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. *rubra*				
*	*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			
^	*Seswium 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	*Pseudomoia 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	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	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	10	80	100	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	100	80	100	100	100	100	100	100	100	100	10	80	100	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	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	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	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	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	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	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	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	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	100	20	100
Guoia coriacea	2	100	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	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	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	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	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	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	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	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	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	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	
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	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	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	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	100	0	100	100	100	100	98	100	80	100
Metrosideros sclerocarpa	2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	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	100	90	100	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	10	9	10	100	10	10	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	100	80	100	100	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	100	80	100	100	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	100	95	100	100	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	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	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
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
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
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
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	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	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	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	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	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	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
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	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	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	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	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
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
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	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	80	20	100

Xylosma parvifolium - Class 2	4	40	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	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	100	20	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	30	100	30	30	30	30	30	30	6	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	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	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	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/*Boehmeria 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	100	50	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

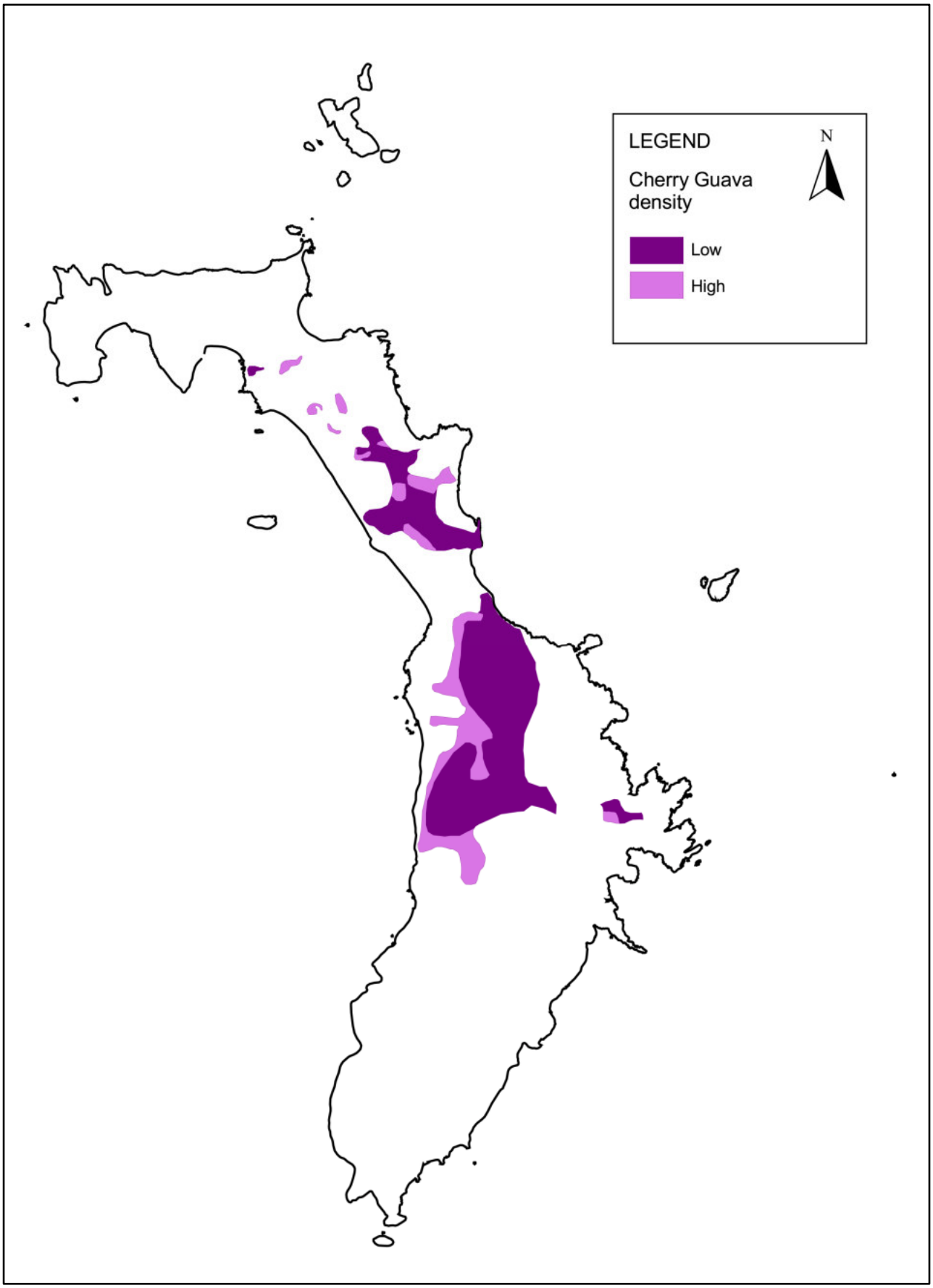

Figure A. An example of a threat layer input for the Lord Howe Island Biodiversity Management Plan - the distribution of Cherry Guava on Lord Howe Island (from Smith 2002)

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.

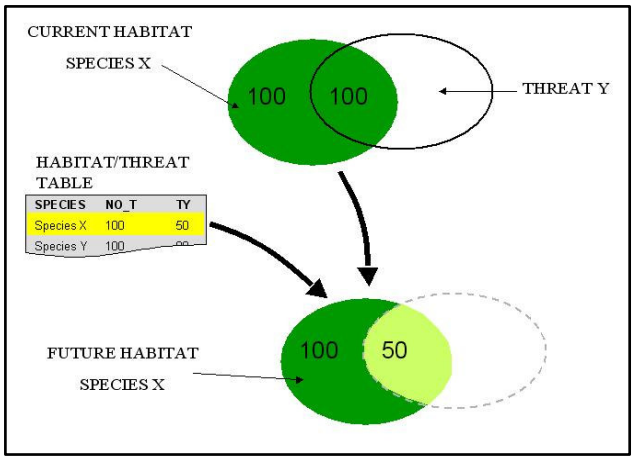

Figure B. Process for deriving future habitat from current habitat, threats and a habitat/threat table

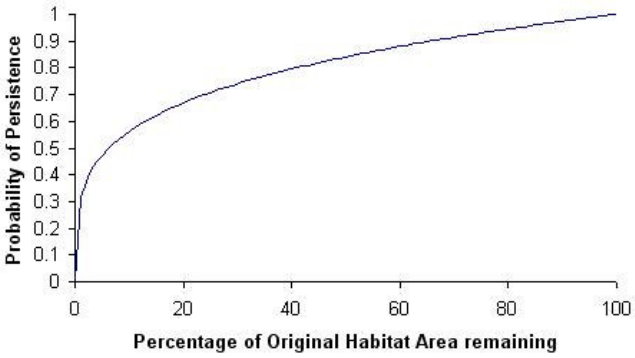

Figure C. Persistence area relationship assumed for the Biodiversity Forecasting Toolkit

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).

