APPENDICES

LORD HOWE ISLAND

BIODIVERSITY MANAGEMENT PLAN

Australian Government

Lord Howe
ISLAND BOARD

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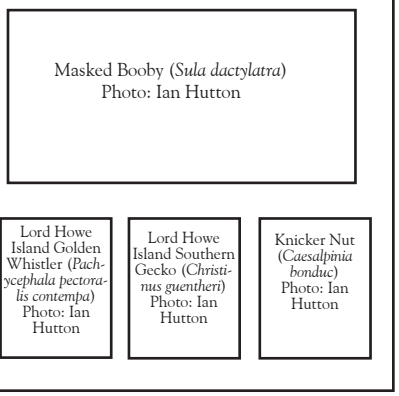

Masked Booby (*Sula dactylatra*)
Photo: Ian Hutton

Lord Howe Island Golden Whistler (*Pachycephala pectoralis contempa*)
Photo: Ian Hutton

Lord Howe Island Southern Gecko (*Christinus guentheri*)
Photo: Ian Hutton

Knicker Nut (*Caesalpinia bonduc*)
Photo: Ian Hutton

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Introduction

The Lord Howe Island Biodiversity Management Plan constitutes the formal National and NSW Recovery Plan for threatened species and communities of the Lord Howe Island Group and, as such, considers the conservation requirements of these species within the Group. It also addresses significant species and communities so as to manage the Lord Howe Island Group's biodiversity in a holistic and cost-effective manner. This plan identifies the actions to be taken to ensure the long-term viability of the threatened species and communities of the Lord Howe Island Group in nature and the parties who will undertake these actions.

The Lord Howe Island Biodiversity Management Plan is presented in two documents. The first document consists of the main body of the plan, this document contains the appendices that accompany the main plan.

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Appendix 1 Species list for Lord Howe Island Group

1.1 Vascular Flora

LHI=LHI endemic; ^ = LHI native (occurring on LHI pre-settlement) but not endemic; *=naturalised exotic (reproducing in the wild on LHI); < = possibly extinct, but not listed on either the TS C Act or EPBC Act as extinct; - not covered by Biodiversity Management Plan (non-terrestrial sea grasses). E = Endangered; CE = Critically Endangered. Taxonomy follows Flora of Australia (1994) unless more recent revision available.

Origin	Scientific Name	Common Name	TSC	EPBC	Priority
^	*Achyranthes aspera*				
*	*Acokanthera oblongifolia*	Septic Tree			
*	*Actites megalocarpa*				
^	*Adiantum aethiopicum*	Maidenhair Fern			
^	*Adiantum aldroviride*	A Maidenhair Fern			
^	*Adiantum hispidulum*	Rough Maidenhair Fern			
^	*Adiantum pubescens*	A Maidenhair Fern			
^	*Aegicerus corniculatum*	River Mangrove			
*	*Agapanthus praecox* ssp. *Orientalis*	Agapanthus			
*	*Agave americana*	Century Plant			
*	*Ageratina adenophora*	Croton Weed			
*	*Ageratum conyzoides*	Billy-goat Weed			
^	*Agrostis aemula*				
*	*Agrostis gigantea*	Red-top Bent			
*	*Aloe arborescens*				
*	*Aloe ciliaris*	Aloe			
*	*Aloe maculata*	Aloe			
*	*Alstroemeria pulchella*	Christmas Lily			
*	*Alternanthera bettzichiana*				
LHI	*Alyxia lindii*				□
^	*Alyxia ruscifolia*	Prickly Alyxia			
LHI	*Alyxia squamulosa*				□
*	*Amaranthus blitum*	Amaranth			
*	*Anagallis arvensis*	Scarlet Pimpernel			
*	*Andredera cordifolia*	Madeira Vine			
*	*Apium graveolens*	Celery			
LHI	*Apium prostratum* ssp. *howense*	Sea Celery			□
^	*Arachniodes aristata*				
*	*Araucaria heterophylla*	Norfolk Island Pine			

*	*Araujia hortum*	Moth Vine			
*	*Arenaria serpyllifolia*	Thyme-leaved Sandwort			
^	*Arthropteris tenella*	Climbing Fishbone Fern			
*	*Arundinaria simonii* f. *variegata*	Bamboo			
*	*Arundo donax*	Giant Reed			
*	*Asclepias curassavica*	Swan Plant			
*	*Asparagus aethiopicus*	Ground Asparagus			
*	*Asparagus asparagoides*	Bridal Creeper			
*	*Asparagus plumosus*	Climbing Asparagus			
^	*Asplenium australasicum* f. *australasicum*	Bird's Nest Fern			
LHI	*Asplenium goudeyi*				□
LHI	*Asplenium milnei*				□
^	*Asplenium polyodon*	Sickle Spleenwort			
LHI	*Asplenium pteridoides*				□
LHI	*Asplenium surrogatum*				□
	Aster subulatus	Wild Aster			
LHI	*Atractocarpus stipularis*	Green Plum			□
*	*Atriplex australasica*				
^	*Atriplex cinerea*	Grey Saltbush			
*	*Atriplex prostrata*				
*	*Avena barbata*	Bearded Oat			
*	*Avena byzantina*				
^	*Avicennia marina* v. *australasica*	Grey Mangrove			
*	*Axonopus compressus*	Grass			
^	*Baloghia inophylla*	Brush Bloodwood			
^	*Baumea juncea*	Bare Twig-rush			
*	*Bidens pilosa*	Farmer's Friend			
*	*Billbergia pyramidalis*				
LHI	*Blechnum contiguum*				□
LHI	*Blechnum fullagarii*				□
LHI	*Blechnum geniculatum*				□
LHI	*Blechnum howeanum*				□
^	*Blechnum patersonii*	Strap Water Fern			
LHI	*Boehmeria calophleba*				□
^	*Boerhavia tetrandra*				
^	*Botrychium australe*	Parsley Fern			
*	*Brachychiton acerifolius*	Flame Tree			
LHI	*Brachyscome segmentosa*				□
*	*Briza maxima*	Giant Shivery Grass			
*	*Briza minor*	Small Shivery Grass			
*	*Bromus catharticus*	Prairie Grass			
*	*Bromus diandrus*	Great Brome			

*	*Bromus hordeaceus*	A Soft Brome			
*	*Bromus molliformis*	A Soft Brome			
*	*Bryophyllum pinnatum*	Mother of Millions			
*	*Buddleja madagascariensis*	Buddleja			
^	*Bulbophyllum argyropus*				
^	*Bulbostylis densa*				
^	*Caesalpinia bonduc*	Knicker Nut	E		□
*	*Cakile edentula*	American Sea Rocket			
^	*Calanthe triplicata*	Christmas Orchid			
*	*Callisia fragrans*				
LHI	*Calystegia affinis*		E	CE	□
^	*Calystegia soldanella*				
^	*Canavalia rosea*	Coastal Jack Bean			
*	*Canna* x *generalis*	Canna Lily			
*	*Capsella bursa-pastoris*	Shepherd's Purse			
*	*Cardamine hirsuta*				
^	*Carex breviculmis*				
^	*Carex brunnea*				
^	*Carex inversa*				
^	*Carex pumila*				
LHI	*Carmichaelia exsul*		E		□
^	*Carpobrotus glaucescens*				
LHI	*Cassinia tenuifolia*	Bully Bush			□
*	*Casuarina glauca*	Swamp Oak			
*	*Catapodium rigidum*	Rigid Fescue			
*	*Catharanthus roseus*	Madagascar Periwinkle			
LHI	*Celtis conferta* ssp. *amblyphylla*	Cotton Wood			□
*	*Centaurea melitensis*	Maltese Cockspur			
*	*Centaurium tenuiflorum*	Centaury			
*	*Centella asiatica*	Pennywort			
*	*Centranthus ruber*	Red Valerian			
^	*Cephalomanes atrovirens*				
LHI	*Cephalomanes bauerianum*				□
*	*Cerastium fontanum* ssp. *vulgare*	Chickweed			
*	*Cerastium glomeratum*	Chickweed			
*	*Cestrum nocturnum*	Lady of the Night			
*	*Chamaesyce hyssopifolia*				
*	*Chamaesyce prostrata*	Red Caustic Weed			
^	*Chamaesyce psammogeton*		E		□
^	*Cheilanthes distans*	Bristly Cloak Fern			
^	*Cheilanthes sieberi*				
*	*Chenopodium album*	Fat Hen			

*	*Chenopodium murale*	Nettle-leaf Goosfoot			
LHI	*Chionanthus quadristamineus*	Blue Plum			□
LHI	*Chionochloa howensis*				□
*	*Chloris gayana*	Rhodes Grass			
*	*Chloris truncata*	Windmill Grass			
*	*Chlorophytum comosum*	Spider Plant			
^	*Christella dentata*				
*	*Chrysanthemoides monilifera* ssp. *Rotundata*	Bitou Bush			
*	*Ciclospermum leptophyllum*	Carrot Weed			
*	*Cirsium vulgare*	Spear Thistle			
*	*Citrus jambhiri*	Bush Lemon			
^	*Clematis glycinoides*	Headache Vine			
*	*Coffea arabica*	Coffee			
^	*Commelina cyanea*	Blue Wandering Jew			
*	*Conyza bonariensis*	Fleabane			
*	*Conyza parva*				
*	*Conyza sumatrensis*				
LHI	*Coprosma huttoniana*				□
LHI	*Coprosma inopinata*		E		□
LHI	*Coprosma lanceolaris*				□
LHI	*Coprosma prisca*	Goatwood			□
LHI	*Coprosma putida*	Stinkwood			□
LHI	*Coprosma* sp. nov				□
LHI	*Corokia carpodetoides*				□
*	*Coronopus didymus*	Swinecress			
*	*Cortaderia selloana*	Pink Pampass Grass			
^	*Corybas barbarae*	Helmet Orchid			
*	*Cotoneaster glaucophyllus*	Cotoneaster			
^	*Cotula australis*	Carrot Weed			
*	*Crassula aborescens* ssp. *Arborescens*				
^	*Crassula sieberiana*				
^	*Crinum asiaticum* var. *pedunculatum*	Crinum Lily			
*	*Crocosmia* x *crocosmiiflora*	Montbretia			
LHI	*Cryptocarya gregsonii*	Blackbutt			□
^	*Cryptocarya triplinervis*	Blackbutt			
LHI	*Cyathea brevipinna*				□
LHI	*Cyathea howeana*				□
LHI	*Cyathea macarthurii*				□
LHI	*Cyathea robusta*				□
*	*Cynodon dactylon*	Couch Grass			
*	*Cyperus eragrostis*	Umbrella Sedge			
*	*Cyperus involucratus*				

^	*Cyperus lucidus*	Leafy Flat Sedge			
*	*Cyperus rotundus*	Nut Grass			
*	*Dactylis glomerata*	Cocksfoot			
*	*Datura stramonium*	Thornapple			
*	*Delairea odorata*	Cape Ivy			
LHI	*Dendrobium macropus* ssp. *howeanum*				
LHI	*Dendrobium moorei*				
^	*Dianella intermedia*				
^	*Dichelachne crinita*				
*	*Dietes grandiflora*				
LHI	*Dietes robinsoniana*	Wedding Lily			
*	*Digitaria ciliaris*	Summer Grass			
*	*Digitaria sanguinalis*	Crab Grass			
*	*Digitaria violescens*				
LHI	*Diplazium melanochlamys*				
^	*Dodonaea viscosa* ssp. *burmanniana*	Hop Bush			
^	*Doodia aspera*				
^	*Doodia caudata*	Small Rasp Fern			
^	*Doodia media*				
LHI	*Dracophyllum fitzgeraldii*	Fitzgeraldii			
LHI	*Drypetes deplanchei* ssp. *affinis*	Greybark			
*	*Duchesnea indica*	Wild Strawberry			
LHI	*Dysoxylum pachyphyllum*	Island Apple			
*	*Echinochloa crusgalli*	Barnyard Grass			
*	*Echinopogon caespitosus* var. *caespitosus*				
^	*Echinopogon ovatus*				
*	*Ehrharta erecta*				
LHI	*Elaeocarpus costatus*				
^	*Elaeodendron curtipendulum*	Tamana			
LHI	*Elatostema grande*				
*	*Eleusine indica*	Crab Grass			
^	*Elymus multiflorus* var. *kingianus*			CE	
*	*Elymus scaber*	Wheat Grass			
^	*Epilobium billardiereanum* ssp. *cinereum*				
*	*Eragrostis cilianensis*	Stink Grass			
*	*Eragrostis tenuifolia*	Elastic Grass			
*	*Eranthemum pulchellum*	Lilac Flower			
*	*Eriobotrya japonica*	Loquat			
*	*Eucalyptus siderophloia*	Grey Ironbark			
^	*Euchiton involucratus*				
*	*Eugenia uniflora*	Brazilian Cherry			
*	*Euphorbia cyathophora*				

*	*Euphorbia paralias*	Sea Spurge			
*	*Euphorbia peplus*	Petty Spurge			
*	*Euphorbia prostrata*				
^	*Euphorbia psammogeton*				
LHI	*Exocarpus homalocladus*				
LHI	*Ficus macrophylla* ssp. *columnaris*	Banyan			
^	*Flagellaria indica*	Whip Vine			
*	*Fumaria bastardii*	Bastard's Fumitory			
*	*Fumaria muralis*	Wall Fumitory			
*	*Furcraea foetida*				
LHI	*Gahnia howeana*				
^	*Gahnia xanthocarpa*				
*	*Gaillardia x grandiflora*	Daisy			
*	*Galinsoga parviflora*	Potato Weed			
*	*Gamochaeta purpurea*				
^	*Geitonoplesium cymosum*	Scrambling Lily			
LHI	*Geniostoma huttonii*		E		
LHI	*Geniostoma petiolosum*				
*	*Geranium molle*	Cranesbill Geranium			
*	*Gladiolus x hortulanus*	Gladioli			
*	*Gloriosa superba*	Glory Lily			
LHI	*Gonocarpus* sp				
LHI	Gonocarpus teucrioides				
LHI	*Grammitis diminuta*				
LHI	*Grammitis nudicarpa*				
LHI	*Grammitis watsii*				
*	*Grevillea robusta*	Silky Oak			
LHI	*Guoia coriacea*	Island Cedar			
*	*Gynura aurantiaca*				
^ -	*Halophila ovalis*	Sea Grass			
*	*Harpephyllum caffrum*	Kaffir Plum			
*	*Hedera helix*	English Ivy			
LHI	*Hedyscepe canterburyana*	Big Mountain Palm			
*	*Hedychium* sp.	Ornamental Ginger			
^	*Hibiscus diversifolius*				
*	*Hibiscus mutabilis*	Hibiscus			
^	*Hibiscus tiliaceous*	Cottonwood Hibiscus			
*	*Hippeastrum puniceum*	Hippeastrum			
^	*Histiopteris incisa*				
^	*Homolanthus populifolius* (syn. *Omalanthus popularifolius*)	Bleeding Heart			
*	*Hordeum murinum* ssp. *glaucum*	Hedgehog Grass			
*	*Hordeum murinum* ssp. *leporinum*	Barley Grass			

LHI	*Howea belmoreana*	Curly Palm			□
LHI	*Howea forsteriana*	Kentia Palm			□
^	*Huperzia varia*				
*	*Hydrocotyle bonariensis*	Beach Pennywort			
^	*Hydrocotyle hirta*	Pennywort			
LHI	*Hymenophyllum howense*				□
LHI	*Hymenophyllum moorei*				□
*	*Hypochaeris radicata*	Flatweed			
^	*Hypolepis elegans*				
^	*Hypolepis tenuifolia*				
*	*Imperata cylindrica* var. *major*	Blady Grass			
*	*Ipomoea alba*	Moonflower			
*	*Ipomoea cairica*	Five-leaf Morning Glory			
*	*Ipomoea indica*	Blue Morning Glory			
^	*Ipomoea pes-caprae* ssp. *brasiliensis*	Beach Bean			
^	*Isolepis nodosa*				
^	*Jasminium didymum* ssp. *didymum*				
^	*Jasminium simplicifolium* ssp. *australiense*				
*	*Juncus aridicola*				
*	*Juncus bufonius*				
*	*Juncus pallidus*				
*	*Justica carnea*	Pink Spider Shrub			
LHI	*Korthalsella emersa*				□
^	*Korthalsella rubra* ssp. r*ubra*				
*	*Kyllinga brevifolia*				
*	*Lactuca saligna*	Wild Lettuce			
^	*Lagunaria patersonia* ssp. *patersonia*	Sallywood			
*	*Lagurus ovatus*	Hare's Tail Grass			
*	*Lamium amplexicaule*	Dead Nettle			
*	*Lantana camara*	Lantana			
LHI	*Lastreopsis nephrodioides*				□
*	*Lathyrus latifolius*	Sweet Pea			
*	*Lepidium africanum*				
*	*Lepidium bonariense*	Peppercress			
LHI	*Lepidium howei-insulae*				□
LHI	*Lepidium nesophilum*				□
LHI	*Lepidorrhachis mooreana*	Little Mountain Palm			□
LHI	*Leptopteris moorei*				□
LHI	*Leptospermum polygalifolium* ssp. *howense*	Tea Tree			□
^	*Lepturus repens*				
*	*Leucanthemum* x *superbum*	Shasta Daisy			
^	*Leucopogon parviflorus*				

*	*Ligustrum sinense*	Small-leaved Privet			
*	*Lilium formosanum*	Tiger Lily			
^	*Lobelia alata*				
^	*Lobelia anceps*				
*	*Lobularia maritima*	Sweet Alyssum			
*	*Lolium perenne*	Rye Grass			
*	*Lolium rigidum* var. *rigidum*	Rigid Rye Grass			
*	*Lolium rigidum* var. *rottboelliodes*				
LHI	*Lordhowea insularis*				
LHI	*Luzula longiflora*				
*	*Lycium ferocissimum*	African Boxthorn			
*	*Lycopersicum esculentum*	Cherry Tomato			
*	*Lythrum hyssopifolia*				
LHI	*Machaerina insularis*				
^	*Macropiper excelsum* ssp. *psittacorum* (syn. *Piper excelsum)*	Kava			
LHI	*Macropiper hooglandii*	Kava			
*	*Macroptilium atropurpureum*	Siratro			
*	*Malva parviflora*	Mallow			
*	*Malvastrum coromandelianum*				
LHI	*Marattia howeana*				
^	*Marsdenia rostrata*	Common Milk Vine			
LHI	*Marsdenia tubulosa*<				
*	*Medicago lupulina*	Black Medic			
*	*Medicago polymorpha*	Burr Medic			
LHI	*Melaleuca howeana*	Tea Tree			
*	*Melia azedarach* var. *australasica*	White Cedar			
LHI	*Melicope contermina*				
LHI	*Melicope polybotrya*				
LHI	*Melicytus novae-zelandieae* ssp. *centurionis*				
*	*Melilotus indicus*	King Island Melilot			
*	*Melinis minutiflora*	Molasses Grass			
*	*Mentha spicata*	Spearmint			
*	*Metrosideros kermadecensis*	Christmas Bush			
LHI	*Metrosideros nervulosa*	Mountain Rose			
LHI	*Metrosideros sclerocarpa*	Mountain Rose			
^	*Microlaena stipoides*				
^	*Microtis unifolia*				
*	*Mirabilis jalapa*	Marvel of Peru			
*	*Modiola caroliniana*	Red-flower Mallow			
*	*Morus alba*	Mulberry			
^	*Mucuna gigantea*	Burny Bean			
^	*Muehlenbeckia complexa*				

^	*Myoporum insulare*	Boobialla			
LHI	*Negria rhabdothamnoides*	Pumpkin Tree			□
*	*Nephrolepis biserrata*	Giant Fishbone			
^	*Nephrolepis cordifolia*	Fishbone Fern			
^	*Nicotiana forsteri*				
*	*Nothoscordum borbonicum*	Wild Onion			
*	*Ochna serrulata*	Mickey Mouse Plant			
^	*Ochrosia elliptica*				
*	*Odontonema tubaeforme*	Red Tube Flower Shrub			
*	*Oenothera drummondii*	Evening Primrose			
*	*Oenothera stricta* ssp. *stricta*				
^	*Olea paniculata*	Native Olive			
LHI	*Olearia ballii*	Mountain Daisy			□
LHI	*Olearia elliptica* ssp. *praetermissa*				□
LHI	*Olearia mooneyi*	Pumpkin Bush			□
*	*Onopordum acanthium*				
^	*Ophioglossum coriaceum*				
^	*Ophioglossum pendulum*	Ribbon Fern			
^	*Ophioglossum petiolatum*				
^	*Ophioglossum reticulatum*				
^	*Oplismenus hirtellus* (syn. *O. imbecillus*)	Creeping Beard Grass			
^	*Oxalis corniculata*				
*	*Oxalis debilis*	Large-leaved Wood Sorrel			
LHI	*Pandanus forsteri*	Forked Tree			□
^	*Pandorea pandorana* ssp. *austrocaledonia*				
*	*Papaver rhoeas*	Poppy			
*	*Papaver somniferum*	Opium Poppy			
^	*Parietaria debilis*				
*	*Parietaria judaica*				
LHI	*Parsonsia howeana*				□
*	*Paspalum dilatatum*	Paspalum			
^	*Paspalum distichum*	Water Couch			
*	*Paspalum mandiocanum*				
*	*Paspalum urvillei*				
^	*Paspalum vaginatum*<				
*	*Paspalum wettsteinii*	Broad-leaved Paspalum			
*	*Passiflora edulis*	Black Passionfruit			
LHI	*Passiflora herbertiana* ssp. *insulae-howei*				□
*	*Pelargonium australe*	Pelargonium			
^	*Pellaea falcata*	Sickle Fern			
^	*Pellaea paradoxa*	Sickle Fern			
*	*Pennisetum clandestinum*	Kikuyu			

*	*Pennisetum purpureum*	Elephant Grass			
^	*Peperomia tetraphylla*	Four-leaved Pepper Plant			
^	*Peperomia urvilleana*				
*	*Petunia x hybrida*	Petunia			
*	*Phalaris aquatica*	Phalaris			
*	*Phalaris canariensis*	Canary Grass			
*	*Phanerophlebia falcata*	Holly Fern			
^	*Phragmites australis*	Common Reed			
*	*Phragmites karka*				
*	*Phyllanthus tenellus*	Hen and Chickens			
*	*Phylostachys* spp.	Rhizomatous Bamboo			
LHI	*Phymatosorus pustulatus* ssp. *howensis*				
^	*Phymatosorus pustulatus* ssp. *pustulatus*				
^	*Phymatosorus scandens* (syn. *Microsorum scandens*)				
*	*Physalis ixocarpa*				
*	*Physalis peruviana*	Cape Gooseberry			
LHI	*Pimelea congesta*				
^	*Pisonia brunoniana*	Punkwood			
*	*Pistacia chinensis*	Pistacio			
LHI	*Pittosporum erioloma*				
*	*Pittosporum undulatum*	Sweet Pittosporum			
LHI	*Plantago hedleyi*				
*	*Plantago lanceolata*	Plantain			
*	*Plantago major*	Large Plantain			
^	*Platycerium bifurcatum*	Elkhorn			
LHI	*Plectorrhiza erecta*				
^	*Plectranthus graveolens*				
*	*Poa annua*	Winter Grass			
^	*Poa poiformis*				
*	*Polycarpon tetraphyllum*	Four-leaf Allseed			
*	*Polypogon monspeliensis*	Annual Beard Grass			
^	*Polyscias cissodendron*	Island Pine			
LHI	*Polystichum moorei*		E		
LHI	*Polystichum whiteleggei*				
*	*Portulaca oleracea*	Portulaca			
^	*Pouteria myrsinoides* ssp. *reticulata*	Axe-handle Wood			
*	*Pratia purpurascens*	White Root			
*	*Prunella vulgaris*	Self-heal			
*	*Prunus persica*	Peach			
^	*Pseudognaphalium luteoalbum*				
*	*Psidium cattlianum* var. *cattleianum*	Cherry Guava			
*	*Psidium guajava*	Guava			

^	*Psilotum nudum*	Skeleton Fork Fern			
LHI	*Psychotria carronis*	Black Grape			□
LHI	*Pteris microptera*				□
^	*Pteris tremula*	Tender Bracken			
^	*Pterostylis curta*				
^	*Pterostylus obtusa*				
^	*Pterostylus pedunculata*				
*	*Punica granatum*	Pomegranate			
*	*Pycreus polystachyos*				
^	*Pyrrosia confluens*	Horshoe Felt Fern			
^	*Pyrrosia rupestris*	Rock Felt Fern			
*	*Ranunculus parviflorus*	Buttercup			
*	*Ranunculus sessiliflorus*	Buttercup			
LHI	*Rapanea mccomishii*				□
LHI	*Rapanea myrtillina*				□
LHI	*Rapanea platystigma*				□
*	*Richardia stellaris*				
*	*Ricinus communis*	Castor Oil Plant			
*	*Roldana petasitis*				
*	*Romulea rosea* var. *australis*	Onion Grass			
*	*Rostraria cristata*	Annual Catstail			
*	*Rottboellia coelorachis*				
*	*Rumex brownii*	Swamp Dock			
*	*Rumex crispus*	Curled Dock			
^	*Rytidosperma racemosum*				
^	*Rytidosperma unarede*				□
*	*Sagina apetala*	Pearlwort			
*	*Salvia coccinea*	Texas Sage			
*	*Sanseviera trifasciata*	Mother-in-law's Tongue			
^	*Sarcocornia quinqueflora* ssp. *quinqueflora*				
^	*Sarcomelicope simplicifolia* ssp. *simplicifolia*	Bauerella			
^	*Scaevola calendulacea*				
LHI	*Scaevola taccada*				□
*	*Schefflera actinophylla*	Umbrella Tree			
*	*Senecio elegans*	Purple Groundsel			
LHI	*Senecio hooglandii*				
LHI	*Senecio howeanus*				□
LHI	*Senecio pauciradiatus*				□
*	*Senecio vulgaris*	Common Groundsel			
*	*Senna pendula* var. *glabrata*	Winter Senna			
*	*Senna septemtrionalis*	Brazilian Buttercup			
^	*Sesuvium portulacastrum*				

*	*Setaria gracilis*				
*	*Setaria palmifolia*	Palm Grass			
*	*Setaria verticillata*	Whorled Pigeon Grass			
*	*Sherardia avensis*				
^	*Sicyos australis*	Native Cucumber			
*	*Sida rhombifolia*	Paddy's Lucerne			
*	*Silene gallica*	Catchfly			
*	*Silybum marianum*	Variegated Thistle			
*	*Sisymbrium officinale*				
*	*Sisyrinchium micranthum*	Scour Weed			
^	*Smilax australis*	Native Sarsparilla			
*	*Solanum americanum* ssp. *nigrans*				
*	*Solanum americanum* ssp. *nutans*	Blackcurrant			
^	*Solanum aviculare*				
^	*Solanum bauerianum*<				□
*	*Solanum mauritianum*	Tobacco Bush			
*	*Solanum nigrum*	Nightshade			
*	*Solidago canadensis*				
*	*Sonchus asper* ssp. *glaucescens*	Prickly Sowthistle			
*	*Sonchus megalocarpus*	Dune Thistle			
*	*Sonchus oleraceus*	Milk Thistle			
LHI	*Sophora howinsula*	Lignum Vitae			□
*	*Sphagneticola trilobata*	Singapore Daisy			
^	*Spinifex sericeus*	Spinifex			
*	*Sporobolus africanus*	Parramatta Grass			
^	*Sporobolus virginicus*	Sonchus			
*	*Stachys arvensis*	Stagger Weed			
*	*Stellaria media*	Chickweed			
*	*Stenotaphrum secundatum*	Buffalo Grass			
LHI	*Stephania japonica* var *timoriensis*				□
^	*Sticherus lobatus*	Spreading Shield Fern			
*	*Stipa ramosissima*	Bamboo Grass			
LHI	*Symplocos candelabrum*				□
LHI	*Syzygium fullargarii* (syn. *Cleistocalyx fullargarii)*	Scalybark			□
*	*Taraxacum officinale*	Dandelion			
LHI	*Tetragonia implexicoma*<				□
^	*Tetragonia tetragonioides*	New Zealand Spinach			
*	*Tetrapanax papyrifer*	Rice Paper Plant			
^	*Tmesipteris truncata*				
*	*Torilis nodosa*				
*	*Tradescantia fluminensis*	Wandering Jew			
*	*Tradescantia spathacea*				

*	*Tradescantia zebrina*	Striped Wandering Jew			
*	*Trifolium dubium*	Clover			
*	*Trifolium glomeratum*	Clustered Clover			
*	*Trifolium repens*	Dutch Clover			
*	*Trifolium subterraneum*	Subterranean Clover			
^	*Triglochin striata*				
*	*Tropaeolum majus*	Nasturtium			
LHI	*Trophis scandens* ssp. *megacarpa*				
^	*Tylophora biglandulosa*				
^	*Typha domingensis*	Cumbungi			
LHI	*Uncinia debilior*				
*	*Urtica urens*	Stinging Nettle			
*	*Verbascum virgatum*	Mullein			
*	*Verbena bonariensis*	Purple Verbena			
*	*Verbena brasiliensis*	Purple Top			
*	*Veronica arvensis*	Wall Speedwell			
*	*Veronica persica*				
*	*Vicia sativa* ssp. *angustifolia*				
*	*Vicia sativa* ssp. *nigra*	Common Vetch			
^	*Vigna marina*				
*	*Vinca major*	Periwinkle			
*	*Vulpia bromoides*				
*	*Vulpia myuros*				
^	*Wahlenbergia gracilis*				
LHI	*Wahlenbergia insulae-howei*				
^	*Westringia fruticosa*				
LHI	*Westringia viminalis*				
^	*Wollastonia biflora* (syn. *Melanthera biflora*)				
LHI	*Xylosma maidenii*				
LHI	*Xylosma parvifolium*		E		
*	*Yucca aloifolia*	Yucca			
*	*Zantedeschia aethiopica*	Arum Lily			
^	*Zanthoxylum pinnata*	Yellow Wood			
^-	*Zostera capricorni*	Sea Grass			
LHI	*Zygogynum howeanum* (syn. *Bubbia howeanum*)	Hotbark			

1.2 Vegetation communities recognised in LHI Biodiversity Management Plan

Terrestrial Communities	Mapping (Pickard 1983 map unit, and any futher derivation)
Closed Forest Communities	
Chionanthus quadristamineus Closed Forest	Cq
Cryptocarya gregsonii Closed Forest	Cg
Drypetes deplanchei-Cryptocarya triplinervis Closed Forest on calcarenite/coral sand	DaCt on calcarenite/coral sand
Drypetes deplanchei-Cryptocarya triplinervis Closed Forest on basalt	DaCt on volcanics
Drypetes deplanchei-Cryptocary triplinervis Low Closed Forest on exposed calcarenite	DaCtC
Drypetes deplanchei-Cryptocarya triplinervis Low Closed Forest on exposed basalt	DaCtX
Hedyscepe canterburyana Closed Sclerophyll Forest	Hc
Howea belmoreana Closed Sclerophyll Forest	Hb
Howea forsteriana Closed Sclerophyll Forest on calcarenite/coral sand	Hf on calcarenite/coral sands
Howea forsteriana Closed Sclerophyll Forest on basalt	Hf on volcanics
Lagunaria patersonia Closed Swamp Forest	Lp
Lowland Mixed Closed Forest	LMF
Pandanus forsteri Closed Sclerophyll Forest	Pf
Syzygium fullagarii Closed Forest	Cf
Zygogynum howeanum-Dracophyllum fitzgeraldii Gnarled Mossy Closed Forest	BhDf
Closed Scrub Communities	
Aegiceras corniculatum Closed Swamp Scrub	Ac
Boehmeria calophleba-Macropiper hooglandii Closed Scrub	BcMep
Cassinia tenuifolia Closed Scrub	Ca
Dodonaea viscosa Closed Scrub	Dv
Dracophyllum fitzgeraldii-Metrosideros nervulosa Closed Scrub	unit DfMn
Melaleuca howeana Closed Scrub	Mh
Dwarf Scrub Communities	
Alyxia squamulosa-Coprosma inopinata Dwarf Scrub	I. Hutton
Atriplex cinera Dwarf Scrub	Ax
Open Scrub Communities	
Avicennia marina v. *australasica* Open Swamp Scrub	Ama
Herb Communities	
Ipomoea cairica-Carpobrotus glaucescens* Herbfield	IcCg
Mixed Fern and Herb	MFH
Grass Communities	
Cyperus lucidus Sedgeland	Cl
Poa poiformis Grassland	Pp

Specialised Landform Communities	
Basalt Boulder Beach	
Calcarenite and Coral Boulder Beach	
Cliff	
Coral Sand Beach and Dune	
Waterfall Cliff	I. Hutton.
Disturbed Areas	
Cleared land/non-native vegetation/buildings	Updated by Hunter (2002)
Aquatic Communities	
Lowland Freshwater Instream Community	Drainage lines 2nd order and below on calcarenite/coral sands. Excluding mapped *Lagunaria patersonia* community
Upland Freshwater Instream Community	Drainage lines 2nd order and below found on volcanics

1.3 Vertebrate fauna and threatened invertebrate fauna.

E = endangered; PEx = Presumed Extinct; V = Vulnerable; M = Migratory species. # = restricted to Lord Howe Island and Norfolk Island, ~ = regular migratory visitor, ^ = feral population subsequently extirpated. [1] Subfossil deposits known but not known to breed on LHIG today.

Common name	Scientific Name	TSC	EPBC	Priority
Section 1: Endemic native species				
Mammals				
Lord Howe Island Long-eared Bat	*Nyctophilus howensis*	Pex	Pex	
Land Birds				
Lord Howe Island Grey Fantail	*Rhipidura fuliginosa cervina*	Pex	Pex	
Lord Howe Currawong	*Strepera graculina crissalis*	V	V	
Lord Howe Island Thrush	*Turdus poliocephalus vinitinctus*	Pex	Pex	
Lord Howe Island Gerygone	*Gerygone insularis*	Pex	Pex	
Lord Howe Island Golden Whistler	*Pachycephala pectoralis contempta*	V		
Lord Howe Island Silvereye	*Zosterops lateralis tephropleura**	V		
Lord Howe Woodhen	*Gallirallus sylvestris*	E	V	
Red-crowned Parakeet (Lord Howe Island ssp.)	*Cyanoramphus novaezelandiae subflavescens*	Pex	Pex	
Robust White-eye	*Zosterops strenuus*	Pex	Pex	
Southern Boobook (Lord Howe Island ssp.)	*Ninox novaeseelandiae albaria*	Pex	Pex	
Tasman Starling (Lord Howe Island ssp.)	*Aplonis fusca hullianus*	Pex	Pex	
White Gallinule	*Porphyrio albus*	Pex	Pex	
White-throated Pigeon (Lord Howe Island ssp.)	*Columa vitiensis godmanae*	Pex	Pex	
Invertebrates (TSC Act/EPBC Act-listed species only)				
Lord Howe Island Earthworm	*Pericryptodrilus nanus*	E		
Lord Howe Island Ground Weevil	*Hybomorphus melanosomus*	Pex		
Lord Howe Island Phasmid	*Drycocelus australis*	E	CE	
Lord Howe Island Wood-eating Cockroach	*Panesthia lata*	E		
Lord Howe Placostylus	*Placostylus bivaricosus*	EE	E	
Section 2: Non-endemic native species (residents or regular visitors on the LHIG at time of European settlement).				
Mammals				
Large Forest Bat	*Vespedelus darlingtonii*			
Land Birds				
Bar-tailed Godwit	*Limosa lapponica* ~		M	
Double-banded Plover	*Charadrius bicinctus* ~		M	
Eastern Curlew	*Numenius madagascariensis* ~		M	
Emerald Ground-dove	*Chalcophaps indica*			
Grey-tailed Tattler	*Tringa brevipes* ~		M	
Latham's Snipe	*Gallinago hardwickii* ~		M	

Pacific Golden Plover	*Pluvialis fulva* ~			□
Red Knot	*Calidris canutus* ~		M	□
Red-necked Stint	*Calidris ruficollis* ~		M	□
Ruddy Turnstone	*Arenaria interpres* ~		M	□
Sharp-tailed Sandpiper	*Calidris acuminata* ~		M	□
Wandering Tattler	*Tringa incana* ~		M	□
Whimbrel	*Numenius phaeopus* ~		M	□
Sea Birds				
Common (Brown) Noddy	*Anous stolidus*		M	□
Flesh-footed Shearwater	*Puffinus carneipes*	V	M	□
Grey Ternlet	*Procelsterna cerulea*	V		□
Kermadec Petrel	*Pterodroma neglecta*	V	V	□
Little Shearwater	*Puffinus assimilis*	V		□
Masked Booby	*Sula dactylatra*	V	M	□
Providence Petrel	*Pterodroma solandri*	V	M	□
Pycroft's Petrel[1]	*Pterodroma pycrofti*			
Red-tailed Tropicbird	*Phaethon rubricauda*	V		□
Sooty Tern	*Sterna fuscata*	V		□
Wedge-tailed Shearwater	*Puffinus assimilis*			□
White-bellied Storm Petrel	*Fregata grallaria*	V	V	□
White-faced Storm Petrel[1]	*Pelagodroma marina*			
Reptiles				
Lord Howe Island Gecko	*Christinus guentheri#*	V	V	□
Lord Howe Island Skink	*Pseudomioa lichenigerum#*	V	V	□
Freshwater Fishes				
Long-finned Eel	*Anguilla reinhardtii*			□
Short-finned Eel	*Anguilla australis*			□
Common Jollytail	*Galaxias maculatus*			□
Section 3: Non-native species (residents or regular visitors on the LHIG, present through either intentional/accidental introduction or by colonisation since European settlement).				
Mammals				
Black Rat	*Rattus rattus*			
Feral Cat ^	*Felis cattus*			
Feral Goat	*Capra hircus*			
Feral Pig ^	*Sus scrofa*			
House Mouse	*Mus musculus*			
Land Birds				
Australasian Gannet	*Morus serrator*			
Nankeen Kestrel	*Falco cenchroides*			
Blackbird	*Turdus merula*			
Buff-banded Rail	*Gallirallus philippensis*			
Cattle Egret	*Ardea ibis* ~		M	
Common Starling	*Sturnus vulgaris*			

Feral Pigeon	*Columba livia*			
Great Cormorant	*Phalacrocorax carbo*			
Magpie Lark	*Grallina cyanoleuca*			
Masked Lapwing	*Vanellus miles*		M	
Masked Owl (Tasmanian subspecies)	*Tyto novaehollandiae* ssp. *castanops*			
Pacific Black Duck	*Anas superciliosa*			
Pacific Black Duck-Mallard hybrids	*Anas superciliosa* x *A. platyrhynchos*			
Purple Swamphen	*Porphyrio phrphyrio*			
Sacred Kingfisher	*Todiramphus sanctus*			
Songthrush	*Turdus philomelos*			
Welcome Swallow	*Hirundo neoxena*			
White-faced Heron	*Ardea novaehollandiae*			
Sea Birds				
Black Noddy	*Anous minutus*			
Black-winged Petrel	*Pterodroma nigripennis*	V		
Cape Petrel	*Daption capense*			
Great-winged Petrel	*Pterodroma macroptera*			
White Tern	*Gygis alba*	V		
Reptiles				
Eastern Snake-necked Turtle	*Chelodina longicollis*			
Grass Skink	*Lampropholis delicata*			
Amphibians				
Bleating Tree Frog	*Litoria dentata*			
Section 4: Vagrants or irregular visitors				
Marine Mammals				
Bottlenose Dolphin	*Tursiops truncatus*			
Common Dolphin	*Delphinus delphis*			
Humpback Whale	*Megaptera novaeangliae*	V		
Sperm Whale	*Physeter macrocephalus*	V		
Pilot Whale	*Globicephala* sp.			
Blainville's Beaked-whale	*Mesoplodon densirostris*			
Marine Reptiles				
Green Turtle	*Chelonia mydas*	V		
Loggerhead Turtle	*Caretta caretta*	E		
Yellow-bellied Sea Snake	*Pelamis platurus*			
Land Birds				
Australasian Bittern	*Botaurus poiciloptilus*	V		
Australasian Grebe	*Tachybaptus novaehollandiae*			
Australian Pratincole	*Stiltia isabella*			
Australian Shelduck	*Tadorna tadornoides*			
Australian White Ibis	*Threskiornis spinicollis*			
Australian Wood Duck	*Chenonetta jubata*			

Australian Raven	*Corvus coronoides*			
Baillon's Crake	*Porzana pusilla*			
Banded Lapwing	*Vanellus tricolor*			
Black Swan	*Cygnus atratus*			
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*			
Black-tailed Godwit	*Limosa limosa*	V	M	
Black-winged Stilt	*Himantopus himantopus*			
Brahminy Kite	*Haliastur indus*			
Brown Falcon	*Falco berigora*			
Brush Bronzewing	*Phaps elegans*			
Brush Cuckoo	*Cacomantis variolosus*			
Buff-breasted Sandpiper	*Tryngites subruficollis*		M	
Canada Goose	*Branta canadensis*			
Common Chaffinch	*Fringilla coelebs*			
Chestnut Teal	*Anas castanea*			
Channel-billed Cuckoo	*Scythrops novaehollandiae*			
Common Greenshank	*Tringa nebularia*		M	
Common Koel	*Eudynamys scolopaceus*			
Common Sandpiper	*Tringa hypoleucos*		M	
Curlew Sandpiper	*Calidris ferruginea*		M	
Dollarbird	*Eurystomus orientalis*			
Dusky Moorhen	*Gallinula tenebrosa*			
Eastern Reef Egret	*Egretta sacra*		M	
Eastern Rosella	*Platycercus eximius*			
Eurasian Coot	*Fulicia atra*			
European Goldfinch	Carduelis carduelis			
European Greenfinch	*Carduelis chloris*			
Fairy Martin	*Hirundo ariel*			
Fan-tailed Cuckoo	*Cacomantis pyrrhophanus*			
Fork-tailed Swift	*Apus pacificus*		M	
Glossy Ibis	*Plegadis falcinellus*		M	
Great Egret	*Egretta alba*		M	
Great Knot	*Calidris tenuirostris*	V	M	
Grey Plover	*Pluvialis squatarola*		M	
Grey Teal	*Anas gibberifrons*			
Hoary-headed Grebe	*Poliocephalus poliocephalus*			
Intermediate Egret	*Ardea intermedia*			
Greater Sand Plover	*Charadrius leschenaultii*	V	M	
Leaden Flycatcher	*Myiagra rubecula*			
Lesser Sand Plover	*Charadrius mongolus*	V	M	
Common Redpoll	*Carduelis flammea*			
Little Bittern	*Ixobrychus minutus*			

Little Egret	*Egretta garzetta*			
Little Curlew	*Numenius minutus*		M	
Long-tailed Cuckoo	*Eudymanys taitensis*			
Marsh Sandpiper	*Tringa stagnatilis*		M	
Masked Woodswallow	*Artamus personatus*			
Nankeen Night Heron	*Nycticorax caledonicus*			
Noisy Friarbird	*Philemon corniculatus*			
Olive-backed Oriole	*Oriolus sagittatus*			
Oriental Cuckoo	*Cuculus pallidus*			
Oriental Plover	*Charadrius veredus*		M	
Oriental Pratincole	*Glareola maldivarum*		M	
Painted Snipe	*Rostratula benghalensis*	V	M	
Pallid Cuckoo	*Cuculus pallidus*			
Paradise Shelduck	*Tadorna variegata*			
Pectoral Sandpiper	*Calidris melanotos*		M	
Rainbow Bee-eater	*Merops ornatus*		M	
Richard's Pipit	*Anthus novaeseelandiae*			
Royal Spoonbill	*Platalea regia*			
Shining Bronze-cuckoo	*Chrysococcyx lucidus*			
Skylark	*Alauda arvensis*			
White-throated Needletail	*Hirundapus caudacutus*		M	
Sooty Oystercatcher	*Haematopus fuliginosus*			
South Island Pied Oystercatcher	*Haematopus finschi*			
Spotted Turtledove	*Streptopelia chinensis*			
Straw-necked Ibis	*Threskiornis spinicolis*			
Swamp Harrier	*Circus approximans*			
Swift Parrot	*Lathamus discolor*	E		
Terek Sandpiper	*Xenus cinerus*	V	M	
Tree Martin	*Hirundo nigricans*			
Pied Imperial Pigeon	*Ducula bicolor*			
White-browed Woodswallow	*Artamus superciliosus*			
White-winged Triller	*Lalage sueurii*			
Willie Wagtail	*Rhipidura leucophrys*			
Yellow-billed Spoonbill	*Platalea flavipes*			
Yellowhammer	*Emberiza citrinella*			
Seabirds				
Antarctic Prion	*Pachyptila desolata*			
Arctic Tern	*Sterna paradisaea*			
Black-browed Albatross	*Diomedea melanophris*	V	M	
Black-naped Tern	*Sterna sumatrana*		M	
Brown Booby	*Sula leucogaster*		M	
Buller's Shearwater	*Puffinus bulleri*			

Caspian Tern	*Sterna caspia*		M	
Common Tern	*Sterna hirundo*		M	
Crested Tern	*Sterna bergii*			
Fairy Prion	*Pachyptila turtur*			
Fluttering Shearwater	*Puffinus gavia*			
Southern Giant Petrel	*Macronectes giganteus*		M/E	
Gould's Petrel	*Pterodroma leucoptera*		M/E	
Gull-billed Tern	*Sterna nilotica*			
Hutton's Shearwater	*Puffinus huttoni*			
Kelp Gull	*Larus dominicanus*			
Lesser Frigatebird	*Fregata ariel*		M	
Little Black Cormorant	*Phalacrocorax sulcirostris*			
Little Penguin	*Eudyptula minor*			
Little Pied Cormorant	*Phalacrocorax melanoleucos*			
Little Tern	*Sterna albifrons*	E	M	
Long-tailed Jaeger	*Stercorarius longicauda*		M	
Mottled Petrel	*Pterodroma inexpectata*			
Pied Cormorant	*Phalacrocorax varius*			
Red-footed Booby	*Sula sula*		M	
Short-tailed Shearwater	*Puffinus tenuirostris*		M	
Silver Gull	*Larus novaehollandiae*			
Sooty Shearwater	*Puffinus griseus*		M	
Wandering Albatross	*Diomeda exulans*	E	M/V	
Westland Petrel	*Procellaria westlandica*		M	
Wilson's Storm Petrel	*Oceanites oceanicus*		M	
Whiskered Tern	*Chlidonias leucoptera*		M	
White-fronted Tern	*Sterna striata*			
White-headed Petrel	*Pterodroma lessonii*			
White-necked Petrel	*Pterodroma cervicalis*			
White-tailed Tropicbird	*Phaethon lepturus*		M	
White-winged Black Tern	*Chlidonias leucopterus*		M	

Appendix 2 Invertebrates of the Lord Howe Island Group Considered Threatened*

* This table lists species considered to be eligible for listing as threatened by Cassis *et. al.* 2003, but not currently on the TSC Act or EPBC Act schedules

List of threatened ant (Hymenoptera: Formicidae) species of Lord Howe Island.

