

Focusing on the Landscape

Biodiversity in Australia's National Reserve System

Part A: Fauna

A Report for Caring for Our Country

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Table of Contents

Figures.....	2
Tables	2
Executive Summary	5
Introduction.....	8
Methods.....	9
Results and Discussion	14
References.....	194
Appendix 1 Vertebrate summary	196
Appendix 2 Invertebrate summary.....	197

Figures

Figure 1. Location of protected areas within the Australian Protected Area Network (taken from http://www.environment.gov.au/parks/nrs/science/locations.html).	10
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Tables

Table 1 Summary of vertebrate taxa in the National Reserve System (NRS). Well Reserved = >45% of Record Sites within PAs; Under Reserved = <10% Record Sites within PAs Large PAs = PAs larger than 1000ha.....	7
Table 2 Summary of invertebrate taxa in the NRS – Codes as for Table 1.	7
Table 3 Area of IUCN category reserved lands within each state of Australia (http://www.environment.gov.au/parks/nrs/science/capad/2006/index.html)	10
Table 4 Codes for location distributions	12
Table 5 Vegetation type codes	12
Table 6 <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC) threatened status codes	12
Table 7 Codes for more detailed location distributions	13
Table 8a Anuran species considered extinct	14
Table 8b List of anuran species with 30 records or fewer in the ANHAT database. Species in bold are listed as threatened under the EPBC Act.	14
Table 9 Species of anurans with > 45% of record sites in PAs.....	15
Table 10 Species of anurans with <10% of record sites within PAs.....	16
Table 11 List of anuran species recorded from more than 100 PAs	17
Table 12 List of anuran species recorded from fewer than five PAs	18
Table 13 Mammal species considered extinct.....	19
Table 14 Mammal species which account for almost 50% of the total species records in ANHAT.....	20
Table 15 Mammal species with 30 or fewer individual site records in the ANHAT database.	20
Table 16 Mammal species with >45% of site records within the NRS.....	21
Table 17 Mammal species with <10% of ANHAT records located within the NRS.....	23
Table 18 Mammal species recorded at more than 100 PAs.	23
Table 19 Mammal species recorded from five or fewer PAs.....	25

Table 20	Mammal species recorded in five or fewer PAs greater than 1000 hectares.	26
Table 21	Reptile species that account for approximately 50% of the total species records in ANHAT.	27
Table 22	Reptile species with 30 or fewer individual site records in the ANHAT database.	28
Table 23	Reptile species with >45% of site records within PAs.	33
Table 24	Reptile species with <10% of ANHAT records located within the NRS.	37
Table 25	Reptile species recorded at more than 100 PAs.	38
Table 26	Reptile species recorded from five or fewer PAs.	40
Table 27	Reptile species recorded in five or fewer PAs greater than 1000 hectares.	42
Table 28	Non-passerine species considered extinct.	45
Table 29	Non-passerine species that account for approximately 50% of the total species records in ANHAT.	45
Table 30	Non-passerine species with 30 or fewer individual site records in the ANHAT database.	46
Table 31	Non-passerine species with >45% of site records within PAs.	46
Table 32	Non-passerine species with <10% of ANHAT records located within PAs.	47
Table 33	Non-passerine species recorded at more than 100 PAs.	48
Table 34	Non-passerine species recorded from five or fewer PAs.	51
Table 35	Non-passerine species recorded in five or fewer PAs greater than 1000 hectares.	52
Table 36	Passerine species that account for almost 50% of the total species records in ANHAT.	53
Table 37	Passerine species with 30 or fewer site records in the ANHAT database.	54
Table 38	Passerine species with 45% or more of their record sites in PAs.	54
Table 39	Passerine species with <10% of ANHAT records located within the NRS.	55
Table 40	Passerine species recorded at more than 100 PAs.	56
Table 41	Passerine species recorded from five or fewer PAs.	60
Table 42	Passerine species recorded in five or fewer PAs greater than 1000 hectares.	60
Table 43	Dragonfly and damselfly species that account for approximately 50% of the total species records in ANHAT.	61
Table 44	Dragonfly and damselfly species with 10 or fewer individual site records in the ANHAT database.	62
Table 45	Dragonfly and damselfly species with >45% of site records within the NRS.	65
Table 46	Dragonfly and damselfly species with <10% of ANHAT records located within the NRS.	66
Table 47	Dragonfly and damselfly species recorded at more than 50 PAs.	67
Table 48	Dragonfly and damselfly species with records in five or fewer PAs and PAs of 1000 ha or more.	67
Table 49	Butterfly species that account for approximately 50% of the total species records in ANHAT.	70
Table 50	Butterfly species with 10 or fewer individual site records in the ANHAT database.	71
Table 51	Butterfly species with greater than 45% of site records within the NRS.	73
Table 52	Butterfly species with <10% of ANHAT records located within the NRS.	75
Table 53	Butterfly species recorded at more than 100 PAs.	77
Table 54	Butterfly species recorded from five or fewer PAs and five or fewer PAs larger than 1000 hectares.	77
Table 55	Land snail species that account for almost 50% of the total species records in ANHAT.	81

Table 56 Land snail species with 10 or fewer individual record sites in the ANHAT database.....	84
Table 57 Land snail species with >45% of site records within PAs	109
Table 58 Land snail species with <10% of ANHAT records located within PAs.	114
Table 59 Land snail species recorded from five or fewer PAs and from five or fewer PAs >1000 ha.....	120
Table 60 Trap-door spider species that account for approximately 50% of the total species records in ANHAT.....	129
Table 61 Trap-door spider species with 10 or fewer individual site records in the ANHAT database.....	130
Table 62 Trap-door spiders species with >45% of site records within the NRS.	144
Table 63 Trap-door spider species with <10% of ANHAT records located within the NRS.	145
Table 64 Trap-door spider species recorded from five or fewer PAs and five or fewer PAs greater than 1000 ha.....	146
Table 65 Sparassidae species that account for approximately 50% of the total species records in ANHAT.....	149
Table 66 Huntsman spider species with 10 or fewer individual site records in the ANHAT database.....	150
Table 67 Huntsman spider species with >45% of site records within the NRS.....	152
Table 68 Huntsman spider species with <10% of ANHAT records located within The NRS	152
Table 69 Huntsman spider species recorded from five or fewer PAs and recorded in five or fewer PAs of greater than 1000 hectares.	153
Table 70 Terrestrial beetle species that account for approximately 50% of the total species records in ANHAT.....	154
Table 71 Carabidae species with 10 or fewer individual site records in the ANHAT database.....	156
Table 72 Ground beetles species with >45% of site records within the NRS.....	178
Table 73 Ground beetles species with <10% of ANHAT records located within the NRS.	180
Table 74 Ground beetles species recorded from five or fewer PAs and five or fewer PAs greater than 1000 hectares.....	182
Table 75 Dytiscidae species that account for approximately 50% of the Dytiscid records in ANHAT.....	186
Table 76 Dytiscidae species with 10 or fewer individual site records in the ANHAT database.....	186
Table 77 Dytiscidae species with >45% of site records within the NRS.....	188
Table 78 Dytiscidae species recorded from five or fewer PAs and in five or fewer PAs greater than 1000 hectares.....	189

Executive Summary

We compared the location of fauna records (record sites) with the protected area network of Australia for the following diverse groups: anurans (frogs), mammals, birds, reptiles, mygalomorphae (trap-door) spiders, sparassidae (huntsman) spiders, lepidoptera (butterflies), land snails, dytiscidae (water beetles) and odonata (dragonflies and damselflies). We determined how many record sites fell within protected areas (PAs) and assessed whether the available distribution of record sites matched that which could be expected by random chance. We also determined the number of PAs in which each species was located and how many were found in larger (>1000 ha) PAs. This latter category is considered to be of importance as larger PAs are thought to provide significantly better long-term protection to species. They represent larger areas of more diverse habitats that can support larger populations that are more likely to survive local catastrophic events and so survive in relative perpetuity. Species in smaller reserves will be present in smaller populations and so are considered more likely to suffer major decline due to individual “local” events that affect habitats (eg, fire, disease) leaving them prone to extinction. They also are likely to have less genetic diversity and so have less long-term ability to adapt to changing conditions within their PA and region.

The 2006 Collaborative Australian Protected Areas Database (CAPAD) lists 8780 International Union for the Conservation of Nature (IUCN) criteria “reserves” that protect 768,826,956 hectares (11.6%) of mainland Australia (forming Australia’s National Reserve System (NRS)). We obtained data for 6590 species, but 15 vertebrate species were considered extinct and removed from analysis. Also, 30 or fewer records were available for 302 vertebrate species (15.9%) and ten or fewer records for 3021 invertebrate species (64.4%). These species were not included in the further detailed analysis, but it was notable that vertebrate species in this category are usually located in northern and inland Australia and represent only small proportions of the total vertebrate species. Hence, the vertebrates are generally well understood in their distributions and habitat requirements. For the invertebrates, the smaller number of records to enter this category still resulted in more species being listed as “poorly known”. For nearly all of these species, their ranges and habitat requirements are essentially unknown and it is reasonable to state that we currently have no knowledge of their conservation status. These species come from all over Australia, although, again, there is a tendency for species in this category to come from the less populated regions of Australia.

The data for the 1550 remaining extant vertebrate species and 1669 invertebrate species is summarised in **Tables 1** and **2**. These species have an average of 20.46% of their record sites within PAs, far above the 11.6% of land protected by PAs across Australia, indicating that records are much more likely to come from PAs than would be expected by chance. A total of 649 species have >45% of record sites in PAs and 441 species <10% of record sites within PAs. Species of vertebrates are far more likely to have relatively larger proportions of their record sites within reserves than they are to be poorly represented in reserves. Birds in particular are very well recorded, reflecting that relative ease of surveying for birds and the large number of amateur bird watchers who contribute extensively to the databases. Interestingly, birds have relatively low proportions of records in reserves compared to the other vertebrates, but the majority of species have been recorded in large numbers of reserves and so are broadly protected in the NRS. Frogs appear to be relatively represented in PAs as

are mammals. Reptiles are the least well recorded group. Reptiles are less likely to be surveyed and reported by people and so have relatively less information available on their presence inside or outside of the PA network. Of particular note is that no reptile species is located in greater than 100 large reserves, which is the category most likely to provide a secure conservation future. Further survey work is likely to change this and is highly recommended.

In contrast to the vertebrate groups, invertebrates are equally likely to be poorly reserved as they are to be well reserved. That is, an invertebrate species is equally likely to have less than 10% of the available records in PAs as it is to have over 45% of its known records within PAs. Over 50% of the invertebrate taxa represented by more than 10 record sites are known from fewer than 100 PAs. Invertebrates tend to have much smaller distributions than vertebrates and so it is expected that they will fall into less PAs on average; they do not occur in distributions encompassing large numbers of PAs. However, as with the reptiles, there are still many species with larger distributions that still are not known from more than 100 PAs whereas they may be expected to do so.

Table 1 Summary of vertebrate taxa in the National Reserve System (NRS). Well Reserved = >45% of Record Sites within PAs; Under Reserved = <10% Record Sites within PAs
Large PAs = PAs larger than 1000ha

Taxa	No. Species (>30 records)	Total No. Records	No. of species (≤30 records)	No. Species Well Reserved	No. Species Under Reserved	% Species > 100 PAs	% Species > 100 Large PAs	% Species ≤ 5 PAs	% Species ≤ 5 Large PAs
Anurans	169	95967	41	36 (21.3%)	18 (10.6%)	11.24	9.47	14.20	13.02
Mammals	242	412781	36	61 (25.2%)	8 (3.3%)	23.55	19.83	15.29	16.12
Reptiles	579	325282	212	123 (21.2%)	46 (7.9%)	10.36	7.60	19.52	20.55
Non-passerines	282	3564629	3	12 (4.8%)	13 (5.2%)	68.67	58.63	2.81	2.81
Passerines	311	4970597	10	47 (15.1%)	13 (4.1%)	53.70	49.20	4.50	5.79

Table 2 Summary of invertebrate taxa in the NRS – Codes as for Table 1.

Taxa	No. Species (>10 records)	No. Records	No. species (≤10 records)	No. Species Well Reserved	No. Species Under Reserved	% Species > 100 PAs	% Species > 100 Large PAs	% Species ≤ 5 PAs	% Species ≤ 5 Large PAs
Odonata	168	9227	115	38 (22.6%)	30 (17.9%)	0.00	0.00	53.57	52.98
Lepidoptera	362	52914	80	46 (12.7%)	49 (13.5%)	0.83	0.28	35.91	37.57
Pulmonata	727	38702	1187	178 (24.5%)	159 (21.9%)	0.00	0.00	55.30	58.18
Mygalomorphae	128	7703	481	22 (17.2%)	49 (38.3%)	0.00	0.00	47.66	50.78
Sparassidae	30	889	86	6 (20.0%)	7 (23.3%)	0.00	0.00	43.33	46.67
Carabidae	204	6537	999	74 (36.3%)	49 (24.0%)	0.00	0.00	63.73	64.71
Dytiscidae	50	1668	73	6 (12.0%)	0 (0.0%)	0.00	0.00	62.00	62.00

Introduction

Australia has a diverse fauna with a very high level of endemism. However, the fauna of Australia is under threat from several areas and remains in need of protection. Land clearance represents a very serious threat to the ongoing survival of most species. Since 1788, over 700,000 km² (about 20%) of woodland and forest have been cleared or thinned, primarily for crops and grazing. A further 130,000 km² (35%) of mallee has been cleared since 1788, along with 20,000 km² of heath (45%), over 60,000 km² (10%) of tussock grassland and smaller areas of other grasslands (National Land and Water Resources Audit 2001). Habitat loss continues with the 2001 annual rate of vegetation clearance being around 248,000 hectares (National Land and Water Resources Audit 2001). Hence, habitat loss is a serious threat for species where the majority of habitat required is already lost or under immediate threat.

The Australian Government is building a network of protected areas, called the National Reserve System (NRS), which aims to “contain samples of all ecosystems identified at an appropriate regional scale” (see <http://www.environment.gov.au/parks/nrs/science/scientific-framework.html>). More specifically, this is based on the widely used criteria of preserving a minimum of 10% of each biome (McNeely 1993; Archer and Orr 2008). Furthermore, the criteria based on the Regional Forest Agreements (RFAs) to protect the remaining forests in Australia is a target of 15% of pre-1750 (pre-European) vegetation types (Commonwealth of Australia 1996), although this has not always been achieved (e.g., Flint et al 2004). Whilst sound in principle, the actual success of these reserves in protecting populations of species remains unknown.

A simple approach to assessing the potential effectiveness of reservations in protecting species is to determine the proportion of record sites (from hereon simply records) for each species that falls within Protected Areas (PAs). Few records falling within PAs suggests that a species may not be well protected. Conversely, if relatively large numbers of records fall within PAs, then a species may be moderately secure from the effects of habitat loss and degradation. Overall, we could expect the percentages of records in PAs to be similar to the percentage of reserved lands available within Australia.

Additional means of assessing the effectiveness of PAs in protecting fauna relate to their size and the number of reserves that contain populations of a species. Island biogeography theory suggests that larger reserves are more valuable as conservation areas than small ones due to edge effects, area to perimeter ratios, greater ranges of habitats and larger areas having larger populations that are likely to be more robust (Lomolino, 1994). Greater conservation value is also likely where populations occur in multiple PAs rather than one single PA as localised extinctions due to stochastic events are almost inevitable. Hence, a spread of populations across the landscape should lessen the likelihood of total extinction whilst increasing the opportunities for rescue events through recolonisation, providing that areas remain connected. The number of larger PAs in which species are found and the number of PAs in total are two potentially useful measures of the capability of the NRS to protect a species.