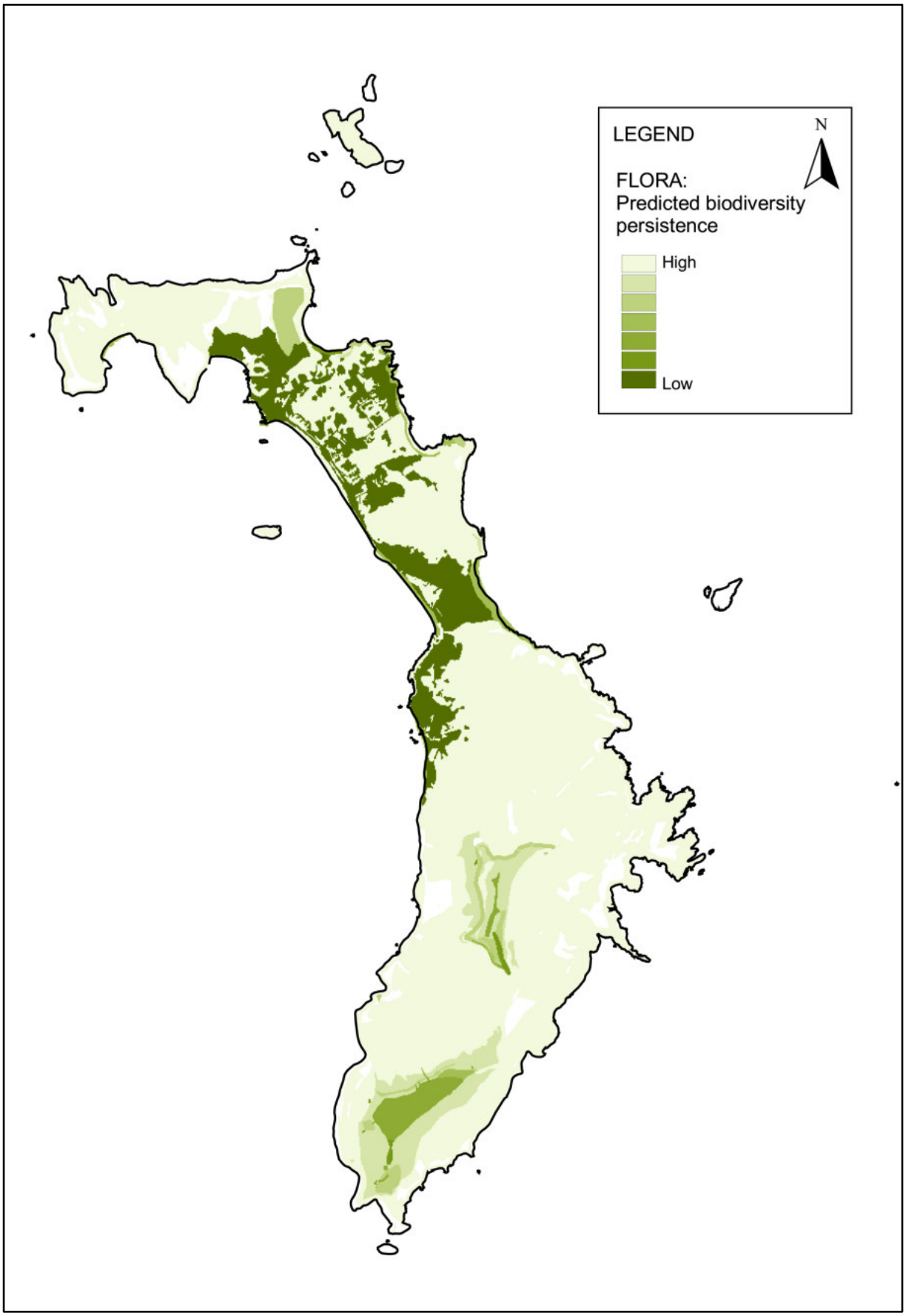

Figure D. **Areas of predicted biodiversity persistence for flora of the LHIG**