'N' refers to the northern end of the island. 'ST' refers to the settlement. 'IH' refers to the Intermediate Hill are. 'S' refers to the southern end of the island.

Status	Order	Family	Genus Species	Comments			
Presumed Extinct	Hymenoptera - Formicidae	Myrmicinae	*Orectognathus howensis*	1 specimen recorded in 1915, 3 specimens recorded in 1966, 1 specimen in 1979, Not recorded since.			
Status	**Order**	**Family**	**Genus Species**	**No. Specimens**	**No. Sites Occurs**	**Abundance**	**Distribution (N, ST, IH, S)**
Threatened Vulnerable	Hymenoptera - Formicidae	Myrmicinae	*Lordomyrma leae*	4	3	Rare	S Only
Threatened Vulnerable	Hymenoptera - Formicidae	Ponerinae	*Amblyopone* sp. nov.	9	4	Rare	S Only
Threatened Vulnerable	Hymenoptera - Formicidae	Ponerinae	*Amblyopone* sp. nov.	2	1	Rare	S Only
Threatened Vulnerable	Hymenoptera - Formicidae	Ponerinae	*Discothyrea* sp. nov.	5	3	Rare	S Only
Threatened Vulnerable	Hymenoptera - Formicidae	Ponerinae	*Proceratium* sp. nov.	1	1	Rare	S Only
Threatened At Risk	Hymenoptera - Formicidae	Ponerinae	*Amblyopone leae*	>100	19	Locally Common	S Only

b) List of threatened beetle (Coleoptera) species of Lord Howe Island.

'N' refers to the northern end of the island. 'ST' refers to the settlement. 'IH' refers to the Intermediate Hill area. 'S' refers to the southern end of the island. 'U' refers to unknown distribution. SAM refers to the South Australian Museum collection.

Status	Order	Family	Genus Species	No. Specimens	No. Sites Occurs	Abundance	Distribution (N, ST, IH, S, U)
Presumed Extinct	Coleoptera	Buprestidae	*Melobasis empyria*	?	?	Rare	not collected since 1880's, distribution U
Presumed Extinct	Coleoptera	Carabidae	*Lacordairea fugax*	?	?	Rare	all records pre 1900, distribution U
Presumed Extinct	Coleoptera	Cerambycidae	*Elasmotena insulana*	1	1	Rare	not collected since 1880's, distribution U
Presumed Extinct	Coleoptera	Cerambycidae	*Somatidia pulchella*	1	1	Rare	not collected since 1910's, distribution U
Presumed Extinct	Coleoptera	Cleridae	*Cormodes darwini*	1	1	Rare	not collected since 1910's, distribution U
Presumed Extinct	Coleoptera	Curculionidae	*Howeotranes insularis*	2	1	Rare	not collected since 1920's, Summit Mt Gower
Presumed Extinct	Coleoptera	Curculionidae	*Hybomorphus melanosomus*	3	1	Rare	not recorded since 1889, distribution U
Presumed Extinct	Coleoptera	Curculionidae	*Leptopius etheridgei*	1	1	Rare	not collected since 1910's, distribution U
Presumed Extinct	Coleoptera	Mordellidae	*Tomoxia howensis*	1	1	Rare	not collected since 1880's, distribution U
Presumed Extinct	Coleoptera	Staphylinidae	*Cafius gigas*	2	1	Rare	not collected since 1910's, distribution U
Threatened Vulnerable	Coleoptera	Staphylinidae	*Scaphisoma glabripenne*	9	1	Locally Common	S
Threatened Vulnerable	Coleoptera	Anobiidae	*Mysticephala elliptica*	10	8	Uncommon	S, IH, ST
Threatened Vulnerable	Coleoptera	Anobiidae	*Mysticephala punctipennis*	5	5	Uncommon	N, ST,

Status	Order	Family	Genus Species	No. Specimens	No. Sites Occurs	Abundance	Distribution (N, ST, IH, S, U)
Threatened Vulnerable	Coleoptera	Anthribidae	*Mecocerinopis balli*	7	4	Uncommon	ST
Threatened Vulnerable	Coleoptera	Cerambycidae	*Somatidia olliffi*	5	2	Uncommon	S
Threatened Vulnerable	Coleoptera	Cerambycidae	*Xyloteles segrex*	8	4	Uncommon	S
Threatened Vulnerable	Coleoptera	Cerylonidae	*Mychocerus peckorum*	8	4	Uncommon	S, IH, ST
Threatened Vulnerable	Coleoptera	Curculionidae	*Aethreus cicatricosus*	7	2	Uncommon	ST
Threatened Vulnerable	Coleoptera	Curculionidae	*Ephrycinus pilistriatus*	4	4	Uncommon	N, S, ST
Threatened Vulnerable	Coleoptera	Curculionidae	*Orthorhinus lateralis*	9	7	Uncommon	S, ST (only 5 recent specimens)
Threatened Vulnerable	Coleoptera	Elateridae	*Ochosternus howensis*	8	7	Uncommon	ST & S
Threatened Vulnerable	Coleoptera	Oedomeridae	*Copidita interocularis*	5	2	Uncommon	S
Threatened Vulnerable	Coleoptera	Staphylinidae	*Heterothops castaneus*	9	4	Uncommon	S
Threatened Vulnerable	Coleoptera	Tenebrionidae	*Trachyscelis howensis*	7	2	Uncommon	ST
Threatened Vulnerable	Coleoptera	Aderidae	*Aderus conspicillatus*	5	3	Rare	S, IH, ST
Threatened Vulnerable	Coleoptera	Aderidae	*Aderus pilosicornis*	1	1	Rare	S
Threatened Vulnerable	Coleoptera	Anthribidae	*Howeanthribus bufo*	4	2	Rare	S
Threatened Vulnerable	Coleoptera	Buprestidae	*Maoraxia roseocuprea*	1	1	Rare	U

Status	Order	Family	Genus Species	No. Specimens	No. Sites Occurs	Abundance	Distribution (N, ST, IH, S, U)
Threatened Vulnerable	Coleoptera	Carabidae	*Mecyclothorax howei*	5	5	Rare	S
Threatened Vulnerable	Coleoptera	Carabidae	*Microferonia howei*	5	5	Rare	S
Threatened Vulnerable	Coleoptera	Carabidae	*Scopodes ovalis*	5	4	Rare	S
Threatened Vulnerable	Coleoptera	Cerambycidae	*Howea angulata*	2	2	Rare	U
Threatened Vulnerable	Coleoptera	Cerambycidae	*Xyloteles wollastoni*	7	2	Rare	ST, only 1 specimen since 1916
Threatened Vulnerable	Coleoptera	Curculionidae	*Leptopius mirabilis*	2	2	Rare	ST
Threatened Vulnerable	Coleoptera	Curculionidae	*Nechyrus cribratus*	1	1	Rare	N
Threatened Vulnerable	Coleoptera	Curculionidae	*Poropterus pictus*	1	1	Rare	ST
Threatened Vulnerable	Coleoptera	Histeridae	*Platylomalus cribratus*	1	1	Rare	U
Threatened Vulnerable	Coleoptera	Laemophloeidae	*Cryptolestes distorticornis*	2	1	Rare	U
Threatened Vulnerable	Coleoptera	Laemophloeidae	*Laemophloeus bimaculiflavus*	1	1	Rare	U
Threatened Vulnerable	Coleoptera	Languriidae	*Hapalips investigatus*	1	1	Rare	S
Threatened Vulnerable	Coleoptera	Melyridae	*Helcogaster litoralis*	6	3	Rare	N, Roach Is
Threatened Vulnerable	Coleoptera	Rhipiphoridae	*Nephrites helenae*	1	1	Rare	ST
Threatened Vulnerable	Coleoptera	Salpingidae	*Notosalpingus montanus*	1	1	Rare	N

Status	Order	Family	Genus Species	No. Specimens	No. Sites Occurs	Abundance	Distribution (N, ST, IH, S, U)
Threatened Vulnerable	Coleoptera	Scarabaeidae	*Platytomus pachypus*	2	2	Rare	ST
Threatened Vulnerable	Coleoptera	Sphindidae	*Aspidiphorus howensis*	4	3	Rare	N, ST,
Threatened Vulnerable	Coleoptera	Staphylinidae	*Pachycorynus megacephalus*	1	1	Rare	S
Threatened Vulnerable	Coleoptera	Tenebrionidae	*Promethis sterrha*	8	2	Rare	Now Blackburn Is. only, pre 1918 found on main island
Threatened At Risk	Coleoptera	Curculionidae	*Hoplocossonus lethargicus*	32	5	Common	ST

c) List of threatened spider (Araneae) species of Lord Howe Island.

'N' refers to the northern end of the island. 'ST' refers to the settlement. 'IH' refers to the Intermediate Hill area. 'S' refers to the southern end of the island. 'U' refers to unknown distribution.

Status	Order	Family	Genus Species	No. Specimens	Abundance	Distribution & Comments
Threatened Vulnerable	Araneae	Clubionidae	*Clubiona* sp. (AM sp. 4)	16	Locally Common	S, Only altitudes over ca 300m
Threatened Vulnerable	Araneae	Micropholcommatidae	*Micropholcomma* sp.	13	Locally Common	Mt Gower summit area only
Threatened Vulnerable	Araneae	Corinnidae	unidentified sp.	6	Uncommon	N and ST
Threatened Vulnerable	Araneae	Cyatholipidae	*Lordhowea nesiota*	4+ types (QM)	Uncommon	Mainly S
Threatened Vulnerable	Araneae	Linyphiidae	*Bathyphantes rainbowi*	7 + types (SAM)	Uncommon	Scattered; recent records only from Roach Island & Ball's Pyramid
Threatened Vulnerable	Araneae	Micropholcommatidae	*Parapua* sp.	5 + unregistered	Uncommon	Mt Gower & Mt Lidgbird only
Threatened Vulnerable	Araneae	Mimetidae	*Australomimetus annulipes*	6	Uncommon	Scattered – All records below 120m
Threatened Vulnerable	Araneae	Pholcidae	*Spermophora* sp.	5	Uncommon	Scattered
Threatened Vulnerable	Araneae	Salticidae	*Pseudomaevia cognata*	6 adult & 6 juv. + type (SAM)	Uncommon	Mainly S
Threatened Vulnerable	Araneae	Theridiidae	*Achaearanea nigrodecorata*	9 + types (SAM)	Uncommon	Mt Gower summit only
Threatened Vulnerable	Araneae	Zodariidae	*Storena colossea*	5 + cotype (SAM)	Uncommon	Scattered
Threatened Vulnerable	Araneae	Zoridae	*Argoctenus vittatus*	6 + cotype (SAM)	Uncommon	Scattered
Threatened Vulnerable	Araneae	Amaurobioidea	unidentified sp. (AM sp. 2)	2	Rare	Mt Gower summit only

Status	Order	Family	Genus Species	No. Specimens	Abundance	Distribution & Comments
Threatened Vulnerable	Araneae	Araneidae	*Cyclosa* sp.(AM sp.12)	5	Rare	No recent records, all from S half of island
Threatened Vulnerable	Araneae	Araneidae	*Archemorus cicatrosus*	6	Rare	only 6 juveniles recorded since 1915
Threatened Vulnerable	Araneae	Araneidae	*Araneus rainbowi*	2?	Rare	No definite record since types (1915)
Threatened Vulnerable	Araneae	Desidae	*Forsterina* sp.gp., (AM sp.4)	1	Rare	Unknown – single recent specimen
Threatened Vulnerable	Araneae	Desidae	*Forsterina* sp.gp (ecribellate) (AM sp.7)	1	Rare	Unknown – single specimen from the 1970's
Threatened Vulnerable	Araneae	Mimetidae	*Australomimetus* spp. (AM sp.1 & ?sp.3)	5	Rare	Rare, all sites below 20m
Threatened Vulnerable	Araneae	Oonopidae	*Oonops leai*	3 + type (SAM)	Rare	Rare (only two adult records, one on Ball's Pyramid)
Threatened Vulnerable	Araneae	Segestriidae	*Ariandna montana*	1 adult, 10 juves + type (SAM)	Rare	Either rare or too difficult to collect
Threatened Vulnerable	Araneae	Sparassidae	*Cheiracanthium pallidum*	3 + type (SAM)	Rare	N & ST, all below 50m
Threatened Vulnerable	Araneae	Sparassidae	*Neosparassus haemorrhoidalis*	4	Rare	Probably lowlands only
Threatened Vulnerable	Araneae	Theridiidae	*Crustulina* sp.	2	Rare	Scattered
Threatened Vulnerable	Araneae	Theridiidae	*Euryopis* sp. (AM sp. 9)	2	Rare	Recorded from Mt Lidgbird only
Threatened Vulnerable	Araneae	Thomisidae	*?Stephanopis* (AM sp. 7)	2	Rare	Mt Gower summit only
Threatened Vulnerable	Araneae	Uloboridae	Unidentified sp.	1 + unregistered	Rare	Unknown

Status	Order	Family	Genus Species	No. Specimens	Abundance	Distribution & Comments
Threatened At Risk	Araneae	Mysmenidae	Unidentified sp. (AM sp. 2)	20	Locally Common	Mt Gower summit area only
Threatened At Risk	Araneae	Salticidae	*Tara gratiosa*	22 + types (SAM)	Locally common	S Only – Mt Gower summit
Threatened At Risk	Araneae	Tetragnathidae	*Nanometa* sp.	22	Locally Common	Mt Gower summit only

Appendix 3 Threat tables for flora, vegetation communities, and vertebrate and invertebrate fauna.

Threats are indicated across the top row, with species or communities on the left hand column. The impact of each threat is estimated with a value between 0 to 100, where 100 means the threat does not impact upon the species, and 0 means the threat completely removes the habitat of the species. Where habitat is divided into two qualities, a value for each particular quality is assigned and the threat value is proportionalised. A legend of the threat codes is provided at the end of this table.

a) Flora threat table

Species	Priority	No threat	Thr_01	Thr_02	Thr_03	Thr_04	Thr_05	Thr_06	Thr_07	Thr_08	Thr_09	Thr_10	Thr_11	Thr_12	Thr_13	Thr_14	Thr_15	Thr_16	Thr_17	Thr_18	Thr_19	Thr_20	Thr_21	Thr_22	Thr_23	Thr_24	Thr_25	Thr_26	Thr_27	Thr_28	Thr_29	Thr_30	Thr_31
Alyxia lindii	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Alyxia squamulosa - Class 1	2	100	100	100	100	100	100	100	100	90	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	80	100	100	90	100	90	20	100
Alyxia squamulosa - Class 2	2	20	20	20	20	20	20	20	20	18	20	20	20	20	20	18	20	100	20	20	20	20	20	20	20	16	20	20	18	20	18	4	20
Apium prostratum ssp. *howense*	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	30	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100
Asplenium goudeyi	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Asplenium milnei	2	100	100	100	100	100	100	0	100	100	100	95	100	100	100	50	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	0
Asplenium pteridoides - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Asplenium pteridoides - Class 2	2	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	100	50	50	50	50	50	50	50	50	50	50	50	50	50	10	50
Asplenium surrogatum	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Atractocarpus stipularis	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	80	100
Blechnum contiguum	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Blechnum fullagarii	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100

Blechnum geniculatum	2	100	100	100	100	100	100	100	100	80	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	5	100
Blechum howeanum	2	100	100	100	100	100	100	100	100	40	100	100	100	100	100	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Boehmeria calophleba - Class 1	2	100	100	100	100	100	60	100	100	60	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Boehmeria calophleba - Class 2	2	30	30	30	30	30	18	30	30	18	30	30	30	30	30	20	30	100	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Brachyscome segmentosa	2	100	100	100	100	100	100	100	100	20	100	100	100	100	100	20	100	100	100	100	100	100	100	100	100	100	100	100	30	100	100	100	100
Caesalpinia bonduc	3	100	100	100	100	100	100	0	100	100	100	100	100	100	100	15	15	100	100	100	100	100	100	100	100	100	100	100	100	100	100	5	0
Calystegia affinis	4	100	100	100	100	100	100	0	100	100	100	80	100	100	70	30	30	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	0
Carmichaelia exsul	4	100	100	100	100	100	30	100	100	20	100	100	100	100	100	20	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100
Cassinia tenuifolia	2	100	100	100	100	100	100	0	100	100	100	100	100	100	100	40	100	100	100	100	100	100	100	100	60	100	100	100	100	100	90	100	0
Cassinia tenuifolia	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Celtis conferta	2	100	100	100	100	100	100	0	100	100	100	90	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
Cephalomanes bauerianum	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100
Chamaesyce psammogeton	3	100	100	100	100	100	100	50	100	100	100	100	100	100	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	5	50
Chionanthus quadristamineus - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	30	100	100	100	100	100	100	100	100	100	20	100	100	100	100	100	100	100
Chionanthus quadristamineus - Class 2	2	30	30	30	30	30	30	30	30	30	30	30	30	30	30	9	30	100	30	30	30	30	30	30	30	6	30	30	30	30	30	30	30
Chionochloa howensis	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Coprosma huttoniana	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Coprosma inopinata	4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	5	100
Coprosma lanceolaris	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Coprosma prisca	2	100	100	100	100	100	100	0	100	100	100	100	100	100	100	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
Coprosma putida	2	100	100	100	100	100	100	0	100	100	100	100	100	100	100	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
Coprosma sp. nov	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Corokia carpodetoides	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	20	100

Cryptocarya gregsonii - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	50	100
Cryptocarya gregsonii - Class 2	2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	100	40	40	40	40	40	40	40	36	40	40	40	40	40	20	40
Cyathea brevipinna	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Cyathea howeana	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Cyathea macarthurii	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Cyathea robusta	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Dendrobium macropus ssp. *howeanum*	2	100	100	100	100	100	100	0	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
Dendrobium moorei - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	90	100
Dendrobium moorei - Class 2	2	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	100	30	30	30	30	30	30	30	30	30	30	30	28.5	30	27	30
Dianella intermedia	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Dietes robinsoniana	2	100	100	100	100	100	100	100	100	70	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	60	100	100	70	100	100	100	100
Diplazium melanochlamys	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Dracophyllum fitzgeraldii	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	50	100
Drypetes deplanchei ssp. *affinis* - Class 1	2	100	100	100	100	100	100	0	100	100	100	80	100	100	100	30	100	100	100	100	100	100	100	100	100	80	100	100	100	100	95	100	0
Drypetes deplanchei ssp. *affinis* - Class 2	2	30	30	30	30	30	30	0	30	30	30	24	30	30	30	9	30	100	30	30	30	30	30	30	30	24	30	30	30	30	28.5	30	0
Dysoxylum pachyphyllum	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Elaeocarpus costatus	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	10	80	100	100	100	100	50	100
Elatostema grande	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Exocarpus homalocladus	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	10	80	100	100	100	100	100	100
Ficus macrophylla ssp. *columnaris* - Class 1	2	100	100	100	100	100	100	0	100	100	100	0	100	100	100	90	100	100	100	100	100	100	100	100	100	100	95	100	100	100	95	100	0
Ficus macrophylla ssp. columnaris - Class 2	2	30	30	30	30	30	30	0	30	30	30	0	30	30	30	27	30	100	30	30	30	30	30	30	30	28.5	30	30	30	30	28.5	30	0

Gahnia howeana syn. *G. xanthocarpa*	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100	80	100
Geniostoma huttonii	4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	20	100
Geniostoma petiolosum	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100
Gonocarpus sp	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	100
Grammitis diminuta	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Grammitis nudicarpa	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Grammitis watsii	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Guoia coriacea	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100
Hedescepe canterburyana - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100	100	100	95	100	50	100
Hedescepe canterburyana - Class 2	2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	100	40	40	40	40	40	40	40	8	40	40	40	38	40	20	40
Howea belmoreana - Class 1	2	100	100	100	100	100	100	0	100	100	100	90	100	100	100	60	100	100	100	100	100	100	100	100	100	40	100	100	100	85	20	100	0
Howea belmoreana - Class 2	2	40	40	40	40	40	40	0	40	40	40	36	40	40	40	24	40	100	40	40	40	40	40	40	40	16	40	40	40	34	8	40	0
Howea forsteriana - Class 1	2	100	100	100	100	100	100	0	100	100	100	90	100	100	100	60	100	100	100	100	100	100	100	100	100	40	100	100	100	80	20	100	0
Howea forsteriana - Class 2	2	40	40	40	40	40	40	0	40	40	40	36	40	40	40	24	40	100	40	40	40	40	40	40	40	16	40	40	40	32	8	40	0
Hymenophyllum howense	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10	100
Hymenophyllum moorei	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10	100
Korthalsella emersa	2	100	100	100	100	100	100	0	100	100	100	80	100	100	100	70	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	0
Lagunaria patersonia - Class 1	2	100	100	100	100	100	100	0	100	100	100	50	100	100	100	20	100	100	100	100	100	100	100	100	100	70	100	100	100	100	0	100	0
Lagunaria patersonia - Class 2	2	50	50	50	50	50	50	0	50	50	50	25	50	50	50	10	50	100	50	50	50	50	50	50	50	35	50	50	50	50	0	50	0
Lastreopsis nephrodioides	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Lepidium howei-insulae	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	80	100
Lepidium nesophilum	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Lepidorrhachis mooreana	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	5	100	100	100	95	100	50	100
Leptopteris moorei	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Leptospermum polygalifolium ssp. *howense* - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	10	100	100	100	100	100	100	50	100
Leptospermum polygalifolium ssp. *Howense* - Class 2	2	20	20	20	20	20	20	20	20	20	20	20	20	20	20	16	20	100	20	20	20	20	20	20	2	20	20	20	20	20	20	10	20
Lordhowea insularis	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100
Luzula longiflora	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Machaerina insularis	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Macropiper hooglandii - Class *1*	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100
Macropiper hooglandii - Class 2	2	30	30	30	30	30	30	30	30	30	30	30	30	30	30	18	30	100	30	30	30	30	30	30	30	30	30	30	30	30	30	24	30
Marattia howeana - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Marattia howeana - Class 2	2	50	50	50	50	50	50	0	50	50	50	50	50	50	50	50	50	100	50	50	50	50	50	50	50	50	50	50	50	50	50	10	0
Melaleuca howeana - Class 1	2	100	100	100	100	100	100	0	100	100	100	100	100	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
Melaleuca howeana - Class 2	2	50	50	50	50	50	50	50	50	50	50	50	50	50	50	47.5	50	100	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Melicope contermina	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Melicope polybotrya	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Melicytus novae-zelandieae ssp. *centurionis*	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Metrosideros nervulosa	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	98	100	80	100
Metrosideros sclerocarpa	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	0	100	100	100	100	98	100	100	100
Negria rhabdothamnoides - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100

Negria rhabdothamnoides - Class 2	2	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	100	10	10	10	10	10	10	10	10	10	10	10	10	8	10
Olearia ballii	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100
Olearia elliptica ssp. *praetermissa*	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Olearia mooneyi	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Pandanus forsteri - Class 1	2	100	100	100	100	100	100	0	100	100	100	40	100	100	100	70	100	100	100	100	100	100	100	100	100	70	100	100	100	98	100	90	0
Pandanus forsteri - Class 2	2	30	30	30	30	30	30	0	30	30	30	12	30	30	30	21	30	100	30	30	30	30	30	30	30	21	30	30	30	29.4	30	100	0
Passiflora herbertiana ssp.insula-howei	2	100	100	100	100	100	100	0	100	100	100	100	100	100	100	20	100	100	100	100	100	100	100	100	100	20	100	100	100	100	100	100	0
Phymatosorus pustulatus ssp. *howensis*	2	100	100	100	100	100	100	0	100	100	100	95	100	100	100	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	0
Pimelea congesta	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	10	100	100	100	100	100	100	100
Pittosporum erioloma	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	50	100
Plantago hedleyi	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Plectorrhiza erecta - Class 1	2	100	100	100	5	100	100	0	100	100	100	100	100	100	100	5	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	0
Plectorrhiza erecta - Class 2	2	60	60	60	3	60	60	0	60	60	60	60	60	60	60	3	60	100	60	60	60	60	60	60	60	60	60	60	60	54	60	60	0
Polystichum moorei	4	100	100	100	100	100	100	0	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10	0
Polystichum whiteleggei	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Psychotria carronis	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100
Pteris microptera	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Rapanea mccomishii	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Rapanea myrtillina	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	50	100
Rapanea platystigma	2	100	100	100	100	100	100	0	100	100	100	95	100	100	100	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	95	100	0
Senecio howeanus	2	100	100	100	100	100	50	100	100	30	100	100	100	100	100	30	90	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100
Senecio pauciradiatus	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Sophora howinsula	2	100	100	100	100	100	100	0	100	100	100	95	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	0

Stephania japonica var *timoriensis*	2	100	100	100	100	100	100	0	100	100	100	95	100	100	50	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	95	100	0
Symplocos candelabrum	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100
Syzygium fullargarii (syn. *Cleistocalyx fullargarii*) - Class 1	2	100	100	100	100	100	100	0	100	100	100	60	100	100	100	30	100	100	100	100	100	100	100	100	0	80	100	100	100	100	100	100	0
Syzygium fullargarii (syn. *Cleistocalyx fullargarii*) - Class 2	2	30	30	30	30	30	30	0	30	30	30	18	30	30	30	9	30	100	30	30	30	30	30	30	0	24	30	30	30	30	30	30	0
Trophis scandens ssp. *megacarpa*	2	100	100	100	100	100	100	0	100	100	100	95	100	100	100	90	100	100	100	100	100	100	100	100	100	80	100	100	100	100	95	100	0
Uncinia debilior	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Wahlenbergia insulae-howei	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Westringia viminalis	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Xylosma maidenii	2	100	100	100	100	100	100	0	100	100	100	95	100	100	100	70	100	100	100	100	100	100	100	100	100	80	100	100	100	100	95	100	0
Xylosma parvifolium - Class 1	4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	20	100
Xylosma parvifolium - Class 2	4	40	40	40	40	40	40	40	40	40	40	40	40	40	40	32	40	100	40	40	40	40	40	40	40	40	40	40	40	40	32	8	40
Zygogynum howeanum (syn. *Bubbia howeanum*) - Class 1	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100	100	100	100	100	100	80	100
Zygogynum howeanum (syn. *Bubbia howeanum*) - Class 2	2	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	100	30	30	30	30	30	30	6	30	30	30	30	30	30	24	30

(b) Vegetation community Threat Table

Species	Priority	No Threat	Thr_01	Thr_02	Thr_03	Thr_04	Thr_05	Thr_06	Thr_07	Thr_08	Thr_09	Thr_10	Thr_11	Thr_12	Thr_13	Thr_14	Thr_15	Thr_16	Thr_17	Thr_18	Thr_19	Thr_20	Thr_21	Thr_22	Thr_23	Thr_24	Thr_25	Thr_26	Thr_27	Thr_28	Thr_29	Thr_30	Thr_31
Aegiceras corniculatum	3	100	100	100	100	100	100	0	100	100	100	100	100	100	100	30	100	100	100	100	100	100	100	100	100	100	50	100	100	30	20	0
Alyxia squamulosa - Coprosma inopinata	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Atriplex cinerea	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Avicennia marina var. *australasica*	3	100	100	100	100	100	100	0	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	30	20	0
Basalt boulder beach	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Boehmaria calcophleba - Macropiper excelsum var. *psittacorum*	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Bubbia howeana - dracophyllum fitzgeraldii	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100	100	100	100	100	100	20	100
Calcarenite/coral boulder beach	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Cassinia tenuifolia	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Cassinia tenuifolia/Melaleuca howeana	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Cassinia tenuifolia/Poa poiformis	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Chionanthus quadristamineus	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Chionanthus quadristamineus/Howea belmoreana	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100
Cleistocalyx fullageri	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Cliffs	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Coral sand and beach	3	100	100	100	100	100	100	0	100	100	100	100	100	100	100	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	20	0
Cryptocarya gregsonii	3	100	100	100	100	100	100	100	100	60	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Cyperus lucidus	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Dodonaea viscosa	2	100	100	100	100	100	100	0	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	0
Dracophyllum fitzgeraldii - Metrosideros nervulosa	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	
Dracophyllum fitzgeraldii - Metrosideros nervulosa/Lowland Mixed Forest/*Drypetes australasica - Cry*	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	
Drypetes australasica - Cryptocarya triplinervis (calcarenite variant)	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	50	100
Drypetes australasica - Cryptocarya triplinervis (exposed variant)	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100
Drypetes australasica - Cryptocarya triplinervis on Coral	2	100	100	100	100	100	100	0	100	100	100	80	100	100	100	60	100	100	100	100	100	100	100	100	100	70	100	90	100	100	60	80	0
Drypetes australasica - Cryptocarya triplinervis on Volcanics	2	100	100	100	100	100	100	0	100	100	100	80	100	100	100	60	100	100	100	100	100	100	100	100	100	70	100	100	100	100	95	100	0
Hedyscepe canterburyana	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100
Hedyscepe canterburyana/Boehmaria calcophleba - Macropiper excelsum var. *psittacorum*	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	20	100
Howea belmoreana	2	100	100	100	100	100	100	0	100	100	100	90	100	100	100	70	100	100	100	100	100	100	100	100	100	70	100	100	100	95	50	100	0
Howea forsterana on Coral	3	100	100	100	100	100	100	0	100	100	100	90	100	100	100	70	100	100	100	100	100	100	100	100	100	50	100	100	100	90	50	100	0
Howea forsterana on Volcanics	2	100	100	100	100	100	100	0	100	100	100	90	100	100	100	70	100	100	100	100	100	100	100	100	100	50	100	100	100	90	50	100	0

Howea forsterana/Chionanthus quadristamineus	2	100	100	100	100	100	100	0	100	100	100	90	100	100	100	70	100	100	100	100	100	100	100	100	100	50	100	100	100	90	50	100	0
Howea forsterana/Howea belmoreana	2	100	100	100	100	100	100	0	100	100	100	90	100	100	100	70	100	100	100	100	100	100	100	100	100	50	100	100	100	90	50	100	0
Ipomoea cairica - Carpobrotus glaucescens	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Lagunaria patersonia	4	100	100	100	100	100	100	0	100	100	100	0	100	100	100	0	100	100	100	100	100	100	100	100	60	100	100	60	100	100	0	10	0
Lowland Freshwater Community	3	100	100	100	100	100	100	10	100	100	100	100	100	100	100	20	100	100	100	100	100	100	100	100	100	100	100	30	100	100	20	10	10
Lowland Mixed Forest	3	100	70	100	100	100	100	0	50	70	100	80	100	100	100	50	90	100	100	100	100	100	100	100	100	70	100	100	100	100	80	100	0
Melaleuca howeana	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Mixed Fern & Herb	2	100	100	100	100	100	80	100	100	60	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100
Mixed Fern & Herb/*Melaleuca howeana*	2	100	100	100	100	100	80	100	100	60	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100
Padanus forsteri	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100	100
Poa poiformis	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
UNTYPED	1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Upland Freshwater Community	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10	100
Waterfall Community	2	100	100	100	100	100	100	100	100	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	10	100

(c) Vertebrate Fauna Threat Table

Species	Priority	No Threat	Thr_01	Thr_02	Thr_03	Thr_04	Thr_05	Thr_06	Thr_07	Thr_08	Thr_09	Thr_10	Thr_11	Thr_12	Thr_13	Thr_14	Thr_15	Thr_16	Thr_17	Thr_18	Thr_19	Thr_20	Thr_21	Thr_22	Thr_23	Thr_24	Thr_25	Thr_26	Thr_27	Thr_28	Thr_29	Thr_30	Thr_31
Sea birds:																																	
Pacific Golden Plover	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Brown Noddy	1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	100	100	100	95	100	100	100	100	100	100	100
Flesh-footed Shearwater	2	100	100	100	100	100	100	5	100	100	95	80	100	100	100	100	90	100	100	100	100	100	100	100	100	95	100	100	100	100	80	100	5
Grey Ternlet	1	100	100	100	100	100	100	100	100	100	100	100	95	100	100	100	100	100	100	98	100	100	100	100	100	95	100	100	100	100	100	100	100
Kermadec Petrel	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	50	100	100	100	100	100	100	100
Little Shearwater	2	100	100	100	100	100	100	90	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	25	100	100	100	100	100	100	90
Masked Booby	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	100	100	100	0	100	100	100
Providence Petrel	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Providence Petrel	2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	100	40	40	40	40	40	40	40	40	40	40	40	40	40	100	40
Red-tailed Tropicbird	2	100	95	100	100	100	100	100	100	100	100	100	100	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Sooty Tern	2	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	99	99	99	100	100	100	100	95	100	100	100	100	95	100	100
Wedge-tailed Shearwater	1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	30	100	100	100	100	100	100	100	100	95	100	100	100	100	95	100	100
White-bellied Storm Petrel	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100	100
White Tern	1	100	100	100	100	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	80	100	100	100	100	100	100	100	100	95
Black-winged Petrel	1	100	100	100	100	100	100	90	80	100	100	100	100	100	100	80	100	100	100	100	80	100	100	100	100	95	100	100	100	100	100	100	90
Non-sea bird Vertebrates:																																	
Large Forest Bat	1	100	100	100	100	100	100	50	100	100	100	90	100	100	95	100	100	100	100	100	95	100	100	100	100	100	100	100	100	100	80	100	50
Lord Howe Gecko	2	100	100	100	100	100	100	20	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	40	95	100	100	100	80	100	20
Lord Howe Gecko	2	50	50	50	50	50	50	10	50	50	50	45	50	50	50	50	50	50	50	50	50	50	50	50	50	20	47.5	50	50	50	40	100	10
Lord Howe Skink	2	100	100	100	100	100	100	20	100	100	100	90	100	100	100	100	100	100	100	100	100	100	100	100	100	40	95	100	100	100	80	100	20

Lord Howe Skink	2	50	50	50	50	50	50	10	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	20	47.5	50	50	50	40	100	10
Long-finned Eel	1	100	100	100	100	100	100	20	100	100	100	100	100	100	100	100	100	100	98	100	100	100	100	100	100	100	50	100	100	20	100	20
Short-finned Eel	1	100	100	100	100	100	100	20	100	100	100	100	100	100	100	100	100	100	98	100	100	100	100	100	100	100	50	100	100	20	100	20
Common Jollytail	1	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	5	100	100	5	100	0
Bar-tailed Godwit	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Double-banded Plover	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Eastern Curlew	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Emerald Ground-dove	1	100	100	100	100	100	100	0	100	100	98	90	100	100	50	30	100	95	100	100	98	100	100	100	100	100	50	100	100	80	100	0
Emerald Ground-dove	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
Grey-tailed Tattler	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Japanese Snipe	1	100	100	100	100	100	100	100	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100
Lord Howe Currawong	3	100	100	100	100	100	100	10	100	100	100	100	100	100	50	100	100	100	95	100	95	100	100	100	100	100	100	100	100	100	100	10
Lord Howe Golden Whistler	3	100	100	100	100	100	100	0	100	100	100	90	100	100	50	80	100	100	100	100	100	100	98	100	100	100	100	100	100	90	100	0
Lord Howe Silvereye	3	100	100	100	100	100	100	0	100	100	100	90	100	100	50	80	100	100	100	100	100	100	98	100	100	100	100	100	100	90	100	0
Lord Howe Woodhen	4	100	100	80	100	80	100	10	100	100	98	80	100	100	100	30	100	95	100	100	95	100	100	100	100	95	100	100	100	80	100	10
Lord Howe Woodhen	4	10	10	8	10	8	10	1	10	10	9.8	8	10	10	10	3	10	9.5	10	10	9.5	10	10	10	10	9.5	10	10	10	10	8	100	1
Red Knot	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Red-necked Stint	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Ruddy Turnstone	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Sharp-tailed Sandpiper	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Wandering Tattler	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100
Whimbrel	1	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100

(d) Invertebrate groups threat table

Species	Priority	No Threat	T_01	T_02	T_03	T_04	T_05	T_06	T_07	T_08	T_09	T_10	T_11	T_12	T_13	T_14	T_15	T_16	T_17	T_18	T_19	T_20	T_21	T_22	T_23	T_24	T_25	T_26	T_27	T_28	T_29	T_30	Thr_31
Ants	1	100	81	81	100	100	100	6	81	100	100	81	100	100	24	81	81	100	100	100	100	81	3	100	100	100	81	100	100	100	96	24	6
Beetles	1	100	81	81	100	100	100	13	81	100	100	81	100	100	24	81	81	100	100	100	100	81	13	100	100	6	81	81	100	6	96	24	13
Spiders	1	100	81	81	100	100	100	13	81	100	100	81	100	100	24	81	81	100	100	100	100	81	13	100	100	100	81	100	100	100	96	24	13
Snails	1	100	81	81	100	100	100	3	81	100	100	81	100	100	24	81	81	100	100	100	100	81	3	100	100	3	81	81	100	66	96	24	3

(e) Threatened Invertebrates threat table

Species	Priority	No Threat	Thr_01	Thr_02	Thr_03	Thr_04	Thr_05	Thr_06	Thr_07	Thr_08	Thr_09	Thr_10	Thr_11	Thr_12	Thr_13	Thr_14	Thr_15	Thr_16	Thr_17	Thr_18	Thr_19	Thr_20	Thr_21	Thr_22	Thr_23	Thr_24	Thr_25	Thr_26	Thr_27	Thr_28	Thr_29	Thr_30	Thr_31
Lord Howe Earthworm	4	100	100	95	100	100	100	100	100	100	100	100	100	100	95	95	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	100
Lord Howe Phasmid	4	100	100	100	100	100	100	0	100	100	100	95	100	50	100	95	100	100	100	100	100	100	100	100	100	0	50	100	100	0	100	50	0
Lord Howe Phasmid	4	50	50	50	50	50	50	0	50	50	50	47.5	50	25	50	47.5	50	100	50	50	50	50	50	50	50	0	25	50	50	0	50	25	0
Lord Howe Cockroach	4	100	100	100	100	100	100	0	100	100	100	100	100	100	100	10	10	100	100	100	100	100	95	100	100	0	100	100	100	100	100	20	0
Lord Howe Cockroach	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lord Howe Placostylus	4	100	100	70	100	100	100	0	100	100	100	20	100	100	100	30	100	100	100	100	100	100	100	100	100	10	100	100	100	70	50	50	0
Lord Howe Placostylus	4	25	25	17.5	25	25	25	0	25	25	25	5	25	25	25	7.5	25	100	25	25	25	25	25	25	25	2.5	25	25	25	17.5	12.5	12.5	0

Threat codes:

Index	Description
Thr_01	Weed invasion - Bitou Bush
Thr_02	Competition and predation from Blackbird &Songthrush
Thr_03	Weed invasion- Bridal Creeper
Thr_04	Competition and predation from Buff-banded Rail
Thr_05	Weed invasion- Cherry Guava
Thr_06	Habitat clearing and modification
Thr_07	Weed invasion - Asparagus Fern
Thr_08	Weed invasion- Crofton Weed
Thr_09	Predation by Dogs
Thr_10	Edge Effects/Vegetation Dieback
Thr_11	Competition from introduced Pigeon
Thr_12	Competition and predation from introduced frog
Thr_13	Introduced invertebrates
Thr_14	Weed invasion - general (merged)
Thr_15	Weed invasion- Introduced grasses
Thr_16	Herbicide Use
Thr_17	Human Interactions
Thr_18	Predation from Introduced Kestrel
Thr_19	Competition and Predation from Introduced Owl
Thr_20	Weed Invasion - Norfolk Island Pine
Thr_21	Competition and Predation from Other Introduced Species
Thr_22	Competition and Predation from LHI Currawong
Thr_23	Impacts from Phytopthora
Thr_24	Predation by the Rodents
Thr_25	Competition and Predation from Introduced Skink
Thr_26	Groundwater Pollution
Thr_27	Weed invasion - Tiger Lily
Thr_28	Collecting (plants and eggs) and Traditional Activities
Thr_29	Trampling Browsing and Grazing
Thr_30	Climate Change
Thr_31	Future Clearing

Appendix 4 Biodiversity Forecasting Tool

4.1 Methods

Introduction

The LHI BMP aims to provide an overview of the LHIG's biodiversity, threats and future management priorities. To achieve this aim, the LHI BMP considered a large number of priority species and their associated threats to identify areas of particular conservation significance (biodiversity "hot spot" areas and areas where threats are causing the most harm to biodiversity), as well as considering individual species requirements.