In this study, we collate record sites for each species in a range of speciose groups and determine the number and proportions of records within listed NRS protected areas (PAs), including in how many different reserves species are found and how many of these PAs are 1000 ha or larger (following Rodrigues et al 2004). We are particularly interested in seeing if there are common biological or geographical characteristics for species that are either well or under “reserved”. This can provide indications of the level of protection likely to be

afforded to species for which we have few site records. Species that are likely to be under represented in PAs can be considered for priority conservation action if land clearance and/or degradation is/are likely to be an immediate and severe threatening process.

Methods

The methods used in this paper are based on those used to undertake a similar analysis of frogs by Lemckert et al (2009).

The 2006 CAPAD database lists 8780 IUCN criteria PAs (see Figure 1) that protect 768,826,956 hectares (11.6%) of continental Australia, including Tasmania (see **Table 3**). This level of reservation provided the baseline for comparisons of the expected reservation levels for each group.

Records for each group were supplied by the Australian Government Department of the Environment, Water, Heritage and the Arts through the Australian Natural Heritage Assessment Tool (ANHAT) database. This database has been compiled from specimen and site records held in State, Territory and Commonwealth flora and fauna collections and wildlife atlases, and from the work of individual researchers. ANHAT is a custom-designed analysis tool built on Microsoft Access (Microsoft, 2003) and ArcGIS geographic information system (ESRI, 2005).

Data was supplied on the following terrestrial groups: mammals, birds, reptiles, frogs, trap-door spiders, huntsman spiders, butterflies, land snails, carabidae land beetles, dytiscidae water beetles and the dragonflies and damselflies. This included data on species that have yet to be formally described.

Records dated pre-1950 were excluded from the data sets, as earlier historical site records rarely have sufficient spatial accuracy for this type of analysis. Furthermore, site records with a spatial error range >20 km were excluded and duplicate records removed. Records within 500 m of each other were considered the same site and listed as a single spatial record.

Due to time limitations, review of taxonomic and nomenclatural changes of the species in ANHAT was not performed. Time limitations also meant that names of undescribed species were not able to be put into the correct taxonomic format, so that in many cases informal names may appear italicised and/or not indicative of taxonomic rank.

Within each of the nine groups, any species with fewer than 30 records for vertebrates and fewer than 10 records for the invertebrates was noted and removed from further consideration. Such species may have been rarely recorded because they are rare, because they occur in remote locations, because they are very cryptic or through a combination of these factors. Regardless, we removed them because we believe it is difficult to assess the relative state of reservation of such species with reasonable accuracy. For example, if a species has two site records and both fall in a reserve, it is not reasonable to assume that it is highly protected when most of its predicted range falls outside of reserves. We also removed species that are now considered extinct, have suffered recent serious declines or have been named relatively recently. Records for recently declined species may not provide an accurate assessment because many are from sites where the species is no longer extant. The recovery of these species is unpredictable and so assessing their relative reservation levels into the future is difficult.

Figure 1 Location of protected areas within the Australian Protected Area Network (taken from <http://www.environment.gov.au/parks/nrs/science/locations.html>).

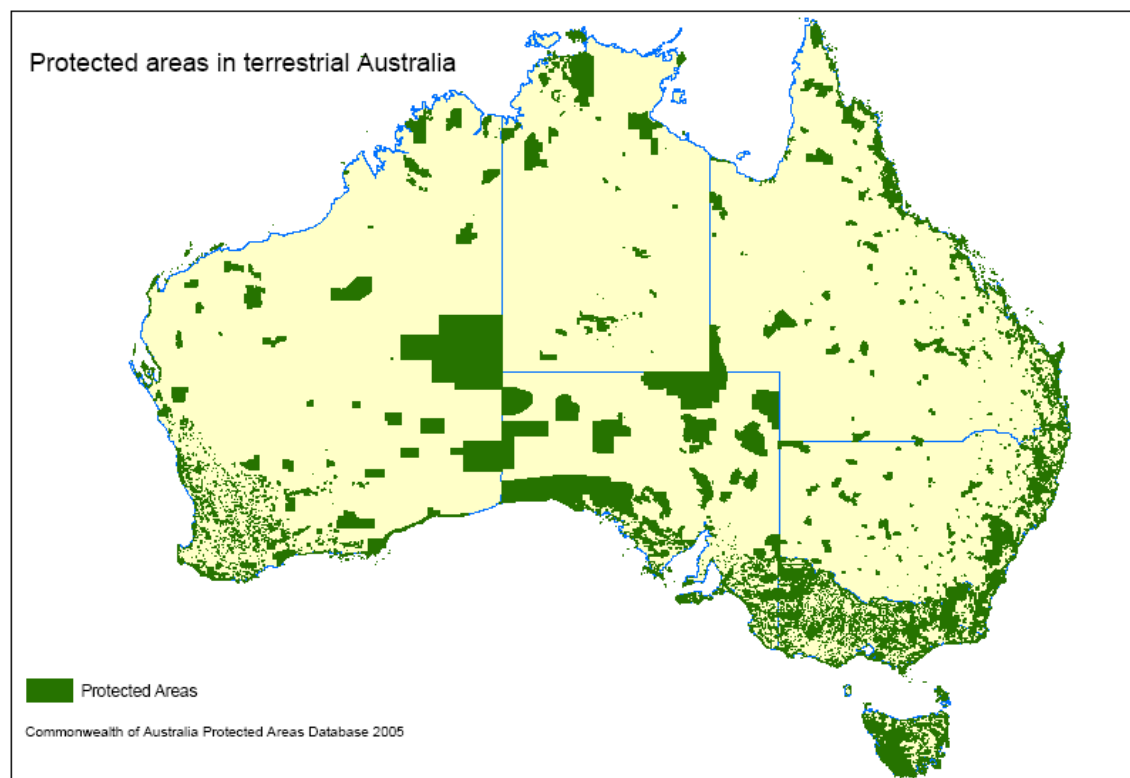


Table 3 Area of IUCN category reserved lands within each state of Australia (<http://www.environment.gov.au/parks/nrs/science/capad/2006/index.html>)

	Total Area (ha)	Reserve Area (ha)	Reserve Count	% Area
Australia	768,826,956	89,528,859	8,780	11.6
ACT	235,813	129,040	42	54.7
NSW	80,121,268	6,755,798	736	8.4
NT	134,778,762	7,889,765	95	5.9
QLD	172,973,671	9,608,482	854	5.6
SA	98,422,137	25,115,119	1,845	25.5
TAS	6,840,133	2,721,392	940	39.8
VIC	22,754,364	3,832,094	2,784	16.8
WA	252,700,808	33,477,165	1,484	13.2

The site records of the remaining species were compared to Australia's NRS (based on the 2006 CAPAD database) using the six IUCN recognized protected area categories to define reserves (http://www.iucn.org/about/union/commissions/wcpa/wcpa_overview/index.cfm).

We determined three categories of information for each species: 1) how many site records fell within PAs; 2) in how many different PAs each species was recorded; and 3) in how many PAs greater than 1000 ha each species was recorded. We were especially interested in determining which species had obviously larger or smaller percentages of their site records falling within PAs and if the species in each shared common characteristics. Hence, we listed the species within the “high” and “low” reservation categories for each group and noted for each their broad location within Australia and their known broad habitat preferences. The main sources of information used in the assessment of each of the groups are listed below:

Anurans: GAA (2001).

Mammals: Van Dyck, S., and Strahan, R. (2008), Menkhorst and Knight (2001) and Churchill (2008)

Birds: Barrett et al (2003)

Reptiles: Wilson and Swan (2003)

Butterflies: Australian Faunal Directory (<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>) and Braby (2004).

Land Snails: Australian Faunal Directory (<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>)

Trapdoor Spiders: Australian Faunal Directory (<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>)

Huntsman Spiders: OZCAM (2009) and Australian Faunal Directory (<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>)

Odonata: Theischinger and Hawking (2006) and Australian Faunal Directory (<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>)

Carabidae: Australian Faunal Directory (<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>)

Dytiscidae: Australian Faunal Directory (<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>)

Table 4 Codes for location distributions

Location	description
ACT	Australian Capital Territory
CN	Central North Australia
CS	Central South Australia
E	Eastern Australia
I	Inland Australia
MAW	Mainland Aust. Wide
NE	North East Australia
NSW	New South Wales
NT	Northern Territory
NW	North West Australia
QLD	Queensland
SA	South Australia
SE	South East Australia
SW	South West Australia
TAS	Tasmania
UnV	Uncommon & Vagrant Species
UR	Unrecorded
VIC	Victoria
W	West Australia
WA	Western Australia

Table 5 Vegetation type codes

Vegetation Type	Code
Alluvial Flats/Floodplain	AF
Alpine	Al
Arid	Ar
Caves	Cave
Cliffs	Cl
Coastal	Co
Coastal Flats	CF
Coastal Swamplands	CSw
Coastal Veg	CV
Dune Fields	DF
Eucalypt	Euc
Farmland	FL
Forest	For
Generalist	Gen
Gorges	Gor
Grassland	GrL
Heath	He
High Rainforest	HRG
Hummock Grass	HG
Limestone	LS
Litter	Lit
Mallee	Mal
Mangroves	Man
Montane	Mon
Mulga	Mul
Open Country	Op

Vegetation Type	Code
Rainforest	RF
Rocky Habitats	RH
Riparian	Rip
Salt Lake	SaL
Salt Bush	SB
Salt Marsh	SM
Sandy Plains	SaP
Sandstone	Sand
Scrub	Sc
Semi Arid	SAr
Shrublands	SL
Spinifex	Sp
Thicket	Th
Urban	Urb
Wetland	Wet
Woodland	WL

Table 6 *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) threatened status codes

Code	Threatened status
CE	Critically endangered
EN	Endangered
VU	Vulnerable
CD	Conservation dependant
NL	not listed under the EPBC Act
EX	Extinct

Table 7 Codes for more detailed location distributions

Location Code	Location	Description
W	West	Bound by 120° E longitude in the east and 30° S latitude in the south and 20° S latitude in the north.
SW	South West	Bound by Northern Territory/Western Australian border (approx 129° E longitude) in the east and 30° latitude S in the north.
NW	North West	Bound by 20° S latitude in the south and Northern Territory/Western Australian border (approx 129° E longitude) in the east.
WI	West Inland	Bound by 20° S latitude in the north and by 120° E longitude in the west, 30° S latitude in the south and by Northern Territory/Western Australian border (approx 129° E longitude) in the east.
CN	Central North	Bound by Northern Territory/Western Australian border (approx 129° E longitude) in the west, 141° E longitude in the east (in line with NSW/South Australian border) in the east and 20° S latitude in the south.
CI	Central Inland	Bound by Northern Territory/Western Australian border (approx 129° E longitude) in the west, 141° E longitude in the east (NSW/South Australian border) in the east, approx 20° S latitude in the north and 30° S latitude in the south.
CS	Central South	Bound by Northern Territory/Western Australian border (approx 129° E longitude) in the west, 141° E longitude in the east (NSW/South Australian border) in the east and 30° S latitude in the south.
NE	North East	Bound by 141° E longitude in the west (in line with NSW/South Australian border) and 20° S latitude in the south.
E	East	Bound by 146° E longitude in the west and 20° S latitude in the north and 34° S latitude (approx Sydney) in the south.
EI	East Inland	Bound by 141° E longitude in the west (in line with NSW/South Australian border) and 146° E longitude in the east and by 20° S latitude in the north and 34° S latitude (approx Sydney) in the south.
SE	South-East	Bound by 141° E longitude in the west (Victorian/South Australian border) and 34° S latitude (approx Sydney) in the north.
TAS	Tas	Tasmania
TAS Is	TAS Is	Islands around Tasmania

Results and Discussion

Anurans

We were able to extract 96947 post-1950 site records for 211 species of frogs. Of these, 25961 site records (26.78%) fell into IUCN PAs, which is much higher than the comparative figure of 10.54% of lands reserved. The mean and median numbers of PAs in which a species occurs are 32 and 16 reserves respectively.

One species is considered as extinct and therefore excluded from analysis (**Table 8a**).

Table 8 Anuran species considered extinct

Species	Common Name	No. Records
<i>Rheobatrachus vitellinus</i>	Northern Gastric-breeding frog	6

We removed 41 species for which we had 30 or fewer site records available (**Table 9b**).

Nine of these species are listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which reflects the fact that this group has recently undergone significant declines. Twenty-seven species come from the northern parts of Australia.

Table 9b List of anuran species with 30 records or fewer in the ANHAT database. Species in bold are listed as threatened under the EPBC Act.

General Location in Australia – N = North, E = East, S = South, W = West, I = Interior and C = Central Australia. Vegetation Types – RF = Rainforest, For = Forest, WL = Woodlands, GrL = Grasslands.

Taxon Name	Records	Location/Veg Type	EPBC Status
<i>Geocrinia lutea</i>	1	SW, For	NL
<i>Geocrinia vitellina</i>	1	SW, For	VU
<i>Pseudophryne covacevichae</i>	2	NE, For	VU
<i>Uperoleia orientalis</i>	3	CN, WL	NL
<i>Litoria andiirmalin</i>	4	NE, RF	NL
<i>Notaden weigela</i>	5	NW, WL	NL
<i>Cophixalus peninsularis</i>	7	NE, RF	NL
<i>Cophixalus zweifeli</i>	7	NE, For	NL
<i>Philoria richmondensis</i>	9	CE, For	NL
<i>Cophixalus monticola</i>	10	NE, RF	NL
<i>Uperoleia martini</i>	10	SE, For	NL
<i>Litoria lorica</i>	11	NE, For	CE
<i>Spicospina flammocaerulea</i>	11	SW, For	EN

<i>Uperoleia arenicola</i>	12	CN, WL	NL
<i>Litoria cavernicola</i>	13	NW, WL	NL
<i>Uperoleia glandulosa</i>	13	CW, WL	NL
<i>Litoria piperata</i>	14	CE, For	VU
<i>Geocrinia rosea</i>	15	SW, For	NL
<i>Litoria electrica</i>	15	NI, WL	NL
<i>Uperoleia talpa</i>	15	NW, GrL	NL
<i>Litoria burrowsae</i>	16	Tas, For	NL
<i>Cophixalus macdonaldi</i>	17	CE, RF	NL
<i>Uperoleia micromeles</i>	17	NI, GrL	NL
<i>Taudactylus liemi</i>	18	NE, For	NL
<i>Uperoleia minima</i>	20	NW, GrL	NL
<i>Uperoleia altissima</i>	21	NE, For	NL
<i>Pseudophryne douglasi</i>	21	CW, WL	NL
<i>Litoria daviesae</i>	21	CE, For	NL
<i>Uperoleia capitulate</i>	22	CI, WL	NL
<i>Uperoleia mjobergii</i>	23	NW, WL	NL
<i>Limnodynastes depressus</i>	24	CN, WL	NL
<i>Taudactylus eungellensis</i>	24	NW, For	EN
<i>Taudactylus pleione</i>	24	NW, For	VU
<i>Taudactylus rheophilus</i>	25	NW, For	EN
<i>Litoria gilleni</i>	26	CI, GrL	NL
<i>Cophixalus saxatilis</i>	26	NW, For	NL
<i>Uperoleia aspera</i>	27	NW, GrL	NL
<i>Uperoleia crassa</i>	27	NW, WL	NL
<i>Cyclorana manya</i>	29	NE, WL	NL
<i>Litoria nyakalensis</i>	30	NE, For	CE
<i>Litoria personata</i>	30	CN, WL	NL

Table 10 Species of anurans with > 45% of record sites in PAs.

Locations – N = North, E = East, S = South, W = West, Tas = Tasmania, I = Interior and C = Central Australia. M = Montane Species. Vegetation Types – CHe = Coastal Heathlands, CSw = Coastal Swamplands, GrL = Grasslands, For = Forest, RF = Rainforest and WL = Woodlands.

