis</i>	Elizabeth
<i>Eucryphia lucida</i>	Philips
<i>Gastrodia procera</i>	Magazine
<i>Gastrodia sesamoides</i>	Philips
<i>Hydrocotyle hirta</i>	Elizabeth
<i>Lepidosperma filiforme</i>	Soldiers
<i>Lepidosperma gladiatum</i>	Bonnet
<i>Leptospermum glaucescens</i>	Sarah
<i>Leucopogon ericoides</i>	Neck
<i>Lomatia polymorpha</i>	Soldiers
<i>Lycopodiella lateralis</i>	Elizabeth
<i>Nothofagus cunninghamii</i>	Philips
<i>Olearia ramulosa</i>	Magazine
<i>Ozothamnus</i> sp.	Bonnet
<i>Pelargonium australe</i>	Magazine
<i>Plantago triantha</i>	Magazine
<i>Pterostylis nutans</i>	Philips
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	Bonnet
<i>Sarcochilus australis</i>	Soldiers
<i>Schizaea fistulosa</i>	Neck
<i>Senecio glomeratus</i>	Bonnet
<i>Senecio linearifolius</i>	Magazine
<i>Senecio minimus</i>	Cat
<i>Tetragonia implexicoma</i>	Entrance
<i>Tmesipteris obliqua</i>	Philips

An analysis of the correlation between vegetation diversity (species & communities) with a number of biophysical parameters was undertaken. These parameters are shown below in Table 11. There was no observed increase or decrease in diversity in relation to any of these parameters for species recorded. Also included was the correlation of species diversity in relation to

vegetation community diversity and vice versa. Again no trends of any significance were evident.

To confirm this, a cluster analysis was undertaken of all islands using the biophysical characteristics of elevation, size, position, species composition and vegetation community composition. Figure 4 shows that there is strong similarity between 6 of the eight islands (Magazine, Soldiers, Neck,

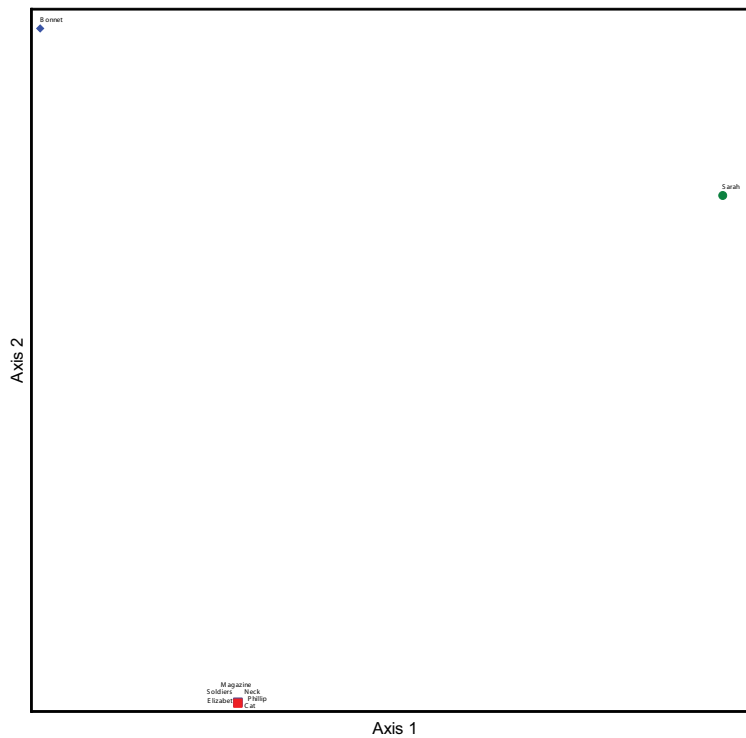
Elizabeth, Philips and Cat) despite the differences in elevation, size and position in the harbour. Bonnet and Sarah Islands have split out as a cluster of one island each.

Further analysis revealed that of the 6 like islands (see figure 5), two main clusters are evident, with Neck, Philips and Soldiers Islands being the most similar to each other and the other

Table 11. List of Biophysical attributes used for analysis

Island	Size (Ha)	Maximum elevation m (ASL)	Position in Harbour	Geology	No. Native Vascular Species	No. Veg Communities
Bonnet	0.17	10	Entrance	Bedrock Meta-sedimentary	21	3
Cat	27.26	4	Lower	Poorly consolidated sediments	52	8
Elizabeth	2.12	23	Middle	Bedrock Meta-sedimentary	38	2
Entrance	0.61	4	Entrance	?	9	?
Magazine	2.37	5	Lower	Poorly consolidated sediments	43	5
Neck	18.22	6	Lower	Weakly consolidated Pebble conglomerate	49	5
Philips	8.99	41	Upper	Semi-consolidated sandstone/siltstone	52	4
Sarah	8.29	18	Upper	Inter-bedded siltstone/sandstone sediment	34	7
Soldiers	12.98	21	Upper	Semi-consolidated sandstone sequence	44	3

Figure 4. Biophysical cluster analysis



cluster showing Cat, Magazine and Elizabeth Islands to be most similar to each other. Interestingly Soldiers and Philips Islands split out again from the second cluster as being most similar to each other.