This approach allowed for landscape scale management actions to be applied where threats affect large numbers of species, while still providing specific actions to manage individual species where warranted.

Biodiversity Forecasting Toolkit

The Biodiversity Forecasting Toolkit (BFT) is a Geographical Information System (GIS) decision support tool (DEC 2004). It has been developed during the past three to four years by the DEC's GIS Research and Development Unit. Biodiversity forecasting focuses on estimating the likely persistence of overall biodiversity. Outcomes from the BFT are modelled using the best available data on the extent and condition of vegetation types and individual species, coupled with data and expert knowledge on various threats and ecological processes. This approach is well suited to landscape-scale planning involving multiple management scenarios.

The LHI BMP is the first time that GIS biodiversity forecasting has been used for regional species recovery planning. The result is an integrated multi-species landscape-level plan that is considered to be a model for future regional multi-species recovery plans. In the case of the LHI BMP, the BFT assists with prioritising conservation management actions and assessing the potential effectiveness of management scenarios in terms of biodiversity outcomes.

The LHI BMP considered a large number of species and vegetation communities individually, including their unique response to habitat, threats, and management. The BFT approach used the quantity and quality of habitat and the degree of threat operating on the habitat for each species or vegetation community, to infer the likelihood of species persistence. More complex biological interactions, such as population dynamics and the spatial configuration of habitat were not included in the modelling approach.

Methodology

Due to the strong linkage between species viability and the occurrence of suitable habitat, the amount of habitat of each species is often used as a surrogate for species persistence where detailed population data is unknown. For flora, vertebrate fauna, threatened invertebrate fauna and invertebrate fauna groups, the data used for the LHI BMP consisted of mapped distributions of threatened and priority species and species groups based on habitat across the LHIG, which was divided into various quality classes where applicable.

Although the LHIG is relatively well-studied in terms of its flora and fauna, little of this information was available in a spatial (mapped) form suitable for GIS processing.

To produce suitable GIS models, habitat and threat data were derived using information provided by a wide range of people with expertise in the taxa of the LHIG. The original and current habitat area for each species was mapped (modelled) using the best available knowledge and information.

Patterns of threatening processes

Representing threats in a spatial manner allows for identification of areas that are subject to multiple threats, or conversely, identification of areas that are subject to fewer threats.

Threat information was generated using expert knowledge and available spatial data. For example, several prominent weed species had been mapped and their impact on various habitats

estimated. An example of a threat map is given in Figure A. This shows the distribution of the weed Cherry Guava, classified into two categories of high density and low density. Other threats, such as climate change, were derived by delineating areas that are most likely to be susceptible to this threat. This approach is limited to threats where the spatial distribution could be mapped or estimated (Table 1). Threats that could not be spatially represented, such as long-line fishing, were assessed separately.

Threat ranking

Different threatening processes have different levels of impact on the biodiversity values of the LHIG. Some threats constitute serious problems for the biodiversity of the LHIG, while others represent minor impacts.

The predicted impact of individual threats were ranked by estimating the level of reduction of habitat quantity and quality for each species, species group or vegetation community.

Table 1. Spatial threat models used in the LHI BMP

Threats associated with weed invasion	**Threats associated with pest animals**
Distribution of weed invasion (general)	Predation by the Ship Rat
Bitou Bush distribution	Competition and predation from the feral Pigeon
Bridal Creeper distribution	Competition and predation from Blackbird and Songthrush
Cherry Guava distribution	Competition and predation from Buff-banded Rail
Climbing Asparagus distribution	Competition and predation from introduced Bleating Tree Frog
Crofton Weed distribution	Competition and predation by introduced House Mouse
Ground Asparagus distribution	Predation by domestic Dogs
Lantana distribution	Competition and predation by domestic Chicken
Madeira Vine distribution	Competition and predation by other introduced species
Norfolk Island Pine distribution	Competition and predation by introduced ants
Ochna distribution	Competition and predation by introduced beetles
Pittosporum distribution	Competition and predation by introduced snails
Tiger Lily distribution	Competition and predation by introduced spiders
Areas susceptible to invasion by exotic grasses	Competition and predation by introduced invertebrates - general
Areas at risk from use of herbicide	Competition and predation from the Masked Owl
Miscellaneous threats	Competition and predation from introduced Skink
Current *Phytophthora* distribution	Predation from Australian Kestrel
Potential distribution of *Phytophthora*	**Threats from human impacts**
Vegetation dieback	Habitat clearing and modification
Areas at threat from landslip	Trampling, browsing and grazing
Potential distribution of introduced pests, weeds and disease	Areas most at risk from impacts of humans
Areas most at risk from climate change	Areas most at risk from illegal collection
Threat of groundwater pollution	Collecting (plants and sea bird eggs) and other traditional activities

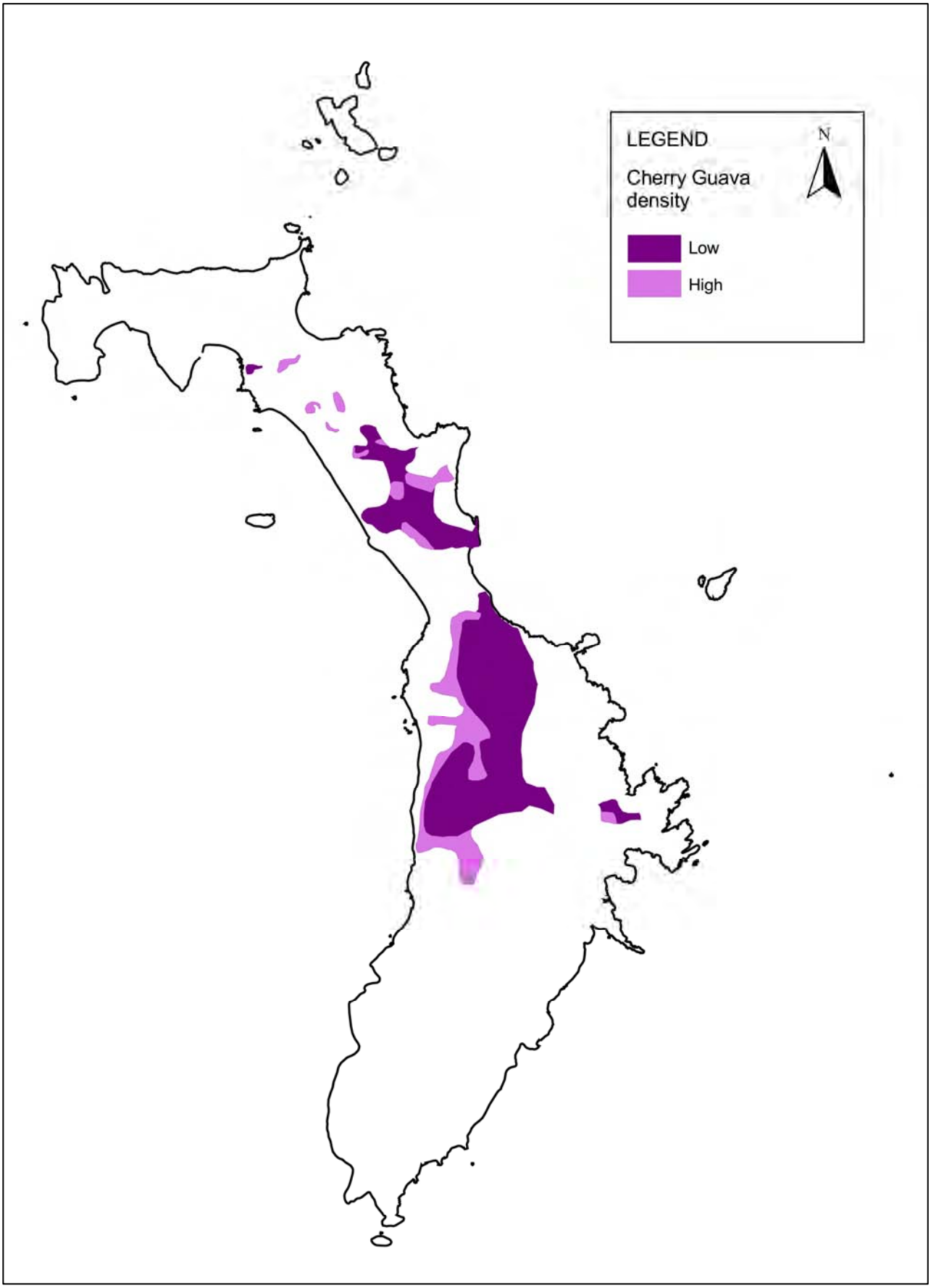

Figure A. An example of a threat layer input for the Lord Howe Island Biodiversity Management Plan - the distribution of Cherry Guava on Lord Howe Island (from Smith 2002)

Derivation of future habitat

An overview of the modelling methodology is outlined in Figure B. This is based on the original habitat extent of a species or vegetation community, and the threats that are acting upon each species or community. The future habitat extent is modelled based on the past habitat extent, threats and the estimated effectiveness of management actions to address threats. The future habitat extent is the habitat that is predicted to remain after the impacts of threats have occurred. Priorities for management action are based on the relative improvements to biodiversity achieved by treating threats.

Limitations of the methodology include its inability to allow for the partial influence of threats that operate over time, nor does it take into account the potential interactions between threats. In this project the threat with the highest estimated impact at any $10m^2$ grid cell is used as the active threat and its impact defines future habitat quality at that point.

Biodiversity persistence index

The objective of a biodiversity persistence index is to identify those species at greatest conservation risk, and thus maximise the probability of overall species persistence. Each species and vegetation community was ranked. The highest ranking was given to species or communities listed as Endangered on either the TSC Act or the EPBC Act. The next priority was vulnerable species, followed by endemics and then natives (Appendix 1). Invertebrate data were dealt with in two ways. Individual species models and rankings were only available for four threatened invertebrate species. Four invertebrate groups (ants, spiders, snails and beetles) were dealt with separately and were assumed to have equal rank.

An approximate estimate of the probability of persistence for each species was calculated by dividing the species' current habitat area by its original habitat area, and then raising this proportion to the power of 0.25 (a widely employed species-area function relating to the proportion of species retained in an area to the proportion of habitat remaining (Figure C). The curve gives added weight to species which have suffered the greatest loss of habitat. The overall biodiversity persistence index therefore, is the sum of individual species probabilities.

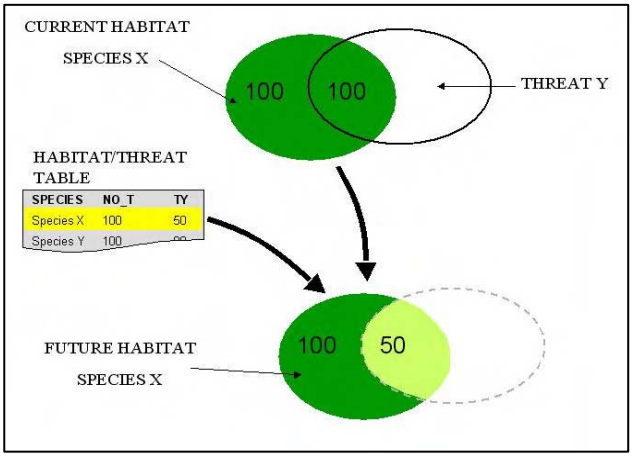

Figure B. Process for deriving future habitat from current habitat, threats and a habitat/threat table

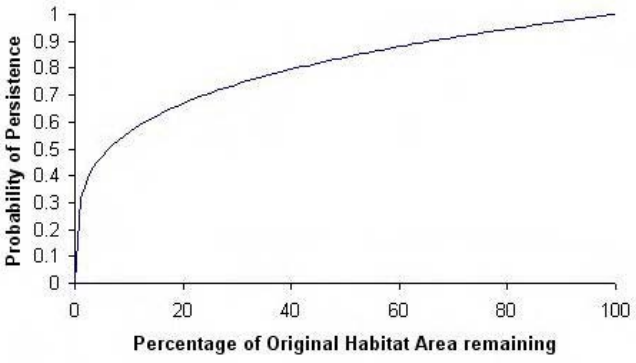

Figure C. Persistence area relationship assumed for the Biodiversity Forecasting Toolkit

Prioritising management actions

Priority areas for appropriate management are the areas where species richness is high, where the habitat of those species is vulnerable to threats, and where management action is considered effective in ameliorating the threat.

The BFT was used to analyse the potential benefit to biodiversity of any particular management action. This was modelled by identifying the maximum threat applying to each gridcell across the LHIG and then the change to the biodiversity persistence index if that threat is removed.

The resulting threat consequence layers provide a prediction of where the greatest conservation gains can be achieved by addressing individual threats. The consequences of individual threats can also be summed to provide a prediction of the overall priority for conservation action.

The BFT was also used to predict the effectiveness of any particular management action. Twenty four management actions were analysed using the BFT. The degree of effect of each management action on each of the threats were ranked using expert opinion.

Although this approach only considers the 'major' spatial threat for each gridcell and is likely to produce some distortions, it is useful as a guide to the development of management actions. The potential cost-benefit of implementing a particular management action or a combination of a number of actions can be tested using the BFT and provides a guide to considering the most appropriate management priorities.

The BFT can be updated as new spatial data becomes available and the outcomes of management actions are monitored and mapped. This will allow the LHIB to use the BFT to assist in evaluating the effectiveness of the plan implementation and reporting requirements.

4.2 Biodiversity Forecasting Outputs

Explanation of Biodiversity Forecasting Outputs

This chapter describes and presents some of the outputs from the BFT. Where relevant, management actions with the greatest predicted biodiversity benefits are incorporated into the management actions listed in Section 6 of the main report.

Habitat richness and threat impacts

Habitat richness and the overall predicted impacts of threats on species groups, vegetation communities and individual species is discussed below for each group, and for listed threatened species and communities.

Flora

Habitat richness and endemicity for flora is greatest in the southern mountains, especially on the high altitude areas of Mounts Gower and Lidgbird (see Figure 2 in DEC 2006).

Habitat richness after threats are applied indicates a similar pattern of richness, but with reduced values, i.e. the habitat richness is still greatest in the southern mountains, but not as rich. Conversely, some parts of the settlement area drop to zero value (cleared areas).

A high significance of the loss of biodiversity is indicated for Sallywood Swamp Forest patches and threatened plant locations of *Calystegia affinis* at Old Settlement, and Knicker Nut at Neds Beach (Figure D). The significance of past clearing in the settlement area is also indicated very highly.

Vegetation communities

Habitat richness for communities does not apply as there is no overlap in their distributions.

An extremely high level of significance of the loss of biodiversity is indicated for Sallywood Swamp Forest Community patches, followed by Mangrove Communities. The significance of the loss of the Waterfall Cliff Community and Freshwater Instream Communities to overall biodiversity are also indicated at very high levels.

High levels of persistence of vegetation communities are predicted for much of the remainder of the LHIG, specifically in the higher elevations of the southern mountains. A high level of persistence is also predicted for offshore islands.

Sea birds

Habitat richness for sea birds is highest on Roach Island, the southern tip of the southern mountains, followed by Muttonbird Island, Muttonbird Point, other offshore Islands and the northern clifflines (see Figure 3 in DEC 2006). The settlement area between Neds Beach and Middle Beach also has a high value, as do the Lagoon Foreshores. Balls Pyramid was not included in the BFT analysis.

Habitat richness after threats are applied identifies threatening processes working most strongly at Muttonbird Point, the Lagoon Foreshores, Mount Eliza and the settlement area from Neds Beach to Clear Place. A high level of sea bird habitat richness is predicted to be maintained on offshore Islands, at King Point and along the northern clifflines.

The persistence of sea bird biodiversity is predicted to be lowest at Muttonbird Point, followed by areas in the settlement area between Neds Beach and Middle Beach. These areas are followed by the offshore islands then remaining areas of identified shoreline and cliffline (Figure E).

Non-sea bird vertebrates

High habitat richness levels are indicated along the shorelines due to the habitat of migratory waders and shore birds, particularly on the Lagoon side.

Also indicated highly are areas along watercourses across the main island due to the habitat of eels and freshwater fish.

Habitat richness after threats are applied predict a fairly uniform loss of habitat across the main island and adjacent offshore islands.

The persistence of biodiversity for non-sea bird vertebrates is predicted to be lowest in watercourse habitats in the Old Settlement Beach area, Cobby's Corner and Soldiers Creek. A low overall loss is predicted for much of the rest of the main island, but does not include shoreline areas,

indicating that shore bird habitat is less under threat.

Threatened invertebrates

Habitat richness for threatened invertebrates uses past habitat distributions which include the Lord Howe Island Phasmid and the Lord Howe Island Wood-eating Cockroach, now extinct on the main island. Analysis does not include Balls Pyramid. Threatened invertebrate habitat richness appears greatest in the settlement area followed by the lower slopes in the northern and southern PPP.

Habitat richness is predicted to suffer the greatest loss after threats have been applied at the lower altitudes of the northern and southern PPP, and Intermediate Hill.

The persistence of biodiversity of threatened invertebrates is predicted to be lowest across much of the lower altitude parts of the main island, including the settlement area, and also the cleared parts of Blackburn Island (Figure F). The most secure areas are indicated in the higher parts of the southern mountains.

Invertebrate assemblages (snails, spiders, beetles, ants)

Habitat richness for the invertebrate assemblages used outputs from Cassis *et al.* (2003), where species richness was interpolated between survey sites (see Figures 5 and 6 of DEC 2006). Areas of high species richness are indicated as patchily distributed across the main island, namely Far Flats, Mount Gower, Boatharbour, Intermediate Hill, Transit Hill, the northern settlement area (focussed on Stephens Reserve) and Malabar.

After modelled threats are applied, habitat richness is predicted to suffer a major loss over the entire main island due to the estimated high impact of rat predation. Offshore islands, including the Admiralty Group, Muttonbird, Blackburn and Gower Islands, are predicted to retain a moderate to high level of habitat richness.

The expected persistence of invertebrate biodiversity reflects to a large extent the patterns of richness, indicating areas of greatest species richness suffering the major losses to biodiversity (Figure G).

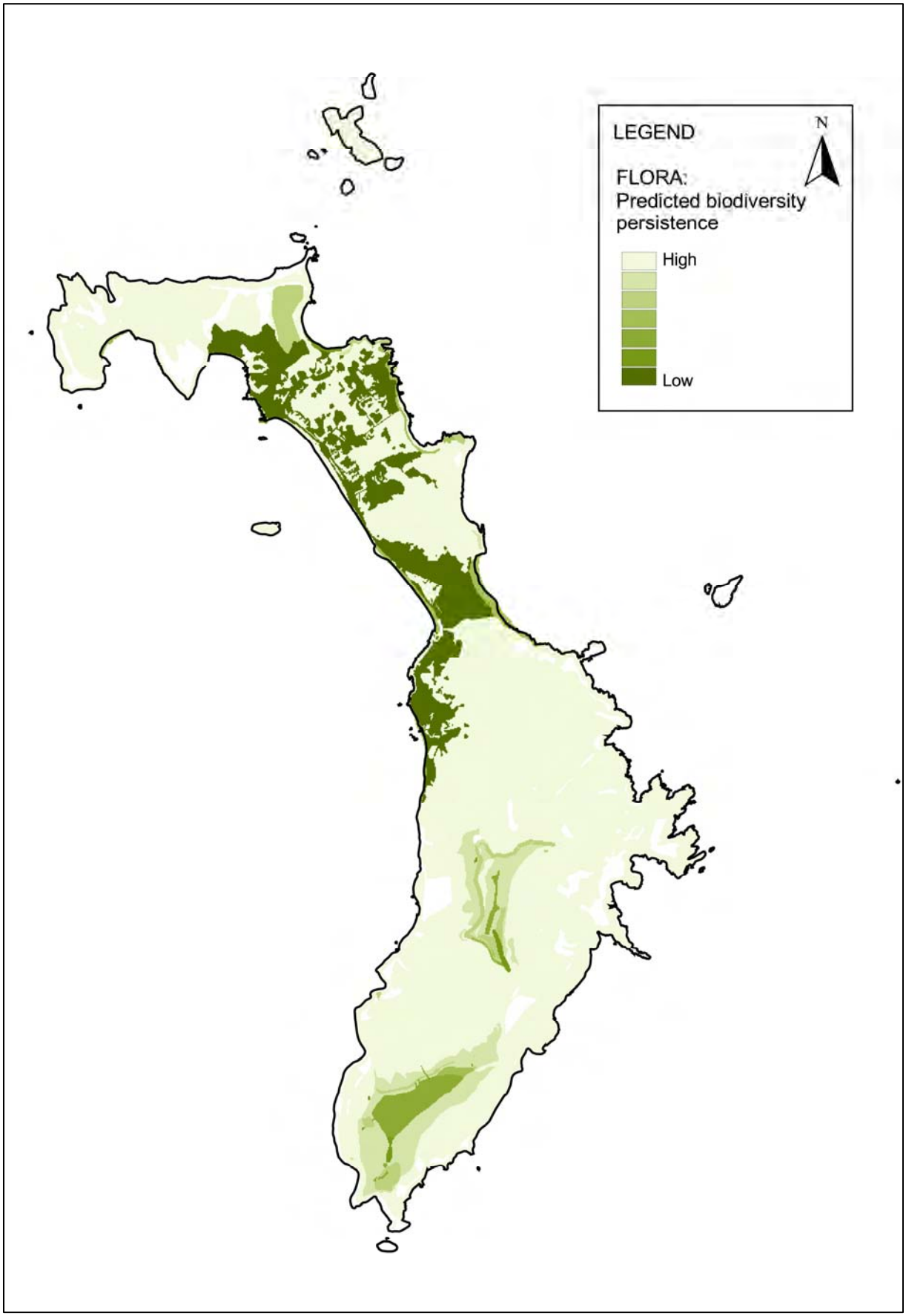

Figure D. **Areas of predicted biodiversity persistence for flora of the LHIG**

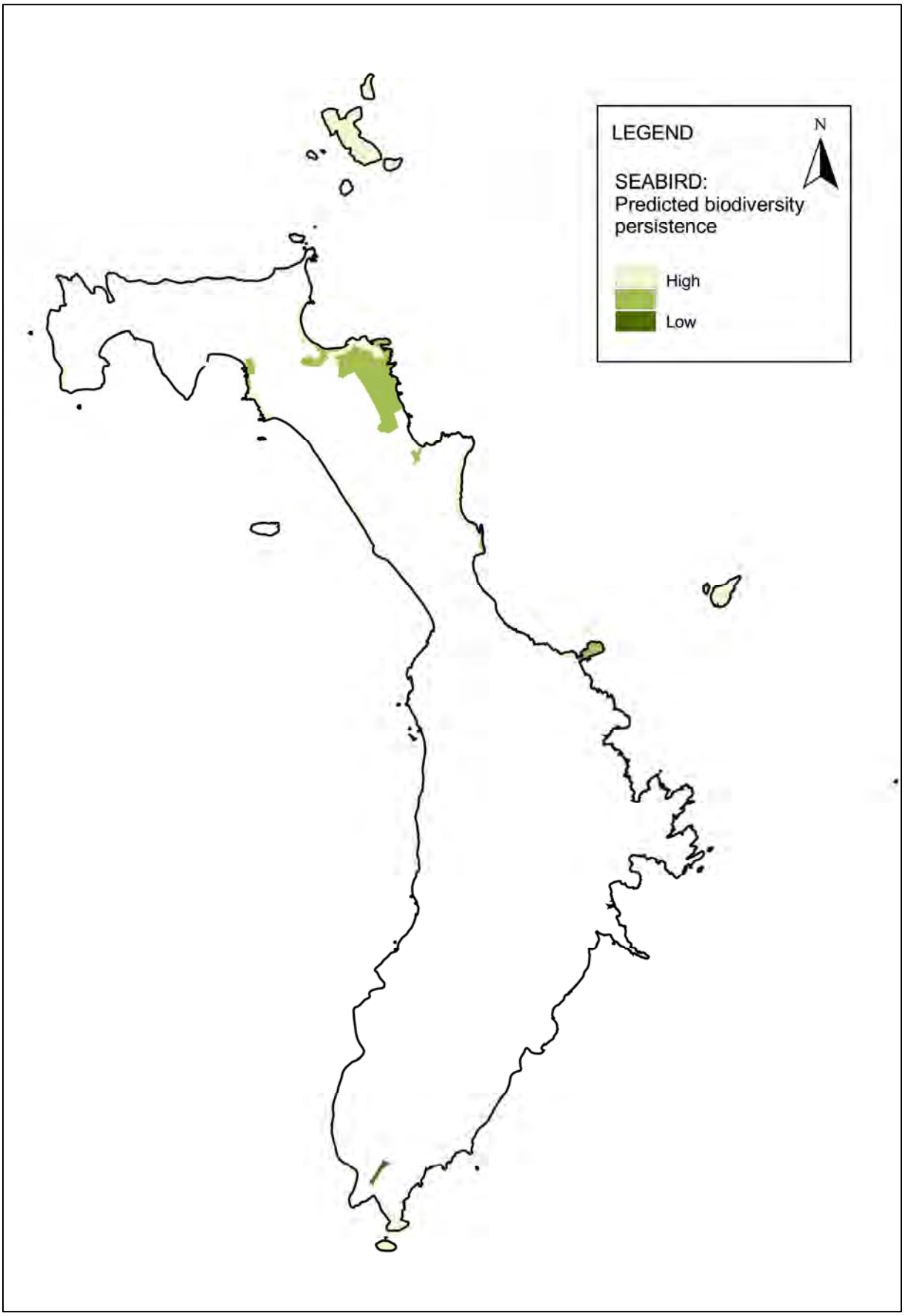

Figure E. **Areas of predicted biodiversity persistence for sea birds of the LHIG**

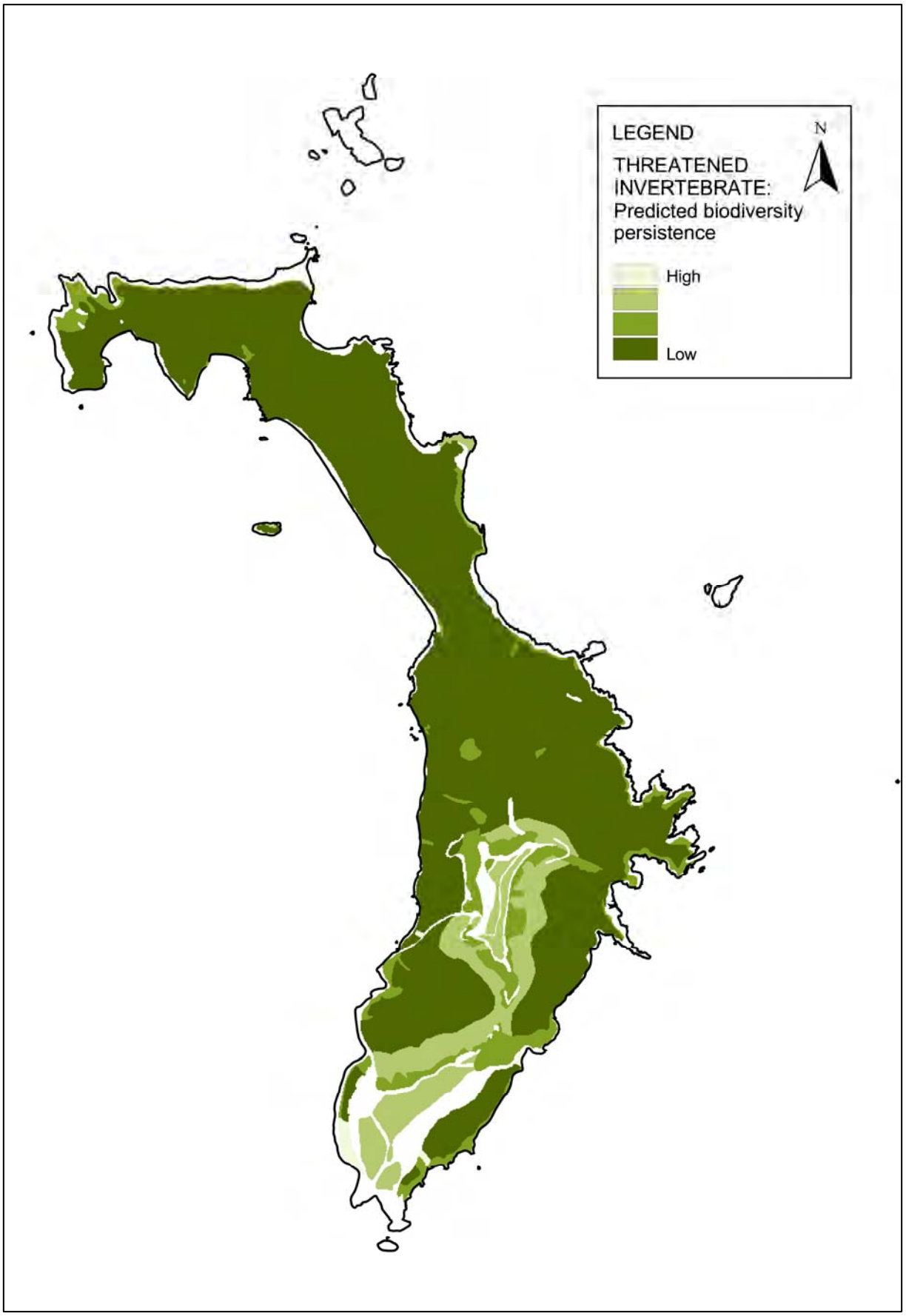

Figure F. **Areas of predicted biodiversity persistence for threatened invertebrates of the LHIG**

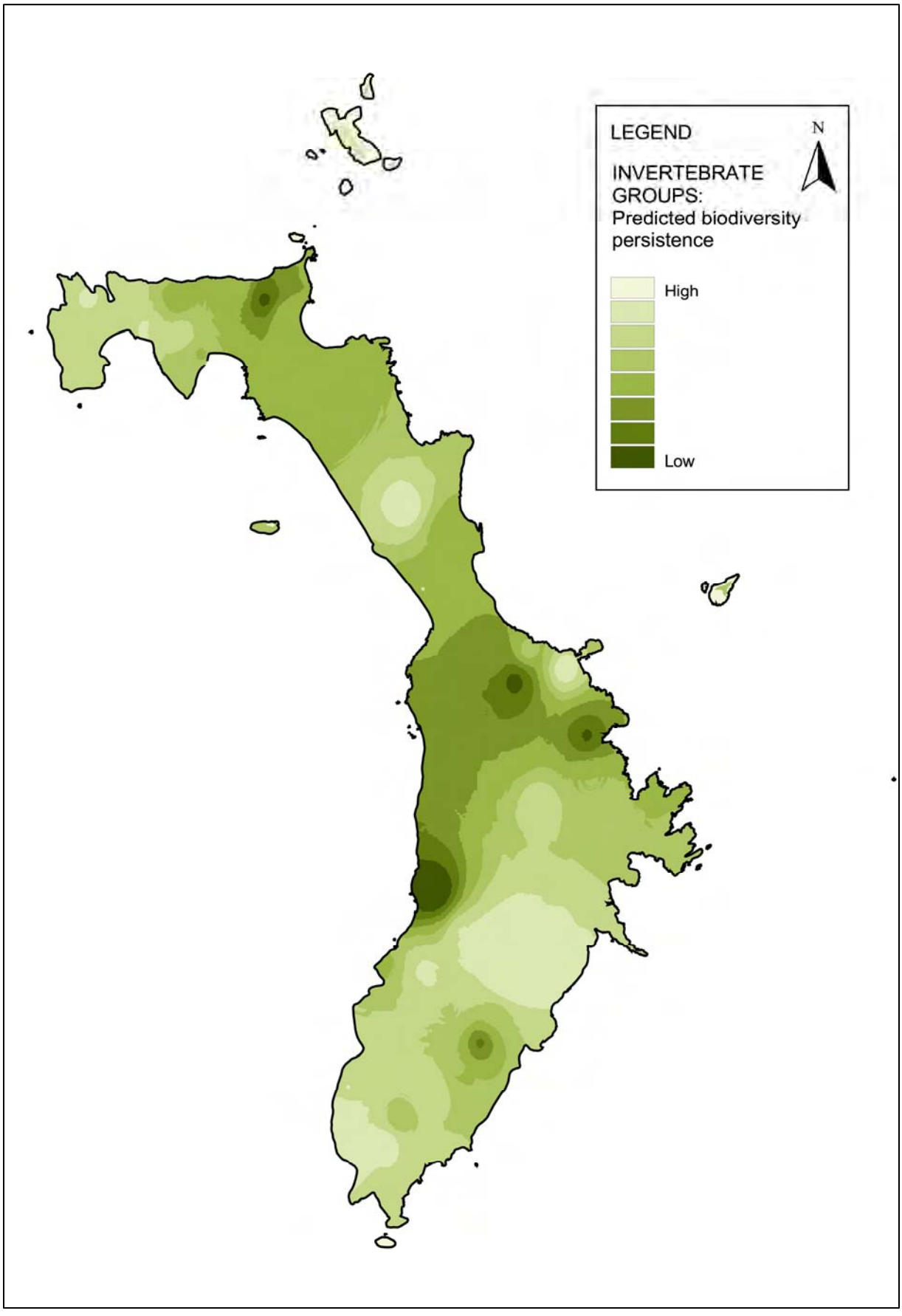

Figure G. Areas of predicted biodiversity persistence for invertebrate groups

Taxon Persistence

Taxon persistence is a predicted measure of the likelihood of any individual taxa or group of taxa to persist once modelled threats have impacted upon taxa or groups of taxa.

Individual flora species predicted as least likely to persist were Knicker Nut, *Chamaesyce psammogeton*, *Coprosma inopinata*, *Hymenophyllum howense*, *Hymenophyllum moorei*, Little Mountain Palm, Mountain Rose (*Metrosideros nervulosa*) and *Plectorrhiza erecta*.

The vegetation communities predicted as least likely to persist (in order of communities at greatest risk) were: Sallywood Swamp Forest, Mangroves (*Aegiceras corniculatum*), Lowland Freshwater Instream, Upland Freshwater Instream, Greybark-Blackbutt, Coral Sand and Beach Dune and the Kentia Palm on coral sand Communities.

Vertebrate fauna are generally predicted to have a relatively high probability of persistence. This is likely to be because the impacts of significant threats, such as rodent predation, have already occurred, including the extinction of those species most susceptible to rodent predation.

The threatened invertebrates (Lord Howe Island Earthworm, Lord Howe Island Phasmid, Lord Howe Island Wood-eating Cockroach and Lord Howe Island Placostylus) are most at risk with a predicted likelihood of persistence at less than 50% given the impact of modelled threats. Individual threatened invertebrate species least likely to persist are the Lord Howe Island Phasmid, followed by the Lord Howe Island Wood-eating Cockroach, and the Lord Howe Island Placostylus while the Lord Howe Island Earthworm is predicted to be secure.

Summary of High Conservation Priority Sites

The areas of greatest conservation priority were based on those sites indicated to have high conservation value and the lowest predicted persistence per species, group or vegetation community.

Flora

- Threatened plant habitat in, or adjacent to, the settlement area (*Calystegia affinis* habitat on the Max Nicholls track at Old Settlement and in the southern mountains, Knicker Nut habitat at Neds Beach and between Signal Point and Old Settlement Beach).
- The top of Mounts Gower and Lidgbird, and Waterfall Cliff areas in the southern mountains.
- *Chamaesyce psammogeton* habitat at Blinky Beach, *Polystichum moorei* habitat at Kings Beach.

Vegetation communities

- Sallywood Swamp Forest sites.
- Mangrove communities, especially those within the settlement area.
- Upland and Lowland Freshwater Instream communities and Grey Saltbush community in the northern hills.
- The remainder of vegetated areas in the settlement area.

Vertebrate fauna

- Watercourses in the settlement area (Cobby's Corner, Soldiers Creek and Old Settlement).
- For sea birds, the eastern settlement area between Neds Beach and Middle Beach, offshore islands, Muttonbird Point, Signal Point to Old Settlement Beach.

Threatened invertebrate fauna

- The main island below 300 m elevation and Blackburn Island.
- Sallywood Swamp Forest.
- Soldiers Creek.
- Far Flats, Intermediate Hill, Malabar.

Threat Consequences

Threat consequences predict what impact each modelled threat will have on biodiversity persistence for any group of species or individual species. Areas that are most at risk from each threat are also identified.

A summary of the predicted impacts of threats is provided in Table 2. Those threats that do not measure an impact, or where impacts are very minor, are not included. Example maps of threat consequences are provided to illustrate particular trends or significant areas.

Summary of threat consequences

Threat consequences output by the BFT can be summarised in two ways; by identifying priority sites, and by identifying the most significant threats across all species and vegetation communities. Priority sites based on biodiversity values and the most significant threats as predicted by the BFT are provided below.

There is some repetition in the list of sites depending on areas that were indicated by the BFT outputs, i.e. some areas indicated were broad, whereas others pinpointed more specific areas.