Species	Records	In PAs	% in PAs	Location, Veg type	Area (km ²)	Status
<i>Uperoleia tyleri</i>	84	38	45.2	SE, CHe	82356	NL
<i>Austrochaperina adelphe</i>	37	17	45.9	N, WL	109688	NL
<i>Litoria littlejohni</i>	167	77	46.1	SE, CHe	84256	VU
<i>Pseudophryne pengilleyi</i>	292	136	46.6	M-SE, WL	1110	VU
<i>Litoria xanthomera</i>	96	45	46.8	NE, RF	19572	NL
<i>Philoria sphagnicolus</i>	255	121	47.4	M-E, RF	9582	NL
<i>Litoria spenceri</i>	140	67	47.9	SE, For	16572	EN
<i>Heleioporus australiacus</i>	449	217	48.3	SE, CHe	79633	VU
<i>Austrochaperina robusta</i>	171	85	49.7	M-NE, RF	8863	NL
<i>Crinia tasmaniensis</i>	60	31	51.7	Tas, For	55923	NL
<i>Philoria frosti</i>	36	19	52.8	M-SE, WL	103	EN
<i>Litoria verreauxii alpina</i>	123	69	56.1	M-SE, WL	NA	VU
<i>Austrochaperina pluvialis</i>	104	59	56.7	NE, RF	13730	NL
<i>Litoria genimaculata</i>	565	322	57.0	NE, RF	40,000	NL
<i>Cophixalus ornatus</i>	448	256	57.1	NE, RF	14771	NL

<i>Lechriodus fletcheri</i>	715	410	57.3	E, RF	63120	NL
<i>Nyctimystes dayi</i>	199	125	62.8	NE, RF	18866	EN
<i>Mixophyes fleayi</i>	101	64	63.4	E, RF	16803	EN
<i>Litoria barringtonensis</i>	84	54	64.3	E, For	NA	NL
<i>Litoria rheocola</i>	301	196	65.1	NE, RF	15211	EN
<i>Mixophyes schevilli</i>	252	166	65.9	NE, RF	19347	NL
<i>Litoria nannotis</i>	177	118	66.7	NE, RF	19013	EN
<i>Cophixalus infacetis</i>	75	53	70.7	NE, RF	8232	NL
<i>Philoria kundagungan</i>	63	45	71.4	M-E, RF	1603	NL
<i>Litoria olongburensis</i>	188	139	73.9	C-E, CSw	8340	VU
<i>Litoria cooloolensis</i>	122	92	75.4	C-E, CSw	2434	NL
<i>Assa darlingtoni</i>	530	431	81.3	M-E, RF	36032	NL
<i>Cophixalus hosmeri</i>	75	61	81.3	M-NE, RF	348	NL
<i>Austrochaperina fryi</i>	177	144	81.4	NE, RF	6396	NL
<i>Philoria loveridgei</i>	238	207	87.0	M-E, RF	451	NL
<i>Cophixalus concinnus</i>	118	10	87.3	M-NE, RF	14	NL
<i>Cophixalus neglectus</i>	41	36	87.8	M-NE, RF	562	NL
<i>Pseudophryne corroboree</i>	94	84	89.4	M-SE, WL	1079	EN
<i>Cophixalus bombiens</i>	39	38	97.4	M-NE, RF	491	NL
<i>Cophixalus exiguus</i>	54	53	98.1	M-NE, RF	72	NL
<i>Bryobatrachus nimbus</i>	33	33	100	M-Tas, GrL	4138	NL

Table 11 Species of anurans with <10% of record sites within PAs.

Locations – N = North, E = East, S = South, W = West, Tas = Tasmania, I = Interior and C = Central Australia. Ag = Agricultural Lands (species with ranges falling mainly in the productive cropland areas). Vegetation Types – CSw = Coastal Swamplands, GrL = Grasslands, RF = Rainforest and WL = Woodlands.

Species	Records	In PAs	% in PAs	Location, Veg type	Range (km ²)	Status
<i>Cyclorana cryptotis</i>	86	0	0	N, GrL	386850	NL
<i>Uperoleia trachyderma</i>	43	0	0	N, GrL	241151	NL
<i>Neobatrachus aquilonius</i>	83	1	1.2	NW, GrL	437210	NL
<i>Crinia insignifera</i>	251	9	3.6	SW, CSw	5981	NL
<i>Cyclorana vagitus</i>	47	2	4.3	NW, GrL	43809	NL
<i>Cyclorana maculosa</i>	42	2	4.8	I-N, GrL	557410	NL
<i>Neobatrachus fulvus</i>	41	2	4.9	W, WL	19214	NL
<i>Litoria longirostris</i>	39	2	5.1	NE, RF	7096	NL
<i>Notaden nichollsi</i>	319	19	6.0	I-W, GrL	1809287	NL
<i>Limnodynastes fletcheri</i>	813	58	7.1	Ag-E, WL	1345573	NL
<i>Cyclorana cultripes</i>	112	8	7.1	N, GrL	401761	NL
<i>Neobatrachus wilsmorei</i>	123	9	7.3	W, WL	504571	NL
<i>Cyclorana verrucosa</i>	66	5	7.6	Ag-E/WL	391718	NL
<i>Cyclorana brevipes</i>	149	12	8.1	Ag-E/GrL	852282	NL
<i>Limnodynastes salmini</i>	295	26	8.8	Ag-E, WL	604289	NL
<i>Cophixalus crepitans</i>	34	3	8.8	NE, RF	1127	NL
<i>Uperoleia rugosa</i>	299	27	9.0	Ag-E, WL	962875	NL
<i>Litoria alboguttata</i>	330	32	9.7	Ag-NE, GrL	1250564	NL

The removal of these species leaves a new total of 95967 site records for 169 species, with 25501 site records (26.6%) falling within a PA. The mean percentage of site records within PAs for each

species is 32.0%. The mean number of records per species for species with greater than 30 records was 873.3. Thirty-six species have >45% and 18 species <10% of their site records within IUCN PAs (

Table 10 & Table 11 respectively). One species, *Bryobatrachus nimbus* (33 record sites), has all site records falling within PAs whilst two species, *Cyclorana cryptotis* (86 sites) and *Uperoleia trachyderma* (43 sites), have none falling in PAs.

Some trends can be seen in the species with relatively high representation in PAs. Fifteen of the 36 species are found mostly or entirely within montane areas of eastern Australia, with 22 being either essentially or substantially rainforest dependent. A further five species are wholly or mostly restricted to near coastal heath or swamp habitats of eastern Australia. The only two species not within these three groups are *Austrochaperina adelphe*, which is found in lowland areas of far northern Australia and *Crinia tasmaniensis* from Tasmania. This latter species also has significant parts of its range in upland areas. Despite the reasonably high percentages of site records in PAs, only 12 of the 34 species are listed as threatened.

The major group with relatively few site records within PAs consists of seven species from the major agricultural zones of eastern and western Australia and the remainder come from the more remote parts of Australia where minimal surveying has been carried out. Eleven of these 18 species are burrowing species and no arboreal species are represented in this list.

Table 12 List of anuran species recorded from more than 100 PAs

<i>Species</i>	<i>No. Records</i>	<i>No. PAs</i>	<i>No. PAs > 1000ha</i>
<i>Adelotus brevis</i>	1196	102	90
<i>Litoria dentate</i>	1068	108	84
<i>Mixophyes fasciolatus</i>	1673	112	95
<i>Litoria ewingii</i>	1462	121	96
<i>Litoria nasuta</i>	1626	125	91
<i>Pseudophryne coriacea</i>	1835	128	98
<i>Litoria verreauxii</i>	1795	134	109
<i>Litoria rubella</i>	2705	144	115
<i>Pseudophryne bibroni</i>	1518	144	111
<i>Limnodynastes ornatus</i>	2264	148	121
<i>Litoria latopalmata</i>	2319	193	156
<i>Limnodynastes tasmaniensis</i>	3355	202	147
<i>Litoria fallax</i>	3231	202	144
<i>Litoria caerulea</i>	3631	208	155
<i>Limnodynastes dumerilii</i>	2520	216	163
<i>Litoria peronii</i>	2895	216	172
<i>Litoria lesueuri</i>	3393	233	203
<i>Limnodynastes peronii</i>	3565	248	179
<i>Crinia signifera</i>	7216	377	266

Table 12 and **Table 13** provide lists of species that have been recorded in more than 100 or fewer than five IUCN reserves respectively and also the number of these reserves that are above 1000 ha in size. All of the 19 species found in more than 100 reserves have large numbers of site records, are from eastern Australia and are at least partly or totally coastal in

range. The majority of the reserves are also larger reserves of more than 1000 ha in size. These species all have relatively large percentages of site records falling in reserves. The 24 species recorded from fewer than five reserves commonly have few overall site records and tend to be found in northern or western Australia. There are also a few species that have very small ranges and so are necessarily found in very few reserves. *Pseudophryne corroboree* is the best example in being found in only one reserve, but having nearly all of its records within this reserve. Notably, almost all of the reserves from which these “lesser” protected species have been recorded are of more than 1000 ha in size.

Table 13 List of anuran species recorded from fewer than five PAs

Species	No. Records	No. PAs	No. PAs > 1000ha
<i>Cyclorana cryptotis</i>	86	0	0
<i>Uperoleia trachyderma</i>	43	0	0
<i>Cyclorana vagita</i>	47	1	1
<i>Litoria longirostris</i>	39	1	1
<i>Neobatrachus aquilonius</i>	83	1	1
<i>Neobatrachus fulvus</i>	41	1	1
<i>Pseudophryne corroboree</i>	94	1	1
<i>Arenophryne rotunda</i>	56	2	2
<i>Cophixalus bombiens</i>	39	2	2
<i>Cophixalus crepitans</i>	34	2	1
<i>Cophixalus exiguus</i>	54	2	2
<i>Cyclorana maculosa</i>	42	2	2
<i>Cyclorana verrucosa</i>	66	2	2
<i>Phyloria frosti</i>	36	2	2
<i>Phyloria pughi</i>	49	2	2
<i>Uperoleia littlejohni</i>	33	2	2
<i>Bryobatrachus nimbus</i>	33	3	3
<i>Cophixalus neglectus</i>	41	3	2
<i>Crinia subinsignifera</i>	40	3	3
<i>Litoria eucnemis</i>	55	3	3
<i>Uperoleia russelli</i>	117	3	3
<i>Crinia sloanei</i>	37	4	4
<i>Austrochaperina adelphe</i>	37	4	4
<i>Austrochaperina gracilipes</i>	134	4	3

Mammals

The ANHAT database has 413834 records for 290 species and subspecies of terrestrial mammals. Four species of freetail bat (*Mormopterus* sp.) are currently unnamed although recognised as separate species (Churchill 2008), and have thus been retained here.

Marine mammals were not considered for analysis. Twelve species of mammals are considered extinct and therefore excluded from analysis. These species are presented in **Table 14**. The majority are small to mid-sized terrestrial species for which the declines have been well documented and appear to have resulted from the impacts of introduced species. The thylacine was hunted to extinction.

Table 14 Mammal species considered extinct

Species	Common Name	No. Records
<i>Chaeropus ecaudatus</i>	Pig-footed Bandicoot	12
<i>Conilurus albipes</i>	White-footed Rabbit-rat	1
<i>Lagorchestes asomatus</i>	Central Hare-wallaby	8
<i>Macropus greyi</i>	Toolache Wallaby	1
<i>Macrotis leucura</i>	Lesser Bilby	6
<i>Notomys amplus</i>	Short-tailed Hopping-mouse	12
<i>Notomys longicaudatus</i>	Long-tailed Hopping-mouse	11
<i>Onychogalea lunata</i>	Crescent Nail-tail Wallaby	16
<i>Perameles eremiana</i>	Desert Bandicoot	15
<i>Potorous platyops</i>	Broad-faced Potoroo	1
<i>Pseudomys gouldii</i>	Gould's Mouse	2
<i>Thylacinus cynocephalus</i>	Thylacine	400

Fifteen species account for almost 50% of the total species records in ANHAT. These species have over 7000 records each and in the case of the Koala (*Phascolarctos cinereus*) over 26000 records.

Table 15 Mammal species which account for almost 50% of the total species records in ANHAT.

Species	No. Records	% total records
<i>Nyctophilus geoffroyi</i>	7326	1.77
<i>Chalinolobus gouldii</i>	7474	1.81
<i>Vespadelus vulturnus</i>	7564	1.83
<i>Petaurus australis</i>	9696	2.34
<i>Petaurus breviceps</i>	11293	2.73
<i>Macropus robustus</i>	11320	2.74
<i>Petauroides volans</i>	11623	2.81
<i>Rattus fuscipes</i>	12606	3.05
<i>Pseudocheirus peregrinus</i>	13038	3.15
<i>Macropus giganteus</i>	14584	3.52
<i>Wallabia bicolor</i>	16723	4.04
<i>Vombatus ursinus</i>	18724	4.52
<i>Tachyglossus aculeatus</i>	18767	4.53
<i>Trichosurus vulpecula</i>	18899	4.57
<i>Phascolarctos cinereus</i>	26479	6.40
Total	206116	49.81

Thirty-six species had 30 or fewer individual site records in the ANHAT database (**Table 16**). Of those species, 14 are listed as threatened (including one species classified as critically endangered). There are few obvious patterns in this data, but most species come from northern parts of Australia and are found in rainforest, forest or woodlands and so are relatively dependent on denser native vegetation. These species have been excluded from and further analysis.

Table 16 Mammal species with 30 or fewer individual site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Rhinolophus megaphyllus ignifer</i>	1	100.0	E, NE	RF, For, For	100	NL
<i>Nyctimene cephalotes</i>	2	0.00	Moa Is	RF	300	NL
<i>Rattus exulans</i>	4	75.0	Is NE & NW	Urb, FL, For For, WL, Mul,	300	NL
<i>Taphozous troughtoni</i>	4	25.0	E, NE	Sp, GrL	400	NL
<i>Saccolaimus saccolaimus nudiclunatus</i>	5	0.0	NE	WL, For	400	CE
<i>Pseudantechinus mimulus</i>	7	14.3	I, CN	WL	500	VU
<i>Pseudocheirus cinereus</i>	7	100.0	NE	RF	400	NL
<i>Petrogale lateralis pearsoni</i>	8	75.0	Is CS	SL, CI RH, RE, RH,	700	VU
<i>Petrogale coenensis</i>	10	0.0	NE	WL	400	NL
<i>Sminthopsis aitkeni</i>	10	50.0	CS, Kang. Is	Mal, He	800	EN
<i>Petrogale lateralis hacketti</i>	11	90.9	Is SW	Mal, SL, RO	500	VU
<i>Sminthopsis butleri</i>	11	0.0	CN	WL	900	VU
<i>Petrogale sharmani</i>	12	8.3	NE	WL, WL	1000	NL
<i>Uromys hadrourus</i>	12	83.3	NE	RF	400	NL

<i>Cercartetus caudatus</i>	13	61.5	NE	RF	1400	NL
<i>Notomys aquilo</i>	13	92.3	CN	DF, He, For, RF	1300	VU
<i>Parantechinus apicalis</i>	13	46.1	SW	Co, Mal, He	1200	EN
<i>Petrogale concinna monastria</i>	16	18.7	CN	WL, Gor	1500	NL
<i>Sminthopsis archeri</i>	16	50.0	NE	WL	500	NL
<i>Taphozous kapalgensis</i>	16	43.7	CN	For, WL, Sw,	1300	NL
<i>Pseudocheirus herbertensis</i>	17	47.0	NE	RF	1100	NL
<i>Saccolaimus saccolaimus</i>	17	23.5	CN	WL, For	2000	NL
<i>Dasyurus maculatus gracilis</i>	18	66.7	NE	RF, For, SL, RF, Sand, Gor,	1500	NL
<i>Zyzomys palatalis</i>	19	0.0	CN	RH	700	EN
<i>Saccolaimus mixtus</i>	20	5.0	NE	For, WL, He	800	NL
<i>Mormopterus</i> sp 6	23	39.1				NL
<i>Wyulda squamicaudata</i>	23	13.0	NW	WL, For	1600	NL
<i>Dendrolagus bennettianus</i>	24	83.3	NE	RF	1700	NL
<i>Petrogale concinna</i>	25	36.0	NW, CN	RF, WL, GrL	2200	NL
<i>Phalanger intercastellanus</i>	25	44.0	NE	RF	600	NL
<i>Pogonomys mollipilosus</i>	25	72.0	NE	RF	1400	NL
<i>Pseudomys fieldi</i>	25	96.0	W, I	Sp	1200	VU
<i>Sminthopsis longicaudata</i>	27	29.6	W, I	HG, WL, Sp, Mul	2500	NL
<i>Zyzomys pedunculatus</i>	29	82.8	I	HG, GrL, SL, RH	2100	EN
<i>Hipposideros semoni</i>	30	36.7	NE	RF, For, WL	2000	EN
<i>Perameles bougainville</i>	30	76.7	SW, SEI	Co DF	3500	EN

Removal of extinct and poorly recorded species leaves 412781 records in ANHAT for 242 species (and subspecies). The mean number of records per species for species with greater than 30 records was 1706, with the mean of 31.8 for the percent of records in PAs. Sixty-one species of mammals had 45% or greater of individual site records located within PAs (**Table 17**). Of those 61 species, 14 species are classified as threatened, including seven species classified as endangered. The majority of species in this list can be found in southern Australia. There are also a significant number of species from the Central Northern area of Australia. Few species predominantly from inland areas and NW are in this group. These species showed the most affinities for woodlands, forests and shrublands. Species dependent on grassland areas are less well represented. No species had all records coming from within PAs.