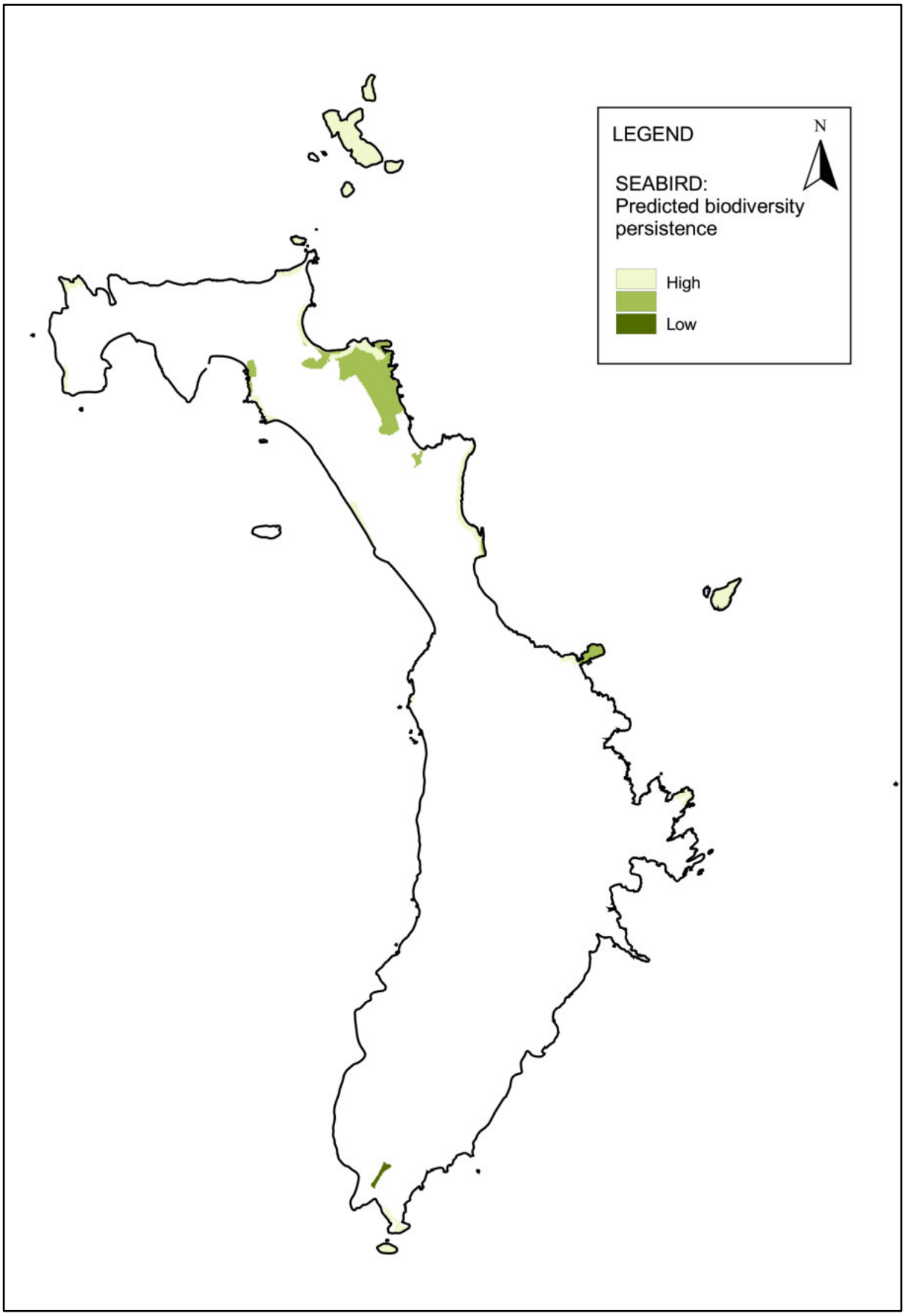

Figure E. **Areas of predicted biodiversity persistence for sea birds of the LHIG**