Sites most under threat

First priority

- Sallywood Swamp Forest
- Mangrove communities in the settlement area
- Freshwater instream habitats
- Threatened plant habitat (*Calystegia affinis*, Knicker Nut, *Polystichum moorei)*
- Waterfall Cliff community

Second priority

- Blackburn Island
- southern mountains, in particular Cloud Forest, Mountain Palm Forest and Cliffs.
- *Coprosma inopinata-Alyxia squamulosa* community (southern mountains)
- settlement area

Third priority

- Coral Sand and Beach community
- eastern settlement area
- Muttonbird Point
- Intermediate Hill
- Old Settlement to Signal Point
- Far Flats
- Shorelines of settlement area
- Neds Beach to Clear Place
- Greybark-Blackbutt community
- Mixed Fern and Herbfield community
- Cliffs of the northern hills
- Malabar and northern hills

Fourth priority

- Restricted vegetation communities (Grey Saltbush, *Poa poiformis*, Bully Bush-*Poa*, Leafy Flat Sedge, Hop Bush, *Boehmeria calophleba-Macropiper hooglandii*
- Kentia Palm communities
- Lagoon foreshores
- Muttonbird Island, and other offshore islands (except Blackburn Island)
- Lowland Mixed Forest community
- Transit Hill

Most significant threats to biodiversity

While the BFT is useful in providing guidance on the relative significance and predicted impacts of threats, it is important to acknowledge that only those threats that can be spatially represented are included in the BFT analyses. Significant threats such as the potential for new pest species and disease introductions are not included here.

The most significant threats identified by the BFT outputs are:

- Clearing;
- Trampling, browsing and grazing;
- Weed invasion;
- Ship Rat predation; and
- Climate change.

Table 2. Summary of the predicted impacts of threats on biodiversity persistence

Threat	Consequences
Past Clearing	Significant past consequences for vegetation communities throughout the settlement area. Sallywood Swamp Forest is ranked extremely highly. Other areas that rank very highly include Mangrove communities and freshwater instream habitats in the settlement area. Has significantly impacted on sea bird persistence, particularly in the eastern settlement area where habitat for sea birds is rich. A high impact on persistence for threatened invertebrates is predicted in the settlement area and on Blackburn Island. This is influenced by the lost habitat of the Lord Howe Island Wood-eating Cockroach and the Lord Howe Placostylus.
Future Clearing	Limited to vegetated areas that are at some risk of being cleared in the future (Figure H). Predicted to be a significant threat for vegetation communities throughout the settlement area. Remnant areas of Mangrove community rank extremely highly. Greybark-Blackbutt, Kentia Palm on Coral and Coral Sand and Beach Dune communities rank moderately. Predicted to have an impact on sea bird persistence, particularly in the eastern settlement area where habitat for sea birds is rich. A high level of impact is predicted for non-sea bird vertebrates on vegetated creeklines around Soldiers Creek, Cobby's Corner and Old Settlement Creek and its tributaries. A moderate level of impact is indicated for the rest of the remnant vegetation in the settlement area. Clearing is predicted to have a significant impact on persistence for threatened invertebrates in the settlement area (Lord Howe Placostylus).
Trampling, browsing and grazing	Impacts are patchily distributed across the various vegetation communities of the settlement area. The predicted impact is extremely high for the Sallywood Swamp Forest community, and for non-sea bird vertebrates in the watercourses in the vicinity of Soldiers Creek. Freshwater Instream and Greybark-Blackbutt communities in the northern settlement area are indicated at a lower level.
Weed invasion – combined weed species	Predicted to have a significant impact across the main island and offshore islands for flora (Figure I). Very high levels of impact are predicted for the threatened plant *Calystegia affinis* habitat in the southern mountains and at Old Settlement. High and moderate levels are also indicated for areas in the southern mountains, especially clifflines. Predicted to have a wide extent of impact on the non-sea bird vertebrate group, especially in the southern mountains, northern part of Intermediate Hill, Erskine Creek, Transit Hill and Windy Point. Predicted to have a moderate level of impact on threatened invertebrates for Blackburn Island. Predicted to have the most significant impact on sea birds in parts of the clifflines of the northern hills and around to Neds and Middle Beaches, adjacent to Muttonbird Point and near Boatharbour. Predicted to have an impact on vegetation communities on a large area on the main island and offshore islands. Communities most at risk are of Greybark-Blackbutt in the northern hills, areas of Saltmarsh (*Atriplex* sp.), the *Boehmeria-Macropiper*, followed by *Poa poiformis* and Bully Bush-*Poa* in the northern hills and offshore islands, Mixed Fern and Herbfield, *Dracophyllum-Metrosideros* in the southern mountains, and the rare and restricted *Alyxia-Coprosma* also in the southern mountains.

Bitou Bush invasion	Predicted to have an impact on sea birds along the clifflines of the northern hills, and a small part of the southern mountains on the western part of Mount Lidgbird.
Grass Invasion	The impacts of grass invasion on sea birds is predicted to be most significant on the Admiralty Islands, Muttonbird Point, Muttonbird Island, parts of the Lagoon Foreshores, Lovers Bay and King Point. Ant spider, beetle and snail invertebrate assemblages are predicted to be affected by grass invasion, especially on Blackburn Island.
Crofton Weed invasion	Predicted to have a patchy but relatively high impact on vegetation communities in the southern mountains. These impacts are within the Mixed Fern and Herbfield and Waterfall Cliff communities.
Cherry Guava invasion	Predicted to have an impact on flora in the southern mountains, both within and outside of the PPP.
Tiger Lily invasion	A high level of impact is predicted in the Waterfall Cliff community of the southern mountains.
Predation by the Ship Rat	The highest impact for flora is predicted in the Cloud Forest on Mounts Lidgbird and Gower. Moderate impacts are indicated in widespread areas in other parts of the southern mountains as well as areas around North Bay and in the settlement area. Most significant impact for sea birds on Muttonbird Point. A low impact is indicated in the northern hills, lagoon foreshores and Neds Beach to Clear Place. Predicted to have a low level impact on non-sea bird vertebrates across much of the main island. The low impact level most likely reflects that impacts from the Ship Rat have already occurred, including past species extinctions. For threatened invertebrates, the highest impact is predicted in uncleared parts of the settlement area and at lower altitude parts of the northern and southern PPP. For invertebrate assemblages, Far Flats and the Get Up Place are the areas indicated as being most impacted, followed by Boat Harbour, Malabar and parts of the settlement area. The vegetation communities predicted to be most significantly impacted are Kentia Palm, Blue Plum and Curly Palm communities.
Predation by Dogs	Low level impact predicted on sea birds and shoreline wading birds indicated at Clear Place, Middle Beach, Blinky Beach, Lagoon Foreshores and the eastern coastline.
Ground water pollution	High level of impact for non-sea bird vertebrates where potential septic pollution of watercourses may occur.
Climate change	Predicted to have a minor impact on sea bird persistence on the coastline where nesting habitat most commonly occurs. Relatively low level of impact predicted for shore birds. For flora, areas predicted as being most impacted include Knicker Nut habitat, Waterfall Cliff areas, habitat for the Endangered fern *Polystichum moorei* in the southern mountains, Cloud forest and *Alyxia squamulosa-Coprosma inopinata* community in the southern mountains. Vegetation communities predicted to be most impacted include Mangrove, freshwater and Waterfall Cliff Communities, cloud forest and much of the coastline areas.

Management scenarios and review of management

The BFT allows for a number of conservation management actions to be analysed together as management scenarios to predict each scenario's overall benefit to biodiversity. A management scenario, for example, may consist of rat eradication, fencing and weed control management actions.

It is also possible to introduce the cost of implementing each management action within each scenario and thereby estimating the cost/biodiversity benefit of each scenario, thus allowing an assessment of which scenario has the greatest biodiversity benefit given the financial cost of actions. This capability can be used to assist with prioritising management scenarios.

The BFT can also be used to review the impact of implementation of management actions and scenarios and to identify future priorities. It is possible to input management scenarios and costs for the LHI BMP but time constraints have not allowed this capability to be realistically presented for this report.

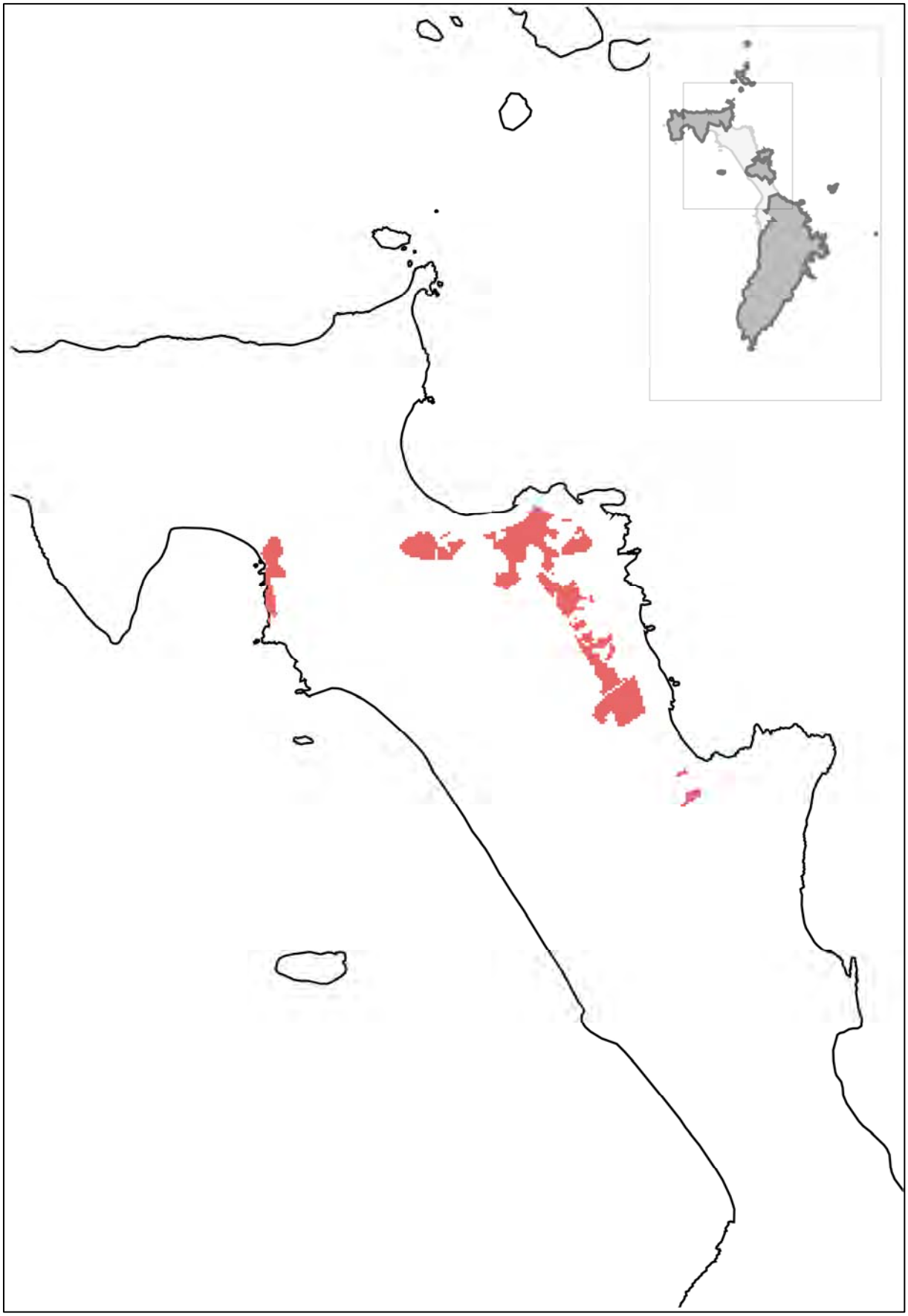

Figure H. **Areas where future clearing is predicted to have the greatest impact on sea birds**

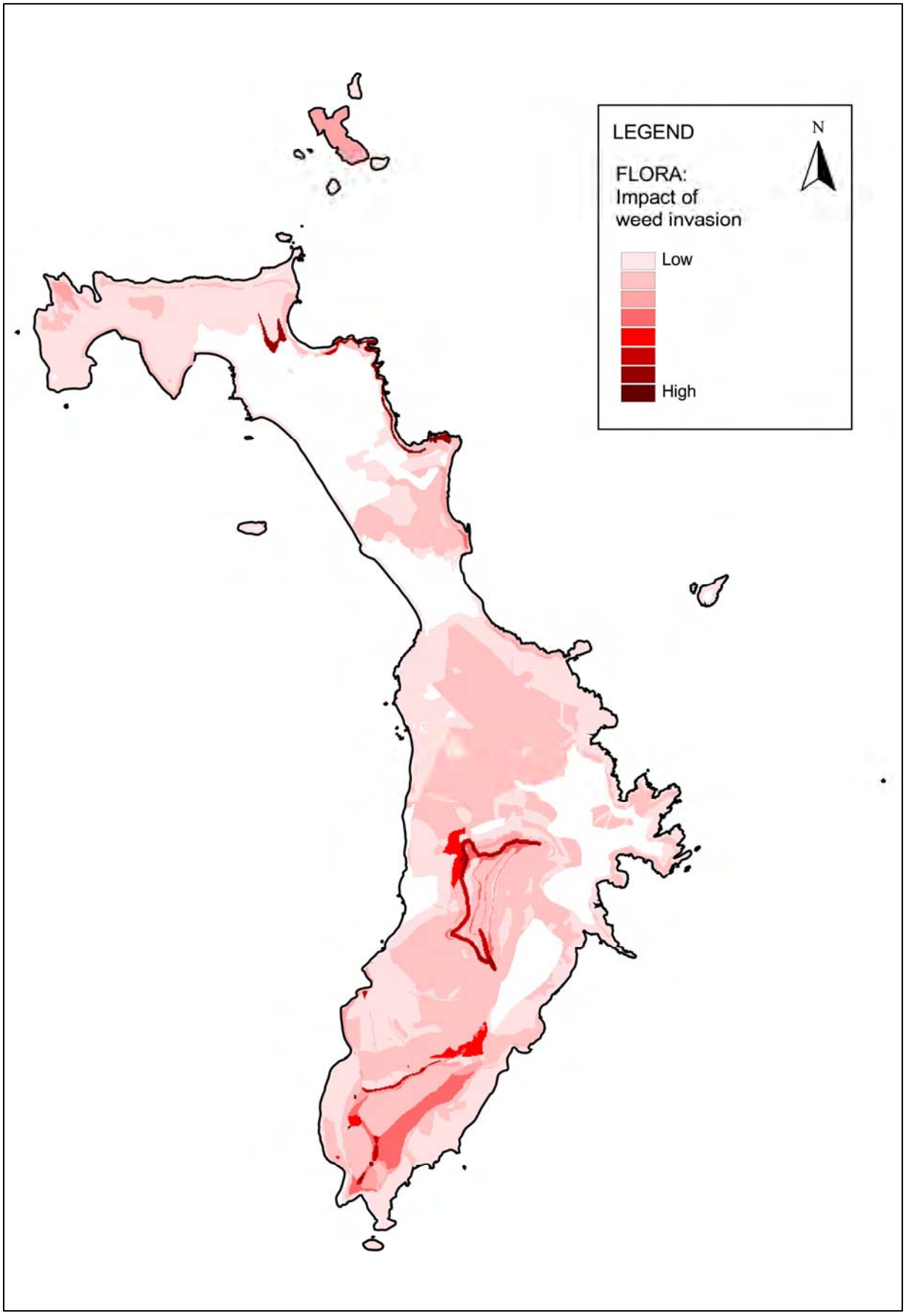

Figure I. Areas where weed invasion is predicted to have the greatest impact on flora biodiversity values

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DEC 2004, Nandewar WRA Landscape Conservation, Report for the Resource and Conservation Assessment Council (RACAC). NSW Western Regional Assessment, coordinated by NSW Department of Infrastructure, Planning and Natural Resources, Report no. NAND01, Department of Environment and Conservation (NSW), Coffs Harbour.

DEC 2006, Lord Howe Island Biodiversity Management Plan. Main Report. Biodiversity Conservation Section, Department of Environment and Conservation, Coffs Harbour.

Appendix 5 Fauna, Flora and Community Profiles

Photo: Ian Hutton

Masked Booby and chick

Lord Howe Island Gecko (*Christinus guentheri*)

Description

Pale olive-grey to dark brown gecko, peppered above with dark and light markings, to about 80mm length.

Conservation Significance

Endemic to the Lord Howe Island Group and Norfolk Island.

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

Rare on Lord Howe Island, more common on Blackburn and Roach Islands. Possibly present on other large offshore islets.

Ecology

Nocturnal. During the day it shelters in places such as under rocks, in weathered tunnels in calcarenite rock and in splits in trees. It is occasionally seen sheltering under upturned boats on the beach margin. This species feeds on beetles, spiders, moths, ants and other insects amongst the leaf litter. It also hunts in trees and can be seen climbing along the branches where it has been observed feeding on the nectar of the Sallywood flowers (*Lagunaria patersonia*) Lays a clutch of one to three eggs: incubation is about 80 to 90 days.

This species is larger on Ball's Pyramid than on the main island, possibly due to an increased length of survival.

Population data/health

During invertebrate surveys in December 2000 by the Australian Museum no locations were recorded for this species. This species appears to have been abundant on the main island until the mid-1930s, after which it declined dramatically, most likely due to predation by rats. It now occurs only in relatively low numbers at few localities, although remains common on Blackburn and Roach Islands and probably occurs on other vegetated islands in the Admiralty group and on some other vegetated rocky islets.

Habitat

Wide range of forest types from lowland rainforest to montane rainforest to *Poa poiformis* islet.

Threats

Rats are likely to be the main reason for the decline of this species on the main island.

In the past, Cats were reported as preying on this species. No Cats remain on Lord Howe Island.

The introduced skink *Lampropholis delicata* which arrived in the early 1990s has spread from the settlement to the northern hills and Intermediate Hill and may compete for food with this species.

Impact on other species

Unknown.

References

Cogger, H.G. 1971. The Reptiles of Lord Howe Island. *Proc. Linn. Soc.* NSW 96(1):23-38.

Cogger, H. G. 2004. *Draft Recovery Plan for the threatened lizards* Christinus guentheri *and* Oligosoma lichenigera *on the island complexes of Norfolk and Lord Howe Islands.* Department of Environment and Heritage, Canberra.

Photo: Ian Hutton

Lord Howe Island Gecko *(Christinus guentheri)*

Lord Howe Island Skink (*Cyclodina lichenigera*)

Description

Rich metallic bronze or olive above with numerous small brown longitudinal flecks or streaks, to about 80mm in length.

Conservation Significance

Endemic to the Lord Howe Island Group and Norfolk Island.

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

Rare on Lord Howe Island, more common on offshore islets – Blackburn Island, Roach Island and Ball's Pyramid, possibly other large offshore islets.

Ecology

Nocturnal. During day shelters under rocks, in cavities on boulder beaches, in weathered tunnels in calcarenite rock, in splits in trees and in holes in volcanic rock cliffs. Eggs of this species have been noted in these locations. Occasionally seen sheltering under upturned boats on beach margin. They feed on beetles, spiders, moths, ants and other insects amongst the leaf litter. Lay a clutch of one to three eggs and incubation is about 70 days.

This species is larger on Ball's Pyramid than on the main island, possibly due to an increased length of survival.

Population data/health

Rare on main Lord Howe Island due to predation by rats. During invertebrate surveys in December 2000 by Australian Museum Centre for Biodiversity and Conservation Research only two locations were recorded for this species on Roach Island and The Saddle. Previously it had been recorded across the whole island

Habitat

Wide range of forest types including lowland rainforest, montane rainforest and *Poa poiformis* islets.

Threats

Rats prey upon this species and are probably the main reason for its decline on the main island.

In the past, Cats were reported as preying on this species. No Cats remain on Lord Howe Island.

The introduced skink *Lampropholis delicata* which arrived in the early 1990's has spread from the settlement to the northern hills and Intermediate Hill and may compete for food with this species.

Impact on other species

Unknown.

References

Cogger, H.G. 1971. The Reptiles of Lord Howe Island. *Proc. Linn. Soc.* NSW 96(1): 23-38.

Cogger, H. G. 2004. *Draft Recovery Plan for the threatened lizards* Christinus guentheri *and* Oligosoma lichenigera *on the island complexes of Norfolk and Lord Howe Islands.* Department of Environment and Heritage, Canberra.

Lord Howe Island Skink *(Cyclodina lichenigera)*

Photos: Ian Hutton

Lord Howe Island Skink *(Cyclodina lichenigera)*

White-faced Heron (*Ardea novaehollandiae*)

Description

Large blue-grey wader with a white face and long "S"-shaped neck.

Conservation Status

Protected under the *Lord Howe Island Act* 1953.

Distribution

Widely distributed throughout Australia.

First recorded breeding on Lord Howe Island in 1938. Most commonly found on grassy areas around the settlement and on rocky shores at low tide. Also often observed foraging on the outer islets.

Ecology

Breeding: Mainly October to December.

Eggs: 2-7, usually 3-4; oval; lustreless; light blue-green. Incubation 25 days, fledging c. 40 days.

Nest: Unlined; a small, shallow and untidy structure of sticks and twigs in a tree, often in a leafy branch 5-20 m off the ground.

Diet: Extremely varied – almost any small animal, but mainly small fish, amphibians and aquatic insects. Observed catching and eating mice at the Island dump (pers obs.).

Foraging Behaviour: Sedentary or nomadic. Mainly diurnal. Usually forages singly; territorial when feeding, though often congregates when food is abundant.

Population Data/Health

Population estimated at less than 10 pairs.

Habitat

Shallow water almost anywhere: reefs and offshore islands, lagoon, wet paddocks, golf course.

Threats

Unknown

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

Hindwood, K.A. 1940. The Birds of Lord Howe Island. *Emu* 40:1-86.

Hutton, I. 1991. *Birds of Lord Howe Island: Past and Present*. Hutton, Coffs Harbour.

Australian Kestrel (*Falco cenchroides*)

Description

Light brown falcon with fine black spotting to about 35cm in length. Underparts white, head rufous.

Conservation Status

Protected under the *Lord Howe Island Act* 1953.

Distribution

Widely distributed throughout Australia.

Recent coloniser of the island, probably arriving in the 1940's. Ranges widely over the island and some offshore islands (Harden 1993).

Ecology

Breeding: July-December, peaking September-October.

Eggs: 3-7, usually 4; very pale buff or pink with blotches of brown-red; round. Incubation 26-28 days by female only, fledging c 26 days.

Nest: No nest built; uses tree hollows or ledges on cliff faces.

Diet: Insects, rodents and other birds.

Foraging Behaviour: Sedentary or nomadic. Hovers for extended periods of time, dives and seizes its prey.

Population Data/Health

Population estimated at 10 pairs.

Habitat

Seen over remote paddocks and cliffs.

Threats

Use of rodent poisons other than warfarin may result in secondary poisoning.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Pacific Black Duck (*Anas superciliosa*)

Description

Large dark duck with two dark lines on buff face; green or purple speculum and white underwing lining.

Conservation Status

Self-introduced species.

Protected under the *Lord Howe Island Act* 1953.

Distribution

Distributed throughout Australia and common throughout the Pacific.

Thought to have commenced breeding on the Island in 1972.

Ecology

Breeding: July-November.

Eggs: 5-16, usually 8-10; uniform oval; coarse, slightly lustrous; creamy white. Incubation 26-28 days.

Nest: Highly variable, both in site and construction.

Diet: Mainly vegetarian; seeds of a wide range of aquatic and swamp plants, also aquatic insects and their larvae.

Forage at Ned's beach feeding on bread and other scraps given to them by visitors.

Observed feeding on small white-bait in the lagoon.

Foraging Behaviour: Nomadic and dispersive. Gregarious when not breeding. Usually dabbles and upends in shallows, occasionally forages ashore in wet pastures.

Population Data/Health

Population estimated at c 20 pairs (including hybrids).

Habitat

Swampy paddock areas, Ned's Beach and lagoon.

Threats

Masked Owls and Currawongs predate on chicks.

Impacts Upon Other Species

Unknown.

Other Comments

The majority of the ducks on the island are hybrids between this species and the Mallard, an exotic species introduced to Australia. The collective population has increased significantly in the past 20 years and may number 20 breeding pairs, of which only a minority are Pacific Black Duck.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Pringle, J.D. 1987. *The Shorebirds Of Australia.* The National Photographic Index Of Australian Wildlife. Angus & Robertson, UK.

Buff-banded Rail (*Gallirallus philippensis*)

Description

Short-billed rail with heavily barred underparts broken by buff patch on breast.

Conservation Status

Probably self-introduced species.

Protected under the *Lord Howe Island Act* 1953.

Distribution

Patchily distributed around, and inland from, most of the Australian coast. Also occurs in Indonesia, New Guinea and New Zealand.

Intermittently present on the Island since settlement. Population has increased significantly over the last 10 years. Now commonly observed throughout the settlement.

Ecology

Breeding: Spring and summer.

Eggs: 5-8, rounded oval; smooth, slightly lustrous; rich cream, liberally blotched reddish-brown, purplish-brown. Incubation 18-20 days.

Nest: Well concealed in dense vegetation, often well away from water; on ground, a depression lined with grass and leaves.

Diet: Insects, molluscs and plants.

Foraging Behaviour: Mainly diurnal or crepuscular. Very opportunistic, often stealing feed from fowl yards.

Population Data/Health

Population estimated at c. 15 pairs.

Habitat

Shy, common through settlement area.

Threats

Unknown.

Impacts Upon Other Species

Have temporarily expelled Woodhens from settlement territories (pers obs.). Often in conflict with Woodhens especially during breeding season.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Lord Howe Woodhen (*Tricholimnas sylvestris*)

Description

Brown flightless bird about the size of a bantam hen, with strong legs and feet and a brown-grey bill.

Conservation Status

Listed as Endangered under the NSW TSC Act 1995.

Listed as Critically Endangered under the Commonwealth EPBC Act 1999.

Protected under the *Lord Howe Island Act* 1953.

Distribution

Endemic to Lord Howe Island.

Populations on Lord Howe Island include: the summit of Mt. Gower; the lowlands at Big and Little Slopes; Grey face; Far Flats and throughout the settlement area. Lowland distribution closely follows that of *Howea forsteriana* palm forest. Approximately half the breeding population lives around houses in the settlement area where they are fed or find food in gardens.

Ecology

Breeding: August to January. Can breed all year if conditions are favourable (Hutton pers. obs.).

Eggs: 1-6, dull white, with tiny dots and irregular blotches of chestnut, red and blue-grey. Both parents assist with incubation, which is 20-23 days.

Nest: Woodhens construct a nest in a shallow depression on the ground, lined with dry grass and leaves. It is located under dense ferny vegetation, or in the unused burrow of the Providence Petrel (Woodhen Recovery Plan 2002).

Diet: Earthworms, molluscs and invertebrates. Woodhens readily scavenge food from walkers and residents. Bester *et al.* (2005) found that Woodhens took a number of Providence Petrel chicks. Woodhen will also kill and eat introduced rats and mice (Hutton pers obs.).

Foraging Behaviour: Woodhens forage during the day and occasionally at night on the ground. They use their bill to sift among fallen leaves and rotten timber (Miller and Mullette 1985).

Population Data/Health

Population estimated at 220-230 birds and 71-74 pairs (Harden 1997). Population has remained relatively static over the last 10 years.

Habitat

Woodhens occur predominately in three vegetation types: Gnarled Mossy-Forest, Megaphyllous Broad Sclerophyll Forest, particularly the Kentia Palm association,; and gardens around houses.

Threats

The current and potential threats to the Woodhen population are:

- Vulnerable to disease or natural disaster due to distribution being limited to Lord Howe Island.
- Introduced Masked Owls may take juvenile Woodhens.
- Increased rodent control may cause increased predation by Masked Owls.
- Introduced Blackbirds and Song Thrushes, together with Buff-banded Rails and Purple Swamphens, compete with the Woodhen for food.
- The introduction to the island of additional exotic flora or fauna species could threaten the Woodhen and its habitat.
- Existing weed species that degrade habitat.
- The risk of introduction of disease that may affect the food or health of Woodhens.
- Loss of habitat through clearing for agriculture or development.
- Consumption of rat bait by Woodhens.
- Impacts of domestic dogs.

Impacts Upon Other Species

Woodhens regularly kill the chicks of other land birds, especially the land rail (Hutton pers obs.). Bester *et al* (2005). found that the greatest cause of Providence Petrel mortality was attributed to Woodhen predation.

References

Bester, A., Klomp, N., Priddel, D. & Carlile, N. 2002. 'Chick-provisioning behaviour of the Providence Petrel, *Pterodroma solandri*' *Emu* 102, pp. 297-303.

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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NSW NPWS. 2002. Recovery Plan for the Lord Howe Woodhen (*Gallirallus sylvestris*). NSW National Parks and Wildlife Service, Coffs Harbour.

Miller, B. and Mullette, K.J. 1985. Rehabilitation of an endangered Australian bird: Lord Howe Woodhen *Triholimnas sylvestris*. *Biological Conservation*. 34: 55-95.

Photo: Ian Hutton

Lord Howe Woodhen *(Tricholimnas sylvestri)*

Photo: Ian Hutton

Lord Howe Woodhen (*Tricholimnas sylvestris*)

Purple Swamphen (*Porphyrio porphyrio*)

Description

Large swamphen with stout red bill and red shield on head. They have a purple-blue breast and dark wings and tail.

Conservation Status

Protected under the *Lord Howe Island Act* 1953.

Distribution

Widely distributed in Eastern Australia. Also occurs in southern Europe, Africa, South-east Asia, New Zealand and the South West Pacific Islands New Guinea and Norfolk Island.

On Lord Howe Island, the Purple Swamphen is most common in the wet areas in the south of the settlement. This species has only begun to breed on Lord Howe Island since the late 1980's.

Ecology

Breeding: Mainly July-December.

Eggs: 4-11, oval, slightly lustrous, buff or sandy, liberally blotched and spotted. Incubation 26 days.

Nest: Reeds, rushes or grass, bent over and trampled to form a bulky platform.

Diet: Mainly vegetarian; succulent shoots of reeds and rushes. Also predate on eggs and chicks of other bird species (R. Shick, pers comm.).

Foraging Behaviour: Graze along margins of wetlands. When eating plants, Swamphens will often use.

Population Data/Health

Population estimated at c. 30 birds and c. 10 pairs (Hutton pers obs.).

Habitat

Edge of pasture around golf course and airstrip. Small population around Soldiers Creek area where there is a permanent supply of fresh water.

Threats

Unknown.

Impacts Upon Other Species

The Purple Swamphen is a well known egg thief and will kill the chicks of other bird species (R. Shick pers. comm.).

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Pringle, J.D. 1985. *The Waterbirds Of Australia*. The National Photographic Index Of Australian Wildlife. Angus & Robertson, UK.

Masked Lapwing (*Vanellus miles*)

Description

Large plover with yellow facial wattles, white breast and underparts and light brown wings and tail.

Conservation Status

Protected under the *Lord Howe Island Act* 1953.

Distribution

Found throughout northern and eastern Australia and Tasmania. Also occurs in New Guinea, Indonesia and New Zealand.

On Lord Howe Island, they are commonly observed around the airstrip area. Birds move to more remote grazing paddocks when breeding. Started breeding on Lord Howe Island since 1990.

Ecology

Breeding: July-February. Birds may lay more than one clutch per year (Hutton 1990).

Eggs: c. 4, brownish olive, with spots and blotches of black and brown. Incubation c. 28 days.

Nest: Shallow depression lined with grass.

Diet: Insects, spiders, worms, beetles and their larvae.

Foraging Behaviour: Masked Lapwings stalk prey, then dart with bill down and poke into tussocks.

Population Data/Health

Population estimated at c. 45 birds and c. 20 pairs (Hutton pers obs.).

Habitat

Open grassland.

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Emerald Ground-dove (*Chalcophaps indica*)

Description

Plump, ground-feeding dove with iridescent green wings, red bill, reddish-brown head and body with delicate purplish bloom.

Conservation Status

Protected under the *Lord Howe Island Act* 1953.

Distribution

Distributed throughout lowland coastal forests of eastern Australia from Narooma to Cape York.

On Lord Howe Island, it is most commonly found in lowland forests and around the settlement area.

Ecology

Breeding: Spring and summer.

Eggs: 2, white. Both parents assist with nest building, incubation and care of the young. Incubation c. 15 days.

Nest: Low platform of twigs and vines.

Diet: Seeds and fruit.

Foraging Behaviour: Feed on the ground; walk along the thick limbs of trees eating fruit that is within their reach.

Population Data/Health

Population estimated at c. 10-1 000 pairs (Fullagar *et al.*1974).

Habitat

Solitary, mainly lowland forest, feeding on the ground, tame around settlement (Hutton 1990).

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Masked Owl (*Tyto novaehollandiae*)

Description

Large barn owl with blackish-brown to speckled buff upperparts.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Introduced to Lord Howe Island.

Distribution

Widely distributed in Australia usually in forests or woodlands, except for arid parts of Central and Western Australia.

This species ranges over the whole of the main island.It was introduced in the 1920's to control Ship Rats.

Ecology

Breeding: Breeds at any time.

Eggs: 2-3, off-white. Incubated by the female for 35 days, with the male feeding her at the nest. The young are fed by the female for the first few weeks, and then by both parents.

Nest: Hollow in a tree 40-500 cm deep, prepared by the male and used in successive years.

Diet: Rats, mice, and birds.

Foraging Behaviour: Nocturnal, hunts in all vegetation types on Lord Howe Island. Often observed flying low over forested and cleared areas, sometimes standing motionless on the ground.

Population Data/Health

Population estimated at c. 10-100 pairs (Hutton pers obs.).

Habitat

Forest within and outside of the settlement, nocturnal.

Threats

No natural threats.

Impacts Upon Other Species

Known to predate on several native and endemic species of Lord Howe Island including the Woodhen, White Tern, Black-winged Petrel, Providence Petrel, Sooty Tern and Black Duck.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Sacred Kingfisher (*Todiramphus sanctus*)

Description

Blue-rumped kingfisher with pale buff underparts, peacock blue and green upperparts and smal buff spot before eye.

Conservation Status

Protected under the *Lord Howe Island Act* 1953.

Distribution

Widespread throughout Australia except for the arid centre. Also found in New Zealand and on islands from Timor to the Solomons.

This species may be a recent coloniser of Lord Howe Island.

Ecology

Breeding: Spring to summer.

Eggs: 2-6, glossy white. Incubation c. 16-17 days.

Nest: Mostly in the hollow of a tree, sometimes excavates a burrow in a rotting tree trunk.

Diet: Worms, insects, fish, crustaceans, chicks of other birds and adult white-eyes.

Foraging Behaviour: Dives swiftly down from its perch to grasp food in its bill. Food items are usually taken back to the perch to be eaten.

Population Data/Health

Population estimated at c. 10-100 pairs (Hutton 1990).

Habitat

Often feeds on reef flats, commonly seen throughout the settlement area. Often perches for extended periods of time on the edge of clearings searching for prey.

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Welcome Swallow (*Hirundo neoxena*)

Description

Rusty-throated swallow with grey underparts and no breastband; white spots in tail.

Conservation Status

Protected under the *Lord Howe Island Act* 1953.

Distribution

Widely distributed throughout eastern and southern Australia and has recently colonised New Zealand.

Recent coloniser, thought to have commenced breeding on Lord Howe Island in the 1970's.

Ecology

Breeding: Spring to summer.

Eggs: 4-6, white, freckled. Incubation 15 days.

Nest: Cup shaped, constructed of mud and vegetation, often fixed under the eaves of buildings and in small caves on vertical cliff faces. On Lord Howe Island, it nests from sea level to c. 550 metres.

Diet: Insects-moths, flies and midges, often over water.

Foraging Behaviour: Flies low over pasture and swamps.

Population Data/Health

Population estimated at c. 10-100 pairs.

Habitat

Most commonly seen over open paddocks and water around settlement.

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Blackbird (*Turdus merula*)

Description

Male: Black all over with a yellow eye ring and brown eye. Bill orange-yellow and feet brown-black. Female: Dark brown with a grey chin; brown bill and feet; brown eyes.

Conservation Status

Introduced exotic species - not protected.

Distribution

Introduced to Australia and New Zealand from northwestern Europe in the 1850's. Established on Norfolk and Lord Howe Island. One of the most common bird species seen in the settlement of Lord Howe Island.

Ecology

Breeding: September to January.

Eggs: 3-4, pale blue blotched with red-brown and grey. Incubation 14 days, the male assists with the feeding of the chicks. Chicks fledge in 14 days.

Nest: Cup of dried grasses and other plant matter, bound together with mud and lined with fine grasses; placed in any thick clump of shrubbery or low dense tree.

Diet: Feeds predominately on the ground, vigorously foraging for fruits, berries and insects.

Foraging Behaviour: Ground foragers among damp litter, move considerable amounts of leaf litter in search of their food.

Population Data/Health

Population estimated at c. 10-100 pairs.

Habitat

Predominately in lowland forest around the settlement area, however also on the summits of Mts Gower and Lidgbird and offshore islands including Roach Island and Muttonbird Island.

Threats

Unknown.

Impacts Upon Other Species

It is likely that Blackbirds predate on juvenile land snails *Placostylus bivaricosus*.

Other Comments

Eradication of the Blackbird population could be linked to any future rodent eradication attempts.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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NSW NPWS, 2001, Lord Howe Placostylus *Placostylus bivaricosus* Recovery Plan, NSW NPWS, Hurstville.

Song Thrush (*Turdus philomelos*)

Description

Upperparts warm olive-brown; throat pale yellow and speckled brown; breast buff with small triangular patches; white belly; pinkish legs; eyes dark brown.

Conservation Status

Introduced exotic species - not protected.

Distribution

Introduced to Australia and New Zealand from Europe in the 1850's. Established on Norfolk and Lord Howe Island. One of the most common birds seen in the settlement area of Lord Howe Island.

Ecology

Breeding: September to January.

Eggs: 4-5, pale blue-green and spotted with black. Incubation 14 days, the male assists with the feeding of the chicks. Chicks fledge in 15 days.

Nest: Cup of dried grasses and other plant matter, bound together with mud and lined with fine grasses; placed in any thick clump of shrubbery or low dense tree.

Diet: Feeds predominately on the ground, picking from the leaf litter. Vigorously forages for earthworms, spiders centipedes and a variety of insects, their larvae and snails.

Foraging Behaviour: Forages among damp litter.

Population Data/Health

Population estimated at c. 10-100 pairs.

Habitat

Predominately in lowland forest around the settlement area. Also on the summits of Mts Gower and Lidgbird.

Threats

Unknown.

Impacts Upon Other Species

It is likely that Song Thrushes predate on juvenile land snails *Placostylus bivaricosus*.

Other Comments

Eradication of the Song Thrush population could be linked to any future rodent eradication.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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NSW NPWS, 2001. Lord Howe Placostylus *Placostylus bivaricosus* Recovery Plan, NSW NPWS, Hurstville.

Lord Howe Golden Whistler (*Pachycephala pectoralis contempta*)

Description

Male: Head and face black with a broad yellow collar; white throat with a black band below. Back and rump olive-grey; breast and belly bright yellow; tail black. Femaile: Upperparts olive-grey; underparts grey with a yellowish wash; throat speckled whitish and breast buff.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Protected under the *Lord Howe Island Act* 1953.

Distribution

Subspecies endemic to Lord Howe Island.

Widely distributed in forests on the main island.

Ecology

Breeding: September to January.

Eggs: c. 2, pale salmon or stone-coloured, with spots of dark red-brown and grey. Incubation 14-17 days. Chicks fledge in c. 14 days.

Nest: An open cup-shaped structure composed of palm fibre, vines and leaves, lined with grass. It is about 10 cm in diameter, and generally located high up out of sight (Hutton 1990).

Diet: Spiders, insects and their larvae.

Foraging Behaviour: Hop from branch to branch looking for insects. Will also drop to the ground to forage in litter.

Population Data/Health

Population estimated at c. 100-1 000 pairs (Fullagar *et al* 1974).

Habitat

Forest all over the Island.

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Photo: Ian Hutton

Lord Howe Golden Whistler (*Pachycephala pectoralis contempta*)

Vulnerable

Land Bird

Lord Howe White-eye (*Zosterops tephropleura*)

Description

Small bird to 13cm. Head and throat yellow, white eye-ring. Upper surface of wings, rump and tail green-yellow. Underparts grey-brown and whitish.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Protected under the *Lord Howe Island Act* 1953.

Distribution

Species endemic to Lord Howe Island. Regarded by some ornithologists as only a subspecies of *Z. lateralis*.

Has a wide range on the main island in all habitats except open fields (Harden 1993).

Ecology

Breeding: Spring to summer.

Eggs: c. 2-4, pale green. Incubation, 12 days. Chicks fledge in c. 12 days.

Nest: Small cup-shaped nest made of palm fibre, reinforced with grass and spider's web (Hutton 1990).

Diet: Eat a variety of food including insects, beetles, aphids and bugs, fruit and nectar.

Foraging Behaviour: Fly quickly from tree to tree looking for food. Will also forage on the ground.

Population Data/Health

Population estimated at c. 100-1 000 pairs (Fullagar *et al.* 1974).

Habitat

Concealed in foliage of forest trees all over the island.

Threats

Other island bird species including the Australian Kestrel, Sacred Kingfisher and the Lord Howe Island Currawong predate on the Lord Howe White-eye.

Weed invasion threatens the integrity of the habitat of this species.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Hutton, I. 1991. *Birds of Lord Howe Island: Past and Present*. Hutton, Coffs Harbour.

Photo: Ian Hutton

Lord Howe White-eye (*Zosterops tephropleura*)

Common Starling (*Sturnus vulgaris*)

Description

Black all over with a green-purple sheen except for brown wash on wings and tail. Bill brown (yellow when breeding); feet and eyes brown.

Conservation Status

Self introduced exotic species - not protected.

Distribution

Introduced to Australia and New Zealand from Eurasia in the 1850's.