Table 17 Mammal species with >45% of site records within the NRS.

Species	No records	No. Records in PAs	Location	Veg type	Area (km ²)	EPBC status
<i>Dasyurus hallucatus</i>	1359	617 (45.4%)	N	For, WL	44400	EN
<i>Petauroides volans</i>	11623	5300 (45.6%)	E-SE	For, WL	178100	NL
<i>Macropus fuliginosus</i>	3968	1811 (45.6%)	CS, SW, EI	Gen	234800	NL
<i>Pseudomys occidentalis</i>	45	21 (46.7%)	CS, SW	WL, SL	2600	NL
<i>Sminthopsis granulipes</i>	76	36 (47.4%)	SW	WL, SL	6300	NL
<i>Thylogale thetis</i>	1170	555 (47.4%)	E, Fraser Is	RF, For	27800	NL
<i>Antechinus swainsonii</i>	2583	1232 (47.7%)	SE, TAS	For, SL	75700	NL

<i>Antechinus subropicus</i>	322	154 (47.8%)	E	WL	6300	NL
<i>Hipposideros ater</i>	256	123 (48.0%)	CN, NE	For, WL, GrL	15000	NL
<i>Antechinus minimus</i>	381	184 (48.3%)	SE, TAS	For, WL, Wet	16900	NL
<i>Falsistrellus mackenziei</i>	31	15 (48.4%)	SW	For	2600	NL
<i>Isodon obesulus</i>	2174	1052 (48.4%)	N	For, WL, SL	60500	NL
<i>Sminthopsis psammophila</i>	33	16 (48.5%)	CS, I	WL, GrL	1500	EN
<i>Vespadelus troughtoni</i>	350	171 (48.9%)	E, NE	WL, For, RH	20500	NL
<i>Thylogale stigmatica</i>	443	219 (49.4%)	NE, E	RF, For	22900	NL
<i>Cercartetus nanus</i>	896	443 (49.4%)	SE, TAS	RF, For, SL	46800	NL
<i>Sminthopsis hirtipes</i>	160	80 (50.0%)	SW, CS	WL, SL	33800	NL
<i>Sminthopsis dolichura</i>	542	271 (50.0%)	I, W	WL, SL	10200	NL
<i>Sminthopsis gilberti</i>	101	51 (50.5%)	SW	WL	9800	NL
<i>Nyctophilus timoriensis</i>	362	185 (51.1%)	SW, CS SE, E, TAS	For, WL	28500	VU
<i>Melomys cervinipes</i>	1783	932 (52.3%)	NE, E	RF, For, Wet, Man	62500	NL
<i>Notoryctes typhlops</i>	174	91 (52.3%)	SEI	GrL	9600	EN
<i>Rattus colletti</i>	342	179 (52.3%)	CN	Wet	10800	NL
<i>Rattus tunneyi</i>	1446	762 (52.7%)	W, NW, CN, NE	GrL, WL, For	60300	NL
<i>Pseudomys fumeus</i>	242	129 (53.3%)	SE	For, SL	9800	EN
<i>Cercartetus concinnus</i>	742	399 (53.8%)	SW,CS	For, SL	54900	NL
<i>Rhinonycteris aurantius</i>	292	158 (54.1%)	NW, CN	Gen	12300	NL
<i>Trichosurus caninus</i>	1638	891 (54.4%)	E	For	54100	NL
<i>Petrogale rothschildi</i>	55	30 (54.5%)	W	GrL	16800	NL
<i>Nyctimene robinsoni</i>	341	186 (54.5%)	E, NE	RF, For	3700	NL
<i>Petrogale penicillata</i>	1354	743 (54.9%)	SE, TAS	RF, For, WL	35500	VU
<i>Uromys caudimaculatus</i>	444	244 (54.9%)	NE	RF, For	14800	NL
<i>Pseudomys pilligaensis</i>	114	63 (55.3%)	E	WL, SL	2700	VU
<i>Pseudomys higginsii</i>	197	110 (55.8%)	TAS	RF, For	9400	NL
<i>Petropseudes dahlia</i>	168	94 (55.9%)	NW, CN	RH	8700	NL
<i>Vespadelus douglasorum</i>	37	21 (56.8%)	CN	WL	2500	NL
<i>Notomys mitchelli</i>	541	308 (56.9%)	SW, S	WL, GrL	33100	NL
<i>Hemibelideus lemuroids</i>	33	20 (60.6%)	NE	RF	1700	NL
<i>Sminthopsis bindi</i>	51	31 (60.8%)	CN	WL	3900	NL
<i>Chalinolobus dwyeri</i>	391	239 (61.1%)	E	WL, For, RF	23400	VU
<i>Pseudomys albocinereus</i>	215	132 (61.4%)	SW	WL, SL	12500	NL
<i>Pseudomys apodemoides</i>	471	293 (62.1%)	CS	WL, SL	15100	NL
<i>Ningauia yvonneae</i>	482	301 (62.4%)	SW,CS	WL, SL, GrL	18300	NL
<i>Pseudomys shortridgei</i>	335	210 (62.7%)	SW, CS	For, SL	7400	VU
<i>Lasiorninus krefftii</i>	46	29 (63.0%)	E, SE	WL	800	EN
<i>Cercartetus lepidus</i>	262	170 (64.9%)	SE, TAS	For, WL, Wet	11700	NL
<i>Pseudantechinus bilarni</i>	120	78 (65.0%)	CN	WL	6800	NL
<i>Pseudomys novaehollandiae</i>	481	324 (67.4%)	E, Tas, SE	WL, For, Wet	17100	NL
<i>Hypsiprymnodon moschatus</i>	70	48 (68.6%)	S	RF	5400	NL
<i>Burramys parvus</i>	374	265 (70.9%)	SE, TAS	SL	1700	EN

<i>Phascogale tapoatafa</i>						
<i>pirata</i>	35	25 (71.4%)	CN	For	3000	NL
<i>Bettongia lesueur</i>	137	98 (71.5%)	Aus	WL	10100	NL
<i>Mastacomys fuscus</i>	512	376 (73.4%)	SE, TAS	For, SL	16400	NL
<i>Onychogalea fraenata</i>	69	51 (73.9%)	EC,SE	For, WL, SL	2800	EN
<i>Macropus bernardus</i>	56	42 (75.0%)	CN	GrL, WL	3600	NL
<i>Leporillus conditor</i>	39	31 (79.5%)	CS, W	SL	3700	VU
<i>Zyzomys maini</i>	64	52 (81.2%)	CN	RF	2300	VU
<i>Antechinus bellus</i>	268	232 (86.7%)	CN	WL	7400	NL
			Bernier Is,			
<i>Lagostrophus fasciatus</i>	38	33 (86.8%)	Dorre Is	SL	1400	NL
<i>Pseudomys calabyi</i>	69	62 (89.9%)	CN	WL	2900	NL
<i>Antechinus godmani</i>	32	29 (90.6%)	NE	RF	1900	NL

Eight species had less than 10% of ANHAT records located within the NRS (**Table 18**). Five of the eight species are classified as threatened. These species are scattered widely across Australia and show no patterns in distribution. However, in terms of habitat, they are mostly commonly associated with grasslands, although these may be on dunes, gibber plains or in more mesic areas. All species had some records within the reserve system.

Table 18 Mammal species with <10% of ANHAT records located within the NRS.

Species	No. records	No. Records in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Notomys cervinus</i>	123	5 (4.1%)	SEI	GrL	7700	NL
<i>Macrotis lagotis</i>	923	40 (4.3%)	WI, SC, EI	GrL	56200	VU
<i>Perameles gunnii</i>	2961	131 (4.4%)	S, TAS	GrL	34400	N
<i>Dasyercus byrnie</i>	341	22 (6.4%)	I	GrL	8100	VU
<i>Notomys fuscus</i>	131	9 (6.9%)	CS, I	GrL	10400	VU
				WL, SL,		
<i>Onychogalea unguifera</i>	819	58 (7.1%)	N	GrL	43500	NL
<i>Lagorchestes conspicillatus</i>	900	72 (8.0%)	S, W	GrL	45400	NL
<i>Myrmecobius fasciatus</i>	34	3 (8.8%)	SW,CS	For, WL	7900	VU

A total of 57 mammal species had records in more than 100 separate PAs (**Table 19**). Fifty-four species in this list had over a thousand records, with a mean of 5789 records per species. Only two species were listed as threatened, including the grey-headed flying fox, which is highly mobile and individuals will visit a wide range of locations throughout the year.

Table 19 Mammal species recorded at more than 100 PAs.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Cercartetus concinnus</i>	742	100	60	NL
<i>Aepyprymnus rufescens</i>	1578	104	90	NL
<i>Scoteanax rueppellii</i>	761	105	87	NL

<i>Sminthopsis crassicaudata</i>	2325	105	91	NL
<i>Myotis adversus</i>	1225	109	86	NL
<i>Cercartetus nanus</i>	896	111	103	NL
<i>Isoodon obesulus</i>	2174	116	61	NL
<i>Pteropus scapulatus</i>	1442	119	96	NL
<i>Scotorepens orion</i>	1075	121	97	NL
<i>Scotorepens greyii</i>	1526	125	110	NL
<i>Scotorepens balstoni</i>	1201	131	118	NL
<i>Macropus rufus</i>	5126	131	116	NL
<i>Falsistrellus tasmaniensis</i>	1519	132	109	NL
<i>Phascogale tapoatafa</i>	2201	136	102	NL
<i>Vespadelus pumilus</i>	1684	137	118	NL
<i>Saccolaimus flaviventris</i>	1176	138	119	NL
<i>Antechinus swainsonii</i>	2583	143	116	NL
<i>Trichosurus caninus</i>	1638	149	120	NL
<i>Antechinus agilis</i>	5876	157	94	NL
<i>Sminthopsis murina</i>	1278	158	134	NL
<i>Melomys cervinipes</i>	1783	162	133	NL
<i>Antechinus stuartii</i>	4280	172	139	NL
<i>Miniopterus australis</i>	1919	176	136	NL
<i>Petaurus norfolcensis</i>	2626	185	145	NL
<i>Rhinolophus megaphyllus</i>	1761	192	172	NL
<i>Pteropus poliocephalus</i>	3890	196	114	VU
<i>Isoodon macrourus</i>	3405	218	161	NL
<i>Acrobates pygmaeus</i>	1708	224	194	NL
<i>Miniopterus oceanensis</i>	2690	234	192	NL
<i>Ornithorhynchus anatinus</i>	6496	244	181	NL
<i>Hydromys chrysogaster</i>	2202	247	188	NL
<i>Macropus robustus</i>	11320	249	208	NL
<i>Dasyurus maculatus</i>	5260	251	210	EN/VU
<i>Rattus lutreolus</i>	3708	255	187	NL
<i>Vespadelus darlingtoni</i>	4652	271	197	NL
<i>Petaurus australis</i>	9696	274	224	NL
<i>Perameles nasuta</i>	3804	276	214	NL
<i>Antechinus flavipes</i>	3387	288	208	NL
<i>Macropus fuliginosus</i>	3968	310	186	NL
<i>Vespadelus regulus</i>	4196	313	240	NL
<i>Petauroides volans</i>	11623	347	272	NL
<i>Nyctophilus gouldi</i>	3961	357	283	NL
<i>Macropus rufogriseus</i>	6938	382	279	NL
<i>Vombatus ursinus</i>	18724	422	276	NL
<i>Vespadelus vulturnus</i>	7564	428	305	NL
<i>Chalinolobus morio</i>	6855	453	345	NL
<i>Phascolarctos cinereus</i>	26479	463	307	NL
<i>Tadarida australis</i>	6384	485	355	NL
<i>Rattus fuscipes</i>	12606	518	357	NL
<i>Nyctophilus geoffroyi</i>	7326	539	402	NL
<i>Chalinolobus gouldii</i>	7474	566	442	NL
<i>Petaurus breviceps</i>	11293	587	427	NL
<i>Pseudocheirus peregrinus</i>	13038	589	358	NL
<i>Macropus giganteus</i>	14584	660	431	NL
<i>Wallabia bicolor</i>	16723	691	443	NL

<i>Trichosurus vulpecula</i>	18899	830	538	NL
<i>Tachyglossus aculeatus</i>	18767	859	548	NL

There were 37 species with records in five or fewer PAs (**Table 20**) of which 14 are listed as threatened. Eight species are listed as endangered. The majority of species in this list have fewer than 100 individual site records. These results reflect the declines and rarity in many mammal species and some more recent taxonomic changes that have left smaller periods of time to accumulate recognised species records.

Table 20 Mammal species recorded from five or fewer PAs.

Species	No. Records	No. PAs	EPBC status
<i>Dasyercus hillieri</i>	31	1	EN
<i>Lagostrophus fasciatus</i>	38	1	NL
<i>Lasiorninus krefftii</i>	46	1	EN
<i>Zyzomys maini</i>	64	1	VU
<i>Petrogale mareeba</i>	32	2	NL
<i>Petrogale burbridgei</i>	33	2	NL
<i>Hipposideros cervinus</i>	34	2	NL
<i>Phascogale tapoatafa pirata</i>	35	2	NL
<i>Pseudomys johnsoni</i>	39	2	NL
<i>Macropus bernardus</i>	56	2	NL
<i>Sminthopsis douglasi</i>	67	2	EN
<i>Pseudomys calabyi</i>	69	2	NL
<i>Antechinus leo</i>	70	2	NL
<i>Notomys cervinus</i>	123	2	NL
<i>Dasyercus byrnei</i>	341	2	VU
<i>Burramys parvus</i>	374	2	NL
<i>Echymipera rufescens</i>	31	3	NL
<i>Myrmecobius fasciatus</i>	34	3	VU
<i>Dobsonia magna</i>	66	3	NL
<i>Onychogalea fraenata</i>	69	3	EN
<i>Sminthopsis psammophila</i>	33	4	EN
<i>Pseudantechinus roryi</i>	44	4	NL
<i>Hipposideros stenotis</i>	55	4	NL
<i>Mesembriomys macrurus</i>	56	4	VU
<i>Lagorchestes hirsutus</i>	99	4	VU/EN
<i>Notomys fuscus</i>	131	4	VU
<i>Petrogale persephone</i>	133	4	EN
<i>Petaurus gracilis</i>	228	4	EN
<i>Antechinus bellus</i>	268	4	NL
<i>Pseudomys laborifex</i>	38	5	NL
<i>Sminthopsis bindi</i>	51	5	NL
<i>Pseudomys pilligaensis</i>	114	5	NL
<i>Pseudantechinus bilarni</i>	120	5	NL
<i>Spilocuscus maculatus</i>	120	5	NL
<i>Zyzomys woodwardi</i>	130	5	NL
<i>Conilurus penicillatus</i>	156	5	VU
<i>Melomys capensis</i>	252	5	NL

Thirty-nine species of mammals had records in five or fewer PAs greater than 1000 hectares, including 13 species listed as threatened (**Table 21**). Again, all of these species have relatively few records available and so are unlikely to be represented in many reserves.