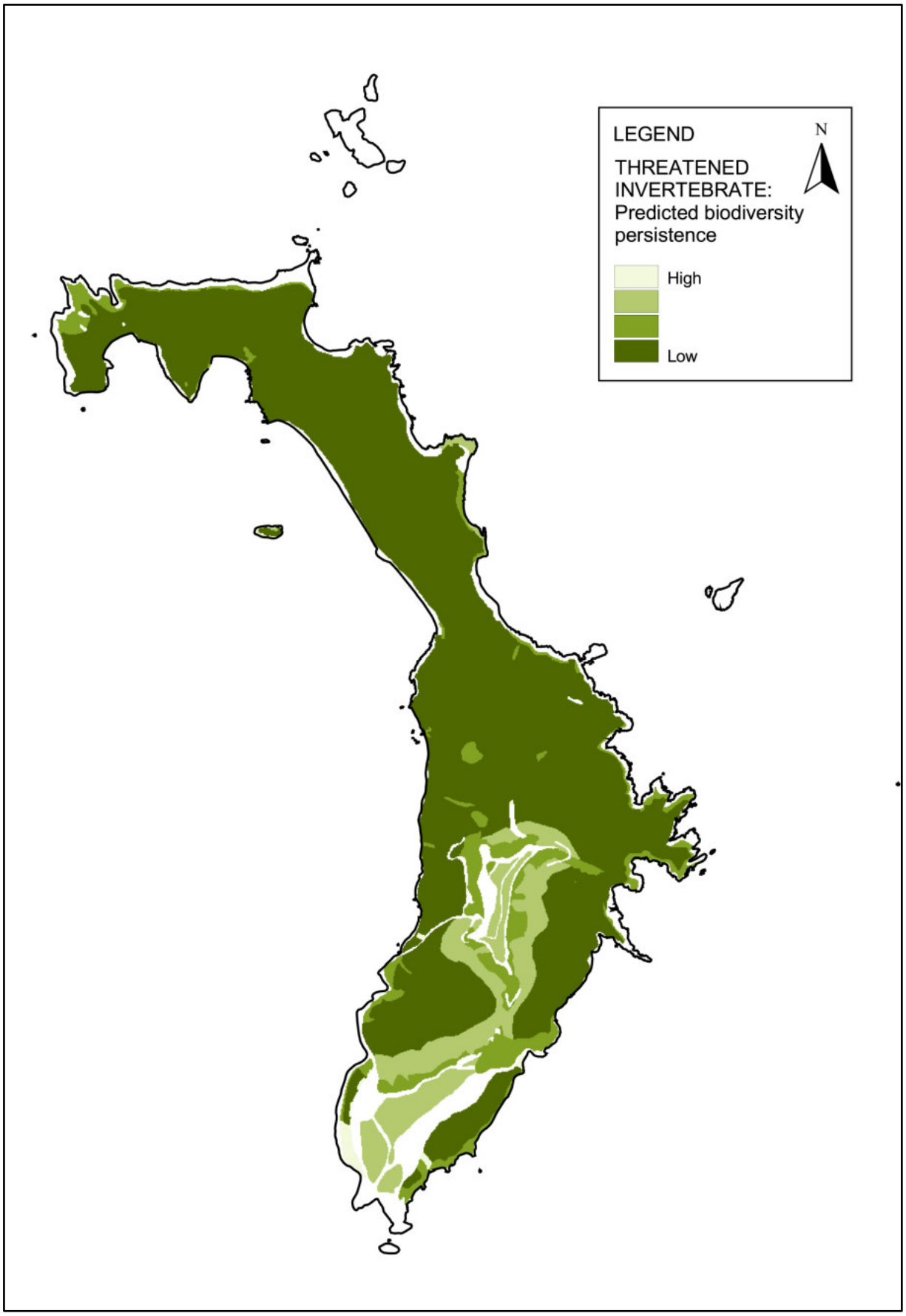

Figure F. Areas of predicted biodiversity persistence for threatened invertebrates of the LHIG