Self introduced to Lord Howe Island. First recorded from about 1924.

Ecology

Breeding: Spring to summer.

Eggs: c 4-7, pale blue. Incubation, 12 days. Chicks fledge in 21 days.

Nest: Untidy cup of grass and palm fibre generally placed in a tree hollow.

Diet: Omnivorous feeders eating a wide variety of insects, beetles, seeds and fruits. Foraging Behaviour: Birds feed mainly on the ground.

Population Data/Health

Population estimated at c 10-50 pairs.

Habitat

Old Settlement and Golf Course.

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Magpie Lark (*Grallina cyanoleuca*)

Description

Medium-sized black and white bird to 28cm; whitish bill tipped black.

Conservation Status

Introduced to Lord Howe Island post-European settlement.

Protected under the *Lord Howe Island Act* 1953.

Distribution

Very common in most parts of Australia. Also occurs in Timor and southern New Guinea.

Ranges over the whole of Lord Howe Island but most common in the lowlands on open pasture and around houses. Also visits some offshore islands to feed.

Ecology

Breeding: Spring and summer.

Eggs: c. 3-5, pink-white, marked with red and purple brown spots and blotches. Incubation: 18 days. Chicks fledge in 20 days.

Nest: Bowl of plant fibre bound with mud, lined with grass. Nest high in trees.

Diet: Insects and their larvae.

Foraging Behaviour: Birds feed mainly on the ground.

Population Data/Health

Population estimated at c. 10-100 pairs.

Habitat

Grassy paddock areas and forest edge.

Threats

The Lord Howe Island Currawong often takes the chicks of the Magpie Lark.

Impacts Upon Other Species

Unknown.

References

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Lord Howe Island Currawong (*Strepera graculina crissalis*)

Description

Large mostly black bird to 46cm. Small white patches on base of primary wing feathers, base and tip of tail and undertail coverts. Orange eyes.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999.

Protected under the *Lord Howe Island Act* 1953.

Distribution

Subspecies endemic to Lord Howe Island.

On Lord Howe Island, it is widely distributed on the main island. Individuals are highly mobile and occasionally visit offshore islands.

Ecology

Breeding: Late spring and summer.

Eggs: c. 3, light brown with darker blotches. Incubation, 21 days by the female. Chicks are fed by both parents and fledge in c. 30 days.

Nest: Cup of sticks lined with grass and palm thatch; placed high in tree.

Diet: Omnivorous; eats a wide variety of foods. Aggressive predator taking land and sea bird chicks, including the Woodhen; also predates on rats and mice.

Foraging Behaviour: Will hunt for food anywhere. Often observed on the outer islets.

Population Data/Health

Population estimated at 215 ± 11 birds.

Habitat

Forests all over the island, particularly the southern mountains. Breeds primarily in undisturbed forests.

Threats

Prior to the 1980's island residents would often shoot Currawongs. Currawongs remain unpopular with some residents which may be a threat to their persistence.

Impacts Upon Other Species

The Lord Howe Currawong predates bird species such as the White Tern and the Woodhen.

Other Comments

Currawongs often take poisoned rats and mice. It is assumed that secondary poisoning of avifauna does not occur due to the use of warfarin poison. While this may be the case, use of other rodent poisons ie: Brodifacoum, will result in secondary poisoning of non-target species. Other rodenticides including Talon are commonly used by the Lord Howe Island Board and residents.

References

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Photo: Ian Hutton

Lord Howe Island Currawong
(*Strepera graculina crissalis*)

Vulnerable **Sea Bird**

Providence Petrel (*Pterodroma solandri*)

Description

Dark grey petrel to 40cm. Underparts paler, head grey-brown with white scaly feathers around the face. Bill stout and black, eyes dark brown.

Conservation Status

Listed as Vulnerable under both the 2000 IUCN Red List of Threatened Animals and the NSW TSC Act 1995.

Listed Migratory species under the Commonwealth EPBC Act 1999.

Distribution

Breeds at Lord Howe Island (and formerly Norfolk Island); pelagic range unknown, but recorded at sea in the Tasman, off Japan and tentatively near Hawaii.

Ecology

Breeding: Breeds on Lord Howe Island from late February until November (mainly mid May), laying one egg. Adults share nest building, incubation and care of young. Incubation about seven weeks. Pairs vigorously defend the area close around the burrow. Very inquisitive, attracted by shouting and hand clapping.

Nest: In chamber at end of burrow 1-1.8m long. Burrows are often flooded in heavy rain. Nests are often densely spaced in a colony.

Diet: Squid, fish and crustaceans.

Foraging Behaviour: Providence Petrels go on foraging trips of 1-14 days duration, return to feed their chicks during the late afternoon and throughout the night and bring back predominantly squid, fish and crustaceans for their chicks (Bester 1999).

Population Data/Health

Population c. 32,500 breeding pairs with a total population of less than 100,000 (Bester *et al.* 2005).

Habitat

Marine, pelagic in waters 15-25ºC.

On Lord Howe Island, this species nests in soil burrows and rock cavities. The colonies extend over all the upper slopes of Mt Lidgbird 777m and Mt Gower 875m. Smaller populations occur on Little Slope, Big Pocket, Little Pocket and the Far Flats. It has been recorded off Balls Pyramid but it is not known if it breeds there (McAllan *et al.* 2004).

Threats

Providence Petrels are threatened by rat predation at the nesting grounds and may be threatened by long-line fishing at their foraging sites (Bester 1999).

Other threats identified by Bester *et al.* (2005) include predation on chicks by the Lord Howe Island Woodhen and flooding of burrows.

Impacts Upon Other Species

General disturbance to invertebrate fauna may result from burrow excavations.

Photo: Ian Hutton

Providence Petrel
(*Pterodroma solandri*)

References

Bester, A. 1999. Uncovering the breeding and feeding secrets of the Providence Petrel on Lord Howe Island. Information paper provided to the Lord Howe Island Board. Lord Howe Island.

Bester, A. Klomp, N. Priddel, D. and Carlile, N 2002. Chick- provisioning behaviour of the Providence Petrel, *Pterodroma solandri*. *Emu* 102:297-303

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Photo: Ian Hutton

Providence Petrel *(Pterodroma solandri)*

Kermadec Petrel (western subspecies) (*Pterodroma neglecta neglecta*)

Description

Variable colour with light, dark and intermediate phases. Dark underwing with white shafts to primaries in upper wing. The darker form is characteristic at Lord Howe. The tail is short and square-cut.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995 and Vulnerable under the Commonwealth EPBC Act.

Distribution

The Kermadec Petrel breeds on Islands across the south Pacific Ocean. In the Lord Howe Island Group it breeds on Ball's Pyramid. It also breeds on Phillip Island, near Norfolk Island.

Ecology

Breeding: On Ball's Pyramid from November to May, one white egg laid. Adults share nest building, incubation and care of young. Incubation c. 52 days, fledging takes at least three months.

Nest: In a crevice among rocks.

Diet: Squid and crustaceans.

Foraging Behaviour: No detailed description. Behaviour appears to be similar to the Providence Petrel where surface seizing and dipping dominate (Hutton pers obs).

Population Data/Health

Fullagar and Disney (1975) estimated the Ball's Pyramid population to consist of less than 100 pairs.

Habitat

Marine, pelagic in waters 15-25ºC.

The Kermadec Petrel breeds only on the higher more inaccessible parts of Ball's Pyramid among rocks and vegetation, and forages far out to sea.

Threats

A small population of Kermadec Petrels was observed nesting on the southern end of Mount Gower in 1914 by Roy Bell. Bell subsequently collected several of the birds and also noted that cats predated on the petrel (Hindwood 1940). It is assumed that their extinction on Lord Howe Island was attributed to the accidental introduction of the black rat in 1918.

Ball's Pyramid is currently a rat free environment, no threats are known for this location.

Impacts Upon Other Species

Not known.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Vulnerable

Sea Bird

Black-winged Petrel (*Pterodroma nigripennis)*

Description

Small black and white petrel to 30cm, easily recognised by bold black markings under its wings and loud high-pitched calls.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

Wide oceanic range in the Tasman Sea and sub tropical and tropical regions of the Central Pacific Ocean. Breeds on a number of island groups. Range thought to be expanding.

This species is likely to be a colonist of Lord Howe Island since 1940. Nests at numerous locations on Lord Howe Island including North Head, New Gulch, Dawson's Ridge, Malabar, Ned's Beach, Jim's Point, Hells Gates, Transit Hill, adjacent to Muttonbird Point, Red Point and Ball's Pyramid.

Ecology

Breeding: Summer breeding seabird (November to May). Adults share nest building, incubation and care of young. Incubation 45 days, fledging at 85 days. Lays one white egg.

Nest: An almost bare chamber at the end of a short burrow.

Diet: Squid, fish, shrimps and cuttlefish.

Foraging Behaviour: Surface-seizing and dipping considered equally important, pattering less so (Marchant & Higgins 1990).

Population Data/Health

Lord Howe Island and Ball's Pyramid population 100-1000 pairs (Fullagher & Disney 1975). No recent population estimates available.

Habitat

Migratory. Highly pelagic, mainly solitary. Participate in high speed spectacular courtship flights over sea or breeding areas, October-February (Hutton 1991). Nest colonies are often among low bushes on high ground along cliff faces.

Threats

Cats and feral pigs predated on the Lord Howe Island population until the eradication of these introduced species in 1980. Introduced Masked Owls *Tyto novaehollandiae* continue to predate on the Black-winged Petrel population.

Impacts Upon Other Species

Not known.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Photos: Ian Hutton

Black-winged Petrel *(Pterodroma nigripennis)*

Vulnerable **Sea Bird**

Flesh-footed Shearwater (*Puffinus carneipes*)

Description

Large, blackish-brown bird to 46cm. Bill heavy and straw-coloured with a dark tip, feet flesh-coloured; eyes brown.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Listed Migratory species under the Commonwealth EPBC Act.

Distribution

Widely distributed throughout the Indian and Pacific Oceans, with many breeding localities. Lord Howe Island is the only breeding locality in eastern Australia.

On Lord Howe Island, the main breeding colony spreads from Ned's Beach to Clear Place on sandy soils. There are smaller colonies below Transit Hill and at Old Settlement beach (Harden 1993).

Ecology

Breeding: Spring – summer, arriving in September and departing in May. Disperse to the north Pacific Ocean during the remainder of the year. Lays one white egg. Adults share nest building, incubation and care of young. Incubation 57 days, fledging c. 85 days. Forms offshore rafts at dusk.

Nest: In a chamber at the end of a burrow, 1 to 2 metres long.

Diet: Squid, fish and crustaceans.

Foraging Behaviour: Feeds mainly from surface, but dives occasionally, observed retrieving scraps at 2 m depth and following baited hooks to 5-6 m (Hutton pers obs).

Population Data/Health

Population estimated at 10 000 – 100 000 pairs (Hutton 1990).

Habitat

Marine, pelagic, mainly in subtropical waters. Feeds at sea during the day returning to nesting colonies at dusk.

Nesting colonies on Lord Howe Island restricted to lowland areas with a deep sandy soil profile. Burrows tend to be excavated in heavily vegetated areas where tree roots assist in maintaining burrow profiles. Nesting colonies occur in open paddocks grazed by cattle (e.g. Big Muttonbird Ground) however excavation and maintenance of burrows in this environment is more difficult for the birds.

Threats

- Increased mortality rates due to the ingestion of floating plastic while foraging.
- By-catch of long-line fishing.
- Development in the settlement area encroaching on Flesh-footed Shearwater nesting habitat.
- Increased mortality rates due to road kills.
- Increased mortality rates due to killing of "problem" birds (e.g. birds burrowing under homes etc.) by residents.
- Increased mortality rates due predation on birds by domestic dogs (Harden 1993).

Impacts Upon Other Species

Not known.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Photo: Ian Hutton

Flesh-footed Shearwater (*Puffinus carneipes*)

Wedge-tailed Shearwater (*Puffinus pacificus*)

Description

Sooty brown shearwater to 43cm. Tail large and wedge-shaped; bill slender and leaden in colour; legs and feet flesh-coloured; eyes brown.

Conservation Status

Native to Lord Howe Island.

Distribution

Widely distributed throughout the Indian and Pacific Oceans, with many breeding localities. On Lord Howe Island, the main breeding colonies occur on the offshore islets, including the Admiralties, Muttonbird Island, Blackburn Island and on Ball's Pyramid. There are also several smaller colonies on the main Island (Hutton 1990).

Ecology

Breeding: Spring – summer, arriving in September and departing in May. Disperse to the north Pacific Ocean during the remainder of the year. Lays one white egg. Adults share nest building, incubation and care of young. Incubation 53 days, fledging 90 days. Adults leave Lord Howe Island about 10 days before the chicks.

Nest: In a chamber at the end of a burrow, up to a metre long. Excavated where possible in deep soil, however, in rocky sites the burrow can be quite shallow, occasionally being reduced to a tunnel in the long grass (Hutton 19990). Where canopy cover is available, such as under the banyan tree on Blackburn Island no burrows are excavated, nests typically consist of a shallow scrape under the protection of an overhanging root or branch.

Diet: Squid, fish and crustaceans.

Foraging Behaviour: Feeds mainly from surface, does not dive as deeply as Flesh-footed Shearwaters (Hutton pers obs).

Population Data/Health

Population estimated at 10 000 – 100 000 pairs (Hutton 1990).

Habitat

Marine, pelagic, mainly in tropical and subtropical waters. Feeds at sea during the day, many birds returning to nesting colonies well before dark.

Threats

- Increased mortality rates due to the ingestion of floating plastic while foraging.
- By-catch of long-line fishing.
- Increased mortality rates due to road kills.
- Increased mortality rates due to predation on chicks by visiting Swamp Harriers.
- Increased mortality rates due predation on birds by domestic dogs.

Impacts Upon Other Species

Not known.

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Vulnerable **Sea Bird**

Little Shearwater (*Puffinus assimilis*)

Description

Small shearwater to 20cm with black upperparts and white underparts. Bill short, slender and grey-black; legs bright blue with black markings; feet pale bluish.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

A widespread species of the subtropical Atlantic, Pacific and Indian Oceans. The Lord Howe Island breeding colony is one of the larger colonies in the Australian region. Also breeds on islands off the Western Australian coast.

On the Lord Howe Island Group, the main breeding colony is on Roach Island, with smaller colonies on Blackburn and Muttonbird Islands. The only colony on the main island is on Muttonbird Point, although isolated pairs have been found on Transit Hill.

Ecology

Breeding: Winter breeding species coming ashore at Lord Howe between February and October. A single white egg is laid in July. Incubation is 52 to 58 days. The chick fledges in about 70-75 days. Adults share nest building, incubation and care of young. Occasionally in October and early November, small numbers of juveniles are found wandering the Island roads at night (Hutton 1990).

Nest: At night they come ashore to court and prepare their nests. They dig a narrow burrow up to one metre long, markedly smaller in width than that excavated by the other shearwaters (Hutton 1990).

Diet: Cephalopods, krill and small fish.

Foraging Behaviour: Food captured mainly by surface-diving, pursuit-plunging and pursuit-diving; also by surface-seizing and surface-plunging (Marchant *et al.* 1990).

Population Data/Health

Population estimated at 1 000 – 10 000 pairs (Hutton 1990).

Habitat

Marine, pelagic, breed on subtropical and subantarctic islands, where soft soil suitable for burrowing; in tussock grassland, shrubland, woodland, or under mats of succulents, or among loose rocks in talus (Marchant *et al.* 1990).

Threats

Susceptible to predation by Kestrels on main Island and possibly black rats.

Impacts Upon Other Species

Not known.

Photo: Ian Hutton

Little Shearwater (*Puffinus assimilis*)

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Vulnerable **Sea Bird**

White-bellied Storm Petrel (*Fregetta grallaria*)

Description

Compact (to 20cm) black and white bird with a square-cut tail. Upper breast black; rump and belly showing white.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995 and Commonwealth EPBC Act.

Distribution

Wide oceanic distribution in the Pacific and Atlantic Oceans. Known to breed in a number of island groups including Lord Howe Island, the only breeding colony in Australian waters.

On Lord Howe Island, it breeds on offshore islands; it is not known to breed on the main island today (bred on the main Island prior to 1914). The main breeding areas are Roach Island and Ball's Pyramid, and also breeding areas on Muttonbird Island (Harden 1993).

Ecology

Breeding: Summer breeding seabird (November to May). One finely speckled egg is laid from late January through to March. Incubation is about 37 days by both parents. Fledging takes about 80 days (Hutton 1990)

Nest: Consists of a chamber usually located amongst large rocks (Hutton 1990).

Diet: Cephalopods and crustaceans.

Foraging Behaviour: Take sfood by dipping and pattering (Marchant *et al.* 1990).

Population Data/Health

Population estimated at 100 – 1000 pairs (Hutton 1990).

Habitat

Marine, pelagic, feeds well out to sea and only at nest on offshore islands at night (Hutton 1990).

Threats

Predation by rodents.

Impacts Upon Other Species

Not known.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Photo: Ian Hutton

White-bellied Storm Petrel *(Fregetta grallaria)*

Masked Booby (*Sula dactylatra fullageri*)

Description

Large (to 87cm) white bird with black tips to flight feathers; black mask on face and around eyes. Yellow bill with base black; legs and feet flesh grey or yellow.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Listed Migratory species under the Commonwealth EPBC Act 1999.

Distribution

Widely distributed throughout the tropical and subtropical seas of the world. In Australia, it breeds on Islands off north-east and north-west Australia.

On Lord Howe Island, the breeding colonies are on Ball's Pyramid, Muttonbird Island, the Admiralty Islands and at King and Muttonbird Points on the main island. Lord Howe Island supports the southern-most breeding colony of this species.

Ecology

Breeding: On Lord Howe Island, the Masked Booby remains year round. It breeds from June to February and usually lays two white eggs about six days apart. Although both hatch, usually only the first chick survives. Adults share incubation and care of young. Incubation 43 days, fledging four months.

Nest: No nest is built. Eggs are laid in a rough scrape in the soil; scraps of debris and local vegetation may accumulate as incubation proceeds.

Diet: Squid and fish.

Foraging Behaviour: Mainly sedentary. Generally solitary, forages in deep water far out to sea. Forages by spectacular plunge-dives from c. 20 m or more.

Population Data/Health

Population estimated at 100 – 1000 pairs (Hutton 1990).

Habitat

Marine, pelagic, mainly in tropical and subtropical waters. Feeds at sea during the day. The Masked Booby breeds on high open areas so they can take off directly into the wind (Hutton 1990).

Threats

Juveniles occasionally dive on lures towed by fishing boats, sometimes getting hooked.

Impacts Upon Other Species

Not known.

Photo: Ian Hutton

Masked Booby *(Sula dactylatra fullageri)*

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Photo: Ian Hutton

Masked Booby (Sula dactylatra fullageri)

Red-tailed Tropicbird (*Phaethon rubricauda*)

Description

White body to about 46cm with two stiff red tail feathers to 50cm long (these may be missing when moulting). Black stripe through the eye; black on flanks and innermost flight feathers.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

Widespread throughout the subtropical and tropical zones of the Indian and West Pacific Oceans, breeding on oceanic islands. In Australia, breeds on islands and cliffs along western, northern and north-eastern shores.

On Lord Howe Island the main breeding areas are the sea-cliffs from North Head to Malabar, and the cliffs of Mts. Lidgbird and Gower.

Ecology

Breeding: Summer breeding species present in numbers from December to April and virtually absent during the winter months. Egg laying begins in November and is generally completed by February, although a few birds can still be found nesting in May (Hutton 1990). Lays one white egg.

Incubation 42 days, fledging 10 weeks.

Nest: The nest consists of a scrape on the ground on an inaccessible cliff ledge or maybe tucked under a Melaleuca bush (Hutton 1990).

Diet: Squid and fish.

Foraging Behaviour: Forages in deep water far out to sea, mainly by plunge-dives and surface seizing.

Population Data/Health

Population estimated at 100 – 1000 pairs (Hutton 1990).

Habitat

Marine, pelagic, mainly in tropical and subtropical waters. Feeds at sea during the day but can be seen flying around breeding areas all day (Hutton 1990).

Threats

Juveniles often succumb to a disease causing growths on the head which is always fatal. Impact on species unknown.

Impacts Upon Other Species

Not known.

Photo: Ian Hutton

Red-tailed Tropicbird (*Phaethon rubricauda*)

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Ross, G.J.B., Weaver, K. & Greig, J.C. (eds) 1996. *The Status of Australia's Seabirds*: Proceedings of the National Seabird Workshop, Canberra, 1-2 November 1993. Biodiversity Group, Environment Australia: Canberra vii + 237 pp.

Photo: Ian Hutton

Red-tailed Tropicbird (*Phaethon rubricauda*)

Sooty Tern (*Sterna fuscata*)

Description

Black and white tern to 46cm. Head, lores and upper parts of body, wings and tail are black; forehead white extending to above eye; underparts white; tail deeply forked; bill black; legs and feet black.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

Wide distribution over subtropical and tropical seas world-wide, breeding on numerous islands. In Australia, breeds on islands in the Great Barrier Reef and on islands off north-west Australia.

Breeding sites on Lord Howe Island include North Head, Mt Eliza, Malabar, and Muttonbird, Scab and King Points. Breeding colonies have expanded in recent years to include the area known as the Big Muttonbird ground (Ned's Beach to Middle Beach). Also breed on the Admiralty Islands, Muttonbird Island and other offshore islands.

Ecology

Breeding: The most numerous of the seabirds to breed on Lord Howe Island. It is a spring/summer breeder, with egg laying beginning in early September and continuing into November. One pinkish white, mottled black or brown egg is laid, (second egg will be laid if the first egg is removed from the nest). Incubation 28 days, fledging 70 days (Hutton 1990).

Adults aggressively protect eggs and chicks.

Nest: Shallow scrape in sand or soft soil, unlined.

Diet: Mainly squid, crustaceans and fish.

Foraging Behaviour: Nocturnal or diurnal, swooping to snatch at surface.

Population Data/Health

Population estimated at 10 000 – 1000 000 pairs (Hutton 1990).

Habitat

Marine, pelagic, mainly in tropical and subtropical waters. Lord Howe and outer islets are the most southerly breeding location for the species.

Threats

Unknown.

Impacts Upon Other Species

Unknown.

Photo: Ian Hutton

Sooty Tern *(Sterna fuscata)*

Photo: Ian Hutton

Sooty Tern *(Sterna fuscata)*

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Marchant, S. Higgins, P.J. (eds.) 1990. *The Handbook of Australian, New Zealand & Antarctic Birds*. Oxford University Press, Melbourne.

Ross, G.J.B., Weaver, K. & Greig, J.C. (eds) 1996. *The Status of Australia's Seabirds*: Proceedings of the National Seabird Workshop, Canberra, 1-2 November 1993. Biodiversity Group, Environment Australia: Canberra vii + 237 pp.

Photo: Ian Hutton

Sooty Tern chick *(Sterna fuscata)*

Brown Noddy/Common Noddy (*Anous stolidus*)

Description

Grey-brown noddy to 40cm. Wings and tail darker grey-brown; light grey crown and white forehead; white eye ring. Tail rounded with a central notch. Bill long and black.

Conservation Status

Listed migratory species under the Commonwealth EPBC Act 1999.

Distribution

Wide distribution over subtropical and tropical seas world-wide, breeding on numerous islands. In Australia, breeds on islands in the Great Barrier Reef and on islands off north-west Australia.

Breeding sites on Lord Howe Island include North Head, Mt Eliza, Malabar, Blinky Beach, Muttonbird and King Points. Also breeds on the Admiralty Islands, Muttonbird Island, Ball's Pyramid and other smaller offshore islands.

Ecology

Breeding: The Brown Noddy arrives at Lord Howe Island in August, breeds over summer, and leaves in May.

One pinkish white egg mottled with blotches of red and purple brown is laid between late October and the end of January. Incubation is 35 days, fledging 50 days (Hutton 1990).

Nest: Rough structures of grass and seaweed on top of the stunted branches of *Melaleuca howeana*. Alternatively, loose scraps of similar material may be assembled on cliff ledges (Hutton 1990).

Diet: Mainly fish.

Foraging Behaviour: Forages typically in flocks, hovering low, actively swooping and snatching at surface.

Population Data/Health

Population estimated at 100 – 10 000 pairs (Hutton 1990).

Habitat

Marine, pelagic, mainly in tropical and subtropical waters. Seen at sea feeding in groups or at nesting colonies. Young birds "loaf" on beaches late summer (Hutton 1990).

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

Hindwood, K.A. 1940. The Birds of Lord Howe Island. *Emu* 40:1-86.

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Lindsey, T.R. 1986. *The Seabirds Of Australia*. The National Photographic Index Of Australian Wildlife. Angus & Robertson, UK.

Marchant, S. Higgins, P.J. (eds.) 1990. *The Handbook of Australian, New Zealand & Antarctic Birds*. Oxford University Press, Melbourne.

Ross, G.J.B., Weaver, K. & Greig, J.C. (eds) 1996. *The Status of Australia's Seabirds*: Proceedings of the National Seabird Workshop, Canberra, 1-2 November 1993. Biodiversity Group, Environment Australia: Canberra vii + 237 pp.

Black Noddy (*Anous minutus*)

Description

Darker and slightly smaller than Brown Noddy. Sooty black body and wings; forehead and crown silver-white, shading abruptly to grey on back of neck. Forked tail; long, slender bill.

Conservation Status

Self-introduced species.

Distribution

This Noddy has a widespread distribution in tropical waters of the Pacific and west Atlantic Oceans.

On Lord Howe Island, it has a small breeding colony behind North Beach in Norfolk Island Pines (Hutton 1990).

Ecology

Breeding: Spring/Summer breeder, but are present on Lord Howe Island all year(Hutton pers obs). They have an extended egg laying period between October-December. They lay one cream coloured egg covered with blotches of brown and purple grey (Hutton 19990).

Incubation 35 days, fledging 50 days (Hutton 1990).

Nest: Substantial structure of leaves, seaweed, twigs and debris, in trees or shrubs.

Diet: Mainly fish.

Foraging Behaviour: Forages typically in flocks, hovering low, actively swooping and snatching at surface.

Population Data/Health

Population estimated at 100 – 1 000 pairs (Hutton 1990).

Habitat

Exclusively pelagic, mainly in tropical and subtropical waters. Seen at sea feeding in groups or at nesting colonies. Often seen feeding within the lagoon during the winter months (Hutton pers obs).

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

Hindwood, K.A. 1940. The Birds of Lord Howe Island. *Emu* 40:1-86.

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Lindsey, T.R. 1986. *The Seabirds Of Australia*. The National Photographic Index Of Australian Wildlife. Angus & Robertson, UK.

Marchant, S. Higgins, P.J. (eds.) 1990. *The Handbook of Australian, New Zealand & Antarctic Birds*. Oxford University Press, Melbourne.

Ross, G.J.B., Weaver, K. & Greig, J.C. (eds) 1996. *The Status of Australia's Seabirds*: Proceedings of the National Seabird Workshop, Canberra, 1-2 November 1993. Biodiversity Group, Environment Australia: Canberra.

Vulnerable

Sea Bird

White Tern (*Gygis alba*)

Description

Body to 30cm; white all over. Wings long; tail forked.

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

Occurs in subtropical seas. The subspecies on Lord Howe Island, G. *alba royana* is rarely seen on the east coast of Australia but occurs on Norfolk Island and the Kermadec Islands.

The White Tern is a recent colonist of Lord Howe Island, first recorded in 1943. Most breeding sites are close to the lagoon in the settlement area (Harden 1993).

Ecology

Breeding: Spring/Summer breeder. Extended laying period from October-April. One white, blotched egg is laid. Incubation 35 days, fledging 70 days (Hutton 1990).

Nest: No nest is built. The single egg is laid in a crevice on the horizontal limb of tree.

Diet: Mainly small fish and squid.

Foraging Behaviour: Mildly gregarious, encountered singly or in small groups; seldom associates with terns or other noddies. Feeds mainly by surface seizing.

Population Data/Health

Population estimated at less than 1000 pairs (Hutton pers. obs.).

Habitat

Marine, pelagic, mainly in tropical and subtropical waters.

Threats

The juvenile mortality rate is very high due to predation by the introduced Masked Owl, the Currawong, the Kestrel and storm events. Regardless of these threats, the population continues to expand.

Impacts Upon Other Species

Unknown.

Photo: Ian Hutton

White Tern (*Gygis alba*)

Photo: Ian Hutton

White Tern (*Gygis alba*)

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

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Hindwood, K.A. 1940. The Birds of Lord Howe Island. *Emu* 40:1-86.

Hutton, I. 1991. *Birds of Lord Howe Island: Past and Present*. Hutton, Coffs Harbour.

Lindsey, T.R. 1986. *The Seabirds Of Australia*. The National Photographic Index Of Australian Wildlife. Angus & Robertson, UK.

Vulnerable **Sea Bird**

Grey Ternlet (*Procelsterna cerulea*)

Description

Body and wings light blue-grey, paler on face and breast; primaries darker. Black bill is pointed. Feet and legs black with yellow webs

Conservation Status

Listed as Vulnerable under the NSW TSC Act 1995.

Distribution

Widespread throughout the tropical and subtropical South Pacific Ocean. The Lord Howe Island Group and Norfolk Island are the only known breeding locations in Australian waters.

On the Lord Howe Island Group, breeding colonies are at North Head on the main Island, Ball's Pyramid, the Admiralty Islands, Muttonbird and Gower Island (Harden 1993).

Ecology

Breeding: Grey Ternlets are not migratory. Breeding begins in September when one whitish egg, with small dark and light brown blotches is laid. Incubation 32 days, fledging 37 days (Hutton 1990).

Nest: No nest is built, eggs are laid on a cliff ledge, usually sheltered from above.

Diet: Mainly small fish and crustaceans.

Foraging Behaviour: Sedentary or dispersive. Gregarious, usually feeds in small parties, but often forages or loafs alone. Feeds mainly by surface seizing.

Population Data/Health

Population estimated at 100-1 000 pairs (Hutton 1990).

Habitat

Marine, pelagic. Seen at sea feeding in flocks or at nesting colonies.

Threats

Unknown.

Impacts Upon Other Species

Unknown.

References

Fullagar, P.J., McKean, J.L. and Van Tets, G. F. 1974. Appendix F. Report on the birds, p. 55-72. In Recher, H. F. and Clark, S.S. *Environmental Survey of Lord Howe Island*. A report to the Lord Howe Island Board. N.S.W. Govt. Printer.

Harden, R.H. 1993. Fauna Impact Statement. The impact of domestic dogs on protected and endangered fauna on Lord Howe Island. NSW National Parks & Wildlife Service. Report prepared for the Lord Howe Island Board.

Hindwood, K.A. 1940. The Birds of Lord Howe Island. *Emu* 40:1-86.

Hutton, I. 1991. *Birds of Lord Howe Island: Past and Present*. Hutton, Coffs Harbour.

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Marchant, S. Higgins, P.J. (eds.) 1990. *The Handbook of Australian, New Zealand & Antarctic Birds*. Oxford University Press, Melbourne.

Pringle, J.D. 1987. *The Shorebirds Of Australia*. The National Photographic Index Of Australian Wildlife. Angus & Robertson, UK.

Ross, G.J.B., Weaver, K. & Greig, J.C. (eds) 1996. *The Status of Australia's Seabirds*: Proceedings of the National Seabird Workshop, Canberra, 1-2 November 1993. Biodiversity Group, Environment Australia: Canberra vii + 237 pp.

Endangered **Invertebrate**

Lord Howe Island Earthworm (*Pericryptodrilus nanus)*

Description

A small earthworm between 25 – 32mm in length made up of 111 – 123 segments.

Conservation Significance

Endemic species.

Listed as Endangered under the NSW TSC Act 1995.

Distribution

Restricted to the northern ridge to Mount Gower.

Ecology

Lives in deep leaf litter in moist environments close to streams.

Population data/health

The species is known from ten specimens, lodged in the Australian museum. Sampling at many other sites at Lord Howe specifically for earthworms has failed to extend the range beyond the northern ridge of Mount Gower.

Habitat

Requires constant moist environment, usually in shaded locations in leaf litter.

Threats

Disturbance to leaf litter, in particular trampling, resulting in changes to its micro environment.

Exotic earthworms have displaced native earthworms in many areas in Australia. Exotic species are already on Lord Howe Island around the settlement area which could have deleterious impacts if they spread.

Rodents may impact on this species.

Impact on other species

Unknown.

References

NSW Scientific Committee 2000. Preliminary Determination of *Pericryptodrilus nanus* as an endangered species.

Lord Howe Phasmid (*Dryococelus australis*)

Description

A giant flightless stick insect over 12cm in length. The adult is a honey brown colour with a white stripe down the side, while the juveniles are bright green, turning brown when mature.

Conservation Significance

Endemic species.

Listed as Endangered under the NSW TSC Act 1995.

Listed as Critically Endangered under the Commonwealth EPBC Act 1999.

Distribution

Only known from Ball's Pyramid, confined to a ledge approximately 30m x 5m at about 70m altitude. Although complete surveys have not been carried out, observations by boat and aerial photography indicate other potential sites are limited.

Previously located on the main island, but thought to have become extinct due to predation by Rats in the 1920's.

Ecology

Phasmids burrow in damp leaf debris during the day, and emerge to feed on shrubs of *Melaleuca howeana* at night. Account of Phasmids on the main island prior to extinction indicated they were abundant, nocturnal and lived in cracks in living trees during the day and emerged at night to feed on leaves in the tree canopy. Sexes can be identified by physical appearance.

Population data/health

Phasmids were once abundant on the main island. It was first collected in 1853 by officers on the survey vessel H.M.S. Herald, and is in collections at the Australian Museum. Phasmids were rediscovered on Ball's Pyramid in 2001, and a subsequent survey located 3 individuals that were all females.

A survey in March 2002 located 24 individuals. Ten of these were able to be sexed, and were identified as 8 females and 2 males.

Habitat

The population on Ball's Pyramid is confined to six small *Melaleuca howeana* shrubs, growing because of a water seep nearby. These shrubs provide food and leaf debris layer where the insects can retreat into damp, shaded location during the day.

Threats

Introduction of the rat to Ball's Pyramid could cause the extinction of the species.

The exotic plant species *Ipomoea cairica* may smother the food plant of the Phasmid on Ball's Pyramid Pridel *et al.* (2002).

Random stochastic events.

Impact on other species

Unknown.

References

Etheridge R. jnr. 1889. The general zoology of Lord Howe Island. *Australian Museum Memoirs* No. 2 pp 3-42.

Priddel, Carlile, Humphrey, Fellenberg and Hiscox 2003. Rediscovery of the "extinct" Lord Howe Island stick-insect (*Dryococelus australis*) (Montrouzier) (Phasmatodea) and recommendations for its conservation. *Biodiversity and Conservation* 12:1391-1403

Lord Howe Island Wood-feeding Cockroach (*Panesthia lata*)

Description

Large wingless wood-eating Cockroach with a length of between 22 – 40mm. Its colour ranges from red to black with a metallic sheen.

Conservation Significance

Endemic.

Listed as Endangered under the NSW TSC Act 1995.

Distribution

In Australia there are 11 species of *Panesthia*, all endemic. The Lord Howe Island Cockroach is only known from offshore islands (Blackburn and Roach Islands).

Ecology

Burrows in soil under rocks and logs. Feeds on leaf litter and rotting wood.

Population data/health

This species once occurred abundantly on the main Island. It was known from collections by the Australian Museum, with the last collections on the main island being in the 1930's.

Habitat

Damp shaded locations.

Threats

Most probable cause of decline is the introduced Rat; mice may also prey upon juveniles of this species.

Impact on other species

Unknown.

References

Etheridge R. jnr. 1889. *Australian Museum Memoirs* No. 2 page 31.

Rose H. 2003. Research Report on *Panesthia lata* Blaberid Cockroach 25-29 March 2003.

NSW Scientific Committee 2003. Nomination for Listing *Panesthia lata* as an endangered species.

Photo: Ian Hutton

LHI bush cockroach (*Panesthia lata*)

Lord Howe Island Placostylus (*Placostylus bivaricosus*)

Description

A large ground-dwelling land snail with a pointed shell up to 8cm in length, medium to dark brown in colour (weathering to white in older animals) and with a thickened lip in mature animals. The body is black.

Conservation Significance

Endemic, listed as an Endangered species under the NSW TSC Act 1995 and as Critically Endangered under the Commonwealth EPBC Act 1999.

Three subspecies are recognized: *P. bivaricosus cuniculinsulae*, *P. bivaricosus etheridgei*, and *P. bivaricosus bivaricosus*, but these are not listed separately under legislation.

Distribution

The three subspecies have different distributions:

P. bivaricosus cuniculinsulae, from Blackburn Island; presumed to be extinct.

P. bivaricosus etheridgei, possibly extinct, but may survive on Little and Big Slopes.

P. bivaricosus bivaricosus, extant but has declined in range and abundance.

The genus has a disjunctive distribution from the Solomon Islands, Fiji and New Caledonia to Lord Howe Island and the northern extremity of New Zealand.

Ecology

Lives in leaf litter, under canopy cover, usually in damp shady locations.

Population data/health

Point locality data from surveys in 1999 (Ponder & Chapman) revealed 19 sites where live *P. bivaricosus* were found, 9 sites where fresh *P. bivaricosus* specimens were found (extant populations probably exist but none were encountered) and 26 localities where only old *P. bivaricosus* shells were found.

Habitat

Damp shaded locations provided by closed canopy. *Drypetes/Cryptocarya* lowland forest on calcarenite soil is their main habitat.

Threats

Most probable causes of decline of this species are:

- The recent arrival of predatory animals (e.g. rodents, Blackbirds and Songthrushes).
- Loss of habitat through clearing of lowland forest.

Impact on other species

Unknown.

References

NSW NPWS 2001. Lord Howe Placostylus Recovery Plan. NSW NPWS, Hurstville, NSW.

NSW NPWS 2002. Predictive Habitat Modeling of the Lord Howe Placostylus on Lord Howe Island. NSW NPWS, Coffs Harbour.

Photo: Michael Murphy

LHI land snail *(Placostylus bivaricosus)*

flora

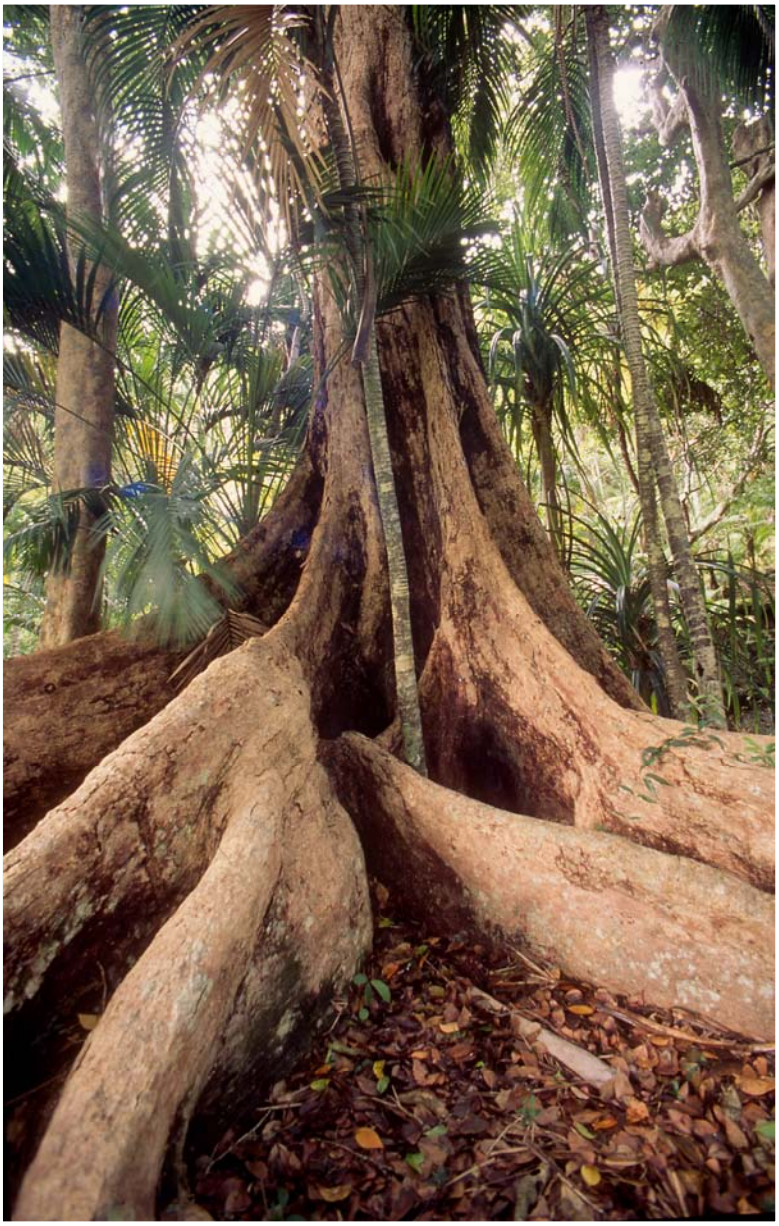

Photo: Ian Hutton

Scalybark

Alyxia lindii

Family APOCYNACEAE

Description

Scrambling shrub to 2-3m high which tends to climb over other low vegetation. The dark green leaves have milky sap and are arranged in threes. The white flowers appear in terminal clusters between November and February and are followed by a black, 2cm long fruit.

Conservation significance

Endemic, widespread but never common. Protected within the Permanent Park Preserve.