Table 21 Mammal species recorded in five or fewer PAs greater than 1000 hectares.

Species	No. Records	No. Reserves >1000ha	EPBC status
<i>Dasyercus hillieri</i>	31	1	EN
<i>Lagostrophus fasciatus</i>	38	1	NL
<i>Lasiornis krefftii</i>	46	1	EN
<i>Zyzomys maini</i>	64	1	VU
<i>Petrogale mareeba</i>	32	2	NL
<i>Petrogale burbridgei</i>	33	2	NL
<i>Hipposideros cervinus</i>	34	2	NL
<i>Phascogale tapoatafa pirata</i>	35	2	NL
<i>Pseudomys johnsoni</i>	39	2	NL
<i>Macropus bernardus</i>	56	2	NL
<i>Sminthopsis douglasi</i>	67	2	EN
<i>Pseudomys calabyi</i>	69	2	NL
<i>Antechinus leo</i>	70	2	NL
<i>Notomys cervinus</i>	123	2	NL
<i>Dasyercus byrnei</i>	341	2	NL
<i>Burramys parvus</i>	374	2	NL
<i>Echymipera rufescens</i>	31	3	NL
<i>Myrmecobius fasciatus</i>	34	3	VU
<i>Hipposideros stenotis</i>	55	3	NL
<i>Dobsonia magna</i>	66	3	NL
<i>Onychogalea fraenata</i>	69	3	EN
<i>Bettongia tropica</i>	73	3	EN
<i>Petrogale persephone</i>	133	3	NL
<i>Sminthopsis psammophila</i>	33	4	EN
<i>Pseudantechinus roryi</i>	44	4	NL
<i>Mesembriomys macrurus</i>	56	4	VU
<i>Lagorchestes hirsutus</i>	99	4	VU/EN
<i>Notomys fuscus</i>	131	4	VU
<i>Petaurus gracilis</i>	228	4	EN
<i>Antechinus bellus</i>	268	4	NL
<i>Pseudomys laborifex</i>	38	5	NL
<i>Sminthopsis bindi</i>	51	5	NL
<i>Petrogale godmani</i>	53	5	NL
<i>Pseudomys pilligaensis</i>	114	5	NL
<i>Pseudantechinus bilarni</i>	120	5	NL
<i>Spilocuscus maculatus</i>	120	5	NL
<i>Zyzomys woodwardi</i>	130	5	NL
<i>Conilurus penicillatus</i>	156	5	VU
<i>Melomys capensis</i>	252	5	NL

Reptiles

The ANHAT database has 328007 records for 791 species and subspecies of terrestrial reptiles (data for 26 marine reptiles were excluded). There are currently no recognised extinct terrestrial reptiles.

Fifty-four species account for approximately 50% of the total reptile species records in ANHAT (**Table 22**). These species have over 1400 records each and in the case of the Bynoe's Gecko (*Heteronotia binoei*), over 9200 records.

Table 22 Reptile species that account for approximately 50% of the total species records in ANHAT.

Species	No. Records	% Records
<i>Heteronotia binoei</i>	9211	2.82
<i>Crocodylus porosus</i>	8754	2.68
<i>Lampropholis delicata</i>	7474	2.28
<i>Lampropholis guichenoti</i>	7322	2.24
<i>Varanus varius</i>	6403	1.96
<i>Gehyra variegata</i>	5572	1.70
<i>Menetia greyii</i>	5176	1.58
<i>Morethia boulengeri</i>	4627	1.41
<i>Ctenotus robustus</i>	4068	1.24
<i>Tiliqua scincoides</i>	3994	1.22
<i>Pseudechis porphyriacus</i>	3857	1.18
<i>Cryptoblepharus plagiocephalus</i>	3792	1.16
<i>Tiliqua rugosus</i>	3763	1.15
<i>Physignathus lesueurii</i>	3424	1.05
<i>Pseudonaja textilis</i>	3399	1.04
<i>Morelia spilota</i>	3397	1.04
<i>Cryptoblepharus virgatus</i>	3320	1.01
<i>Pogona barbata</i>	3284	1.00
<i>Varanus gouldii</i>	3120	0.95
<i>Amphibolurus muricatus</i>	2787	0.85
<i>Ctenotus taeniolatus</i>	2773	0.85
<i>Lialis burtonis</i>	2757	0.84
<i>Eulamprus quoyii</i>	2710	0.83
<i>Carlia munda</i>	2677	0.82
<i>Dendrelaphis punctulata</i>	2466	0.75
<i>Rhynchoedura ornata</i>	2156	0.66
<i>Ctenophorus nuchalis</i>	2136	0.65
<i>Lerista muelleri</i>	2120	0.65
<i>Eulamprus heatwolei</i>	2113	0.65
<i>Lerista bougainvillii</i>	2106	0.64
<i>Gehyra dubia</i>	2101	0.64
<i>Morethia obscura</i>	2062	0.63
<i>Christinus marmoratus</i>	2047	0.63
<i>Cryptoblepharus carnabyi</i>	2009	0.61
<i>Ctenotus schomburgkii</i>	2007	0.61

<i>Pogona vitticeps</i>	1970	0.60
<i>Diplodactylus vittatus</i>	1880	0.57
<i>Carlia foliorum</i>	1871	0.57
<i>Chelodina longicollis</i>	1866	0.57
<i>Egernia striolata</i>	1858	0.57
<i>Notechis scutatus</i>	1848	0.56
<i>Demansia psammophis</i>	1799	0.55
<i>Pseudonaja nuchalis</i>	1792	0.55
<i>Ctenophorus isolepis</i>	1768	0.54
<i>Saproscincus mustelinus</i>	1760	0.54
<i>Ctenotus pantherinus</i>	1732	0.53
<i>Underwoodisaurus milii</i>	1669	0.51
<i>Ctenophorus pictus</i>	1648	0.50
<i>Amphibolurus nobbi</i>	1603	0.49
<i>Cryptophis nigrescens</i>	1580	0.48
<i>Diporiphora bilineata</i>	1554	0.48
<i>Amphibolurus gilberti</i>	1548	0.47
<i>Ctenophorus fordi</i>	1517	0.46
<i>Hemiergis decresiensis</i>	1463	0.45
Total	163710	50.01

Two hundred and twelve species had 30 or fewer individual site records in the ANHAT database (**Table 23**). Of those species, 15 species are listed as threatened, including one species classified as critically endangered. More than half of these species are present in the north-east quarter of the Australian mainland and none from south-eastern Australia. The majority of species are present in the more open woodland, grassland and shrubland habitats and a number are also dependent on rocky environments, which are typical of northern and dryer parts of Australia. Notably, forest dependent species are relatively under-represented in this list, partly because reptiles do not use these habitats extensively and partly because these areas are well surveyed.

Table 23 Reptile species with 30 or fewer individual site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC Status
<i>Chelodina kuchlingi</i>	1	0.0	NW	Wet	100	NL
<i>Ctenotus lancelini</i>	1	0.0	SW	RH	100	VU
<i>Diplodactylus kenneallyi</i>	1	0.0	WCI	WL	100	NL
<i>Glaphyromorphus gracilipes</i>	1	0.0	SW	For, SL	2800	NL
<i>Lerista chalybura</i>	1	100.0	WC	WL	1400	NL
<i>Lerista praefrontalis</i>	1	0.0	NW	WL	100	NL
<i>Lerista talpina</i>	1	0.0	WC	SL?	100	NL
<i>Pseudechis papuanus</i>	1	0.0	Torres St.	Wet	100	NL
<i>Ramphotyphlops aspina</i>	1	0.0	NEI	WL	200	NL
<i>Ramphotyphlops margaretae</i>	1	0.0	IC	?	100	NL
<i>Ramphotyphlops yampiensis</i>	1	0.0	Koolan Is.	WL, SL	200	NL
<i>Saproscincus oriarus</i>	1	100.0	EC	RF, WL	100	NL
<i>Brachyuophis morrisi</i>	2	0.0	NC	WL	200	NL

			Prince of			
<i>Cryptophis incredibilis</i>	2	0.0	Wales Is.	WL	100	NL
<i>Ctenotus ehmanni</i>	2	0.0	NW	WL	400	NL
<i>Diporiphora convergens</i>	2	0.0	NW	WL	200	NL
<i>Egernia douglasi</i>	2	50.0	NW	RH	500	NL
<i>Elseya purvisi</i>	2	0.0	EC	Wet	200	NL
			NE			
<i>Eulamprus frerei</i>	2	100.0	Montane	RF, RH	100	NL
<i>Lepidodactylus pumilus</i>	2	50.0	Torres St.	For	1000	NL
<i>Lerista bunglebungle</i>	2	100.0	NWI	RH	100	NL
<i>Lerista quadrivincula</i>	2	0.0	WC	SL	100	NL
<i>Lerista speciosa</i>	2	0.0	CI	GrL	200	NL
<i>Lucasium alboguttatum</i>	2	0.0	WC-SW	GrL?	7400	NL
			Magnetic			
<i>Menetia sadlieri</i>	2	100.0	Is.	?	300	NL
<i>Ramphotyphlops nema</i>	2	0.0	NC	Gen	200	NL
<i>Ramphotyphlops robertsi</i>	2	100.0	NE	For	100	NL
<i>Ramphotyphlops splendidus</i>	2	100.0	WC	SL	100	NL
<i>Ctenotus aphrodite</i>	3	0.0	NEI	SL, GrL	400	NL
<i>Ctenotus schevilli</i>	3	0.0	NWI	GrL	800	NL
<i>Ctenotus serotinus</i>	3	66.7	CI	DF	300	NL
<i>Ctenotus stuarti</i>	3	100.0	NC	WL	300	NL
<i>Diplodactylus fulleri</i>	3	0.0	WCI	SL	100	NL
<i>Lerista haroldi</i>	3	0.0	WC	WL	500	NL
<i>Lerista robusta</i>	3	0.0	NWI	GrL	300	NL
<i>Lerista viduata</i>	3	0.0	SW	WL	300	NL
<i>Ramphotyphlops howi</i>	3	0.0	NW	Gen	200	NL
<i>Ramphotyphlops minimus</i>	3	33.3	NC	?	800	NL
<i>Aprasia rostrata</i>	4	100.0	WC	WL, SL	1100	VU
<i>Eulamprus tryoni</i>	4	100.0	EC	RF	100	NL
<i>Lerista axillaris</i>	4	50.0	WC	WL	200	NL
<i>Lerista puncticauda</i>	4	50.0	SWI	SL	300	NL
<i>Lerista separanda</i>	4	0.0	NW	SL	300	NL
<i>Simoselaps minimus</i>	4	0.0	NW	SL	300	NL
<i>Strophurus robinsoni</i>	4	25.0	NC	GrL	400	NL
<i>Varanus prasinus</i>	4	0.0	Torres St.	RF, For	600	NL
<i>Cryptagama aurita</i>	5	20.0	NCI	RH	500	NL
<i>Ctenotus zastictus</i>	5	0.0	WC	GrL	300	VU
<i>Lucasium squarrosum</i>	5	60.0	WC-WCI	SL	10200	NL
<i>Morelia carinata</i>	5	100.0	NW	For	400	NL
<i>Oedura filicipoda</i>	5	20.0	NW	RH	500	NL
<i>Ramphotyphlops kimberleyensis</i>	5	60.0	NW	SL	800	NL
<i>Ctenotus yampiensis</i>	6	0.0	NW	?	300	NL
<i>Lerista ingrami</i>	6	0.0	NE	For	200	NL
<i>Menetia koshlandae</i>	6	33.3	NE	RH	400	NL
<i>Strophurus wilsoni</i>	6	16.7	WCI	SL	600	NL
<i>Calyptotis thorntonensis</i>	7	85.7	NE	RF, For	200	NL
<i>Ctenotus angusticeps</i>	7	85.7	NW	SL, GrL	300	VU
<i>Lerista eupoda</i>	7	0.0	WCI	WL	500	NL
<i>Lerista simillima</i>	7	0.0	NWI	SL	500	NL

<i>Lerista yuna</i>	7	14.3	WC	SL	500	NL
<i>Phyllurus championae</i>	7	0.0	NE	RH	300	NL
				Undergroun		
<i>Ramphotyphlops troglodytes</i>	7	0.0	NW	d	600	NL
<i>Suta ordensis</i>	7	0.0	NC	WL	600	NL
<i>Techmarscincus jigurru</i>	7	100.0	NE, Mon	RH	100	NL
<i>Aprasia haroldi</i>	8	0.0	WC	SL	500	NL
<i>Carlia parrhasius</i>	8	0.0	NE	RH	200	NL
<i>Ctenophorus yinnietharra</i>	8	0.0	WCI	RH	400	VU
<i>Ctenotus youngsoni</i>	8	0.0	WC	SL	1000	NL
<i>Delma mitella</i>	8	75.0	NE	RF, For	500	VU
<i>Elseya georgesi</i>	8	50.0	EC	Wet	500	NL
<i>Elseya irwini</i>	8	0.0	NE	Wet	600	NL
<i>Lerista ameles</i>	8	25.0	NE	RH	400	NL
<i>Lerista apoda</i>	8	50.0	NW	WL	700	NL
<i>Lerista arenicola</i>	8	87.5	SC	WL	1000	NL
<i>Lerista elongata</i>	8	0.0	SCI	SL	1200	NL
<i>Lerista kalumburu</i>	8	50.0	NW	WL	400	NL
<i>Lerista stictopleura</i>	8	12.5	WCI	SL	600	NL
<i>Niveoscincus orocryptus</i>	8	87.5	Tas	WL, RH	700	NL
<i>Paroplocephalus atriceps</i>	8	37.5	SWI	WL, SL	800	NL
<i>Tympanocryptis uniformis</i>	8	0.0	NC	WL	1200	NL
<i>Ctenotus agrestis</i>	9	11.1	NWI	GrL	700	NL
<i>Ctenotus monticola</i>	9	11.1	NE	WL	600	NL
<i>Ctenotus terrareginae</i>	9	66.7	NE	RH	600	NL
<i>Lerista storri</i>	9	22.2	NE	WL	700	NL
<i>Lerista walkeri</i>	9	55.6	NW	WL?	1000	NL
<i>Morelia oenpelliensis</i>	9	77.8	NC	RH	800	NL
<i>Ramphotyphlops chamodracaena</i>	9	11.1	NE	WL	900	NL
<i>Ctenotus zebrilla</i>	10	0.0	NW	WL, GrL	800	NL
<i>Egernia pilbarensis</i>	10	20.0	WC	RH	1100	NL
<i>Elseya lavarackorum</i>	10	10.0	NC	Wet	800	EN
<i>Emoia atrocostata</i>	10	20.0	NE	Man, RH	900	NL
<i>Gehyra baliola</i>	10	30.0	Torres St.	WL, Man	1100	NL
<i>Varanus kingorum</i>	10	10.0	NC	RH	900	NL
<i>Carlia rococo</i>	11	63.6	NE	RH	800	NL
<i>Ctenotus pallescens</i>	11	0.0	NC	WL, GrL	1100	NL
<i>Gehyra keep river</i>	11	0.0	WC	RH	800	NL
<i>Lerista vittata</i>	11	9.1	NE	SL	500	VU
<i>Phyllurus isis</i>	11	63.6	NE	RF	200	NL
<i>Pogona microlepidota</i>	11	54.5	NW	WL, RH	1200	NL
<i>Ramphotyphlops broomi</i>	11	9.1	NE	WL	2000	NL
<i>Ramphotyphlops ganei</i>	11	9.1	WCI	WL	700	NL
<i>Ramphotyphlops yirrikalae</i>	11	63.6	NC	WL	900	NL
<i>Ctenotus astictus</i>	12	0.0	NC	WL, SL	800	NL
<i>Ctenotus colletti</i>	12	41.7	NW	SL	1200	NL
<i>Ctenotus mastigura</i>	12	41.7	NW	WL, GrL	2400	NL
<i>Ctenotus nigrilineatus</i>	12	66.7	NW	GrL	400	NL
<i>Ctenotus quinkan</i>	12	8.3	NE	RH	600	NL