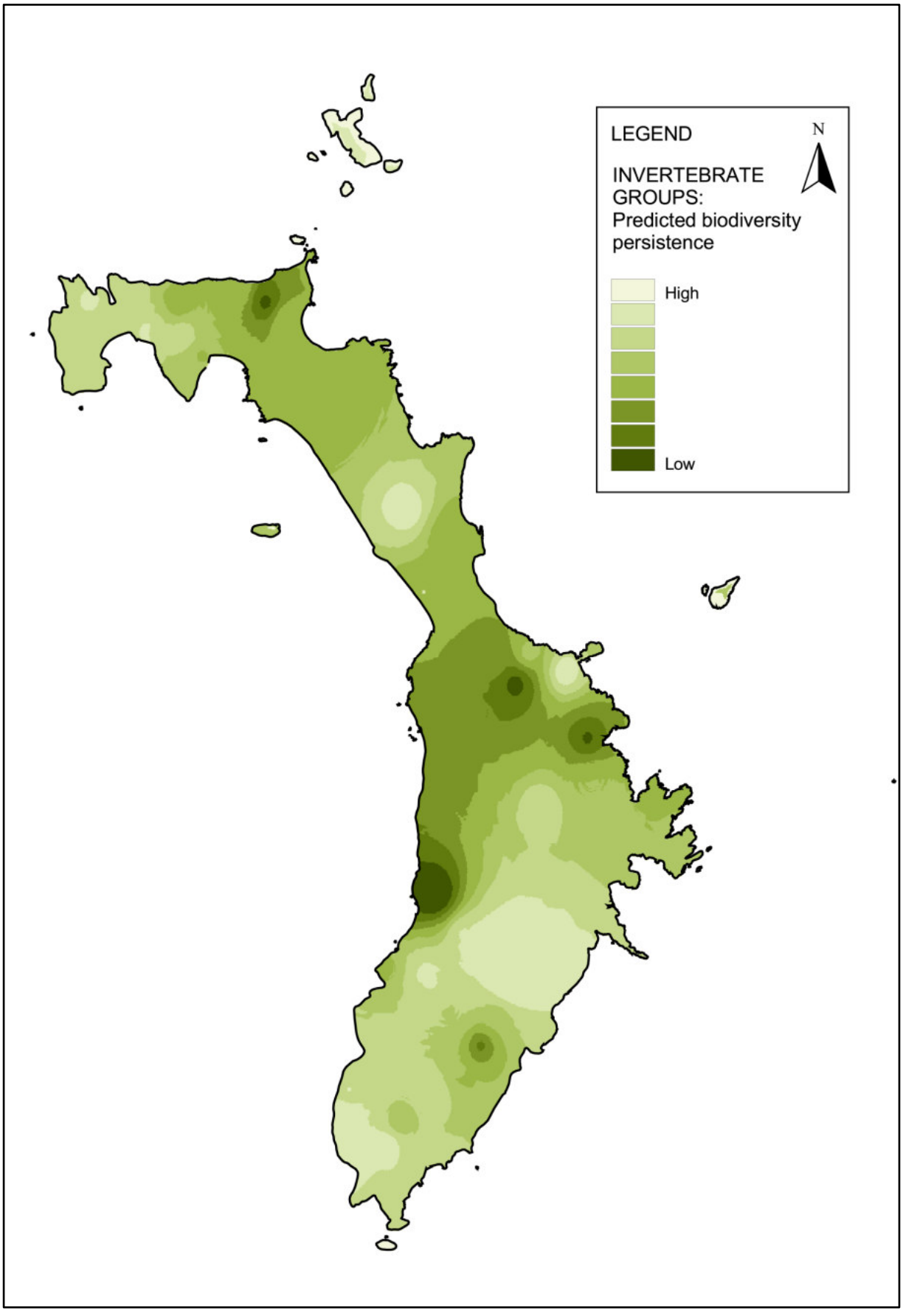

Figure G. **Areas of predicted biodiversity persistence for invertebrate groups**

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.