Distribution

Found mainly on the ridges of the lowland hills i.e. Transit, Intermediate, Mt Eliza. The genus Alyxia consists of about 120 species from India through tropical Asia to Southern China, Malaysia, east and north Australia, and the Pacific Islands.

Ecology

Grows more in shade than open sun.

Population data/health

Scattered as single plants through range.

Habitat

Semi-shaded forest of lowland ridges.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Alyxia squamulosa

Family APOCYNACEAE

Description

Scrambling shrub tending to climb over stunted bushes. The dark green leaves are oblong or slightly wider at the end and are arranged in whorls of 4 or 5. They have milky sap. Flowers are white, sweet-scented and arranged in large heads. Fruits are black and around 2cm long, sometimes with 2 fruits end to end.

Conservation significance

Endemic and restricted in its range. Protected within the Permanent Park Preserve.

Distribution

High in mountains, particularly on exposed ridges off Mt Gower and Mt Lidgbird, down to 600m.

Ecology

Mainly in open sun.

Population data/health

The main populations are confined along the Razorback Ridge and the ridge south east off Mt Lidgbird to "The Pimple". The plant is prolific at both of these locations, but only scattered rarely elsewhere.

Habitat

Highly restricted habitat on Lord Howe Island. Remote, exposed, rocky ridges off the mountains at elevations above 600m. The habitat is significant in that it contains several plant species rarely found elsewhere, e.g. *Gonocarpus* sp., *Xylosma parvifolium, Geniostoma huttonii, Coprosma inopinata*.

Threats

The ridges where this plant mainly grows are very narrow, and walkers accessing these areas can trample this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Apium prostratum ssp. *howense* — Sea Celery

Family APIACEAE

Description

A trailing, perennial herb, with stems to 30cm. Strongly aromatic when bruised. Leaves are 2-17cm long and divided into 3. The small flower clusters are in groups of 1-3 and consist of 8-12 flowers. They are white to pinkish.

Conservation significance

Endemic subspecies.

Distribution

Coastal calcarenite cliffs and adjacent sand areas near the sea.

Ecology

Grows in cracks of coralline rocks and sand pockets, above the high water mark, but within the splash zone.

Population data/health

Fairly common throughout its range.

Habitat

Grows in cracks of calcarenite rock and sand pockets above the high tide line but can be within the splash zone.

Threats

Possible crowding by introduced grasses and the weed *Senecio elegans,* which is increasing along calcarenite cliffs from Ned's Beach to Middle Beach.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Asplenium goudeyi

Family ASPLENIACEAE

Description

Fern with fronds ranging from 20cm to 150cm long.

Conservation significance

Endemic species widespread and common. Protected within the Permanent Park Preserve.

Distribution

Found from sea level to the mountain tops, northern hills and southern mountains. From a genus of about 700 species worldwide.

Ecology

Can tolerate a wide range of conditions – some stunted individuals with 20cm fronds on west facing rock cliffs in full sun, others with fronds 150cm long on mountain summits in shaded conditions.

Population data/health

Common and widespread.

Habitat

Grows on soil, or as an epiphyte on rocks or occasionally trees, in sun or shade.

Threats

None known

References

Jones, D 1996 A new species of *Asplenium* L. section Thamnopteris C.Presl. (Aspleniaceae) from Lord Howe Island. *Muelleria* 9.

Asplenium milnei

Family ASPLENIACEAE

Description

A medium sized terrestrial or lithophytic fern with bright green, shiny, pinnate fronds. The spore cases are linear and 5-10mm long and follow a lateral nerve on the frond.

Conservation significance

Common endemic. Protected within the Permanent Park Preserve.

Distribution

Common around the lowlands on calcarenite and basalt soil, ranging to the mountain tops, but not as common at higher elevations. Genus of 750 species, cosmopolitan.

Ecology

Grows on basalt and calcarenite soils. On coastal cliffs it is stunted and develops leathery, yellowish fronds.

Population data/health

Common and widespread.

Habitat

Common on the forest floor, or sprouting out of calcarenite rocks, Also grows on exposed rocky coastal cliffs.

Threats

Rodents eat frond stipes.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Asplenium pteridoides

Family ASPLENIACEAE

Description

A terrestrial fern with coarse, much divided fronds.

Conservation significance

Rare endemic fern. Protected within the Permanent Park Preserve.

Distribution

Found only in higher parts of the southern mountains. Main areas are Little Pocket and valley off south east of Mount Lidgbird.

Ecology

Only found growing in moist areas under deep shade.

Population data/health

Surveys carried out 2002 indicate that the species is rare and may be listed as endangered. There are two main populations: Little Pocket on Mount Gower; and the valley south east of Mount Lidgbird.

Habitat

Deep shaded valleys as understorey plant, with canopy of *Hedyscepe canterburyana.*

Threats

Limited range.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Asplenium surrogatum

Family ASPLENIACEAE

Description

A medium sized terrestrial or occasionally epiphytic fern with dark green shiny fronds, with pinnae deeply divided.

Conservation significance

Common endemic fern.

Distribution

Mainly found in the southern mountain areas from sea level to the summits (where it is more common), and a few moist areas of the northern hills.

Ecology

A hybrid with *A. milnei* has been recorded.

Population data/health

Widespread an common.

Habitat

Shaded forest floor on basalt soil.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Atractocarpus stipularis Green Plum

Family RUBIACEAE

Description

A tree to 12m high with large rounded fleshy leaves.

Conservation significance

A common endemic species. Protected within the Permanent Park Preserve.

Distribution

Found from sea level to the mountain tops in moist sheltered forests, mainly around the southern mountains. Also a few in the northern hills and Transit Hill. From a genus of 40 species New Caledonia, PNG, Malesia, Tonga.

Ecology

Bird dispersed seeds. Seeds germinate prolifically.

Population data/health

Common and abundant.

Habitat

Sheltered forest in moister conditions on basalt soil.

Threats

Rats eat seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Blechnum contiguum

Family BLECHNACEAE

Description

A climbing fern with stiff, shiny, dark green fronds; usually epiphytic on logs or tree trunks, climbing with its thick rhizome, rarely terrestrial.

Conservation significance

An endemic species. Lord Howe Island is the only location in Australia for this species. Protected within the Permanent Park Preserve.

Distribution

Restricted to the southern mountains above 600m. It is a conspicuous component of the summit cloud forest fern flora. Also found in New Caledonia.

Ecology

Occurs in cloud forest vegetation.

Population data/health

Common in its range.

Habitat

Shaded moist areas of the higher mountain areas.

Threats

None known.

Other comments

There are some differences between the Lord Howe Island and New Caledonia plants.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Blechnum fullagarii

Family BLECHNACEAE

Description

A terrestrial or lithophytic fern. Fronds dimorphic.

Conservation significance

Endemic species restricted to the summits of the southern mountains. Protected within the Permanent Park Preserve.

Distribution

Confined to Mt Gower above 750 metres, where it is common on the summit. Genus of 220 species worldwide.

Ecology

Moist forests.

Population data/health

Widespread and abundant in its limited range.

Habitat

Shaded forest of southern mountains.

Threats

Climate change may change the moisture conditions of the cloud forest on Mount Gower summit and threaten this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Blechnum geniculatum

Family BLECHNACEAE

Description

Terrestrial or lithophytic fern. Fronds are 10-25cm long and 7-15cm broad.

Conservation significance

Rare endemic species, with a very restricted habitat. Protected within the Permanent Park Preserve.

Distribution

Cliffs with waterfalls that flow off the north and west faces of Mount Gower, also on rock faces on Mount Gower. A few specimens seen at base of waterfalls on Mount Lidgbird west face and south west face around 450m.

Ecology

Blechnum geniculatum appears to needs almost constant water, either as trickle or spray. It can gain a foothold on sheer vertical basalt rock faces, and grow despite some very strong flows of water from time to time.

Population data/health

Surveys carried out in 2002 indicate that this species is rare. May be eligible for listing as endangered.

Habitat

Wet gullies where creeks flow over mountain summits, down rock faces with waterfalls and water seepages, and at the base of waterfalls.

Threats

In a few places Crofton Weed is invading stands of *Blechnum geniculatum*. However *B. geniculatum* tends to grow on the more open, vertical, rock cliffs and can cling onto the bare rock whereas the Crofton Weed needs some soil to get a hold. Crofton Weed grows vigorously at the base of the main cliff on the north face of Mount Gower where there is light, and particularly where there is water from the waterfalls off the summit.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Blechnum howeanum

Family BLECHNACEAE

Description

A tall, vigorous, terrestrial fern with light green fronds to 1 metre long.

Conservation significance

Common endemic fern. Protected within the Permanent Park Preserve.

Distribution

Common around the southern mountains from 100m to the summits. Genus of about 220 species worldwide.

Ecology

Prefers damp areas.

Population data/health

Common in its range.

Habitat

Found mainly in creek beds and moist shaded areas and the base of waterfalls of the southern mountains.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Boehmeria calophleba

Family URTICACEAE

Description

A small tree to 3m with soft-textured leaves that are silver-white underneath.

Conservation significance

Endemic species, uncommon but widespread in mountains. Protected within the Permanent Park Preserve.

Distribution

Uncommon but locally abundant in wetter forest areas of the southern mountains, particularly Mount Lidgbird. An endemic species from a genus of 75 species, mainly tropical, one species in New Zealand, one in the rainforests of northern NSW.

Ecology

Thrives in moist sites. This species can be a coloniser of landslips.

Population data/health

Widespread in its range, and sometimes locally abundant.

Habitat

Grows well in moist shaded gullies on the slopes of the southern mountains.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Brachyscome segmentosa

Family ASTERACEAE

Description

Perennial herb, stems spreading and decumbent.

Conservation significance

Endemic species restricted to damp shaded areas in the southern mountains. Protected within the Permanent Park Preserve.

Distribution

Around ledges of the southern mountains above around 300m.

Ecology

Wind dispersed seeds.

Population data/health

Frequent in its range.

Habitat

Damp shaded areas at higher elevations.

Threats

Introduced grasses carried on walker's boots may impact on the habitat along walking tracks.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Caesalpinia bonduc Knicker Nut

Family CAESALPINIACEAE

Description

A woody scrambling shrub with bipinnate leaves and bright yellow flowers. The undersides of the leaf stems have sharp recurved hooks. The seed pod is also covered in recurved hooks, and contains two hard seeds.

Conservation significance

Rare and restricted occurrence on Lord Howe Island. Presumed extinct on N.S.W. north coast. Listed as Endangered on the TSC Act.

Distribution

It is only found behind Ned's Beach and adjacent to Old Settlement Beach on Lord Howe Island. It is also found widely in the tropics and subtropics.

Ecology

Seeds float to aid dispersal.

Population data/health

Surveys carried out in 2001 found 19 plants at Ned's Beach and one plant at Old Settlement.

Habitat

Sandy soil in sun or light shade, close to the coast.

Threats

The introduced grasses Buffalo Grass *Stenotaphrum secundatum* and Kikuyu *Pennisetum clandestinum* are invading the habitat at Ned's Beach.

Current management actions

None.

Other comments

The sharp recurved hooks under leaves make this an unpopular plant.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island*. Report prepared for the NSW Scientific Committee, Hurstville.

Photo: Ian Hutton

Knicker Nut

Photo: Ian Hutton

Knicker Nut

Calystegia affinis

Family CONVOLVULACEAE

Description

A thin-stemmed twiner with sparse leaves and pale pinky-purple flowers, sprawling over a wide area of several square metres to 1800 square metres.

Conservation significance

Found only on Lord Howe & Norfolk Islands. Lord Howe Island specimens may be distinct from Norfolk Island specimens. Listed as Endangered on the NSW TSC Act. Listed as Critically Endangered on the EPBC Act. Mt Gower populations protected within the Permanent Park Preserve.

Distribution

Rare and very localised and restricted in its range. This species is endemic to Lord Howe Island and Norfolk Island. On Lord Howe Island it is located at Old Settlement and Mt Gower. From a genus of about 25 species in the tropics and subtropics.

Ecology

Stems take root when touching the soil. Prolific growth in the sun in cultivation.

Population data/health

Rare on Lord Howe Island and only known from four localities. There is possibly only 1 plant at each locality, sprawling over an area of some square metres.

Habitat

The three mountain localities are in open, sunny moist areas near semi-permanent water flows. The Old Settlement population is growing on a south facing slope in amongst introduced Kikuyu grass on the edge of *Drypetes/Cryptocarya* forest.

Threats

Low numbers and small range. The Dawson's Ridge population is under threat from introduced kikuyu grass, and does not flower. The mountain populations are under threat from introduced plants, particularly Crofton Weed.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Hutton I. & Telford I. 1999. Report on *Calystegia affinis* on Lord Howe Island.

Photo: Ian Hutton

Calystegia affinis

Carmichaelia exsul

Family FABACEAE

Description

Broom-like leafless shrub with small white and purple pea flowers.

Conservation significance

A rare endemic species. Listed as Endangered on the NSW TSC Act. Protected within the Permanent Park Preserve.

Distribution

Restricted to the southern mountains mainly around the 450-600m level, below the main cliffs of the mountains. Largest population at west end of Mount Gower north face, north edge of Big Pocket and near bottom of the Razorback.

From a genus of 41 species all restricted to New Zealand except for this species.

Ecology

Grows well in exposed areas. Bird dispersed seeds.

Population data/health

Low numbers of individual plants found in surveys 2001/2003. Main concentration of plants found at Mount Gower north face (21 plants); Big Pocket north edge (8 plants); edge of north face of Razorback near bottom (6 plants).

Other populations consist of scattered individuals or two or three together.

Habitat

Open sunny areas, mainly at top of treeline of forested mountain slopes/ bottom main cliffs of mountains slopes.

Threats

Low numbers.

Introduced weeds, especially Crofton Weed.

Previously were threatened by browsing by goats, however, this is no longer a threat.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Photo: Ian Hutton

Carmichaelia exsul

Photo: Ian Hutton

Carmichaelia exsul

Cassinia tenuifolia Bully Bush

Family ASTERACEAE

Description

A compact bush to 2m high, with dense foliage of small, pale green, narrow leaves.

Conservation significance

Endemic species, widespread and common. Protected within the Permanent Park Preserve.

Distribution

Common and widespread in the lowlands and exposed open area (e.g. cliffs) to about 600m. Genus of 21 species in Australia and New .Zealand.

Ecology

This species is the most common species to recolonise disturbed areas such landslips, tree fall clearings, lightning strikes, etc on the Lord Howe Island Group. It has wind-dispersed seeds.

Population data/health

Widespread and common.

Habitat

Prefers exposed sites, forest edges and new clearings. Occurs on both basalt and calcarenite soils.

Threats

None known

Other comments

This species is a very useful plant for revegetation, being fast growing and providing dense foliage as a good windbreak. It is propagated at the Lord Howe Island nursery for revegetation projects.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Celtis conferta ssp. *amblyphylla* — Cotton Wood

Family ULMACEAE

Description

A tall tree to 16m with whitish bark. The leathery leaves are distinct with their three veins from the base and fine reticulate venation.

Conservation significance

A common endemic subspecies. The other subspecies *Celtis conferta* ssp. *conferta* is confined to New Caledonia. Protected within the Permanent Park Preserve.

Distribution

Common and widespread in the lowland forests to about 200m altitude. The genus is cosmopolitan with one species in the rainforests of eastern Australia.

Ecology

On both basalt and calcarenite soils. Dioecious. Bird dispersed seeds.

Population data/health

Widespread throughout its range, reasonably common.

Habitat

Sheltered rainforest.

Threats

Rodents eat seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Cephalomanes bauerianum

Family HYMENOPHYLLACEAE

Description

A relatively large terrestrial or lithophytic filmy fern, with very fine, much divided lacy fronds to 50cm long.

Conservation significance

Endemic to Lord Howe and Norfolk Islands. Lord Howe Island has the most significant populations. Protected within the Permanent Park Preserve.

Distribution

Common in the southern mountains mainly on the summits but going down to almost sea level in moist gullies. From a small genus of about 10 species, with one extending to the Australian mainland, widespread mostly in subtropical humid habitats; this species is also found on Norfolk Island.

Ecology

The fronds are delicate but somewhat harsh textured, particularly when its habitat becomes dry.

Population data/health

Abundant and widespread on the mountain summits and in moist gullies at lower elevations.

Habitat

This fern grows prolifically, lining the banks of moist, deeply shaded creek beds and soaks.

Threats

Climate change may alter the moisture conditions of the cloud forest on Mount Gower.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Chamaesyce psammogeton

Family EUPHORBIACEAE

Description

Perennial herb, glabrous. The reddish-purple stems are prostrate, to 35 cm or more. Exudes milky sap when damaged.

Conservation significance

Rare on Lord Howe Island. Listed as Endangered on the NSW TSC Act, also found in coastal NSW north to Queensland.

Distribution

Coastal dune at Blinkie Beach.

Ecology

Well adapted for growth on low nutrient sand dunes affected by wind and salt spray.

Population data/health

Surveys carried out in 2002 indicate the species is restricted to one location at Blinkie Beach. It was previously recorded from North Beach, but not relocated in the 2002 surveys.

Habitat

Sand dune above high tide line, in amongst *Spinifex hirsutus*.

Threats

Kikuyu and Buffalo Grass growing behind the dune, may threaten the habitat of the species.

Possible invasion of the dune by the exotic plant *Euphorbia paralias*. This weed is established on Lagoon Beach dune, and is a major weed on the dunes on the south coast of NSW and Victoria.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Photo: Ian Hutton

Chamaesyce psammogeton

Chionanthus quadristamineus Blue Plum

Family NYCTAGINACEAE

Description

A large tree to 16m high with whitish bark. The fruit is a large purple drupe 5cm long with one large seed inside, encased in a hard endocarp.

Conservation significance

Common endemic species. Protected within the Permanent Park Preserve.

Distribution

Common in the sheltered forests of the mountains and Intermediate Hill from sea level to 400m. A genus of about 100 species from tropical America, Asia and Africa, with a few species in Australia and the Pacific.

Ecology

The fruit is probably water dispersed.

Population data/health

Very common and abundant.

Habitat

Sheltered tall forest on slopes of mountains and Intermediate Hill.

Threats

Rats eat the seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Chionochloa howensis

Family POACEAE

Description

Erect, tussocky perennial grass to 1m tall.

Conservation significance

Endemic species with restricted range. Protected within the Permanent Park Preserve.

Distribution

Only known on or near cliffs of Mounts Lidgbird and Gower.

Ecology

Able to grow on cliff ledges.

Population data/health

Unknown.

Habitat

Open rocky cliff ledges at high mountain elevations.

Threats

None known.

Other comments

Discovered in 1970 by J. Pickard.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Coprosma huttoniana

Family RUBIACEAE

Description

Shrub or small tree 1-2m, sometimes 3m. Young stems and leaves are hairless. The indistinct flowers are green. The opposite leaves have a somewhat unpleasant smell when crushed.

Conservation significance

An endemic species. Protected within the Permanent Park Preserve.

Distribution

Common in the mountains from 500m. An endemic species from a genus of 90 species from Borneo to Australia, New Zealand and Pacific Islands.

Ecology

Dioecious. Wind pollinated flowers. Bird dispersed seeds.

Population data/health

Common throughout its range

Habitat

Open areas around cliffs and rock ledges of mountains.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Coprosma inopinata

Family RUBIACEAE

Description

A compact, prostrate shrub to 0.5m with light green lanceolate, opposite leaves.

Conservation significance

Endemic species. Listed as Endangered on the NSW TSC Act. Protected within the Permanent Park Preserve.

Distribution

Only found on two remote ridges off the southern mountains. From a genus of 90 species from Borneo to Australia, New Zealand and the Pacific Islands.

Ecology

Dioecious. Wind pollinated flowers. Bird dispersed seeds.

Population data/health

Rare. Only known from remote ridges off southern mountains at two localities: the Razorback on Mount Gower and the south east ridge off Mt Lidgbird.

Only 29 plants located in surveys 2001.

Habitat

Highly restricted habitat on Lord Howe Island. Remote, exposed, rocky ridges with shaded southerly aspect. The habitat is significant in that it contains several rare plant species, e.g. *Gonocarpus* sp., *Xylosma parvifolium, Geniostoma huttonii*.

Threats

Small numbers of known individual plants.

The ridges which are the main habitat for this species are very narrow, and walkers accessing these areas can trample this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Photo: Ian Hutton

Coprosma inopinata

Coprosma lanceolaris

Family RUBIACEAE

Description

Shrub 1-2m, occasionally 3m. Underside of opposite leaves have small domatia pits.

Conservation significance

An endemic species common in its range. Protected within the Permanent Park Preserve.

Distribution

Common in the southern mountains from 500m. An endemic species from a genus of 90 species from Borneo to Australia, New Zealand and the Pacific Islands.

Ecology

Dioecious. Wind pollinated flowers. Bird dispersed seeds.

Population data/health

Common throughout its range.

Habitat

Sunny open, but protected areas around cliffs and rock ledges.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Coprosma prisca Goatwood

Family RUBIACEAE

Description

A shrub to 2m high with bright green shiny, opposite leaves.

Conservation significance

Endemic species. Some plants protected within the Permanent Park Preserve.

Distribution

Found mainly in coastal lowland areas, but some grow on edge of the Little Pocket at an altitude of 600m. Genus of about 90 species from Borneo to Australia, New Zealand and the Pacific Islands.

Ecology

Dioecious. Wind pollinated flowers. Bird dispersed seeds.

Population data/health

Common throughout its range.

Habitat

On lowlands more common on calcarenite soils; in sunny locations.

Threats

None known.

Other comments

This species is propagated at the island nursery as a plant for landscaping around the lowlands.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Coprosma putida Stinkwood

Family RUBIACEAE

Description

Bush to small tree 4m high. The large, opposite leaves emit a putrid odour when bruised or crushed. Fruits are red and occur in winter to spring.

Conservation significance

Endemic species. Widespread on Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Widespread and common in sheltered forests from sea level to the mountain tops. From a genus of approximately 90 species from Borneo to Australia, New Zealand and the Pacific Islands.

Ecology

Dioecious. Wind pollinated flowers. Bird dispersed seeds.

Population data/health

Common throughout its range.

Habitat

Widespread in open areas and in open forest, on basalt soil.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Coprosma sp. nov.

Family RUBIACEAE

Description

Straggling shrub to 1m high. Leaves opposite.

Conservation significance

Rare. Only located during rare plant surveys in 2001. Possibly a new species, and probably endemic to Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Mount Lidgbird north face, mainly around base of Greyface on Mount Lidgbird. Genus of 90 species from Borneo to Australia, New Zealand and the Pacific Islands.

Ecology

Most *Coprosma* species are dioecious, have wind pollinated flowers and bird dispersed seeds.

Population data/health

Recorded from a restricted area.

Habitat

Scrambling amongst native grasses and low shrubs of *Metrosideros nervulosa, Cassinia tenuifolia,* and *Dodonaea viscosa.*

Threats

None known.

Other comments

This plant has characteristics of both *Coprosma lanceolaris* and *Coprosma huttoniana,* but is distinct from both.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Hutton, I (2005) *Rare Plant Surveys of Lord Howe Island 2.* Report prepared for the Biodiversity Conservation Science Section, Dept of Environment and Conservation.

Corokia carpodetoides

Family ESCALLONIACEAE

Description

A small tree to 5m high. Masses of tiny yellow flowers cover the plant in summer.

Conservation significance

Rare endemic species restricted to mountain tops. Protected within the Permanent Park Preserve.

Distribution

Mainly on the summits of Mounts Gower and Lidgbird, where it is locally common; a few plants lower down to about 700m. From a genus of 6 species, 2 in New Zealand, one each Rapa, Chatham Islands and the Nightcap Range in NSW on the Australian mainland.

Ecology

Bird dispersed seeds.

Population data/health

Locally common on the summit of Mount Gower.

Habitat

Mountain summits and ridges in open sun.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Cryptocarya gregsonii Blackbutt

Family LAURACEAE

Description

A tree to 12m high with attractive, thick, leathery round leaves. Fruit is black and globular, about 4cm in diameter, with thick flesh inside.

Conservation significance

Uncommon endemic species. Protected within the Permanent Park Preserve.

Distribution

Uncommon but locally abundant on the summit of Mt Gower. There are a few near the Goat House, the Saddle and the flanks of Mt Lidgbird. From a genus of 200-300 species in the tropics and subtropics.

Ecology

More common in moist environments. Has a large seed, which provides food for the seedling in shaded forest floor.

Population data/health

Uncommon but locally abundant.

Habitat

Thrives in moist sheltered areas.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Cyathea brevipinna

Family CYATHEACEAE

Description

A tree fern with a trunk 1.5 to 3m high; leaf scars on the trunk are more or less fibrous.

Conservation significance

Common endemic fern. Protected within the Permanent Park Preserve.

Distribution

Common in the southern mountains above 700 metres. From a mainly tropical genus of about 600 species, extending south to New Zealand, Chile and South Africa. Eleven species on mainland Australia, all on the east coast.

Ecology

Prefers moist shaded environments.

Population data/health

Widespread and common its range.

Habitat

Within moist shaded rainforest of southern mountain summits.

Threats

Climate change.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Cyathea howeana

Family CYATHEACEAE

Description

A medium sized tree fern with a trunk 2 to 3m high. The fronds fall off cleanly, leaving a bare trunk.

Conservation significance

Common endemic species. Protected within the Permanent Park Preserve.

Distribution

Generally common on the upper slopes of the southern mountains, mainly above 700m., some lower. From a mainly tropical genus of about 600 species, extending south to New Zealand, Chile and South Africa. Eleven species occur on mainland Australia, all on the east coast, in tropical and temperate regions.

Ecology

No specific information available.

Population data/health

Common across its range.

Habitat

Rainforest of the southern mountains, sometimes in the open.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Cyathea macarthurii

Family CYATHEACEAE

Description

A tall endemic tree fern with a trunk 2 to 4 metres high, shaggy from persistent frond bases.

Conservation significance

Common endemic fern. Protected within the Permanent Park Preserve.

Distribution

Common in the southern mountains from sea level to mountain tops. From a mainly tropical genus of about 600 species, extending south to New Zealand, Chile and South Africa. Eleven species on mainland Australia, all on the east coast, tropical and temperate.

Ecology

No specific information available.

Population data/health

Common and widespread in its range.

Habitat

Moist shaded areas of the southern mountains.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Cyathea robusta

Family CYATHEACEAE

Description

A tall tree fern with a trunk to 5 metres high; leaf bases persistent on trunk at first.

Conservation significance

Common endemic fern. Protected within the Permanent Park Preserve.

Distribution

Found around the southern mountains from sea level to the summits, and on Intermediate Hill. From a mainly tropical genus of about 600 species, extending south to New Zealand, Chile and South Africa. Eleven species on mainland Australia, all on the east coast, in tropical and temperate regions.

Ecology

No specific information available.

Population data/health

Common and widespread.

Habitat

Moist shaded areas, creek gullies.

Threats

None known.

Other comments

Live plants exported in late 1800's. Currently in the nursery trade on mainland Australia.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Dendrobium macropus ssp. *howeanum*

Family ORCHIDACEAE

Description

An epiphytic orchid, usually occurring in large clumps.

Conservation significance

An endemic subspecies, widespread. Protected within the Permanent Park Preserve.

Distribution

Common in the lowland forests up to 450m. This species is also found in New Caledonia and Fiji. Genus of 1400 species in Australia, New Zealand, the Pacific Islands, Asia and Malesia.

Ecology

Wind dispersed seeds.

Population data/health

Widespread and common throughout its range.

Habitat

Epiphytic on trees or rocks.

Threats

Goats browse on leaves.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Dendrobium moorei

Family ORCHIDACEAE

Description

Epiphytic, mainly on tree branches and occasionally on rocks. Flowers most of the year.

Conservation significance

Endemic species; locally abundant. Protected within the Permanent Park Preserve.

Distribution

Common in the southern mountains from 350m to summits, occasionally down to 150m, and rarely down to 50m (Malabar). From a genus of 1400 species in Australia, New Zealand, the Pacific Islands., Asia and Malesia.

Ecology

Wind dispersed seeds.

Population data/health

Common throughout its range. Very common on the summit of Mount Gower.

Habitat

Epiphytic, mainly on tree branches 2 to 3 m above ground level, occasionally on rocks or cliffs.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Dianella intermedia

Family LILIACEAE

Description

Rhizotamous evergreen herb, leaves to 40cm long.

Conservation significance

Widespread but uncommon, endemic to Lord Howe and Norfolk Islands. Protected within the Permanent Park Preserve.

Distribution

Lowland ridges to higher mountain elevations around 600m.

Ecology

Bird dispersed seeds.

Population data/health

Widespread but not common.

Habitat

Open, grassy, rocky areas.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Dietes robinsoniana Wedding Lily

Family IRIDACEAE

Description

A perennial herb with blue-green strap-like leaves to 1m long. Flowers are white with purple markings.

Conservation significance

An endemic species. Protected within the Permanent Park Preserve.

Distribution

Uncommon, but locally abundant in the southern mountains and now cultivated widely in the settlement. From a genus of six species, the other five being in southern Africa.

Ecology

Thrives in open sunny areas such as cliff ledges. Prolific seed producer.

Population data/health

Widespread across its habitat.

Habitat

Southern mountain cliff ledges and ridges in the open.

Threats

Rats eat seeds, leaves and also dig up roots. Introduced *Dietes* species used in some island gardens have the potential to cross-pollinate with this endemic species.

Other comments

Used widely in the settlement and rehabilitation sites.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Diplazium melanochlamys

Family ATHYRIACEAE

Description

A large terrestrial fern with bright green fronds.

Conservation significance

Reasonably common endemic fern. Protected within the Permanent Park Preserve.

Distribution

Widespread in the southern half of the Island. From a large genus of about 400 species widely distributed in the tropics; 8 species in Australia.

Ecology

No specific information available.

Population data/health

Occasional or locally abundant, widespread in the southern mountains and Intermediate Hill.

Habitat

Moist shaded habitats, such as creek gullies and under tall closed forest.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Dracophyllum fitzgeraldii Fitzgeraldii Tree

Family EPACRIDACEAE

Description

A spreading tree to 15m with long, narrow leaves in rosettes at the ends of branches forming a dense canopy. The attractive flowers occur in a terminal spike to 12cm long made up of 100 or so small white flowers.

Conservation significance

An endemic species widespread in its range. Protected within the Permanent Park Preserve.

Distribution

Occurs in the southern mountains from 120m. The genus has 35 species in New Zealand, and a further 13 in Australia and New Caledonia.

Ecology

An unusual tree-sized member of its family. This species flowers first on the mountain summits and later at the lower altitudinal range. Rarely flowers at altitudes below 400m.

Population data/health

Widespread and common in its range.

Habitat

Prefers exposed sites on ridges and at the edges (particularly top edge) of rainforest on steep slopes of both mountains – not as common in the middle of the rainforest.

Threats

Epacrids in general, and a *Dracophyllum* species in Tasmania, are highly susceptible to the pathogen *Phytophthora cinnamomi*. This pathogen has been recorded at a low altitude site on Lord Howe Island. The risk of significant decline in the species if the pathogen is introduced to its habitat is very high.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Drypetes deplanchei ssp. *affinis* — Greybark

Family EUPHORBIACEAE

Description

A handsome tall tree to 16m with light grey bark often mottled pink with lichen. Leaves are 6cm x 3cm and the 2cm long fruit is bright orange to yellow and globular.

Conservation significance

Endemic subspecies common and widespread. Some areas protected within the Permanent Park Preserve.

Distribution

One of the most common lowland trees on Lord Howe Island; occasionally found to 600m especially on ridges and drier areas. Also found in north and east Australia. Genus of about 200 species distributed mainly in the Old World tropics.

Ecology

Dioeceous. Bird dispersed seeds

Lowland calcarenite *Drypetes* forest is rich and diverse in invertebrates, including an important habitat for the large endangered land snail *Placostylus bivaricosus*.

Population data/health

Common and widespread across its range.

Habitat

Thrives in drier rainforest habitats of the lowlands and ridges. On both basalt and calcarenite soils.

Threats

Clearing for future development in the settlement area. Rats eat seeds. In lowland areas north of Intermediate Hill the habitat is invaded by weeds such as Cherry Guava, Sweet Pittosporum, Climbing Asparagus, Ground asparagus, Bridal Creeper and Ochna.

Other comments

Propagated on the Island as an ornamental plant and used widely in the settlement and rehabilitation sites.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Dysoxylum pachyphyllum Island Apple

Family MELIACEAE

Description

A tree to 8m, occasionally taller.

Conservation significance

Common and widespread endemic species. Protected within the Permanent Park Preserve.

Distribution

From sea level to the summits in wet forest areas. Genus of rainforest trees from north east Australia, south west Pacific Islands, south Asia, Malesia and New Zealand.

Ecology

Exhibits cauliflory (where floral stalks come out of the trunk and branches). This is especially prominent when in fruit. Currawongs eat seeds and disperse.

Population data/health

Common and locally abundant, e.g. Mount Gower summit, and the west edge of the north face around 300m. Mount Lidgbird sea level to summit. Intermediate and Transit Hills.

Habitat

Thrives in moist sheltered areas. Largest trees in Big Pocket and valley on ridge off south east corner Mount Lidgbird.

Threats

Rats eat seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Elaeocarpus costatus

Family ELAEOCARPACEAE

Description

A rainforest tree to 8m in height. The leaf margins are toothed and dark green. Flowers are white in clusters of 8 to 10.

Conservation significance

An uncommon endemic species. Protected within the Permanent Park Preserve.

Distribution

Mainly in the higher pats of the southern mountains. From a genus of some 350 species which is found in tropical and subtropical regions.

Ecology

Largest individuals occur on the sheltered slopes of mountains and on the summit of Mount Gower; stunted on ridges. Individual trees do not flower each year. Bird dispersed seeds. Seeds of this genus known to be difficult to germinate.

Population data/health

Uncommon. The greatest numbers of this species occur on the summit of Mount Gower.

Habitat

Grows in moist locations on basalt soil.

Threats

Rats eat seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Elatostema grande

Family URTICACEAE

Description

Fleshy perennial herb.

Conservation significance

Endemic species, common. Protected within the Permanent Park Preserve.

Distribution

Widespread in the southern mountains in moist, shaded situations. From a genus of about 200 species in the Old World tropics.

Ecology

Often forms dense patches of many plants. Monoecious.

Population data/health

Widespread and common in its range.

Habitat

Moist shaded sites, creek gullies, cliffs with waterfalls.

Threats

Crofton Weed invasion poses a threat to the habitat of this species, particularly in gullies at the base of major cliffs of the southern mountains. This is particularly apparent on the east face of Mount Lidgbird.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Exocarpus homalocladus

Family SANTALACEAE

Description

A broom-like shrub or tree 2- 4m in height. Adults are mainly leafless with flattened branchlets.

Conservation significance

An endemic species, uncommon but widespread. Protected within the Permanent Park Preserve.

Distribution

Found from sea level to the mountain tops. The genus has 16 species in Malaya, Norfolk Island, New Caledonia, Fiji, Polynesia, Madagascar, New Zealand and Australia.

Ecology

Members of the genus *Exocarpus* on the mainland are known to be parasitic on the roots of other plant species. Bird dispersed seeds. Not often seen with mature fruits.

Population data/health

Not common but widespread.

Habitat

Well-drained hillsides with good soil.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Ficus macrophylla ssp. *columnaris* Banyan

Family MORACEAE

Description

A tall tree to 20m high, with roots hanging from the branches, which eventually touch the ground and form new trunks, so one tree can have up to 40 trunks or more.

Conservation significance

A common endemic subspecies of the species found on mainland Australia. Protected within the Permanent Park Preserve.

Distribution

Common in lowland parts all across the main island, occasionally found to 500m altitude. Genus of 600-800 species in tropics & subtropics.

Ecology

Grows well on basalt or calcarenite soil. Pollinated by the wasp *Pleistodontes froggatti*, the same species that pollinates *Ficus macrophylla* ssp. *macrophylla* on mainland Australia. Bird dispersed seeds. Coloniser of land slips. Prone to canopy dieback as a result of windshear.

Population data/health

Common across the island. Historic photographs from the 1880's indicate there were more individuals of this species growing around the settlement area, but removal of their protective surrounding forest has resulted in loss of individuals.

Habitat

Requires protection from the elements provided by closed forest. Where the closed forest has been removed, trees gradually die due to exposure to strong winds. Trees on ridges are somewhat stunted.

Threats

Clearing causing trees to die.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Gahnia howeana

Family CYPERACEAE

Description

A perennial saw sedge forming a robust tussock.

Conservation significance

Endemic species, uncommon but widespread in southern mountains. Protected within the Permanent Park Preserve.

Distribution

Found mainly in southern mountains down to 100m. An endemic species from a genus with about 40 species in Australia, New Zealand, Asia, Pacific.

Ecology

Prefers moist environments.

Population data/health

Uncommon throughout its range

Habitat

Grows in partly shaded moist forests of the southern mountains.

Threats

The closely related *Gahnia xanthocarpa* from New Zealand is known to be highly susceptible to the pathogen *Phytophthora cinnamomi*. This pathogen has been recorded at a low altitude site on Lord Howe Island. The risk of significant decline in the species if the pathogen is introduced to its habitat is very high. Impact on other species.

Other comments

Previously *Gahnia xanthocarpa* of New Zealand, newly described in 1997.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Geniostoma huttonii

Family LOGANIACEAE

Description

A rare scrambling shrub to 1m high, which sprawls over other shrubs.

Conservation significance

Endemic species, very restricted in its range. Listed as Endangered on NSW TSC Act. Protected within the Permanent Park Preserve.

Distribution

Mainly found on the remote ridges off the southern mountains. On Mt Lidgbird it occurs on the south east corner at about 500m altitude. On Mount Gower it occurs on the cliff which leads into Little Pocket. This species was recently discovered in 1990. From a genus of some 35 species found in Madagascar, Mauritius, Malaya, Australia and New Zealand.

Ecology

Bird dispersed seeds.

Population data/health

Rare and very localised and restricted in its range:

About 100 plants on the ridge off the south east summit of Mt Lidgbird

Two plants recorded on the north face of Mt Gower.

About 30 plants recorded on the Razorback off Mt Gower.

One plant at the base of the 2nd waterfall on Mount Gower.

Habitat

Grows on south and east facing shaded cliffs in amongst open stunted shrubs, or in shade.

Threats

Low numbers and limited range. The ridges where this plant mainly grows are very narrow, and walkers accessing these areas can trample this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Photo: Ian Hutton

Geniostoma huttonii

Geniostoma petiolosum

Family LOGANIACEAE

Description

A small tree to 4m. Flowers very pungently-scented.

Conservation significance

Endemic species widespread but not common. Protected within the Permanent Park Preserve.

Distribution

Sheltered forests below 450m, mainly in the southern mountains, but also Transit Hill and Intermediate Hill. From a genus of 25 species found in Japan, Malesia, Australia, New Zealand and the Pacific Islands.

Ecology

Bird dispersed seeds.

Population data/health

Uncommon

Habitat

Sheltered open forest.

Threats

None known

Other comments

Very conspicuous when in flower, as the flowers emit a strong, pungent odour, detectable from 10 metres away when in full flower; presumably to attract flies for pollination.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Gonocarpus sp.

Family HALOGORACEAE

Description

Perennial squat herb, forming large plants to 50cm diameter.

Conservation significance

Rare on Lord Howe Island, only collected in 2001. Possibly a new species or subspecies. Protected within the Permanent Park Preserve.

Distribution

The Razorback Ridge off south west corner of Mount Gower summit. The genus has 41 species worldwide in Australia, New Zealand and. Malesia. Australia has 36 species in all States.

Ecology

No specific information available.

Population data/health

Known only from one locality. Surveys in 2001 recorded several plants of this species growing on two flat sections of the Razorback.

Habitat

On the flatter sections of the Razorback Ridge, amongst short grass, along with patches of *Cassinia tenuifolia* and *Metrosideros nervulosa.*

Threats

The ridge where this plant mainly grows is very narrow, and walkers accessing this area can trample this species.

Other comments

Currently seeking correct identification for this species. It has been identified as *G. humilis* and *G. tetragynus*, both of which occur in eastern Australia. However the specimens on Lord Howe Island are more robust and further taxonomic work is warranted.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Hutton, I (2005) *Rare Plant Surveys of Lord Howe Island 2.* Report prepared for the Biodiversity Conservation Science Section, Dept of Environment and Conservation.

Grammitis diminuta

Family GRAMMITIDACEAE

Description

A small epiphytic or lithophytic fern with thin textured, simple fronds.

Conservation significance

Endemic species common in its range. Protected within the Permanent Park Preserve.

Distribution

Abundant in the southern mountains especially above 500m, occasionally down to 200m Genus is pantropical with about 160 species; generally occupying cool mountain cloud forests.

Ecology

No specific information available.

Population data/health

Widespread and abundant in its range.

Habitat

Found in moist habitats, usually growing on basalt rocks, cliffs, logs and tree fern trunks.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Grammitis nudicarpa

Family GRAMMITIDACEAE

Description

A very small epiphytic fern with simple fronds.

Conservation significance

Rare endemic fern. Protected within the Permanent Park Preserve.

Distribution

This endemic species is confined to the summits of the southern mountains.

Ecology

No specific information available.

Population data/health

Rare and restricted in its range.

Habitat

Densely shaded, moist forests of the southern mountain summits.

Threats

Climate change which may impact upon the species' cloud forest habitat.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Grammitis wattsii

Family GRAMMITIDACEAE

Description

Small fern with simple fronds, epiphytic on logs and tree trunks.

Conservation significance

Common endemic fern. Protected within the Permanent Park Preserve.

Distribution

This species is confined to the top of Mounts Gower and Lidgbird.