<i>Egernia obiri</i>	12	66.7	NC	RH	900	NL
<i>Lerista humphriesi</i>	12	25.0	WC	SL	900	NL
<i>Pseudothecadactylus cavaticus</i>	12	58.3	NW	RH	900	NL
<i>Strophurus mcmillani</i>	12	25.0	NW	GrL	1300	NL
<i>Vermicella snelli</i>	12	16.7	NW	For, WL	1400	NL
<i>Chelodina novaeguineae</i>	13	7.7	NC	Wet	2900	NL
<i>Delma labialis</i>	13	23.1	NE	For	1300	VU
<i>Emydura subglobosa</i>	13	23.1	N	Wet	1200	NL
<i>Lampropholis elongata</i>	13	38.5	EC, Mon	WL	200	NL
<i>Lerista allochira</i>	13	61.5	WC	RH	800	NL
<i>Lerista flammicauda</i>	13	38.5	WCI	GrL	1600	NL
<i>Pseudemoia baudini</i>	13	53.8	SC	SL	1700	NL
<i>Carlia scirtetis</i>	14	42.9	NE	RH	200	NL
<i>Elapognathus minor</i>	14	71.4	SW	For, GrL	2300	NL
<i>Ephalophis greyae</i>	14	0.0			2200	NL
<i>Eulamprus luteilaterialis</i>	14	57.1	NE, Mon	RF	900	NL
<i>Lerista carpentariae</i>	14	14.3	NC	WL	1300	NL
<i>Lerista colliveri</i>	14	28.6	NE	WL, RH	1200	NL
<i>Orraya occultus</i>	14	0.0	NE	RF	500	NL
<i>Ramphotyphlops pilbarensis</i>	14	42.9	NC	SL	1300	NL
<i>Aprasia smithi</i>	15	13.3	WC	WL, SL	1200	NL
<i>Egernia montana</i>	15	53.3	SE	For, RH		NL
<i>Furina barnardi</i>	15	26.7	NE	WL, RH	2300	NL
<i>Lampropholis colossus</i>	15	80.0	EC	RF	300	NL
<i>Nactus galgajuga</i>	15	86.7	NE	RH	200	NL
<i>Nephrurus deleani</i>	15	0.00	SCI	GrL?	1600	NL
<i>Notoscincus butleri</i>	15	0.0	NW	GrL	1200	NL
<i>Ophidiocephalus taeniatus</i>	15	6.7	SCI	WL	1100	VU
<i>Carlia aeratus</i>	16	37.5	NE	WL, GrL	5000	NL
<i>Cyclodomorphus branchialis</i>	16	31.2	WC	SL	11300	NL
<i>Elseya belli</i>	16	12.5	EC	Wet	900	VU
<i>Lampropholis mirabilis</i>	16	62.5	NE	RF-RH	1000	NL
<i>Lerista aericeps</i>	16	68.7	CI	GrL	6000	NL
<i>Vermicella vermiformis</i>	16	31.2	NC-NCI	WL	900	NL
<i>Lerista kennedyensis</i>	17	88.2	WCI	WL, GrL	500	NL
<i>Lerista tridactyla</i>	17	5.9	SWI	WL	1500	NL
<i>Nangura spinosa</i>	17	47.1	EC	For	700	CE
<i>Ctenophorus mckenziei</i>	18	55.6	SC	WL	1000	NL
<i>Emydura australis</i>	18	33.3	NW	Wet	2800	NL
<i>Eugongylus rufescens</i>	18	27.8	NE	For	1900	NL
<i>Lerista onsloviana</i>	18	33.3	WC	SL	1600	NL
<i>Lucasium wombeyi</i>	18	27.8	WCI	?	2600	NL
<i>Strophurus rankini</i>	18	5.6	WC	SL	1900	NL
<i>Varanus keithhornei</i>	18	55.6	NE	RF	1000	NL
<i>Acrochordus granulatus</i>	19	5.3	N	Wet	3000	NL
<i>Cryptoblepharus fuhni</i>	19	100.0	NE	RH	400	NL
<i>Lerista vermicularis</i>	19	5.3	NWI	GrL?	1500	NL
<i>Lerista wilkinsi</i>	19	21.0	NEI	WL?	800	NL
<i>Morelia viridis</i>	19	73.7	NE	RF	600	NL
<i>Anomalopus gowi</i>	20	20.0	NW	WL	2000	NL

<i>Ctenotus rubicundus</i>	20	40.0	WC	GrL	1900	NL
<i>Saproscincus spectabilis</i>	20	65.0	SE	RF	1800	NL
<i>Varanus pilbarensis</i>	20	15.0	NCI	RH	1800	NL
<i>Aprasia fusca</i>	21	4.8	WC	SL	1100	NL
<i>Diporiphora superba</i>	21	42.9	NE	SL	2900	NL
<i>Glaphyromorphus brongersmai</i>	21	19.0	NW	WL	900	NL
<i>Glaphyromorphus mjobergi</i>	21	57.1	NE	RF	2200	NL
<i>Lerista cinerea</i>	21	0.0	NE	WL, RH	1200	NL
<i>Oedura obscura</i>	21	23.8	NW	RH	3000	NL
<i>Antairoserpens warro</i>	22	9.1	NE	For, WL	13500	NL
<i>Carlia tanneri</i>	22	9.1	NE	RF	1200	NL
<i>Ctenotus burbridgei</i>	22	27.3	NW	RH	2100	NL
<i>Diporiphora reginae</i>	22	0.0	SWI	GrL	1400	NL
<i>Egernia guthega</i>	22	86.4	SE, Mon	WL, GrL		NL
<i>Pseudemydura umbrina</i>	22	59.1	SW	Wet	400	CE
<i>Ctenotus gagudju</i>	23	82.6	NC	WL	1100	NL
<i>Ctenotus striaticeps</i>	23	17.4	NC	GrL	2200	NL
<i>Delma elegans</i>	23	26.1	WCI	GrL	2100	NL
				WL, RF,		
<i>Glaphyromorphus pumilus</i>	23	13.0	NE	RH	3700	NL
<i>Anomalopus mackayi</i>	24	4.2	CEI	WL, GrL	1800	VU
<i>Ctenotus alleni</i>	24	50.0	WC	WL	1400	NL
<i>Ctenotus nullum</i>	24	33.3	NE	RH	1400	NL
<i>Demansia simplex</i>	24	33.3	NC	WL	1900	NL
<i>Diporiphora valens</i>	24	20.8	WCI	WL, SL	1700	NL
<i>Egernia hosmeri</i>	24	4.2	NE-NEI	RH	3300	NL
<i>Furina dunmalli</i>	24	29.2	NC	For, WL	2500	VU
<i>Ramphotyphlops leptosoma</i>	24	20.8	WC	WL	2000	NL
<i>Vermicella intermedia</i>	24	8.3	NW-NC	For, WL	1900	NL
<i>Ctenophorus maculosus</i>	25	80.0	SCI	SaL	2500	NL
<i>Ctenotus arnhemensis</i>	25	76.0	NC	For, WL	1500	NL
<i>Ctenotus astarte</i>	25	12.0	NWI	SL	2700	NL
<i>Diplodactylus mitchelli</i>	25	16.0	WC	RH	1300	NL
<i>Menetia concinna</i>	25	80.0	NC	WL	1300	NL
<i>Myron richardsonii</i>	25	28.0	NC	Man	2200	NL
<i>Phyllurus ossa</i>	25	24.0	NE	RF	1200	NL
<i>Ramphotyphlops pinguis</i>	25	8.0	SW	For, WL	4400	NL
<i>Saproscincus lewisi</i>	25	84.0	NE	RF	900	NL
<i>Strophurus michaelsoni</i>	25	48.0	WC	WL, GrL	1900	NL
<i>Diplodactylus klugei</i>	26	19.2	WC	SL	2000	NL
<i>Niveoscincus greeni</i>	26	88.5	Tas, Mon	Wet	1400	NL
<i>Vermicella multifasciata</i>	26	15.4	NC	WL	3400	NL
<i>Ctenotus maryani</i>	27	25.9	WC	GrL	1700	NL
<i>Emoia longicauda</i>	27	44.4	NE	RF	2600	NL
<i>Lerista christinae</i>	27	48.1	SW	WL	1000	NL
<i>Lerista taeniata</i>	27	33.3	CI	GrL	2500	NL
<i>Pseudechis butleri</i>	27	7.4	WCI	WL, SL	3100	NL
<i>Ctenophorus tjantjalka</i>	28	10.7	SCI	RH	2400	NL
<i>Phyllurus caudiannulatus</i>	28	46.4	EC	RF	500	NL
<i>Lerista stylis</i>	29	100.0	NC	WL	1200	NL

<i>Ramphotyphlops silvia</i>	29	79.3	EC	RF, WL	1400	NL
<i>Tympanocryptis houstoni</i>	29	79.3	SW-SC	SL	3200	NL
<i>Varanus primordius</i>	29	31.0	NC	WL, RH	1900	NL
<i>Ctenotus rutilans</i>	30	6.7	WC	GrL	2100	NL
<i>Rhinoplocephalus bicolor</i>	30	56.7	SW	SL	4100	NL

Removal of poorly recorded species leaves 325282 records in ANHAT for 579 species (and subspecies). The mean number of records per species for species with greater than 30 records was 561.8, with the mean of 32.4 for the percent of records in the NRS.

One hundred and twenty three species of reptiles had 45% or greater of individual site records located within PAs (**Table 24**). Of those 123 species, three species are listed as threatened, including one species listed as endangered. Many species in this group of species are from north-western and northern Australia, but there are also many species present in south-eastern Australia and north-eastern Australia. Compared to the species with few records, a number of species in this highly reserved group occupy rainforest and forest habitats. Woodlands are still the most prevalent habitats used and rocky environments remain of some importance in regards to the types of species present in the table, reflecting the relatively strong use that reptiles make of rocks. No reptile species has all of its records from within reserves, but *Coggeria naufragus* from Fraser Island has over 98% of its records within the reserve system.

Table 24 Reptile species with >45% of site records within PAs.

Species	No. Records	Records in NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Eulamprus tenuis</i>	870	392	45.1	E	Gen	51500	NL
<i>Ctenotus regius</i>	1450	654	45.1	SCI-SEI	WL, SL	85100	NL
<i>Pseudemoia entrecasteauxii</i>	1362	615	45.1	SE	Gen	70500	NL
<i>Ctenotus ariadnae</i>	108	49	45.4	I	GrL	6300	NL
<i>Carlia laevis</i>	46	21	45.6	NE	RF	4200	NL
<i>Morethia storri</i>	542	248	45.8	NW, NC	WL, SL	22300	NL
<i>Glaphyromorphus darwiniensis</i>	403	185	45.9	NC	For, WL	14500	NL
<i>Drysdalia coronoides</i>	880	404	45.9	SW, Tas	WL, GrL, WL, SL,	54500	NL
<i>Lerista punctatovittata</i>	917	422	46.0	SEI	GrL, For,	57000	NL
<i>Oedura tryoni</i>	673	311	46.2	EC	WL, RH	36300	NL
<i>Ctenotus labillardieri</i>	293	136	46.4	SW	For, RH	17900	NL
<i>Diplodactylus granariensis</i>	810	376	46.4	SW-SC	WL	45000	NL
<i>Lerista bougainvillii</i>	2106	982	46.6	SE, Tas	For, WL	84200	NL
<i>Lerista microtis</i>	107	50	46.7	SW-SC	For, WL	7900	NL
<i>Rankinia adalaidensis</i>	318	149	46.9	WC-SC	SL	17900	NL
<i>Varanus mitchelli</i>	142	67	47.2	NC	Wet	10600	NL
<i>Ctenophorus cristatus</i>	516	244	47.3	SW-SC	WL	40600	NL

<i>Hoplocephalus stephensii</i>	269	128	47.6	SE	RF, For	19100	NL
<i>Saiphos equalis</i>	1187	565	47.6	EC	RF, For, WL	53200	NL
<i>Acritoscincus platynotum</i>	136	65	47.8	SE, Mon	WL, GrL	40000	NL
<i>Phyllurus nepthys</i>	46	22	47.8	NE	RF	1100	NL
<i>Egernia saxatilis</i>	301	144	47.8	SE	WL, RH	26100	NL
<i>Calypotis scutirostrum</i>	1135	543	47.8	EC	RF, For	30500	NL
<i>Notechis scutatus ater</i>	359	172	47.9	SC	Gen	36800	VU
<i>Ctenotus taeniolatus</i>	2773	1329	47.9	E	WL, RH	127700	NL
<i>Lampropholis amicula</i>	347	167	48.1	EC	For, SL	20400	NL
<i>Ctenotus essingtonii</i>	966	465	48.1	NC-NE	For, WL, SL	28900	NL
<i>Glaphyromorphus isolepis</i>	735	354	48.2	N	Wet, GrL	43100	NL
<i>Strophurus intermedius</i>	732	354	48.4	WCI-SEI	WL, SL	40100	NL
<i>Strophurus assimilis</i>	93	45	48.4	SWI, SC	SL	6900	NL
<i>Lerista dorsalis</i>	358	175	48.9	SC	WL, SL	32500	NL
<i>Pseudemoia cryodroma</i>	90	44	48.9	SE, Montane	WL, GrL	2700	NL
<i>Cyrtodactylus louisianensis</i>	49	24	49.0	NE	RF, RH	3200	NL
<i>Lampropholis couperi</i>	98	48	4.90	EC	RF	4800	NL
<i>Brachyurophis australis</i>	424	208	49.1	E	WL, SL, GrL	34400	NL
<i>Egernia frerei</i>	512	252	49.2	NE-EC	RF, For, WL	26100	NL
<i>Ramphotyphlops bituberculatus</i>	617	307	49.8	S	Gen	52400	NL
<i>Anomalopus brevicollis</i>	62	31	50.0	EC	For, WL	3900	NL
<i>Erotoscincus graciloides</i>	106	53	50.0	EC	RF, For	5600	NL
<i>Pygopus lepidopodus</i>	776	392	50.5	S, NE	For, WL, SL	70300	NL
<i>Proablepharus reginae</i>	114	58	50.9	WI-CI	GrL	7800	NL
<i>Varanus glebopalma</i>	124	64	51.6	NC	RH	10600	NL
<i>Hoplocephalus bungaroides</i>	91	47	51.6	SE	WL, RH	7000	VU
<i>Egernia inornata</i>	866	448	51.7	SI	SL, GrL		NL
<i>Saproscincus rosei</i>	140	73	52.1	EC	RF	13100	NL
<i>Saltuarius salebrosus</i>	63	33	52.4	NE	RF, RH	4400	NL
<i>Ctenophorus decresii</i>	232	124	53.4	SC	RH	14000	NL
<i>Delma butleri</i>	447	239	53.5	W-SEI	GrL	31500	NL
<i>Lerista edwardsae</i>	166	89	53.6	SC	WL	17100	NL
<i>Parasuta nigriceps</i>	435	236	54.2	SW, SC	RH	32000	NL
<i>Anomalopus pluto</i>	35	19	54.3	NE	For	1200	NL
<i>Amphibolurus nobbi</i>	1603	880	54.9	E	For, WL	82100	NL
<i>Chelosania brunnea</i>	49	27	55.1	NC	WL	4600	NL
<i>Morethia obscura</i>	2062	1138	55.2	SW-SEI	WL, SL	102900	NL
<i>Phyllurus platurus</i>	548	305	55.7	SE	RH	20100	NL
<i>Carlia amax</i>	1427	795	55.7	NC	RH	50200	NL