To summarize the results, the islands were given a ranking (see table 12), 1 being least and 10 being most, diverse for species and communities, values, and disturbance. This shows that Philips Island is the most diverse, had the most values and was one of the least disturbed of the islands, followed by Soldiers and Cat Islands, whilst Bonnet and Entrance Islands were ranked lowest for all these values.

Figure 5. Cluster analysis dendrogram for eight Islands.

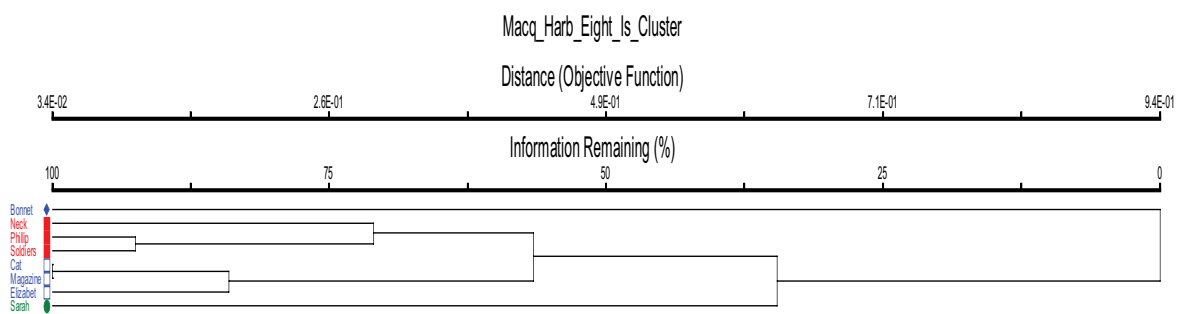


Table 13. Ranking of diversity and values for all islands surveyed

Island	Diversity	Values	Disturbance	Rank total
Entrance	1	1	2	4
Bonnet	2	2	1	5
Elizabeth	3	4	7	14
Magazine	5	4	5	14
Neck	6	5	4	15
Cat	8	6	3	17
Soldiers	4	7	8	19
Philips	7	8	8	23

Discussion

Of the islands surveyed Cat Island had the most diverse flora but ranked lower for diversity and value (table 12) than Philips and Soldiers Island. This is because Cat Island was the most disturbed island, which lowered the total ranked value. Cat Island should be the focus of management actions to protect the values recorded. Neck & Magazine Islands should be given high priority for management whilst Entrance and Bonnet have lower priorities for management as there are few flora values, diversity is low and they are both very disturbed.

The most important values on Cat Island are the threatened communities (NME & MSP) and the diversity of the communities and species present on the island. Though MSP is not currently included in the definition of the sphagnum community listed on the EPBC 1999 it is listed on the TSPA 1995. Cat Island has the second largest area of NME recorded for the islands but it only represents 8% of the vegetation coverage on the island. The disturbance on Cat Island was concentrated mainly around the shack area with small patches of weeds encountered in other locations. Most of these have probably originated from the shack area. Most of the introduced species recorded from the shack area were fruit

trees and other "garden plants". Three of the weed species recorded are listed on the Tasmanian *Weed Management Act 1999* thus there is a legislative requirement for their control. Management required is mainly weed control focusing on the small patches which have established in native vegetation. The shack still appears to be used and it is recommended that some form of awareness raising and/or conservation program be considered for shack users regarding the introduction and spread of exotic species.

The most important value on Philips Island is the threatened community NME. There is only a small patch of approximately 0.25 hectares which covers approximately 5.2% of the Island. A species of note on this island is *Cyathea australis* subs. *australis* for reasons discussed earlier.

The most important values on Soldiers Island are the vegetation communities NME & NNP and the uncommon species *Sarcochilus australis* (gunns tree-orchid). Soldiers Island has the largest area, approximately 4.52 ha of NME which covers 34% of the Island and a very small patch, about 0.25 ha of NNP which covers about 1.9% of the island.

Sarcochilus australis is Tasmania's only epiphytic orchid. It is listed by the Forest Practices Authority as a priority species for a level of

conservation in high quality forests in the Woolnorth, Ben Lomond and Freycinet bioregions and is classed as poorly reserved in the North East of Tasmania by the Forestry Division (Smith 2007).

The record for this species on Soldiers Island considerably extends the geographic range of this species and is the most western occurrence of the species in the state. *Sarcochilus australis* prefers moist habitats, such as permanently moist gullies and moist forest types. As an epiphyte *Sarcochilus australis* requires a host species to anchor on. Smith (2007) found that *S. australis* used 10 tree and shrub species as hosts but was found 80% of the time on either *Coprosma quadrifida* or *Pomaderris apetala*. On Soldiers Island most individuals were on either *Pomaderris apetala* or *Melaleuca ericifolia*. Individuals were flowering at the time of the survey and there was a large variation in the size of individuals suggesting that reproduction and recruitment are occurring in the population. The plants were widespread on the island with the largest concentration on the eastern end of the island extending into the southwest. The total population size is somewhere between 100-200 individuals.