Ecology

No specific information available.

Population data/health

Common in its range.

Habitat

Moist cloud forests of the southern mountains.

Threats

Climate change which may impact upon the species' cloud forest habitat.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Guioa coriacea — Island Cedar

Family SAPINDACEAE

Description

Tall tree to 15m high. The leaf margins are rolled under. A 3-lobed woody seed case encloses orange fleshy seeds.

Conservation significance

Common endemic species. Protected within the Permanent Park Preserve.

Distribution

Common in the sheltered mountain forests below 500 m, and Intermediate and Transit Hills; a few in the northern hills. From a genus found in eastern Australia, the south west Pacific, Southern Asia and Malesia.

Ecology

Bird dispersed seeds.

Population data/health

Common and abundant.

Habitat

Sheltered tall forest in wetter parts, on basalt soil.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Hedyscepe canterburyana Big Mountain Palm

Family ARECACEAE

Description

A compact, feather-leaved palm to 10m high.

Conservation significance

A monotypic genus endemic to Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Common in the southern mountains, from 350m to the summits, where it is a conspicuous element of the flora.

Ecology

Generally specimens grow better in protected forest, but also grows in exposed situations such as ridges.

Population data/health

Common and abundant in its range. There are several areas where it is the dominant tree species of the forest such as Little Pocket and Big Pocket on Mount Gower; and the small valley on the south east ridge off Mount Lidgbird.

Habitat

Mountain slopes and summits with good soil.

Threats

Rats are known to eat the seed and leaf stems of this species.

Other comments

Small numbers of seeds harvested for export.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Howea belmoreana Curly Palm

Family ARECACEAE

Description

A tall palm with a trunk to 12m high, ringed by leaf scars.

Conservation significance

A common and widespread endemic species from a genus restricted to Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Common on sloping sites with basalt soils, up to about 400m. Genus of two species only on Lord Howe Island.

Ecology

Prefers basalt soil. Only occasionally in dense stands, more usually scattered through rainforest.

Population data/health

Common and abundant.

Habitat

Slopes and ridges of lowland hills and mountains to 500m.

Threats

Rats eat seeds and leaf stems of this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Howea forsteriana — Kentia Palm

Family ARECACEAE

Description

A tall palm with a trunk to 15m, with a graceful, hanging crown. Fruit are red when ripe.

Conservation significance

A common and widespread endemic species from a genus restricted to Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Widespread in the lowlands, preferring flat sites with sandy soils, usually in dense stands. Some notable large stands on basalt soil are located at Greyface, the north slope of Mt Gower around 100m, and Dinner Run.

Ecology

The largest stands grow on sandy soil of the lowlands. Usually forms large monoculture stands.

Population data/health

Common and abundant.

Habitat

Mainly occurs on flat areas of lowlands on sandy soil, growing right to the coast edge.

Threats

Rats eat seeds and stems of this species.

Other comments

This endemic palm has long been favoured as an indoor potted plant. Seed has been harvested from Island forests since 1870. A palm nursery on the Island now germinates the seeds and markets seedlings.

Plantations of palms have been grown on the Island from 1984. Plantations have also been established in other countries as a commercial species, notably Norfolk Island and the Canary Islands.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Hymenophyllum howense

Family HYMENOPHYLLACEAE

Description

A small epiphytic filmy fern with bright green, delicate, lacy fronds 4 to 6cm long. The filmy ferns have a membranous frond lamina just one cell thick.

Conservation significance

An endemic species widespread and abundant in its habitat, but this is restricted to the southern mountain summits. Protected within the Permanent Park Preserve.

Distribution

Restricted to the very mountain summits, only occasionally lower in very damp microhabitats. From a genus of about 300 species distributed widely in humid habitats.

Ecology

Restricted to the wettest, shaded environments as found on the mountain summits.

Population data/health

Abundant in its range.

Habitat

Found mainly growing on tree trunks, particularly tree fern trunks, where they often form a dense covering for most of the length of the trunk.

Threats

Climate change which may impact upon the species' cloud forest habitat.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hymenophyllum moorei

Family HYMENOPHYLLACEAE

Description

A small epiphytic filmy fern with bright green, delicate, lacy fronds 1-3cm long. The filmy ferns have a membranous frond lamina just one cell thick.

Conservation significance

An endemic species widespread and abundant in its habitat, but this is restricted to the southern mountain summits. Protected within the Permanent Park Preserve.

Distribution

Restricted to the mountain summits, and occasionally lower in very damp microhabitats. From a genus of about 300 species distributed widely in humid habitats.

Ecology

Wet, shaded environments such as found on the mountain summits.

Population data/health

Abundant in its range.

Habitat

Found growing adpressed on tree trunks, particularly tree fern trunks, where they often form a dense covering for most of the length of the trunk.

Threats

Climate change which may impact upon the species' cloud forest habitat.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Korthalsella emersa

Family VISCACEAE

Description

Parasitic plant to 15cm tall.

Conservation significance

Common endemic species. Protected within the Permanent Park Preserve.

Distribution

Widespread over all areas of the Island. From a genus of about 30 species Africa, Himalayas, Japan, Australia, New Zealand.

Ecology

Recorded growing on a variety of native plants including *Elaeodendron curtipendulum, Jasminum simplicifolium*. Bird dispersed seeds.

Population data/health

Common and widespread.

Habitat

On branches of native trees, shrubs and creepers.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Lastreopsis nephrodioides

Family DRYOPTERIDACEAE

Description

Terrestrial or epiphytic fern with a semi-creeping rhizome covered in dark brown scales. Fronds are 10-40cm long.

Conservation significance

Endemic species

Distribution

Occurs on the southern parts of Lord Howe Island, especially at higher altitudes.

Ecology

No specific information available.

Population data/health

No specific information available.

Habitat

Occurs in moist forest.

Threats

Weed invasion, climate change.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Lepidium howei-insulae

Family BRASSICACEAE

Description

Perennial subshrub to about 1m tall. Stems sometimes partially creeping.

Conservation significance

Endemic species.

Distribution

Scattered distribution. Known from Middle Bay, Signal Point and Balls Pyramid.

Ecology

No specific information available.

Population data/health

No specific information available.

Habitat

Grows on rocky ledges and in sandy pockets near the sea.

Threats

Climate change, weed invasion.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Lepidium nesophilum

Family BRASSICACEAE

Description

Perennial herb or subshrub, with a trailing stem growing to 1.5m. The leaves are 3-12cm long and 0.5-2cm wide. The small white flowers are green with white margins.

Conservation significance

Endemic species.

Distribution

Southern mountains.

Ecology

Grows on rocky basalt ledges at low elevations.

Population data/health

No specific information available.

Habitat

No specific information available.

Threats

Weed invasion.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Lepidorrhachis mooreana Little Mountain Palm

Family ARECACEAE

Description

A stout, dwarf palm with a trunk to 2m high.

Conservation significance

A monotypic genus endemic to Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Confined to higher elevations in the southern mountains, mainly above 750m altitude. A conspicuous component of the Mount Gower cloud forest.

Ecology

Prolific seed producer.

Population data/health

Abundant in its range. Observations indicate that there are two distinct size classes on Mount Gower; tall mature palms, and very small seedlings that may have only recruited since the rodent poison program began on the summit about 1987.

Habitat

Sheltered closed forest of the mountain summits, rarely lower.

Threats

Rats are known to predate heavily on the developing seeds, and also chew the stems of leaf fronds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Leptopteris moorei

Family OSMUNDACEAE

Description

Fern with a trunk 20-30cm tall. The delicate lacy fronds are 0.5-1m long.

Conservation significance

Rare endemic fern. Protected within the Permanent Park Preserve.

Distribution

Confined to the summit of Mount Gower. From a genus of 7 species from New Guinea, Eastern Australia, New Zealand, Vanuatu and Samoa; characteristic of very damp, shady humid forests.

Ecology

These ferns lack mesophyll and stomata and appear almost transparent.

Population data/health

Rare and only in a very restricted habitat on the summit of Mount Gower.

Habitat

Damp shaded cliffs and soil banks in the cloud forest on Mount Gower summit.

Threats

Low numbers, making the species susceptible to stochastic (chance) events. Climate change may change the moisture conditions of the cloud forest on Mount Gower summit and threaten this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Leptospermum polygalifolium ssp. *howense* Tea Tree

Family MYRTACEAE

Description

Bushy shrub or spreading small tree to 5m. Leaves are narrow and pointed. Flowers are white and followed by a woody capsule 5-7mm in diameter.

Conservation significance

Endemic subspecies, mainly confined to mountain summits. Protected within the Permanent Park Preserve.

Distribution

Southern mountains, mainly summits, down to 750m, with only a few lower, e.g. Mutton Bird Point track. An endemic subspecies, from a genus of 35 species, mainly Australian, with a few species in New Caledonia, New Zealand and Malaysia.

Ecology

Many very large, old, gnarled trees on Mt Gower summit where it is one of the major components of the canopy. Wind dispersed seeds.

Population data/health

Common in its range, but quite a restricted range.

Habitat

Montane forest.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Lordhowea insularis

Family ASTERACEAE

Description

A tall, erect, woody herb 1-2m high with distinctive large, deeply toothed leaves and clusters of yellow flowers.

Conservation significance

A monotypic genus endemic to Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Widespread in the southern mountains at higher elevations above 400m, but occasionally lower- Intermediate Hill, Kim's Lookout.

Ecology

Wind dispersed seeds.

Population data/health

Common in its range. Particularly abundant on the Razorback, and the ridge south east off Mount Lidgbird.

Habitat

Grows mainly on open sunny ridges, also in light canopy forest. Basalt soil only.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Luzula longiflora

Family JUNCACEAE

Description

Herb 10-30cm high, with narrow, tufted leaves that are 5-35cm long and ribbed on the underside.

Conservation significance

Uncommon endemic species. Protected within the Permanent Park Preserve.

Distribution

Grows on upper slopes of Mount Gower and Mount Lidgbird.

Ecology

No specific information available.

Population data/health

Common in its range.

Habitat

Cliff ledges and crevices.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Machaerina insularis

Family CYPERACEAE

Description

Tufted perennial with long leaves 1 to 1.8 m long, 2 to 3cm broad.

Conservation significance

Uncommon but widespread endemic species. Protected within the Permanent Park Preserve.

Distribution

Grows on cliffs, ledges in gullies of Mount Gower and Mount Lidgbird.

Ecology

No specific information available.

Population data/health

Widespread but uncommon.

Habitat

Cliffs and ledges, moist gullies, waterfalls.

Threats

Invasion by Crofton Weed.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Macropiper excelsum ssp. *psittacorum* Kava

Family PIPERACEAE

Description

Woody shrub to 1.5m with heart-shaped, pointed leaves. The fruits are small, orange fleshy berries.

Conservation significance

Lord Howe Island and Norfolk Island are the only locations in Australia. Protected within the Permanent Park Preserve.

Distribution

Common on the lowlands, ranging to the mountain. This subspecies is also found on Norfolk Island, Kermadec Island; the genus occurs in the South Pacific, Micronesia and New Zealand.

Ecology

A common understorey plant. Dioecious. Bird-dispersed seeds.

Population data/health

Widespread and common.

Habitat

Shaded understorey of moister forest situations. Basalt and calcarenite soils.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Macropiper hooglandii Kava

Family PIPERACEAE

Description

A woody shrub 2 -3m. The heart-shaped leaves are strongly aromatic and peppery. The fruit is a small, red fleshy berry.

Conservation significance

Endemic and locally abundant. Protected within the Permanent Park Preserve.

Distribution

Locally common and abundant in damp shaded areas on the southern mountain slopes to summits.

Ecology

Dioeceous. Bird dispersed seeds.

Population data/health

Common and locally abundant. Common on east side of Mount Lidgbird below cliff at 500m. Two areas where it is particularly abundant are Little Pocket (31 35 30.9S 159 04 22.4E) and the valley between Mount Lidgbird summit and the SE "pimple" (31 34 18.6S 159 05 00.9E). At these locations it is the main understorey plant, below *Hedyscepe canterburyana* canopy.

Habitat

Thrives in moist shaded areas as an understorey plant.

Threats

Crofton Weed crowds out this species in gullies at bases of waterfalls off east side of Mount Lidgbird.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Marattia howeana

Family MARATTIACEAE

Description

A large robust fern with shiny, black, fleshy stipes, and shiny fronds up to 4 metres long.

Conservation significance

Rare endemic species. Protected within the Permanent Park Preserve.

Distribution

Grows in the southern mountains above 200 metres. From a genus of about 60 species distributed in most tropical countries, reaching Japan and New Zealand.

Ecology

Found in moist shaded areas.

Population data/health

Surveys conducted in 2002 indicates that the species may be eligible for listing as endangered.

Main localities are in Little Pocket and off the south east corner of Mount Lidgbird. At these locations it is reasonably common, otherwise sparsely scattered on slopes of the two southern mountains.

Habitat

Heavily shaded gullies and moist areas in the mountains.

Threats

Low numbers.

Other comments

Pickard (1983) reported in this species almost eradicated by pigs, but now increasing with the removal of pigs in 1979.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Pickard, J. 1983. Vegetation of Lord Howe Island, *Cunninhamia* Vol. 1(2), pp. 133-266.

Marsdenia tubulosa

Family ASCLEPIADACEAE

Description

Leaf semi-circular and about 4.5cm long. Small, tubular flower to about 2mm. Fruit unknown.

Conservation significance

An endemic species only collected once in 1871. Possibly extinct.

Distribution

Mount Gower summit.

Ecology

No specific information known.

Population data/health

One collection only.

Habitat

Unknown.

Threats

Unknown.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Melaleuca howeana Tea Tree

Family MYRTACEAE

Description

A low shrub to small tree, with thin, flaky bark and small linear leaves.

Conservation significance

Endemic species common and widespread. Protected within the Permanent Park Preserve.

Distribution

Common especially around the coast and low exposed ridges, sometimes in dense patches excluding all other species; stunted on the rocky seashore. From a genus of 100 species, mainly Australian, with a few in southern Asia, New Caledonia and Malesia.

Ecology

Can withstand wind and saltspray, and is common on exposed, coastal sites. Leaf litter can exclude other plant species and form a monoculture. Wind dispersed seeds.

Population data/health

Widespread and common throughout its range.

Habitat

Coastal cliffs and low areas exposed to harsh salt spray. Exposed windblown ridges and cliffs.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Melicope contermina

Family RUTACEAE

Description

Small spindly tree to 5m. Leaves are arranged in 3 pointed leaflets. Masses of white flowers occur in spring and summer.

Conservation significance

Rare endemic species. Protected within the Permanent Park Preserve.

Distribution

Scattered distribution on the slopes and summits of the southern mountains. From a genus of 20 species in east Australia, the south west Pacific, Malesia & New Zealand.

Ecology

Basalt soil only.

Population data/health

Very few plants recorded. It is difficult to survey as it is scattered across a large area of mountain slopes. Unless it is dropping flowers, it is easy to bypass, as its trunk is fairly nondescript. The largest plants seen are on the summit of Mount Gower.

Habitat

Tall closed forest of mountain slopes and summits.

Threats

Small population size making the species subject to stochastic (chance) events. Some trees show old scars of grazing by goats. One of only two known individuals growing on the Mount Gower track died in the 1990's as a result of grazing by goats.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Melicope polybotrya

Family RUTACEAE

Description

A small tree to 8m. The leaves are distinctive, large leaves are grouped in threes and are heart-shaped. The flowers are tiny and green and followed by a brown capsule which splits to reveal one black seed.

Conservation significance

Endemic species, not common, but widespread across sheltered forest areas. Protected within the Permanent Park Preserve.

Distribution

Reasonably common in the sheltered forests to about 700m; also along exposed ridges such as Razorback and the ridge south east off Mount Lidgbird. An endemic species from a genus of 20 species in east Australia, south west Pacific, Malesia & New Zealand.

Ecology

Prefers sheltered forest, although some stunted bushes grow on exposed ridges.

Population data/health

Not common, but widespread in its range.

Habitat

Mainly in sheltered forests, but some stunted bushes on exposed ridges.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Melicytus novae-zelandieae ssp. *centurionis*

Family VIOLACEAE

Description

A low bush, occasionally small tree 5m. The leaves have a serrated margin and are 6cm x 2.5cm. The fruit is a purple berry 6mm in diameter.

Conservation significance

Endemic subspecies. Rare but scattered across Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Found scattered across Lord Howe Island, mainly in the southern mountains. The genus of 14 species are mainly in New Zealand, the Chatham Islands, Kermadec Islands, Norfolk Island, Tonga and Fiji.

Ecology

Dioeceous. Bird dispersed seeds.

Population data/health

Rare. Plants have been recorded near Kim's Lookout, Erskine valley, Goat House and Eddie's Cave.

Habitat

Open forest on basalt soil.

Threats

Small population size leaves the species subject to stochastic (chance) events. Fruits not often seen. Rats could eat seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Metrosideros nervulosa Mountain Rose

Family MYRTACEAE

Description

Ranges in form from a stunted bush 1m high on exposed ridges, to a tree 8m high in the protected forest. The stamens of the flowers are deep red and showy, however, several individuals produce a yellow flower.

Conservation significance

Common endemic species. Protected within the Permanent Park Preserve.

Distribution

Southern mountains, mainly from around 350m to the summits, occasionally lower. An endemic species from a genus of 50 from N.Z. to Malaya, Pacific Islands including Hawaii; and one species in South Africa.

Ecology

On the summit of Mount Gower, in protected areas, the branches drop aerial roots, which sometimes strike when touching the soil. Wind dispersed seeds.

Population data/health

Common and widespread in the mountains.

Habitat

Prefers sunny positions, either on dry exposed ridges or as a canopy tree on the summits of the mountains.

Threats

The introduced *Metrosideros excelsum* from New Zealand is grown as an ornamental plant in the settlement area and may cross-pollinate with this endemic species. At least one *M. excelsum* has naturalised on the side of Intermediate Hill, close to the natural range of *M. nervulosa.*

Other members of this genus from Hawaii are highly susceptible to the pathogen *Phytophthora cinnamomi*. This pathogen has been recorded at a low altitude site on Lord Howe Island. The risk of significant decline in the species if the pathogen is introduced to its habitat is very high.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Metrosideros sclerocarpa Mountain Rose

Family MYRTACEAE

Description

A small tree to 10m high with the stamens of the flowers being red.

Conservation significance

An endemic species, locally common in its range. Protected within the Permanent Park Preserve.

Distribution

Grows mainly in moist gullies of the southern mountains from sea level to about 500m. From a genus of 50 from New Zealand to Malaya, the Pacific Islands including Hawaii; and one species in South Africa.

Ecology

Mainly prefers wet sites. Sometimes grows in small monocultures. Wind dispersed seeds.

Population data/health

Common and abundant in its range.

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Habitat

Mainly grows in creek gullies and other moist areas of the mountains.

Threats

The introduced *Metrosideros excelsum* from New Zealand is grown as an ornamental plant in the settlement area and may cross-pollinate with this endemic species. At least one *M. excelsum* has naturalised on the side of Intermediate Hill, close to the natural range of *M. nervulosa.*

Other members of this genus from Hawaii are highly susceptible to the pathogen *Phytophthora cinnamomi*. This pathogen has been recorded at a low altitude site on Lord Howe Island. The risk of significant decline in the species if the pathogen is introduced to its habitat is very high.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Negria rhabdothamnoides Pumpkin Tree

Family GESNERIACEAE

Description

A tree to 8m with white corky bark and large glossy leaves. The large flowers are orange with small red dots and are followed by a black capsule 15mm long which contains numerous minute seeds.

Conservation significance

A monspecific endemic genus widespread and common in the higher elevations of the southern mountains. Protected within the Permanent Park Preserve.

Distribution

Common from 500m to the summit, and occasionally lower. An endemic genus with only one species.

Ecology

This is an unusually large tree-sized member of the African Violet family. Wind dispersed seeds.

Population data/health

Common and widespread in its range. A conspicuous component of the flora on Mount Gower summit.

Habitat

Sheltered forests at higher elevations in the mountains, in sheltered valleys lower down.

Threats

Climate change.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Family ASTERACEAE

Description

A dense shrub to 1m high with glossy, dark green, linear leaves. The white daisy flowers are very showy and appear over a long period.

Conservation significance

An endemic species restricted to the southern mountains. Protected within the Permanent Park Preserve.

Distribution

Found widely in the southern mountains from about 400m to the summits. From a genus of 180 species in Australia, Papua New Guinea & New Zealand.

Ecology

Wind dispersed seeds.

Population data/health

Abundant in its range.

Habitat

Open sunny ridges and cliff ledges of the southern mountains.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Olearia elliptica ssp. *praetermissa*

Family ASTERACEAE

Description

A stunted bush to 1m high. The 3cm long leaves are light green and sometimes sticky below. Flowers are white and about 1cm across.

Conservation significance

An endemic subspecies of a species found in eastern New South Wales and south east Queensland. Protected within the Permanent Park Preserve.

Distribution

Mainly found on rocky ledges of the mountains at higher elevations, e.g. Goat House, Eddies Cave. From a genus of 180 species in Australia, PNG & N.Z.

Ecology

Wind dispersed seeds.

Population data/health

Reasonably common and abundant in its range.

Habitat

Grows well on open sunny cliff ledges, with both northern and southern aspects.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Olearia mooneyi

Family ASTERACEAE

Description

A small tree to 4m high with a dense foliage of shiny dark leaves. The numerous white daisy flowers are about 8mm across.

Conservation significance

Rare endemic species. Protected within the Permanent Park Preserve.

Distribution

Found from 750m to the mountain tops, where it is common and conspicuous. An endemic species from a genus of 180 species in Australia, Papua New Guinea & New Zealand.

Ecology

Wind dispersed seeds.

Population data/health

Common in its restricted range.

Habitat

Sheltered forests of the mountain tops.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Pandanus forsteri Forked Tree

Family PANDANACEAE

Description

A very tall Pandanus, growing to 13m, with distinctive prop roots 3 to 7m long for support.

Conservation significance

Common endemic species. Protected within the Permanent Park Preserve.

Distribution

Common on the lowlands, northern hills, and mountains. It is mainly found in creeks, gullies and soaks and up to 400m altitude. The genus of 700 species is distributed in the tropical and subtropical Old World.

Ecology

Adapted to grow in semi-waterlogged situations. Dioceous. Water dispersed seeds.

Population data/health

Common and abundant, often forming a monoculture in some areas.

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Habitat

Wet areas. Usually grows in lines along creeks or soaks.

Threats

Rats eat seeds.

Other comments

Leaves are collected and dried, used in local craft cottage industry to make baskets for local use and tourist trade.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Pandorea pandorana ssp. *austrocaledonia*

Family BIGNONIACEAE

Description

A strong woody climber with leaves comprised of 5-9 oval-shaped leaflets. Flowers are cream with dark red spots in the throat.

Conservation significance

Lord Howe Island is the only Australian location for this subspecies. Protected within the Permanent Park Preserve.

Distribution

This species is common growing over trees on the lowland ridges to 500m. It is found in Australia, Papua New Guinea, New Caledonia, and the Lesser Sunday Islands. This subspecies is also found in New Caledonia. and Vanuatu.

Ecology

Wind dispersed seeds.

Population data/health

Common in its range.

Habitat

Usually in sheltered forest, on basalt and calcarenite soil.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Parsonsia howeana

Family APOCYNACEAE

Description

A tall twining climber. The young stems are finely hairy and the leaves are glossy above.

Conservation significance

Endemic species widespread and common. Protected within the Permanent Park Preserve.

Distribution

Found in the forest from sea level to about 800m. An endemic species from a genus of 80 species in Australia, New Zealand, south west Pacific Islands and Malaysia.

Ecology

Thrives in sunlight, and often invades cleared areas as a colonising plant, growing profusely in these situations. Climbs vigorously over small trees. Wind dispersed seeds.

Population data/health

Abundant over many forest types.

Habitat

Any sunny areas, on basalt and calcarenite soils.

Threats

None known

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Passiflora herbertiana ssp. *insulae-howei*

Family PASSIFLORACEAE

Description

Herbaceous climber with a woody base. The deeply-lobed leaves are 1.5-2cm long, with 2 glands towards the top. Flowers are green on the outside and white and violet on the inside.

Conservation significance

Rare on Lord Howe Island. Some plants protected within the Permanent Park Preserve.

Distribution

Found on lowlands and elevations to 200m on Intermediate Hill, Transit Hill and Mt Lidgbird. The species is common in rainforest of east Australia. Genus of 370 species in east Australia, south west Pacific Islands, Malesia, South Asia, and the Americas.

Ecology

Found on basalt and calcarenite soils.

Population data/health

Surveys carried out 2002. Nominated for listing as an endangered species due to low number of plants.

Habitat

Open forest of lowland hills, usually with light canopy.

Threats

Possibly rodents eat seeds. Critically low numbers known on the Island.

Other comments

References Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Hutton, I (2005) *Rare Plant Surveys of Lord Howe Island 2*. Report prepared for the Biodiversity Conservation Science Section, Dept of Environment and Conservation.

Phymatosorus pustulatus ssp. *howensis*

Family POLYPODIACEAE

Description

A terrestrial or lithophytic fern with glossy dark green fronds, which are deeply lobed. The lobes have pronounced "blisters" on top, formed from the sori (spore cases) below. A creeping rhizome allows it to spread over a large area.

Conservation significance

Endemic subspecies widespread and abundant across the island. Protected within the Permanent Park Preserve.

Distribution

From sea level to the mountain tops. Genus of about 12 species extending from Africa to Australia, New Zealand and parts of Polynesia; about 3 species in Australia.

Ecology

Forms large open clumps.

Population data/health

Widespread and abundant.

Habitat

Occurs on basalt and calcarenite soil, in all plant communities.

Threats

Rodents are known to chew stems.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra..

Pimelea congesta

Family THYMELAEACEAE

Description

Small spindly shrub to 1m high with white flowers held in terminal heads.

Conservation significance

Endemic species common in its range. Protected within the Permanent Park Preserve.

Distribution

Widespread, both in the lowlands and the mountains. From a genus of some 80 species, mainly Australian, but some in New Zealand, Papua New Guinea, Lesser Sunda Islands, and the Chatham Islands.

Ecology

Grows well on exposed ridges.

Population data/health

Common in its range, which is fairly restricted.

Habitat

Open sunny dry ridges.

Threats

Weed invasion from seeds introduced by walkers.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Pittosporum erioloma

Family PITTOSPORACEAE

Description

A small tree to 8m. The margins of the 5cm x 1.5cm leaves are recurved and pale green. Flowers are lilac with white tips and are followed by a green, thick-walled capsule.

Conservation significance

Endemic species, widespread but not common. Protected within the Permanent Park Preserve.

Distribution

Found in the southern mountains from 450m to the mountain tops, and occasionally lower. From a genus of about 100 species, ranging from Africa, New Zealand, Asia, Australia and the Pacific Islands.

Ecology

Seeds dispersed by birds via ingestion or sticking to feathers.

Population data/health

Uncommon but widespread in the southern mountains. More common on the summit of Mount Gower.

Habitat

Prefers moist, sheltered rainforest sites.

Threats

Rats eat seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Plantago hedleyi

Family PLANTAGINACEAE

Description

Erect perennial herb, leaves to 20cm long.

Conservation significance

Uncommon endemic species. Protected within the Permanent Park Preserve.

Distribution

Scattered in southern mountains above 300m. Genus of about 250 species in temperate areas and mountain regions in tropics.

Ecology

No specific information available.

Population data/health

Widespread in its range, but not common.

Habitat

Shaded, moist rocky ledges in the southern mountains.

Threats

Climate change.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Plectorrhiza erecta

Family ORCHIDACEAE

Description

Small ground orchid, occasionally epiphytic with an erect wiry stem to 30cm long, supported by thick white roots arising from below the leaves. The flowers are yellow-orange with small purple blotches inside.

Conservation significance

Endemic species, rare but locally abundant. Protected within the Permanent Park Preserve.

Distribution

Sparsely scattered across Lord Howe Island, but locally abundant, for example, on Malabar Ridge. Genus of three species, two on the east coast of Australia.

Ecology

Many plants often form a tangled mass. Wind dispersed seeds.

Population data/health

Major locality on northwest side of Malabar spur, where it is prolific; otherwise scattered occurrences.

Habitat

Open forest with light canopy.

Threats

The weed Ground Asparagus *Protasparagus aethiopicus* is invading this species' habitat at its main locality on Malabar spur.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. A *Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Polyscias cissodendron Island Pine

Family ARALIACEAE

Description

An attractive tree to 12m, with distinctive light green pinnate leaves and fissured bark. The leaves are compound and 10-35cm long, usually with 11 leaflets. The fruit is brown and bead like in a large terminal cluster.

Conservation significance

Lord Howe Island is the only Australian location for this species. Protected within the Permanent Park Preserve.

Distribution

Reasonably common from sea level to about 400m, mainly in sheltered forests. Also found in New Caledonia and Vanuatu. Genus of 100 species in tropical and subtropical Old World.

Ecology

Dioecious. Bird dispersed seeds.

Population data/health

Common in its range.

Habitat

Usually in sheltered forest, on basalt and calcarenite soil.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Polystichium moorei

Family DRYOPTERIDACEAE

Description

A small, hardy, lithophytic fern, with tough, leathery fronds, crowded together, forming a spreading crown.

Conservation significance

Rare endemic species. Listed as Endangered on the NSW TSC Act. Protected within the Permanent Park Preserve.

Distribution

Found on rock ledges of the southern mountains, and calcarenite outcrops at the mouth of Soldiers Creek. From a large cosmopolitan genus of about 175 species, usually in mountain areas of the tropics.

Ecology

Grows clinging under overhangs on rocky ledges.

Population data/health

Populations are known from:

Mount Gower on rock ledge Erskine Valley to Little Slope. 13 plants.

Mount Lidgbird - base of cliff at 400m facing south west. 17 plants.

Mount Lidgbird on south east route to summit; 5 plants.

Mount Lidgbird Lower Road near southern end of ledge; 1 plant.

Soldiers Creek on calcarenite outcrop near mouth of creek; 12 plants.

Habitat

Rocky overhangs above ground level. On basalt in the southern mountains and calcarenite outcrops adjacent to Soldiers Creek.

Threats

Small numbers increasing the threat from stochastic (chance) events.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Photo: Ian Hutton

Polystichium moorei

Polystichium whiteleggei

Family DRYOPTERIDACEAE

Description

A hardy, medium sized terrestrial or lithophytic fern with tough leathery fronds forming a compact shape.

Conservation significance

Common endemic. Protected within the Permanent Park Preserve.

Distribution

Found on the slopes of the southern mountains from sea level to near the summits.

Ecology

No specific information available.

Population data/health

Common on slopes of the southern mountains.

Habitat

Understorey of forest in light shade.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Pouteria myrsinoides ssp. *reticulata* — Axe-handle Wood

Family SAPOTACEAE

Description

A small tree to 6m high with shiny leathery leaves which exude a watery latex when cut. New shoots are covered in red hairs.

Conservation significance

Common. Lord Howe Island is the only Australian location for this subspecies. Protected within the Permanent Park Preserve.

Distribution

Common on the lowlands and ridges. Also found in New Caledonia. Genus of 300 species from Asia to New Zealand, Australia, Seychelles and South America.

Ecology

No specific information available.

Population data/health

Widespread and common in its range.

Habitat

Usually in sheltered forest, on basalt and calcarenite soil.

Threats

Weed invasion.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Psychotria carronis Black Grape

Family RUBIACEAE

Description

A small tree to 8m with a dark trunk, large glossy leaves and black, grape-sized fruit.

Conservation significance

An uncommon endemic species. Protected within the Permanent Park Preserve.

Distribution

Found mainly from 100 to 400m in the moist forests of the southern mountains, with a few plants on Intermediate Hill, Transit Hill and the Northern Hills. From a genus of over 1500 species widely in the tropics and subtropics.

Ecology

Bird dispersed seeds.

Population data/health

Uncommon, scattered occurrence throughout range.

Habitat

Moist sheltered forests at lower elevations.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Pteris microptera

Family PTERIDACEAE

Description

A tall terrestrial fern growing to two metres high, with dark green, lacy, tripinnate fronds.

Conservation significance

Common endemic species. Protected within the Permanent Park Preserve.

Distribution

Widespread on the lowlands. This endemic species is part of the widespread *Pteris comans* group found in eastern Australia, New Zealand and the Pacific Islands. The genus is large with a worldwide distribution of about 250 species, 80 of which are in Australia.

Ecology

Wind dispersed spores.

Population data/health

Common and widespread.

Habitat

Damp shaded understorey.

Threats

Climate change.

Other comments

A rare form of this species was described from Lord Howe Island material as *P. comans* var *furcata* Bonap Notes Pteridolgiques 5: 128 (1917)

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Rapanea mccommishii

Family MYRSINACEAE

Description

A tree to 13m high. Leaves are 12cm x 4cm with raised pits on the undersurface. Flowers are minute, and the fruit is 5mm in diameter and is a globular fleshy drupe.

Conservation significance

Uncommon endemic tree species. Protected within the Permanent Park Preserve.

Distribution

Ranges across the island, from sea level to the summits, both north and south ends of the Island. The genus ranges through the tropics and subtropics.

Ecology

Prefers sheltered forest in moist areas. Bird dispersed seeds.

Population data/health

Scattered across the island. This species may be more common than thought, as its tall trunk is fairly indistinguishable from many forest trunks and therefore is easy to miss.

Habitat

Sheltered forests, usually on hill slopes.

Threats

Climate change, weed invasion.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Rapanea myrtillina

Family MYRSINACEAE

Description

Small tree to 4m high. Leaves are small and 11mm x 4mm, with brown dots on the surface. The minute flowers are cream with dark pink spots, and are followed by a purple globular fruit.

Conservation significance

Uncommon endemic species. Protected within the Permanent Park Preserve.

Distribution

Found mainly on the mountain summits, and occasionally down to 400m. From a genus of 150-200 species widespread in the tropics and subtropics.

Ecology

Grows in sheltered forests. Bird dispersed seeds.

Population data/health

Uncommon but scattered across a wide area of the southern mountains.

Habitat

Stunted forest of mountain ridges and summit forest.

Threats

Climate change.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Rapanea platystigma

Family MYRSINACEAE

Description

A bush or occasionally a small tree to 6m. The leaves are dense with wavy edges and sometimes slightly rolled under. The minute flower is greenish with red spots and numerous on the stems. The 4mm fruit is rounded and purple when ripe.

Conservation significance

A common endemic species. Protected within the Permanent Park Preserve.

Distribution

Widespread on the lowlands and ridges to about 400 m. From a genus of 150-200 species widespread in tropics and subtropics.

Ecology

Grows on basalt and calcarenite soils. Bird dispersed seeds.

Population data/health

Widespread and abundant.

Habitat

Grows on drier areas on both basalt and calcarenite.

Threats

Rats eat seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Rytidosperma unarede

Family POACEAE

Description

Slender, perennial grass to 45cm tall. The leaf blades are narrow and up to 40cm long and 3.5mm wide or tightly inrolled.

Conservation significance

Locally rare on Lord Howe Island and the only Australian location. Protected within the Permanent Park Preserve.

Distribution

Southern mountains. Also found in New Zealand. From a genus of about 90 species mainly New Zealand, Australia and southern Africa.

Ecology

No specific information available.

Population data/health

Rare. Recorded from Eddie's Cave on Mount Gower.

Habitat

Rocky ledge.

Threats

Weed invasion, particularly by Crofton Weed.

Other comments

First recorded on Lord Howe Island in 1971.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Scaevola taccada

Family GOODENIACEAE

Description

Spreading shrub to 3m tall. The leaves are somewhat thick, shiny and leathery with tufts of hairs in the leaf axils. Flowers are white streaked with purple.

Conservation significance

Probably extinct. Recorded in 1870, but no recent records. Lord Howe Island is the only Australian location.

Distribution

Genus of about 96 species in subtropics of southern hemisphere and Caribbean.

Ecology

No specific information available.

Population data/health

No information available.

Habitat

Unknown.

Threats

Unknown.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Senecio howeanus

Family ASTERACEAE

Description

Annual herb or short-lived perennial, spreading or erect to 40cm high, with scattered, wispy hairs..

Conservation significance

Widespread endemic species. Protected in Permanent Park Preserve.

Distribution

Common near seashore around Lord Howe Island and offshore islets. Scattered at higher elevations and into the mountains.

Ecology

Wind dispersed seeds.

Population data/health

Scattered and widespread.

Habitat

On cliffs, ledges and open grassy areas in open sun. On basalt and calcarenite rock.

Threats

Introduced species such as *Senecio elegans* in some places.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Senecio pauciradiatus

Family ASTERACEAE

Description

Annual herb, erect to 25cm high. Leaves are 5-6cm long and 1cm wide.

Conservation significance

Rare endemic species with very restricted range.

Distribution

Middle Beach and Steven's Point.

Ecology

Wind dispersed seeds.

Population data/health

Rare.

Habitat

On cliffs and in pockets of calcarenite rock in open sun.

Threats

Introduced species such as *Senecio elegans*.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island*. Report prepared for the NSW Scientific Committee, Hurstville.

Solanum bauerianum

Family SOLANACEAE

Description

Shrub or small tree to 3m.

Conservation significance

Species endemic to Lord Howe and Norfolk Islands. Presumed extinct on both islands. Not collected on Lord Howe Island since 1949.

Distribution

Recorded at North Bay, cliffs above Ned's Beach, Steven's Reserve, top of Middle Beach Road, Little Muttonbird Ground.

Ecology

Appears to have preferred sandy soil.

Population data/health

Last collected on Lord Howe Island in 1949. Also extinct Norfolk Island. Surveys on Lord Howe Island in 2002 failed to relocate this species.

Habitat

Sandy calcarenite soils.

Threats

Rats probably were responsible for its apparent disappearance by eating seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Sophora howinsula Lignum Vitae

Family FABACEAE

Description

A tree to 13m high with soft pinnate leaves and rough bark.

Conservation significance

An endemic species, widespread, uncommon but locally abundant. Protected within the Permanent Park Preserve.

Distribution

Scattered occurrence on the lowland hills, locally common e.g. Transit Hill, Intermediate Hill, Dinner Run; the northern hills. From a genus of 50 species in tropics and subtropics.

Ecology

Seeds have a hard outer coat for water dispersal. Seeds last a long time in soil.

Population data/health

Uncommon across its range, but locally common.

Habitat

Well drained hillsides with good soil.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Stephania japonica var. *timoriensis*

Family MENISPERMIACEAE

Description

A slender herbaceous climber with soft round leaves.

Conservation significance

Common. Lord Howe Island is the only NSW location for this subspecies. Protected within the Permanent Park Preserve.

Distribution

Lowland forests up to 500m altitude. The species is also found in north east Australia, New Caledonia, Samoa, Tahiti, Malesia and south east Asia. Genus of about 40 species in Old World tropics.

Ecology

Can climb vigorously over small shrubs and trees in clearings from tree falls and landslips. Bird dispersed seeds.

Population data/health

Widespread, locally common.

Habitat

Moist sheltered forests.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Symplocus candelabrum

Family SYMPLOCACEAE

Description

A tall tree to 13m, preferring sheltered forest conditions. The large leaves (13cm x 5cm) have a smooth or slightly toothed margin and taper to a long point. The flowers are white with yellow tips and are followed by a bluish, rounded fruit.

Conservation significance

An uncommon endemic species. Protected within the Permanent Park Preserve.

Distribution

Found in the sheltered forests of Intermediate Hill and the southern mountains from sea level to about 500m altitude. It is more common in higher altitudes. This family has only one genus of about 250 species distributed in the tropics and subtropics. Several species are rainforest species of eastern Australia.

Ecology

Currawongs disperse the fruits.

Population data/health

Uncommon across its range, but locally common in certain areas.

Habitat

Sheltered forests of the southern hills and mountains.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Syzygium fullagarii Scalybark

Family MYRTACEAE

Description

A tall tree to 20m with massive spreading limbs and prominent buttresses. The 9cm x 3cm leaves are shiny and mid-green. The flowers have prominent cream stamens, are 25mm long and occur in terminal clusters. The fruits are deep red and fleshy.

Conservation significance

A common endemic species. Protected within the Permanent Park Preserve.

Distribution

Moist sheltered forests from sea level to about 400m. The genus is distributed in northern Australia, Malesia, the south west Pacific Islands and Asia.

Ecology

One of the largest trees on the Island. Bird dispersed fruits.

Population data/health

Common and widespread in the southern mountains.

Habitat

Sheltered slopes of the southern mountains, and occasionally in sheltered sites in the northern hills.

Threats

Rodents eats fruits.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Trophis scandens ssp. *megacarpa*

Family MORACEAE

Description

A strong climber reaching the treetops of tall forest trees. Leaves are stiff and 8-11 cm long x 4-5 cm wide. The fruit is bright red and solitary.

Conservation significance

Endemic subspecies of a species found in eastern Australia, western Pacific Islands, Malesia and Southern Asia. Protected within the Permanent Park Preserve.

Distribution

Widespread across the island from sea level to the mountain summits. From a genus of 9 species in America, Madagascar, south east Asia, New Caledonia and Australia.

Ecology

Dioecious. Currawongs disperse fruits.

Population data/health

Widespread and abundant.

Habitat

Grows in tall sheltered forest, climbing the tallest of trees. On basalt and calcarenite soils.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Uncinia debilor

Family CYPERACEAE

Description

Tufted perennial sedge-like plant, leaves grass-like and up to 10cm by 0.5 – 1mm wide.

Conservation significance

Endemic species restricted to the summits of the southern mountains. Protected within the Permanent Park Preserve.

Distribution

On or near summits of Mounts Gower and Lidgbird.