<i>Cryptoblepharus litoralis</i>	127	71	55.9	NC-NE	RH	13900	NL
<i>Carlia gracilis</i>	967	545	56.4	NW	For	30000	NL
<i>Ctenotus catenifer</i>	69	39	56.5	SW	SL	5600	NL
<i>Egernia pulchra</i>	44	25	56.8	SW	For, WL		NL
<i>Delma australis</i>	813	462	56.8	SW-SEI	SL-GrL	51200	NL
<i>Eulamprus tigrinus</i>	35	20	57.1	NE	RF, SL	3100	NL
<i>Ctenotus arcanus</i>	143	82	57.3	EC	For, WL	6500	NL
<i>Menetia alanae</i>	179	103	57.5	NC	For, WL	7100	NL
<i>Varanus baritji</i>	50	29	58.0	NC	RH	4100	NL
<i>Egernia mcpheei</i>	158	92	58.2	EC	For, RH	12100	NL
<i>Lerista varia</i>	36	21	58.3	WC	SL	2200	NL
<i>Egernia richardi</i>	96	56	58.3	SW-SC	WL, RH	9300	NL
<i>Rankinia diemensis</i>	982	575	58.5	SE, Tas	For, WL	37100	NL
<i>Lerista karlschmidti</i>	92	54	58.7	NC, NE	WL, SL	5100	NL
<i>Ramphotyphlops towelli</i>	39	23	59.0	NC	WL	2200	NL
<i>Drysdalia rhodogaster</i>	61	36	59.0	SE	For, WL	5000	NL
<i>Hypsilurus spinipes</i>	313	185	59.1	EC	RF, For	12800	NL
<i>Ctenotus atlas</i>	486	289	59.5	SI	WL	29000	NL
<i>Ctenophorus pictus</i>	1648	984	59.7	SI-CI	SL, GrL	98300	NL
<i>Carlia rubrigularis</i>	328	196	59.8	NE	RF	13900	NL
<i>Saltuarius swaini</i>	254	153	60.2	EC	RF	13200	NL
<i>Ophioscincus truncatus</i>	257	155	60.3	EC	RF, For, WL	9500	NL
<i>Egernia whitii</i>	1389	844	60.8	SE, Tas	For, WL		NL
<i>Saproscincus basiliscus</i>	189	116	61.4	NE	RF	11500	NL
<i>Lampropholis coggeri</i>	161	99	61.5	NE	RF	9500	NL
<i>Ctenotus orientalis</i>	530	326	61.5	S	WL, SL	28000	NL
<i>Coeranoscincus frontalis</i>	39	24	61.5	NE	RF	2900	NL
<i>Gnypetoscincus queenslandiae</i>	222	137	61.7	NE	RF	8300	NL
<i>Hypsilurus boydii</i>	89	55	61.8	NE	RF	5700	NL
<i>Oedura lesueurii</i>	936	594	63.5	SE	For, WL, RH	36000	NL
<i>Lampropholis caligula</i>	37	24	64.9	SE	GrL	1600	NL
<i>Saltuarius cornutus</i>	142	93	65.5	NE	RF	8400	NL
<i>Ctenotus vertebralis</i>	206	136	66.0	NC	WL	7900	NL
<i>Egernia multiscutata</i>	228	151	66.2	SW, SC	WL, SL		NL
<i>Ctenotus storri</i>	106	71	67.0	NC	WL, GrL	4400	NL
<i>Gehyra pamela</i>	67	45	67.2	NC	RH	4100	NL
<i>Ctenophorus fordi</i>	1517	1019	67.2	SI	WL, GrL	54100	NL
<i>Calypotis lepidorostrum</i>	191	129	67.5	EC	RF, For, WL	8000	NL
<i>Diporiphora lingua</i>	35	24	68.6	SC	GrL	3300	NL
<i>Aprasia inaurita</i>	271	189	69.7	SC	WL	14700	NL
<i>Drysdalia mastersii</i>	162	113	69.7	SC	WL, GrL	10100	NL
<i>Carettochelys insculpta</i>	40	28	70.0	NC	Wet	2500	NL

<i>Amphibolurus norrisi</i>	317	222	70.0	S	WL	14300	NL
<i>Eulamprus murrayi</i>	552	387	70.1	EC	For, WL	19600	NL
<i>Cyclodomorphus</i>					WL,		
<i>praealtus</i>	73	52	71.2	SE, Mon	GrL	1100	EN
<i>Saproscincus</i>							
<i>tetradactylus</i>	60	44	73.3	NE	RF	4500	NL
<i>Ctenotus brachyonyx</i>	473	347	73.4	SEI	WL, SL	15900	NL
<i>Saproscincus</i>							
<i>challengeri</i>	482	355	73.6	EC	For	15200	NL
<i>Pseudethecadactylus</i>							
<i>lindneri</i>	43	32	74.4	NC	RH	3000	NL
<i>Anomalopus swansoni</i>	60	45	75.0	SE	For, WL	4200	NL
<i>Lampropholis robertsi</i>	45	34	75.6	NE, Mon	RF	2000	NL
<i>Nephrurus stellatus</i>	117	89	76.1	SWI-SC	SL, GrL	9600	NL
<i>Harrisoniascincus zia</i>	58	45	77.6	EC, Mon	RF	3200	NL
<i>Saproscincus czechurai</i>	95	74	77.9	NE	RF	4800	NL
<i>Coeranoscincus</i>							
<i>reticulatus</i>	132	103	78.0	EC	RF, For	5100	NL
<i>Glaphyromorphus</i>							
<i>fuscicaudis</i>	74	60	81.1	NE	RF	4900	NL
<i>Ctenotus coggeri</i>	91	74	81.3	NC	RH	4300	NL
					WL,		
<i>Aprasia aurita</i>	73	60	82.2	SEI	GrL	900	NL
<i>Saltuarius wyberba</i>	42	35	83.3	EC	RH	600	NL
<i>Ophioscincus</i>							
<i>cooloolensis</i>	63	53	84.1	EC	RF, WL	2200	NL
<i>Carphodactylus laevis</i>	66	56	84.8	NE	RF	3600	NL
<i>Eulamprus kosciuskoi</i>	268	233	86.9	SE, Mon	Wet	10600	NL
<i>Oedura gemmata</i>	58	53	91.4	NC	RH	2200	NL
<i>Ctenotus xenopleura</i>	35	32	91.4	SWI	GrL	1200	NL
<i>Niveoscincus</i>							
<i>microlepidotus</i>	35	32	91.4	Tas, Mon	SL	2500	NL
<i>Ctenotus kurnbudj</i>	34	33	97.1	NC	WL	700	NL
<i>Coggeria naufragus</i>	55	54	98.2	Fraser Is.	For, SL	900	NL

Forty-six reptile species had less than 10% of ANHAT records located within the NRS. Four of the 46 species are classified as threatened, including two endangered species. Notably, seven species have no records within an IUCN classified PA, indicating they are poorly protected from land-use changes. These species come from northern and western Australia, but are scattered relatively widely. There are few evident geographic trends in regards to the location of all of the identified poorly reserved species. None of the species in the table come from south-eastern Australia or Tasmania, but there are several from most other areas. In regards to habitat preferences, few species use rainforest or forest, indicative of the relatively high levels of reservation of these habitats. The open woodlands, grasslands and shrublands are again the typical habitats of these poorly reserved species, with rock being of some importance.

Table 25 Reptile species with <10% of ANHAT records located within the NRS.

Species	Records	In PAs	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Gehyra robusta</i>	33	0	0.0	NC	RH	3200	NL
<i>Lerista nichollsi</i>	34	0	0.0	WCI	SL	3900	NL
<i>Elusor macrurus</i>	37	0	0.0	NC	Wet	1300	EN
<i>Ctenotus rawlinsoni</i>	39	0	0.0	NE	SL	500	NL
<i>Lerista neander</i>	39	0	0.0	WCI	GrL	3400	NL
<i>Pseudechis colletti</i>	74	0	0.0	NEI	GrL	6200	NL
<i>Strophurus taeniatus</i>	78	0	0.0	NI	GrL	6600	NL
<i>Tiliqua adelaidensis</i>	1087	6	0.5	SC	GrL	1700	EN
<i>Ctenophorus gibba</i>	45	1	2.2	SCI	RH	6100	NL
<i>Rheodytes leukops</i>	41	1	2.4	EC	Wet	2400	VU
<i>Pseudonaja guttata</i>	204	5	2.4	NEI	GrL	17300	NL
<i>Ctenotus tanamiensis</i>	38	1	2.6	CI	GrL	1500	NL
<i>Ramphotyphlops affinis</i>	34	1	2.9	EC	WL	3900	NL
<i>Tympanocryptis centralis</i>	31	1	3.2	NCI-CI	RH	3100	NL
<i>Carlia coensis</i>	52	2	3.8	NE	RH	1600	NL
<i>Ctenotus rimacola</i>	96	4	4.2	NC	GrL	4300	NL
<i>Pogona henrylawsoni</i>	45	2	4.4	NEI	GrL	3700	NL
<i>Denisonia maculata</i>	106	5	4.7	NE	Gen	6500	VU
<i>Oxyuranus microlepidotus</i>	78	4	5.1	SEI	GrL? WL,	5300	NL
<i>Ctenotus greeri</i>	95	5	5.3	CI	GrL	6500	NL
<i>Lerista ips</i>	37	2	5.4	NWI	GrL	3000	NL
<i>Ctenotus militaris</i>	35	2	5.7	NW	WL	2400	NL
<i>Varanus spenceri</i>	98	6	6.1	NEI	GrL	7900	NL
<i>Delma pax</i>	94	6	6.4	WC	GrL	9700	NL
<i>Pygopus steelescotti</i>	31	2	6.4	NC SW,	WL WL,	2700	NL
<i>Neelaps bimaculatus</i>	76	5	6.6	SCI	SL	6800	NL
<i>Fordonia leucobalia</i>	74	5	6.8	N	Man	5700	NL
<i>Ctenotus eutaenius</i>	59	4	6.8	NE	WL WL,	3600	NL
<i>Denisonia devisi</i>	265	19	7.2	ECI NW-	SL WL,	23100	NL
<i>Suta punctata</i>	305	23	7.5	NC	GrL	26200	NL
<i>Chelodina steindachneri</i>	52	4	7.7	WC	Wet	6100	NL

<i>Neelaps calonotus</i>	52	4	7.7	SW	WL, SL	3500	NL
<i>Hemiergis quadrilineatum</i>	212	17	8.0	SW	WL	6100	NL
<i>Gehyra minuta</i>	37	3	8.1	NC	RH	2700	NL
<i>Ctenotus olympicus</i>	235	20	8.5	SCI	SL	18300	NL
<i>Hoplocephalus bitorquatus</i>	290	25	8.6	NE-EC	For, WL	36300	NL
<i>Cacophis harriettae</i>	436	39	8.9	EC	For	23900	NL
<i>Carlia rimula</i>	32	3	9.4	NE	RH	1600	NL
<i>Lerista gascoynensis</i>	32	3	9.4	WC	SL	1700	NL
<i>Tympanocryptis intima</i>	234	22	9.4	CI	RH	26100	NL
<i>Delma grayii</i>	53	5	9.4	SW	WL	5500	NL
<i>Aspidites ramsayi</i>	185	18	9.7	I	WL, SL	20900	NL
<i>Cryptophis boschmai</i>	202	20	9.9	NE	For, WL	15500	NL
<i>Pseudonaja ingrami</i>	40	4	10.0	NCI	GrL	4600	NL
<i>Diporiphora pindan</i>	60	6	10.0	NW	WL	5100	NL
<i>Lerista uniduo</i>	310	31	10.0	WC	SL	12500	NL

A total of 60 reptile species had records in more than 100 separate PAs. Fifty-five species in this list had over 1000 records, with an average of 2613 records per species. No species are listed as threatened.

Table 26 Reptile species recorded at more than 100 PAs.

Species	No. Records	No. Reserves	No. reserves >1000ha	EPBC status
<i>Pseudonaja nuchalis</i>	1792	100	90	NL
<i>Hemiaspis signata</i>	620	100	80	NL
<i>Delma australis</i>	813	100	86	NL
<i>Rhynchoedura ornata</i>	2156	100	96	NL
<i>Carlia vivax</i>	1009	101	79	NL
<i>Pogona vitticeps</i>	1970	102	93	NL
<i>Diplodactylus granariensis</i>	810	102	76	NL
<i>Pseudemoia entrecasteauxii</i>	1362	105	80	NL
<i>Eulamprus heatwolei</i>	2113	111	95	NL
<i>Varanus tristis</i>	1147	114	99	NL
<i>Pseudechis australis</i>	1460	114	104	NL
<i>Eulamprus tenuis</i>	870	121	98	NL
<i>Saiphos equalis</i>	1187	122	91	NL
<i>Pogona minor</i>	1341	127	103	NL
<i>Ctenotus schomburgkii</i>	2007	132	114	NL
<i>Boiga irregularis</i>	1278	137	108	NL

<i>Acritoscincus duperreyi</i>	1327	138	75	NL
<i>Saproscincus mustelinus</i>	1760	139	106	NL
<i>Cryptoblepharus carnabyi</i>	2009	143	113	NL
<i>Gehyra dubia</i>	2101	144	13	NL
<i>Amphibolurus nobbi</i>	1603	147	128	NL
<i>Lerista muelleri</i>	2120	149	129	NL
<i>Hemiergis peronii</i>	1019	149	90	NL
<i>Egernia striolata</i>	1858	149	118	NL
<i>Hemiergis decresiensis</i>	1463	150	72	NL
<i>Pygopus lepidopodus</i>	776	150	124	NL
<i>Carlia foliorum</i>	1871	153	120	NL
<i>Chelodina longicollis</i>	1866	155	103	NL
<i>Egernia whitii</i>	1389	163	111	NL
<i>Diplodactylus vittatus</i>	1880	168	137	NL
<i>Notechis scutatus</i>	1848	175	127	NL
<i>Underwoodisaurus milii</i>	1669	181	153	NL
<i>Dendrelaphis punctulata</i>	2466	185	148	NL
<i>Morelia spilota</i>	3397	209	161	NL
<i>Cryptoblepharus plagiocephalus</i>	3792	210	171	NL
<i>Demansia psammophis</i>	1799	210	173	NL
<i>Lerista bougainvillii</i>	2106	210	120	NL
<i>Cryptophis nigrescens</i>	1580	212	167	NL
<i>Ctenotus taeniolatus</i>	2773	213	167	NL
<i>Eulamprus quoyii</i>	2710	214	167	NL
<i>Morethia obscura</i>	2062	225	156	NL
<i>Pogona barbata</i>	3284	235	156	NL
<i>Tiliqua scincoides</i>	3994	236	163	NL
<i>Christinus marmoratus</i>	2047	236	141	NL
<i>Physignathus lesueuri</i>	3424	247	185	NL
<i>Cryptoblepharus virgatus</i>	3320	250	185	NL
<i>Varanus gouldii</i>	3120	254	211	NL
<i>Amphibolurus muricatus</i>	2787	259	185	NL
<i>Morethia boulengeri</i>	4627	276	199	NL
<i>Gehyra variegata</i>	5572	279	233	NL
<i>Lialis burtonis</i>	2757	281	250	NL
<i>Pseudonaja textilis</i>	3399	285	198	NL
<i>Tiliqua rugosus</i>	3763	303	194	NL
<i>Pseudechis porphyriacus</i>	3857	318	242	NL
<i>Ctenotus robustus</i>	4068	325	233	NL
<i>Heteronotia binoei</i>	9211	369	322	NL
<i>Menetia greyii</i>	5176	372	267	NL
<i>Lampropholis guichenoti</i>	7322	425	244	NL
<i>Lampropholis delicata</i>	7474	426	297	NL
<i>Varanus varius</i>	6403	458	328	NL

A total of 113 species had records in five or fewer PAs (Table 27), covering a very diverse set of taxa. Four species are listed as threatened, including three species classified as endangered. The majority of species in this list have fewer than 100 individual site records and only one has more than 250 site records. The pygmy blue-tongue (*Tiliqua adelaidensis*)

had over 1000 records, but is a well studied species currently with a very restricted distribution.