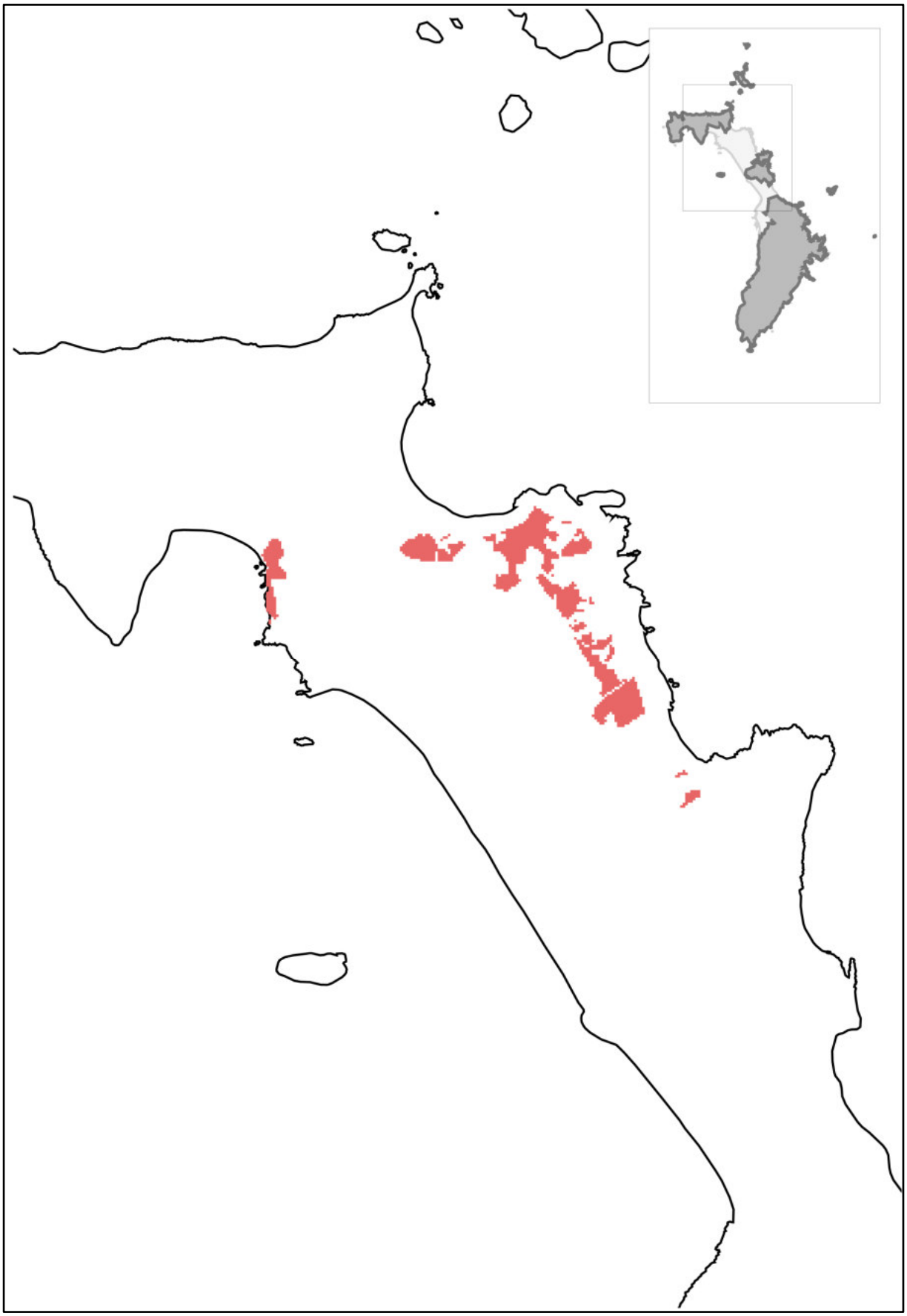

Figure H. **Areas where future clearing is predicted to have the greatest impact on sea birds**