Ecology

No specific information available.

Population data/health

Not known.

Habitat

Grows in low cloud forest.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Wahlenbergia insulae-howei

Family CAMPANULACEAE

Description

Perennial herb to 15cm tall. The narrow leaves are usually hairless and 0.5 – 2cm long x 0.1 – 0.6cm wind. The flowers usually grow in groups of 1-3 and are blue.

Conservation significance

Endemic species. Protected within the Permanent Park Preserve.

Distribution

The northern hills.

Ecology

Wind dispersed seeds.

Population data/health

Scattered occurrence throughout its range.

Habitat

Open rocky areas on basalt rock.

Threats

Introduced grass can compete with this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Westringia viminalis

Family LAMIACEAE

Description

A low compact shrub, sometimes scrambling, less than 0.5 metre high. The flowers are white, sometimes with pink spots inside the throat.

Conservation significance

An endemic species common in its restricted range. Protected within the Permanent Park Preserve.

Distribution

Found mainly on open ledges and cliffs of the southern mountains at 350-450m. It also occasionally grows on exposed ridges of the northern hills, particularly Mt Eliza and North Head. From a genus of 25 species, all of which occur in Australia.

Ecology

Can survive in thin soil on exposed, windblown rocky ledges.

Population data/health

Common throughout its range, but a fairly narrow altitudinal range.

Habitat

Prefers open sunny areas, particularly cliffs.

Threats

Weed invasion.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Xylosma maidenii

Family FLACOURTIACEAE

Description

A small tree to 5m, sometimes 10m in sheltered locations. In the open can be stunted. The 6cm x 3cm leaves are toothed and thin with wavy edges. The tiny flowers grow in leaf axils on bare twigs and are green. The fruit is purple and rounded.

Conservation significance

Endemic species common across the island. Protected within the Permanent Park Preserve.

Distribution

Common in all forest types, from sea level to about 400m. From a genus of about 100 species is distributed in the tropical Pacific, Queensland, Malesia, south east Asia and South and Central America.

Ecology

Dioecious. Bird dispersed seeds.

Population data/health

Common and abundant across the Island.

Habitat

Grows in many forest types over a wide range of conditions, on both basalt and calcarenite soils.

Threats

Rats predate on seeds.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Xylosma parvifolium

Family FLACOURTIACEAE

Description

Shrub to 2 m high. Leaves are rounded and 12mm x 8mm in size with toothed marges. The 5mm diameter fruit is globular and purple.

Conservation significance

A rare endemic species. Listed as Endangered on the NSW TSC Act. Protected within the Permanent Park Preserve.

Distribution

Restricted to the remote ridges in the southern mountains.

Ecology

Bird dispersed fruits.

Population data/health

Main locations are on ridges off the southern mountains at two localities: The Razorback on Mount Gower and the south east ridge off Mt Lidgbird.

Several plants also occur on the ridge above Goathouse Cave on Mount Lidgbird; several at "Get up Place" on Mount Gower.

Habitat

Grows on ridges in open low shrub vegetation in the open sun.

Threats

Low numbers and restricted habitat. The ridges where this plant mainly grows are very narrow, and walkers accessing these areas can trample this species.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2001. Rare plant surveys of Lord Howe Island. Report prepared for the NSW Scientific Committee, Hurstville.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

Photo: Ian Hutton

Xylosma parvifolium

Zygogynum howeanum Hotbark

Family WINTERACEAE

Description

Tree to 13m with a dark, smooth trunk. The large leaves are bluntly pointed, dark green on the top surface and pale underneath. The flowers are white and 20mm across. The fruit is a round black berry 8mm in diameter, and contains 5 – 15 small seeds.

Conservation significance

A common and widespread endemic species. Protected within the Permanent Park Preserve.

Distribution

The southern mountains. This species forms a distinctive component of the flora here from sea level to the mountain tops. Small numbers also occur in isolated moist pockets on Transit Hill and then northern hills. From a genus found in Queensland, Papua New Guinea and New Caledonia.

Ecology

From an ancient family of flowering plants, and apparently pollinated by a range of insects.

Population data/health

Common and locally abundant.

Habitat

Thrives in moist sheltered areas.

Threats

None known.

References

Green, P. S. 1994. *Flora of Australia*, Oceanic Islands 1, Vol. 49, Australian Government Publishing Service, Canberra.

Hutton, I. 2002. *A Field Guide to the Plants of Lord Howe Island*. Hutton, Lord Howe Island.

communities

Photo: Ian Hutton

Cloud Forest

Alyxia squamulosa-Coprosma inopinata Dwarf Scrub

Conservation significance

Endemic community. Only location for several endangered, endemic species. Protected within Permanent Park Preserve.

Distribution

Only two ridges in the southern mountains: the Razorback off Mount Gower and the south east ridge off Mount Lidgbird.

Ecology

Main plant species present: *Xylosma parvifolium, Metrosideros nervulosa, Coprosma inopinata, Guioa coriacea, Melicope polybotrya, Alyxia squamulosa.*

Population data/health

Minimal disturbance due to inaccessibility.

Habitat

Windswept narrow ridges only several metres wide, mainly rocky soil and small cliffs.

Threats

Minimal due to inaccessibility, however these ridges are very narrow, and walkers accessing these areas can trample plant species.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Hutton I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Basalt Boulder Beach

Conservation significance

Restricted association. Contains endemic species. Protected within Permanent Park Preserve.

Distribution

Edge of sea at Old Gulch, Far Flats and Boat Harbour.

Ecology

Main plant species present: *Drypetes deplanchei, Howea forsteriana, Lagunaria patersonia, Cassinia tenuifolia, Melaleuca howeana, Crinum pedunculatum, Isolepis nodosus, Cannavalia rosea, Tylophora biglandulosa, Wollastonia biflora, Calystegia soldanella, Ipomoea cairica.*

Population data/health

Area 7 ha.

Habitat

Bouldery beach of round basalt and coral skeletons, very exposed to salt laden winds.

Threats

Rodents eat seeds and stems of some species.

Impact on other species

Unknown.

Recommended management actions

Continue investigation into feasibility of rat eradication.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Hutton I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* vol 1 (2) pages 133-266.

Blackbutt *(Cryptocarya gregsonii)* Closed Forest

Conservation significance

Endemic species predominate. Protected within Permanent Park Preserve.

Distribution

Mount Lidgbird, slopes at foot of cliffs and top slopes.

Ecology

Main plant species present: *Cryptocarya gregsonii, Dracophyllum fitzgeraldii, Melicope polybotrya, Hedyscepe canterburyana, Symplocus candelabrum, Macropiper hooglandii, Trophis scandens, Carex brunnea, Pteris microptera.*

Population data/health

This community occupies an area of approximately 7 ha. Some areas are affected by weed invasion.

Habitat

Moderate to highly exposed slopes. Westerly and easterly aspects on basalt soil.

Threats

Weed invasion, particularly in waterfall areas that are subject to periodic disturbance.

Rodents eat seeds and stems of some plant species in this community.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Big Mountain Palm *(Hedyscepe canterburyana)* Closed Sclerophyll Forest

Conservation significance

Endemic association. Endemic species predominate. Some endangered species occur in this community. Protected within Permanent Park Preserve.

Distribution

High elevations of the southern mountains, generally above 600m.

Ecology

Common plant species in this community include: *Hedyscepe canterburyana, Dysoxylum pachyphyllum, Dracophyllum fitzgeraldii, Negria rhabdothamnoides, Pittosporum erioloma, Elatostema grande, Machaerina insularis, Uncinia debilor, Cyathea* spp., *Diplazium melanochlamys, Grammitis sp., Marattia howeanum, Polystichum whiteleggei, Blechnum* spp., *Asplenium pteridoides, Macropiper hooglandii.*

Population data/health

This community occupies approximately 25 ha. It is generally in very good condition. In Big Pocket landslips and washaways have allowed some weeds to invade.

Habitat

Top slopes and benches at high elevations on deep or rocky basalt soil; cloud and mist frequent.

Threats

Rats eat the seeds and stems of *Hedyscepe canterburyana* and other plant species of this community.

Weed invasion has occurred on the slopes of Big Pocket, landslips and washaways have allowed invasion by weed species Crofton Weed and Tobacco Bush.

Impact on other species

This plant association provides some areas for the seabird Providence Petrel to nest. There is some natural interaction whereby birds fertilise the soil, but also shift soil and can undermine trees.

Little Pocket and some areas of Mount Lidgbird south east corner are the major areas for several rare plant species such as *Marattia howeanum* and *Asplenium pteridoides.*

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Blue Plum *(Chionanthus quadristamineus)* Closed Forest

Conservation significance

Association endemic to Lord Howe Island. Endemic species predominate. Protected within Permanent Park Preserve.

Distribution

Southern mountains only, on lower slopes of both mountains, 100m – 400m altitude.

Ecology

Main plant species *Chionanthus quadristamineus, Dracophyllum fitzgeraldii, Howea belmoreana, Symplocus candelabrum, Zygogynum howeana Dysoxylum pachyphyllum, Coprosma putida, Trophis scandens, Cyathea* spp., *Histiopteris incisa, Phymatosorus pustulatus, Pteris micoptera.*

Population data/health

Community covers about 93ha in area. Minimal disturbance to this association.

Habitat

Moderate slopes on the mountains, rocky basalt soil.

Threats

Some areas with light canopy have infestations of Crofton Weed.

Rodents eat seeds of *Chionanthus quadristamineus* and other species in this community.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Boehmeria calophleba-Macropiper hooglandii Closed Scrub

Conservation significance

Endemic plant community. Very restricted plant association. Protected within Permanent Park Preserve.

Distribution

West face of Mount Lidgbird about 530m altitude, above Black Face.

Ecology

Main plant species present: *Boehmeria calophleba, Macropiper hooglandii, Hedyscepe canterburyana, Negria rhabdothamnoides, Pittosporum erioloma, Elastostema grande, Gahnia howeana, Machaerina insularis, Cyathea sp., Pteris microptera, Histiopteris incisa.*

Population data/health

Community covers approximately 3 ha in area. Low disturbance.

Habitat

Cliff terraces with damp basalt soil, northerly and westerly aspects, and slopes 10 to 60 degrees.

Threats

Rodents eat seeds and stems of some species.

Impact on other species

This plant association provides some areas for the seabird Providence Petrel to nest. There is some natural interaction whereby birds fertilise the soil, but also shift soil and can undermine trees.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Bully Bush *(Cassinia tenuifolia)* Closed Scrub

Conservation significance

Endemic species predominate. Protected within Permanent Park Preserve.

Distribution

Exposed slopes of Mount Eliza, north slopes to Malabar, east cliffs on the side of Transit Hill, Intermediate Hill, World's End, Scab Point, Little Slope, Mt Lidgbird to 500m, landslip areas.

Ecology

Cassinia tenuifolia is the main early coloniser of landslips and some landslips of June 1996 on Intermediate Hill have a dense covering of *Cassinia tenuifolia.*

Main species are *Cassinia tenuifolia, Dodonaea viscosa, Melaleuca howeana, Lagunaria patersonia, Muehlenbeckia complexa, Tylophora biglandulosa, Cyperus lucidus, Pimelea congesta, Isolepis nodosa, Poa poiformis.*

Population data/health

Community covers about 29 ha in area. Low disturbance.

Habitat

Dry exposed slopes, ridges, crests and terraces on cliffs.

Threats

Goats had been causing some disturbance.

Impact on other species

Cassinia tenuifolia is the main early coloniser of landslips and will initially stabilise the landslip, then other tree species develop and eventually outlive and shade out *Cassinia.*

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Calcarenite and Coral Boulder Beach

Conservation significance

Restricted association. Protected within Permanent Park Preserve.

Distribution

Western end of North Beach, North of Little Island.

Ecology

Main plant species present: *Crinum pedunculatum, Isolepis nodosus, Vigna marina, Cannavalia rosea, Tylophora biglandulosa, Wollastonia biflora, Muehlenbeckia complexa, Cyperus lucidus, Calystegia soldanella, Ipomoea cairica, Cassinia tenuifolia.*

Population data/health

Community covers approximately 6 ha in area. Recent arrival of small patch of Kikuyu grass at North Beach otherwise in good condition.

Habitat

Bouldery beach of jagged coral skeletons and calcarenite blocks, very exposed to salt laden winds, occasional splashing by seawater in rare storm events and high tides.

Threats

Weed invasion.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Cliff

Conservation significance

Endemic species predominate. Protected within Permanent Park Preserve.

Distribution

Around coastline and southern mountains.

Ecology

Main plant species present: *Melaleuca howeanum, Cassinia tenuifolia, Carpobrotus glaucescens, Poa poiformis, Olearia elliptica, Westringia viminalis, Polystichum moorei, Asplenium goudeyi*. Plant species present is very variable depending on the location. On wet faces with waterfalls *Blechnum geniculatum, Elatostema grande, Machaerina insularis, Lobelia anceps*. Larger ledges can have shrubs and stunted tree species similar to surrounding forest.

Population data/health

This community occupies an area of approximately 150 ha. Generally in good condition, apart from some weed invasion by Crofton Weed and Tiger Lily on cliff ledges.

Habitat

Vertical cliff faces with small cracks and ledges of varying sizes, basalt, rarely calcarenite.

Threats

Weed invasion, particularly Crofton Weed and Tiger Lily.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Coral Sand Beach and Dune

Conservation significance

Blinkie Beach dune is the only Lord Howe Island habitat for the endangered species *Chamaesyce psammogeton*. North Beach is protected within the Permanent Park Preserve.

Distribution

Margins of the island where low land exists, as compared to cliffs.

Ecology

Main plant species present: *Spinifex hirsutus, Cassinia tenuifolia, Dodonea viscosa, Cakile edentula, Crinum pedunculatum, Ipomoea pes-caprae, Leucopogon parviflorus, Wollastonia biflora, Vigna marina, Cannavalia rosea, Isolepis nodosus, Muehlenbeckia complexa, Chamaesyce psammogeton, Calystegia soldanella, Ochrosia elliptica.*

Population data/health

Some areas highly disturbed by human activity, infrastructure and introduced weeds.

Habitat

Beach margins, low nutrient soil, exposed to salt laden winds, occasional salt water splashing in storms at high tide.

Threats

Some areas of this community are highly disturbed. Infrastructure such as boat sheds, rubbish tip, access tracks, recreational areas are within this community.

Introduced weed species include Buffalo Grass, Kikuyu Grass and *Euphorbia paralias* are a threat to this community.

Other comments

When the Island airstrip was constructed in 1974, several metres of sand from the top of Blinkie Beach dune were removed to comply with Department of Aviation rules for aircraft landing. The dune was replanted with *Spinifex hirsutus* propagated from seed taken from the island, but grown at Port Macquarie. In the late 1980's this was repeated after 20 years of wind heaping sand back. This may be an ongoing action required.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Vegetation of Lord Howe Island J. Pickard. *Cunninghamia* Vol 1 (2) 1983 pages 133-266.

Curly Palm *(Howea belmoreana)* Closed Sclerophyll Forest

Conservation significance

Endemic association. Endemic species predominate. Protected within the Permanent Park Preserve.

Distribution

Generally 5 to 250m altitude, in slopes or gullies of the northern hills and southern mountains.

Ecology

Plant species include *Howea belmoreana, Howea forsteriana, Drypetes deplanchei, Ficus columnaris, Zygogynum howeanum, Atractocarpus stipularis, Flagellaria indica, Smilax australis, Pteris microptera, Histipopteris incisa.*

Population data/health

This community occupies approximately 75 ha in area. It is generally in good health and intact. Some areas in the northern hills have weeds invading.

Habitat

Mid slopes and gullies on basalt soil, often rocky; often scree. Rarely on sandy or calcarenite soil. Occurs on all aspects in low exposure.

Threats

The major threat is that rats eat the seeds and stems of Curly Palm and other species.

In the northern hills the weed Climbing Asparagus is invading the habitat.

Impact on other species

None known.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Fitzgeraldii-Mountain Rose *(Dracophyllum fitzgeraldii–Metrosideros nervulosa)* Closed Scrub

Conservation significance

Endemic species predominate. Protected within the Permanent Park Preserve.

Distribution

Southern mountains 340-600m, but mainly 380 – 530m.

Ecology

Main plant species - *Dracophyllum fitzgeraldii, Metrosideros nervulosa, Chionanthus quadristamineus, Cryptocarya gregsonii, Symplocus candelabrum, Hedyscepe canterburyana, Carmichaelia exsul, Drypetes deplanchei, Melicope polybotrya, Blechnum howeanum, Cyathea* sp., *Pteris microptera, Histiopteris incisa, Plantago hedleyi, Brachyscome segmentosa, Olearia ballii.*

Population data/health

This community occupies an area of approximately 45 ha. This community is generally in good condition.

Habitat

The top of forested slopes/base of vertical cliffs of the southern mountains.

Threats

Weed invasion, including Crofton Weed and Cherry Guava.

Rodents eat seeds of some plant species.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pp 133-266.

Five-leaf Morning Glory-Pigface *(Ipomoea cairica–Carpobrotus glaucescens)* Herbfield

Conservation significance

Restricted association on Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

North and east slope of Roach Island.

Ecology

The dominant plant species in this community include: *Ipomoea cairica, Carpobrotus glaucescens, Commelina glaucescens, Celtis conferta, Lagunaria patersonia, Melaleuca howeana, Drypetes deplanchei, Achyranthes aspera, Cyperus lucidus, Poa poiformis, Sporobolis virginicus.*

Population data/health

This community has not been significantly disturbed.

Habitat

Very exposed steep slopes of offshore islet.

Threats

Ipomoea cairica is not a native of Lord Howe Island. It is currently not considered a significant threat, but its distribution and density should be monitored.

Impact on other species

On Norfolk Island and parts of mainland Australia *Ipomoea cairica* is becoming a pest by climbing over and smothering native vegetation.

Roach Island is an important nesting area for several seabird species, including some that burrow. *Ipomoea cairica* may impact upon nesting seabirds if its growth becomes too vigorous.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Forked Tree *(Pandanus forsteri)* Closed Sclerophyll Forest

Conservation significance

Endemic species predominate. Protected within the Permanent Park Preserve.

Distribution

Generally occurs from sea level to around 100m altitude in the southern mountains.

Ecology

Pandanus forsteri predominates. Other plant species include *Howea belmoreana, Howea forsteriana, Drypetes deplanchei, Zygogynum howeanum, Atractocarpus stipularis, Melicope polybotrya, Platycerium bifurcatum, Flagellaria indica,* and *Pteris microptera.*

Population data/health

Occupies approximately 19 ha in area. This community is generally in good condition, as the damp, shaded environment inhibits weed invasion.

Habitat

Depressions, valleys and gullies on basalt soil that is often rocky. It is usually in damp, poorly drained areas or in creek beds. Often heavy leaf litter from *Pandanus forsteri*.

Threats

Rats eat the seeds and stems of *Pandanus forsteri* and other species.

Impact on other species

Often the persistent, heavy leaf litter impedes the growth of ground vegetation. *Pandanus forsteri* is a common host tree for the epiphytic fern *Platycerium bifurcatum,* which can grow in clumps in the forks of *Pandanus forsteri* branches. The rare fern *Ophioglossum pendulum* may grow on these clumps.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Greybark-Blackbutt *(Drypetes deplanchei–Cryptocarya triplinervis)* Closed Forest

Conservation significance

Dominant lowland forest association on Lord Howe Island. This community provides the optimal habitat for the endangered Lord Howe Placostylus and the endangered Lord Howe Woodhen. Some areas of this forest type provide breeding habitat for the Flesh footed Shearwater.

Some parts of this community are protected within Permanent Park Preserve.

Distribution

Lowlands to 400m altitude. Mainly in northern half of Lord Howe Island, but also on ridges of the southern mountains.

Ecology

Species can tolerate drier conditions and moderate exposure to salt laden winds. Common species from this community include *Drypetes deplanchei, Cryptocarya triplinervis Howea belmoreana, Howea forsteriana, Lagunaria patersonia, Celtis confertus, Olea paniculata, Elaeodendron curtipendulum, Xylosma maidenii, Myoporum insulare, Rapanea platystigma, Dodonaea viscosa, Smilax australis, Parsonsia howeana, Trophis scandens* ssp. *megacarpa, Adiantium hispidulum, Phymatosorus pustulatus* ssp. *howensis, Asplenium milnei, Carex brunnea, Commelina cyanea.*

Population data/health

This community occupies approximately 355 ha. This community is dominant in the settlement area and is therefore the community most impacted by human activity.

Habitat

Generally occurs on more exposed areas such as dry sites with thin soil and steep, rocky slopes or calcarenite soil.

Two forms of this community are recognised - where it occurs on basalt, and where it occurs on calcarenite/coral sand.

Threats

Weed invasion including Climbing Asparagus, Ground Asparagus, Bridal Creeper, Cherry Guava, Sweet Pittosporum, Cotoneaster, Ochna and Kikuyu.

Rodents eat seeds of several tree species in this community.

Affected by windshear on the forest edge from clearing.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Hutton I. & Le Cussan J. 2001. *Outline for a weed control strategy and an Inventory of weeds for Lord Howe Island*. Report for the Lord Howe Island Board.

Greybark-Blackbutt *(Drypetes deplanchei–Cryptocarya triplinervis)* Low Closed Forest on Exposed Calcarenite

Conservation significance

Restricted plant association on Lord Howe Island. Protected within the Permanent Park Preserve.

Distribution

Northern hills, 15 to 70m altitude.

Ecology

The species in this community can tolerate very dry soil conditions.

Common species in this community include *Drypetes deplanchei, Cryptocarya triplinervis, Howea forsteriana, Elaeodendron curtipendulum, Myoporum insulare, Alyxia ruscifolia, Pimelea congesta, Cassinia tenuifolia, Pouteria myrsinoides* ssp. *reticulata, Smilax australis, Carex brunnea, Oplismenus imbecillus.*

Population data/health

The area covered by this community is approximately 2 ha. It is generally in good condition.

Habitat

Generally on exposed calcarenite outcrops with little soil and littered with plates and blocks of calcarenite.

Threats

Weed invasion.

Rodents eat seeds of tree species.

Impact on other species

None known.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Hutton I. & Le Cussan J. 2001. *Outline for a weed control strategy and an Inventory of weeds for Lord Howe Island*. Report for the Lord Howe Island Board.

Greybark-Blackbutt *(Drypetes deplanchei–Cryptocarya triplinervis)* Low Closed Forest on Exposed Basalt

Conservation significance

Common on exposed lowland sites.

Distribution

This community occurs from the lowlands to approximately 250m altitude. It grows on exposed dry ridges of the northern hills and low elevation ridges in the mountains.

Ecology

Species can tolerate drier conditions and higher exposure to salt laden winds.

Species commonly found in this community include *Drypetes deplanchei, Cryptocarya triplinervis, Alyxia ruscifolia, Pimelea congesta, Leucopogon parviflorus, Lagunaria patersonia, Elaeodendron curtipendulum, Rapanea platystigma, Dodonaea viscosa, Smilax australis, Jasminum didymum, Carex brunnea, Isolepis nodosus* and *Commelina cyanea.*

Population data/health

The area covered by this community is approximately 62 ha. Some areas in the northern hills and Transit Hill are invaded by weeds.

Habitat

This community occurs from sea level to about 250m. It is generally found on more exposed areas, dry sites with thin soil and steep, rocky slopes exposed to strong salt-laden winds.

Threats

Weed invasion, including Climbing Asparagus, Ground Asparagus, Cherry Guava, Cotoneaster, Ochna.

Rodents eat the seeds of some of the tree species from this community.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Hutton I. & Le Cussan J. 2001. Outline for a weed control strategy and an Inventory of weeds for Lord Howe Island. Report for the Lord Howe Island Board.

Hopbush *(Dodonaea viscosa)* Closed Scrub

Conservation significance

Contains endemic species. Protected within the Permanent Park Preserve.

Distribution

Small patches on exposed ridges of southern mountains.

Ecology

Main plant species present: *Dodonaea viscosa, Cassinia tenuifolia, Guioa coriacea, Howea forsteriana, Polyscias cissodendron, Smilax australis, Carex brunnea, Isolepis nodosus, Ageratina adenophora.*

Population data/health

This community occupies an area of approximately 9 ha. Some areas are highly disturbed.

Habitat

Mid slopes and summits of ridges, generally north slope on basalt soil.

Threats

Introduced weed species, including Crofton Weed, Cherry Guava, Cotoneaster and Kikuyu.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Hotbark-Fitzgeraldii *(Zygogynum howeanum–Dracophyllum fitzgeraldii)* Gnarled Mossy Closed Forest

Conservation significance

Association endemic to Lord Howe Island. Endemic species predominate. Protected within Permanent Park Preserve.

Distribution

Summit of Mount Gower and a small area on the summit of Mount Lidgbird.

Ecology

Cloud forest, where the frequent cloud cap provides high humidity.

Common species in this community include: *Zygogynum howeanum, Dracophyllum fitzgeraldii, Metrosideros nervulosa, Leptospermum polygalifolium, Cryptocarya gregsonii, Negria rhabdothamnoides, Atractocarpus stipularis, Corokia carpodetoides, Elaeocarpus costatus, Symplocus candelabrum, Dysoxylum pachyphyllum, Olearia mooneyi, Elatostema grande, Machaerina insularis, Gahnia howeana, Cyathea* spp, *Grammitis* spp, *Blechnum fullagarii, Blechnum contiguum, Blechnum howense, Hymenophyllum howense, Hymenophyllum moorei.* Non-vascular plants such as mosses and liverworts are also very common in this community.

Population data/health

The area covered by this community is approximately 28 ha. It is in very good condition.

Habitat

Undulating mountain summit on deep soil, creek gullies, cliffs and rocky creek beds.

Threats

Rats eat the seeds and leaf stems of the two dominant species, the endemic palms *Hedyscepe canterburyana* and *Lepidorrhachis mooreana,* and also the seeds of other species.

Minor weeds colonise natural clearings.

A reduction in cloud cover, and thus precipitation as a result of climate change is a significant threat to this community.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Hutton I. & Le Cussan J. 2001. *Outline for a weed control strategy and an Inventory of weeds for Lord Howe Island*. Report for the Lord Howe Island Board.

Kentia Palm *(Howea forsteriana)* Closed Sclerophyll Forest

Conservation significance

Endemic association. Endemic species predominate. Some areas are protected within the Permanent Park Preserve.

Distribution

Generally low flat areas from sea level to 120m, but also some areas up to 360m altitude. Little Slope and Big Slope.

Ecology

This community often occurs in dense stands of Kentia Palm. Other scattered plants include: *Cryptocarya triplinervis, Drypetes deplanchei, Ficus macrophylla ssp. columnaris, Pandanus forsteri, Olea paniculata, Coprosma putida, Elaeodendron curtipendulum, Myoporum insulare, Atractocarpus stipularis, Flagellaria indica, Smilax australis, Carex brunnea, Oplismenus imbecillus, Asplenium milnei, Pteris microptera.*

Population data/health

The area covered by this community is approximately 170 ha. It is generally in good condition. Preservation has been enhanced by the commercial value of seeds. Some areas close to the settlement are affected by weed invasion.

Habitat

Major areas occur on sandy or calcarenite soil at low altitudes. However some parts of this community occur on rocky basalt soil higher elevations of the southern mountains.

Threats

The major threat is that rats eat the seeds and stems of *Howea forsteriana* and other species from this community.

Close to the settlement, weed invasion is a significant threat, particularly by Climbing Asparagus, Group Asparagus and Pittosporum, but generally fallen fronds create heavy mulch, which excludes weeds.

Impact on other species

Some areas of this forest type close to the coast provide the major breeding areas for the Flesh footed Shearwater.

Other comments

Two distinctive forms of this community are recognised: *Howea forsteriana* Forest on calcarenite/coral sand, and *Howea forsteriana* Forest on basalt.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* vol 1 (2) pages 133-266.

Leafy Flat Sedge *(Cyperus lucidus)* Sedgeland

Conservation significance

Restricted association on Lord Howe Island. Protected within Permanent Park Preserve.

Distribution

Offshore islets (Roach and Muttonbird Islands), a patch on North Head, several small patches on scree and terraces around the southern mountains.

Ecology

Main plant species present: *Cyperus lucidus, Commelina cyanea, Ipomoea cairica, Poa poiformis, Phragmites australis, Sporobolis virginicus, Crinum pedunculatum.*

Population data/health

This community occupies an area of approximately 3 ha. Undisturbed apart from burrowing seabirds on offshore islets.

Habitat

Exposed slopes of offshore islets, headlands and mountain terraces. Basalt soil, boulder screes.

Threats

None known.

Impact on other species

On Roach Island, the stands of *Cyperus lucidus* are a main habitat for the endemic Lord Howe Island cockroach *Panasthesia lata.*

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Lowland Freshwater Instream

Conservation significance

Very restricted community. Some areas are protected within the Permanent Park Preserve.

Distribution

Lowland parts of the main island.

Ecology

Aquatic, water-dependant community.

Population data/health

Some areas of this community have been disturbed by clearing and trampling.

Habitat

Second order and below streams that occur on calcarenite and coral sands.

Threats

Clearing of this community and adjacent to this community is a significant threat.

Trampling by domestic stock and to a lesser extent, humans, is threatening this community.

Weed invasion impacts on this community.

A reduction in rainfall as a result of climate change is a significant threat to this community.

Impact on other species

Unknown.

References

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Lowland Mixed Closed Forest

Conservation significance

Endemic association. Endemic species predominate. Protected within the Permanent Park Preserve.

Distribution

Intermediate Hill and Southern mountains at low to moderate altitudes.

Ecology

Main plant species present: *Syzygium fullagarii, Melicope polybotrya, Guioa coriacea, Hedyscepe canterburyana, Olea paniculata, Pandanus forsteri, Zygogynum howeanum, Coprosma putida, Psychotria carronis, Xylosma maidenii, Cassinia tenuifolia, Flagellaria indica, Trophis scandens, Carex brunnea, Adiantum hispidulum, Pteris microptera, Nephrolepsis cordifolia.*

Population data/health

This community occupies approximately 192 ha. Some weed invasion occurs in this community, however, it is predominantly in good condition.

Habitat

Mostly occurs in areas of low to moderate exposure on slopes and valleys, in mainly easterly and westerly aspects. Occurs on basalt soils, often rocky.

Threats

Weed invasion, particularly in areas close to the settlement and Mount Lidgbird. Weed species include Ground Asparagus, Cherry Guava, Pittosporum, Cotoneaster and Ochna. Minor weeds escaping from the settlement also pose a threat, and include Silky Oak, Camphor Laurel, Privet and Passionfruit.

Rodents eat seeds and stems of some plant species.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Mangrove *(Aegiceras corniculatum)* Closed Swamp Scrub

Conservation significance

Very restricted community on Lord Howe Island; none protected within the Permanent Park Preserve.

Distribution

At the mouth of three creeks – Soldiers Creek, Old Settlement Creek and Cobby's Corner. Area 2 ha.

Ecology

Main plant species present is *Aegiceras corniculatum;* others include *Lagunaria patersonia, Triglochin striatum* and *Sarcocornia quinqueflora.*

Population data/health

Poor condition due to clearing of adjacent forest for grazing.

Habitat

Mouths of creeks which occasionally flush with salt water at extreme high tides.

Threats

Grazing and trampling by cattle and invasion by introduced pasture grasses Kikuyu and Buffalo.

Impact on other species

Mangrove (*Aegiceras corniculatum*) creeks provide habitat for freshwater fauna, including the fish species Spotted Jollytail, the Short-finned Eel and the Long-finned Eel.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Mangrove *(Avicennia marina* var *australasica)* Open Swamp Scrub

Conservation significance

Rare plant association on Lord Howe Island. Some areas are protected within the Lord Howe Island Marine Protected Area.

Distribution

Western edge of Hunter Bay, mouth of Old Settlement creek.

Ecology

Main plant species present: *Avicennia marina.*

Population data/health

Total area covered by community approximately 0.6 ha. Very low numbers of individual *Avicennia* plants. J. Pickard recorded 9 plants in 1973; Hunters Bay edge population 9 plants in 2002; Old Settlement Creek population 45 plants in 2002.

Habitat

Western edge of Hunter's Bay. Lagoon edge on mud and shingle deposits between low and high tide marks. Mouth of Old Settlement Creek on basalt-derived mud, periodically immersed in sea water.

Threats

Low numbers of individual plants make this community vulnerable to stochastic (chance) events.

Impact on other species

Unknown.

Other comments

In the past this species was probably more common around the Lagoon. Remnants of an old *Avicennia* forest adjacent to the Island jetty were uncovered when Island trading boats discharged ballast water in the 1980's. Samples of the stumps were carbon dated at 6,100 years before present. At that time sea levels were approximately 2 metres lower and *Avicennia marina* may have been more extensive. In addition, many dead shells of two mangrove snail species are present on Old Settlement, Lagoon and North Beaches, but the snails are no longer extant on Lord Howe Island.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Mixed Fern and Herb

Conservation significance

Endemic species predominate. Community very restricted in extent. Protected within the Permanent Park Preserve.

Distribution

Southern mountains at base of cliffs; 80 to 500 metres altitude.

Ecology

This community occupies approximately 7 ha in isolated patches. Ferns and herbs dominate, and include *Elatostema grande, Carex brunnea, Cyperus lucidus, Isolepis nodosa, Adiantum hispidulum, Histiopteris incisa, Cyathea* sp and *Pteris microptera.* Other species include *Dracophyllum fitzgeraldii* and *Hedyscepe canterburyana*.

Population data/health

Usually highly disturbed and from introduced weed species.

Habitat

Top slopes, almost always at the foot of cliffs in sunny, damp places.

Threats

Weed invasion is the major threat in this community, particularly by Crofton Weed.

Rats eat seeds and stems of *Hedyscepe canterburyana.*

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Poa poiformis Grassland

Conservation significance

Very restricted plant association. Important habitat for nesting seabirds. Protected within Permanent Park Preserve.

Distribution

Offshore islets, Muttonbird Point and King Point, some cliff ledges north hills and Hell's Gate.

Ecology

The main plant species present include *Poa poiformis, Commelina cyanea, Isolepis nodosus, Cyperus lucidus, Ipomoea cairica, Cassinia tenuifolia, Melaleuca howeana.*

Population data/health

This community occupies approximately 14 ha in area. Most of the locations of this community are disturbed by exotic grass invasion (Kikuyu).

Habitat

Windswept islets and headlands.

Threats

Invasion by the weed Kikuyu is the predominant threat of this community. At Muttonbird Point this plant association has almost disappeared due to invasion by the weed Kikuyu, where only a small strip remains in the centre.

Impact on other species

On offshore islets and at Muttonbird and King Points, seabirds interact with this plant association. Masked boobies and Sooty terns nest on the ground amongst *Poa* tussocks, Wedge-tailed Shearwaters and Little Shearwaters burrow amongst tussocks. At Muttonbird Point the introduced Kikuyu invades Wedgetailed shearwater burrows, and occasionally entangles the bird so it cannot escape.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Saltbush *(Atriplex cinerea)* Dwarf Scrub

Conservation significance

Restricted plant association on Lord Howe Island. The Malabar population is protected within the Permanent Park Preserve.

Distribution

Talus slope below Malabar; sand and cliffs at Ned's Beach to Steven's Point and Middle Beach,

Ecology

Main plant species present: *Atriplex cinerea, Sporobilis virginicus*.

Population data/health

Low disturbance only. 0.6ha area.

Habitat

Exposed slopes close to the sea, recent coral sand overlaying basalt. Poor soil with minimal development.

Threats

Minor weed incursions at Ned's Beach, where introduced Kikuyu and Buffalo Grass are invading the habitat of this community.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Sallywood *(Lagunaria patersonia)* Closed Swamp Forest

Conservation significance

Endemic association. Listed as an endangered ecological community on the NSW TSC Act. Not protected within the Permanent Park Preserve.

Distribution

The habitat for this community is limited to flat, low lying, poorly drained areas around the settlement (Old Settlement, behind Pinetrees, east end of Mosely Park behind Blinkie Dune, end of the mangrove creek near Cobby's Corner and across the road from the mangrove creek at Soldiers Creek).

Ecology

The dominant plant species present include *Lagunaria patersonia, Hibiscus tiliaceus, Myoporum insulare, Aegicerus corniculatum, Cryptocarya triplinervis* and *Celtis conferta* ssp. *amblyphylla.*

Population data/health

There were previously 5 stands of this community. This has been reduced to one stand, near Cobby's Corner, and some remnant trees in other stands.

Habitat

Low lying, poorly drained flat areas, flooded for part of the year.

Threats

Most areas have been cleared for grazing and any remaining Sallywood trees are dead or near dead through exposure to wind.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Photo: Ian Hutton

Sallywood Swamp forest

Scalybark *(Syzygium fullagarii)* Closed Forest

Conservation significance

Association endemic to Lord Howe Island. Endemic species predominate. Most areas are protected within the Permanent Park Preserve.

Distribution

Located from sea level to 500m altitude, mainly on the flanks of Mount Lidgbird and the north slope of Mount Gower and Intermediate Hill. There is a small patch in the northern hills.

Ecology

Main species include *Syzygium fullagarii, Chionanthus quadristamineus, Guioa coriacea, Howea belmoreana, Rapanea mccomishii, Zygogynum howeana, Atractocarpus stipularis, Coprosma putida, Carex brunnea, Pteris microptera*. Floristically most similar to *Chionanthus quadristamineus*.

Population data/health

Occupies approximately 126ha in area. This community is generally in good condition, although some areas are invaded by noxious weeds.

Habitat

Sheltered valleys or slopes with good soil, water and protection from wind, away from the coast on slight to moderate slopes. Stony basalt soil.

Threats

Weed invasion is a threat on Intermediate Hill and the northern side of Mount Lidgbird close to the settlement. Weed species include Ground Asparagus, Cherry Guava, Pittosporum, Cotoneaster and Ochna. Minor weeds escaping from the settlement include Silky Oak, Camphor laurel, Privet, and *Metrosideros excelsa*. Invasion by Kikuyu on pasture edges is also a weed threat.

Rodents eat the seeds of some tree species.

Forest edge "dieback" from clearing of the protective margin of the forest impacts upon this community.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Hutton I. & Le Cussan J. 2001. *Outline for a weed control strategy and an Inventory of weeds for Lord Howe Island*. Report for the Lord Howe Island Board.

Tea Tree *(Melaleuca howeana)* Closed Scrub

Conservation significance

Endemic association. Endemic species predominate. Protected within the Permanent Park Preserve.

Distribution

Generally occurs close to the coast, between sea level to 150m altitude, and occasionally to 500m.

Some localities of this community include: Old Gulch, New Gulch, bottom of Dawson's Ridge, northern end of Blinkie Beach, Little Slope, Big Slope.

Ecology

The dominant species in this association include *Melaleuca howeana, Cassinia tenuifolia, Lagunaria patersonia, Howea belmoreana, Alyxia ruscifolia, Wollastonia biflora, Muehlenbeckia complexa, Cyperus lucidus, Isolepis nodosa, Asplenium milnei, Adiantum hispidulum* and *Commelina cyanea.*

Species in this community can tolerate exposure to extreme wind and salt spray.

Population data/health

The area covered by this community is approximately 42 ha. It has generally been subjected to minor levels of disturbance. Dry periods can result in individual plants dying.

Habitat

Dry exposed slopes close to the sea, terraces on cliffs and ridge crests. Moderate to steep slopes on basalt or calcarenite soils, that are often stony.

Threats

Prior to Goat control, Goats caused some disturbance.

Impact on other species

At the northern end of Blinkie Beach, this community is a breeding location for seabirds such as the Black-winged Petrel and Little Shearwater.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Hutton I. 2001. *Rare plant surveys of Lord Howe Island.* Report prepared for the NSW Scientific Committee, Hurstville.

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Upland Freshwater Instream

Conservation significance

Very restricted community. Most areas are protected within the Permanent Park Preserve.

Distribution

Elevated parts of the main island.

Ecology

Aquatic, water-dependant community.

Population data/health

Some areas of this community are affected by weed invasion.

Habitat

Second order and below streams that occur on basalt.

Threats

Weed invasion, particularly by Crofton Weed, impacts on this community.

A reduction in rainfall as a result of climate change is a significant threat to this community.

Impact on other species

Unknown.

References

Pickard J. 1983. Vegetation of Lord Howe Island. *Cunninghamia* Vol 1 (2) pages 133-266.

Waterfall Cliff

Conservation significance

Very restricted habitat. Endemic species predominate. Protected within the Permanent Park Preserve.

Distribution

Vertical cliffs on the north and west faces of Mount Gower, down to around 500m altitude.

Ecology

The main plant species present are *Blechnum geniculatum, Blechnum howeanum, Machaerina insularis,* and *Elatostema grande.*

Plants on these wet cliff faces are subject to a wide variety of physical conditions from dry periods to heavy rain resulting in torrents of water pouring across them. Strong winds can blow across the faces.

Population data/health

Very restricted habitat.

Habitat

Vertical basalt cliffs generally with at least a trickle of water coming down.

Threats

Introduced weed species, particularly Crofton Weed, can gain a foothold on some of the ledges of these waterfalls.

Climate change may result in a reduction of rainfall and cloud formation, lowering the amount of water available to this water-dependant community.

Impact on other species

Unknown.

References

Green P.S. 1994. *Flora of Australia* Vol. 49 Oceanic Islands 1. AGPS.

Hutton, I 2005. *Rare Plant Surveys of Lord Howe Island 2.* Report prepared for the Biodiversity Conservation Science Section, Dept of Environment and Conservation.

Index of Species and Communities

Department of **Environment & Climate Change** NSW