This species does not tolerate disturbance from forestry operations or any other activity that removes preferred hosts.

It is susceptible to exposure to sun and drying winds and clearing around habitat can cause permanent drying out of the habitat (Jones *et al.* 1999).

The most important values for Neck Island are the threatened communities NME and the MSP. There are 3 small patches of NME totalling 0.96 hectares covering 5.2% of the island. MSP is important as it is not common vegetation type in Australia as a whole and is a community which does not tolerate disturbance, particularly disturbance which causes drying out of the habitat.

The most important value for Magazine Island is the threatened community NME where there is one small patch of 0.6 ha which covers 25% of the Island. This Island had been reportedly been substantially cleared (Chris Arthur pers. comm.). While regeneration has occurred, some very weedy, disturbed areas are still evident. Two of the weed species present are listed on the *Tasmanian Weed Management Act 1999* thus there is a legislative requirement for their control.

Elizabeth Island has no recorded biometric values, however it is in very good condition. Only one weed species was recorded which was removed and destroyed during the survey.

Bonnet Island was very disturbed with a large area of the Island

infested with exotic species. One of these is listed on the *Tasmanian Weed Management Act 1999*. Entrance Island was in a similar condition and three introduced species *Tasmanian Weed Management Act 1999*. Again there is a legislative requirement to control these weeds.

Overall the values of most note were the presence of the listed communities NME, NNP and MSP on some of the islands. According to Pannell (1992) most swamp forest in Tasmania has been disturbed with only small areas left which are unaffected by logging or drainage operations. The floristic and structural character of what remains has been altered by fire resulting in a decline in the floristic and structural heterogeneity of swamp forests in general. Thus it is important to conserve the full range of structural and floristic diversity of swamp forests. The communities of NME on Neck, Philips and NME and NNP on Soldiers Islands have been undisturbed and retain the full structure and floristic diversity of this community type. Although disturbed on Magazine and Cat Island, NME is still in good condition. Though small, the patches of NME and NNP on the Macquarie Harbour islands are important representatives of these communities in the reserve system.

The occurrence of MSP on Cat and Neck Island is of great interest as sphagnum bog communities are in general rare and most commonly occur above 600m. There are only two other known occurrences of sphagnum bogs at sea level which are located behind dune swales in the north east of Tasmania. Currently sphagnum bogs below 600m do not fit the community description listed on the *Environment Protection and Biodiversity Conservation Act 1999* but efforts are in progress to address this (Jennie Whinam pers. comm.). There is a need to identify the *Sphagnum* species and another sample is required to do this as the one collected was overlooked.

Sarcophilus australis.
Photo Peter Tonelli.



Biophysical similarity

The cluster analysis undertaken to determine how similar the islands were to each other and what, if any biophysical attributes were influencing this “likeness” grouped the islands into 4 clusters. Interestingly the islands one might expect to be most similar for flora composition, because of their position in the harbour; altitude and/or size were not. Thus something other than these attributes are having a stronger influence on the species and community composition of these Islands. Though all islands

had a suite of similar species occurring on them, each one was surprisingly different and each island had one or more species occurring on it that did not occur on any of the others. It might be expected that as most islands are close to the mainland that birds are easily able to fly between islands and the mainland potentially bringing seeds with them attached to feathers or as regurgitate. This may account in some part for the divergence of the species composition between the islands. The fact that Bonnet and Sarah Islands split out on their own as a cluster of 1 island

is probably more related to the degree of human disturbance of these islands than any of the other biophysical characteristics and is supported by the data which showed that these islands have more introduced species and communities recorded than any of the other islands. This result indicates that each island should be treated as unique and that management may best be undertaken on a case by case basis for each island rather than a one rule fits all approach.

Shack and surrounding area on Cat Island. Photo Naomi Lawrence



Management Recommendations

Implement hygiene measures when visiting the islands to limit further weed establishment.

Undertake control measures for listed weeds and remove other weed incursions.

Monitor islands for further weed incursions

Consider implementing a conservation management program with shack users of Cat Island.

Adopt a no camp fire policy on the islands.

In the event of wildfire, suppression would be a priority for Neck and Cat Islands to protect MSP which is a fire sensitive community, Soldiers Island to protect the population of *Sarcochilus australis* (gunns tree-orchid) and Philips as it is mainly wet forest with fire sensitive species and to protect *Cyathea australis*.

References

- Jones, D., Wapstra, H., Tonelli, P., Harris, S. (1999). *The Orchids of Tasmania*. Melbourne University Press, Victoria.
- Parks & Wildlife Service Tasmania (2006) *Sarah Island Visitor Services Site Plan*. Department of Tourism, Arts and the Environment.
- Pannell, J. R. (1992) *Swamp Forests of Tasmania*. Forestry Commission Tasmania.
- Smith, T. J. (2007). *The Ecology of Sarcochilus australis, Tasmania's only epiphytic orchid*. Honours Thesis, School of Plant Science, University of Tasmania.
- Walsh D. (1992) *Sarah Island W.H.A. Visitor Service Site, Vegetation Survey*. Unpublished report for the Department of Parks, Wildlife and Heritage.