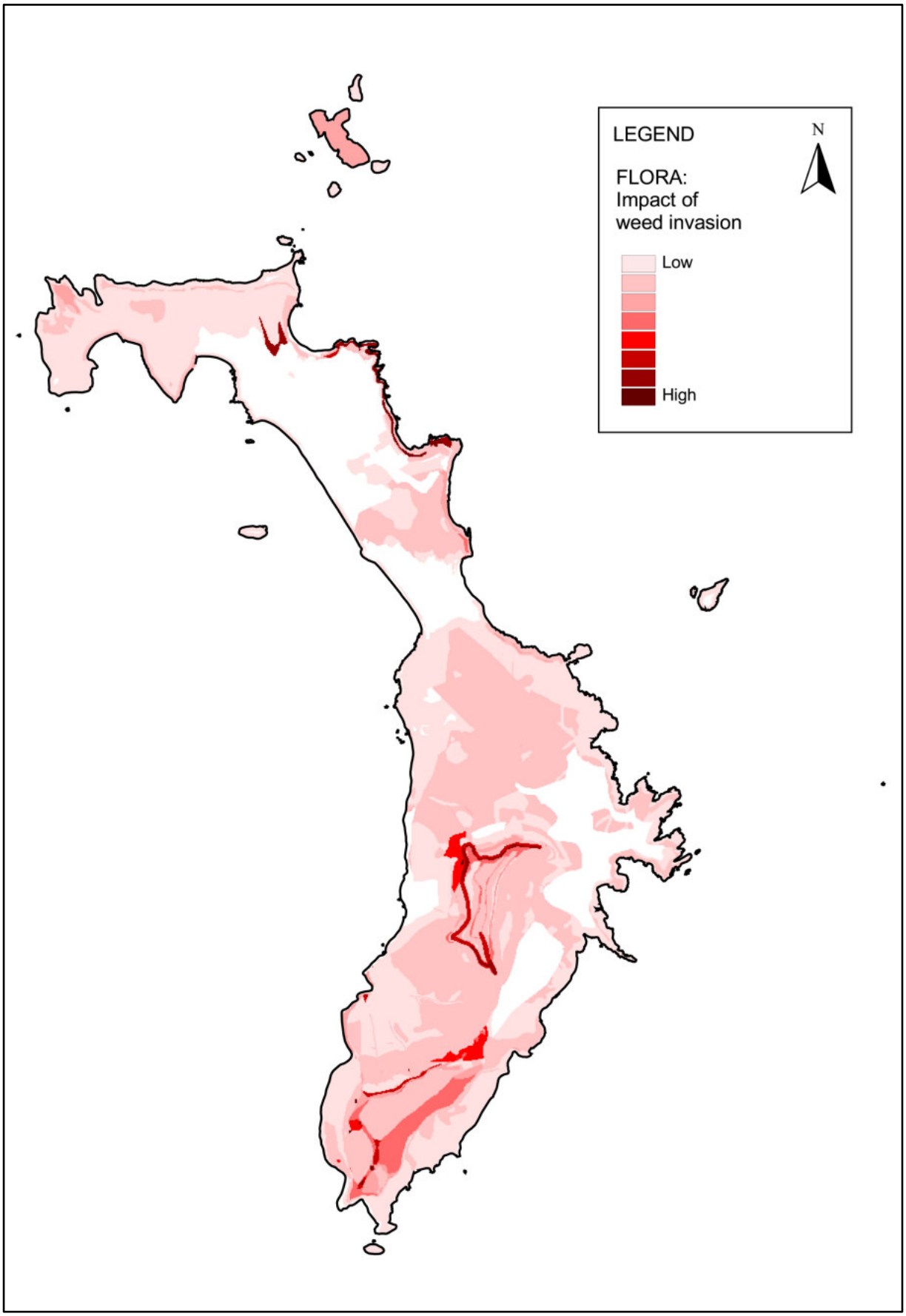

Figure I. Areas where weed invasion is predicted to have the greatest impact on flora biodiversity values

References

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.

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