Table 27 Reptile species recorded from five or fewer PAs.

Species	No. Records	No. reserves	EPBC status
<i>Lerista zietzi</i>	31	1	NL
<i>Pygopus steelescotti</i>	31	1	NL
<i>Tympanocryptis centralis</i>	31	1	NL
<i>Carlia rimula</i>	32	1	NL
<i>Ramphotyphlops affinis</i>	34	1	NL
<i>Ctenotus militaris</i>	35	1	NL
<i>Ctenotus tanamiensis</i>	38	1	NL
<i>Gehyra borrooloola</i>	38	1	NL
<i>Carettochelys insculpta</i>	40	1	NL
<i>Ctenotus rosarium</i>	40	1	NL
<i>Rheodytes leukops</i>	41	1	VU
<i>Pseudothecadactylus lindneri</i>	43	1	NL
<i>Brachyuropsis approximans</i>	44	5	NL
<i>Ctenophorus gibba</i>	45	1	NL
<i>Pogona henrylawsoni</i>	45	1	NL
<i>Phyllurus nepthys</i>	46	1	NL
<i>Carlia coensis</i>	52	1	NL
<i>Coggeria naufragus</i>	55	1	NL
<i>Eulamprus leuraensis</i>	90	1	EN
<i>Tiliqua adelaidensis</i>	1087	1	EN
<i>Egernia slateri</i>	32	2	NL
<i>Ctenotus kurnbudj</i>	34	2	NL
<i>Anomalopus pluto</i>	35	2	NL
<i>Varanus semiremex</i>	36	2	NL
<i>Gehyra minuta</i>	37	2	NL
<i>Lerista ips</i>	37	2	NL
<i>Ctenophorus rufescens</i>	42	2	NL
<i>Saltuarius wyberba</i>	42	2	NL
<i>Lerista lineata</i>	43	2	NL
<i>Oedura gemmata</i>	58	2	NL
<i>Diporiphora pindan</i>	60	2	NL
<i>Ophioscincus cooloolensis</i>	63	2	NL
<i>Tympanocryptis pinguicolla</i>	64	2	EN
<i>Gehyra pamela</i>	67	2	NL
<i>Aprasia aurita</i>	73	2	NL
<i>Cyclodomorphus praealtus</i>	73	2	NL
<i>Ctenotus coggeri</i>	91	2	NL
<i>Ctenotus rimacola</i>	96	2	NL
<i>Varanus spenceri</i>	98	2	NL
<i>Pseudonaja guttata</i>	204	2	NL
<i>Carlia zuma</i>	32	3	NL
<i>Lerista gascoynensis</i>	32	3	NL
<i>Diplodactylus savagei</i>	38	3	NL

<i>Christinus alexanderi</i>	39	3	NL
<i>Lerista zonulata</i>	40	3	NL
<i>Ctenotus capricorni</i>	41	3	NL
<i>Lerista baynesi</i>	41	3	NL
<i>Gehyra xenopus</i>	42	3	NL
<i>Lerista emmotti</i>	43	3	NL
<i>Pogona nullarbor</i>	44	3	NL
<i>Lerista greeri</i>	46	3	NL
<i>Calyptotis temporalis</i>	52	3	NL
<i>Neelaps calonotus</i>	52	3	NL
<i>Fordonia leucobalia</i>	74	3	NL
<i>Oxyuranus microlepidotus</i>	78	3	NL
<i>Delma haroldi</i>	83	3	NL
<i>Strophurus wellingtonae</i>	86	3	NL
<i>Ctenotus nasutus</i>	87	3	NL
<i>Lerista karlschmidti</i>	92	3	NL
<i>Ctenotus storri</i>	106	3	NL
<i>Denisonia maculata</i>	106	3	NL
<i>Ctenotus joanae</i>	200	3	NL
<i>Ctenotus vertebralis</i>	206	3	NL
<i>Lepidodactylus lugubris</i>	32	4	NL
<i>Oedura gracilis</i>	34	4	NL
<i>Ctenotus xenopleura</i>	35	4	NL
<i>Diporiphora lingua</i>	35	4	NL
<i>Lerista varia</i>	36	4	NL
<i>Lampropholis caligula</i>	37	4	NL
<i>Ramphotyphlops toveli</i>	39	4	NL
<i>Demansia calodera</i>	40	4	NL
<i>Pseudonaja ingrami</i>	40	4	NL
<i>Ctenotus rufescens</i>	42	4	NL
<i>Rankinia parviceps</i>	43	4	NL
<i>Ctenotus delli</i>	46	4	NL
<i>Lerista borealis</i>	50	4	NL
<i>Varanus baritji</i>	50	4	NL
<i>Chelodina steindachneri</i>	52	4	NL
<i>Cerberus rhynchops</i>	55	4	NL
<i>Eulamprus amplus</i>	57	4	NL
<i>Varanus indicus</i>	58	4	NL
<i>Carlia dogare</i>	59	4	NL
<i>Ctenotus eutaenius</i>	59	4	NL
<i>Egernia kintorei</i>	65	4	NL
<i>Ramphotyphlops guentheri</i>	65	4	NL
<i>Lerista kendricki</i>	69	4	NL
<i>Ctenotus septenarius</i>	70	4	NL
<i>Delma pax</i>	94	4	NL
<i>Pseudothecadactylus australis</i>	98	4	NL
<i>Ctenophorus rubens</i>	119	4	NL
<i>Ctenophorus vadrappa</i>	132	4	NL
<i>Cyclodomorphus venustus</i>	42	5	NL
<i>Gehyra occidentalis</i>	42	5	NL

<i>Lerista petersoni</i>	42	5	NL
<i>Glaphyromorphus cracens</i>	45	5	NL
<i>Caimanops amphiboluroides</i>	46	5	NL
<i>Cyrtodactylus lousiadensis</i>	49	5	NL
<i>Delma grayii</i>	53	5	NL
<i>Ctenotus tantillus</i>	54	5	NL
<i>Anomalopus swansoni</i>	60	5	NL
<i>Ramphotyphlops centralis</i>	61	5	NL
<i>Ctenotus serventyi</i>	65	5	NL
<i>Saproscincus hannahae</i>	67	5	NL
<i>Ctenotus iapetus</i>	70	5	NL
<i>Lerista picturata</i>	70	5	NL
<i>Strophurus jeanae</i>	75	5	NL
<i>Neelaps bimaculatus</i>	76	5	NL
<i>Ramphotyphlops ammodytes</i>	76	5	NL
<i>Pseudemoia cryodroma</i>	90	5	NL
<i>Ctenotus greeri</i>	95	5	NL
<i>Ctenotus pulchellus</i>	101	5	NL
<i>Acanthophis pyrrhus</i>	117	5	NL
<i>Menetia alanae</i>	179	5	NL

One hundred and nineteen species of reptiles had records in five or fewer PAs greater than 1000 hectares, including three species listed as vulnerable.

Table 28 Reptile species recorded in five or fewer PAs greater than 1000 hectares.

Species	No. Records	No. Reserves >1000ha	EPBC status
<i>Lerista zietzi</i>	31	1	NL
<i>Pygopus steelescotti</i>	31	1	NL
<i>Tympanocryptis centralis</i>	31	1	NL
<i>Lepidodactylus lugubris</i>	32	1	NL
<i>Carlia rimula</i>	32	1	NL
<i>Ctenotus militaris</i>	35	1	NL
<i>Ctenotus tanamiensis</i>	38	1	NL
<i>Ctenotus rosarium</i>	40	1	NL
<i>Carettochelys insculpta</i>	40	1	NL
<i>Pseudothecadactylus lindneri</i>	43	1	NL
<i>Pogona henrylawsoni</i>	45	1	NL
<i>Ctenophorus gibba</i>	45	1	NL
<i>Phyllurus nepthys</i>	46	1	NL
<i>Carlia coensis</i>	52	1	NL
<i>Coggeria naufragus</i>	55	1	NL
<i>Eulamprus leuraensis</i>	90	1	NL
<i>Gehyra catenata</i>	398	1	NL
<i>Egernia slateri</i>	32	2	NL
<i>Carlia zuma</i>	32	2	NL
<i>Ctenotus kurnbudj</i>	34	2	NL
<i>Anomalopus pluto</i>	35	2	NL

<i>Varanus semiremex</i>	36	2	NL
<i>Gehyra minuta</i>	37	2	NL
<i>Lerista ips</i>	37	2	NL
<i>Gehyra borroloola</i>	38	2	NL
<i>Ctenophorus rufescens</i>	42	2	NL
<i>Saltuarius wyberba</i>	42	2	NL
<i>Neelaps calonotus</i>	52	2	NL
<i>Oedura gemmata</i>	58	2	NL
<i>Diporiphora pindan</i>	60	2	NL
<i>Ophioscincus cooloolensis</i>	63	2	NL
<i>Gehyra pamela</i>	67	2	NL
<i>Aprasia aurita</i>	73	2	NL
<i>Cyclodomorphus praealtus</i>	73	2	NL
<i>Fordonia leucobalia</i>	74	2	NL
<i>Ctenotus coggeri</i>	91	2	NL
<i>Ctenotus rimacola</i>	96	2	NL
<i>Varanus spenceri</i>	98	2	NL
<i>Pseudonaja guttata</i>	204	2	NL
<i>Hemiergis quadrilineatum</i>	212	2	NL
<i>Lerista gascoynensis</i>	32	3	NL
<i>Lerista varia</i>	36	3	NL
<i>Diplodactylus savagei</i>	38	3	NL
<i>Christinus alexanderi</i>	39	3	NL
<i>Pseudonaja ingrami</i>	40	3	NL
<i>Demansia calodera</i>	40	3	NL
<i>Lerista zonulata</i>	40	3	NL
<i>Ctenotus capricorni</i>	41	3	NL
<i>Lerista baynesi</i>	41	3	NL
<i>Gehyra xenopus</i>	42	3	NL
<i>Lerista emmotti</i>	43	3	NL
<i>Pogona nullarbor</i>	44	3	NL
<i>Lerista greeri</i>	46	3	NL
<i>Cyrtodactylus lousiadensis</i>	49	3	NL
<i>Lerista borealis</i>	50	3	NL
<i>Calyptotis temporalis</i>	52	3	NL
<i>Carlia dogare</i>	59	3	NL
<i>Oxyuranus microlepidotus</i>	78	3	NL
<i>Delma haroldi</i>	83	3	NL
<i>Strophurus wellingtonae</i>	86	3	NL
<i>Ctenotus nasutus</i>	87	3	NL
<i>Lerista karlschmidt</i>	92	3	NL
<i>Denisonia maculata</i>	106	3	NL
<i>Ctenotus storri</i>	106	3	NL
<i>Aprasia parapulchella</i>	172	3	VU
<i>Ctenotus joanae</i>	200	3	NL
<i>Ctenotus vertebralis</i>	206	3	NL
<i>Furina diadema</i>	582	3	NL
<i>Delma impar</i>	603	3	VU
<i>Furina ornata</i>	689	3	NL
<i>Oedura gracilis</i>	34	4	NL

<i>Diporiphora lingua</i>	35	4	NL
<i>Ctenotus xenopleura</i>	35	4	NL
<i>Aprasia pseudopulchella</i>	36	4	VU
<i>Lampropholis caligula</i>	37	4	NL
<i>Ramphotyphlops toveli</i>	39	4	NL
<i>Ctenotus rufescens</i>	42	4	NL
<i>Rankinia parviceps</i>	43	4	NL
<i>Ctenotus delli</i>	46	4	NL
<i>Varanus baritji</i>	50	4	NL
<i>Chelodina steindachneri</i>	52	4	NL
<i>Cerberus rhynchops</i>	55	4	NL
<i>Eulamprus amplus</i>	57	4	NL
<i>Varanus indicus</i>	58	4	NL
<i>Ctenotus eutaenius</i>	59	4	NL
<i>Anomalopus swansoni</i>	60	4	NL
<i>Pletholax gracilis</i>	61	4	NL
<i>Ramphotyphlops guentheri</i>	65	4	NL
<i>Egernia kintorei</i>	65	4	NL
<i>Ctenotus serventyi</i>	65	4	NL
<i>Lerista kendricki</i>	69	4	NL
<i>Ctenotus septenarius</i>	70	4	NL
<i>Delma pax</i>	94	4	NL
<i>Pseudothecadactylus australis</i>	98	4	NL
<i>Ctenophorus rubens</i>	119	4	NL
<i>Ctenophorus vadrappa</i>	132	4	NL
<i>Cacophis churchilli</i>	38	5	NL
<i>Lerista petersoni</i>	42	5	NL
<i>Gehyra occidentalis</i>	42	5	NL
<i>Cyclodomorphus venustus</i>	42	5	NL
<i>Brachyurophis approximans</i>	44	5	NL
<i>Glaphyromorphus cracens</i>	45	5	NL
<i>Caimanops amphiboluroides</i>	46	5	NL
<i>Delma grayii</i>	53	5	NL
<i>Ctenotus tantillus</i>	54	5	NL
<i>Ramphotyphlops centralis</i>	61	5	NL
<i>Saproscincus hannahae</i>	67	5	NL
<i>Lerista gerrardii</i>	70	5	NL
<i>Ctenotus iapetus</i>	70	5	NL
<i>Lerista picturata</i>	70	5	NL
<i>Strophurus jeanae</i>	75	5	NL
<i>Neelaps bimaculatus</i>	76	5	NL
<i>Ramphotyphlops ammodytes</i>	76	5	NL
<i>Pseudemoia cryodroma</i>	90	5	NL
<i>Ctenotus greeri</i>	95	5	NL
<i>Ctenotus pulchellus</i>	101	5	NL
<i>Acanthophs pyrrhus</i>	117	5	NL
<i>Delma mollerii</i>	144	5	NL
<i>Menetia alanae</i>	179	5	NL

Non-passerine (marine birds removed)

Birds in general represent the major number of vertebrate records available in the ANHAT database. This is because of their high visibility and easy detection. The ANHAT database has 3803290 records for 287 species and subspecies of non-passerines. Two species of non-passerines are considered extinct and therefore excluded from analysis. These species are presented in **Table 29**.

Table 29 Non-passerine species considered extinct

Species	Common name	No. of records
<i>Dromaius ater</i>	King Island Emu	1
<i>Psephotus pulcherrimus</i>	Paradise Parrot	28

Thirty two species account for approximately 50% of the total species records in ANHAT. These species have over 30,000 records each, and, in the case of the Laughing Kookaburra (*Dacelo novaeguineae*), over 113250 records.

Table 30 Non-passerine species that account for approximately 50% of the total species records in ANHAT.

Species	No. Records	% total records
<i>Cacomantis flabelliformis</i>	34854	0.96
<i>Phalacrocorax sulcirostris</i>	37557	1.04
<i>Chroicocephalus novaehollandiae</i>	37603	1.04
<i>Tachybaptus novaehollandiae</i>	38191	1.06
<i>Phaps chalcoptera</i>	38544	1.07
<i>Fulica atra</i>	38767	1.07
<i>Barnardius zonarius</i>	38788	1.07
<i>Psephotus haematonotus</i>	40490	1.12
<i>Todiramphus sanctus</i>	41945	1.16
<i>Microcarbo melanoleucos</i>	42616	1.18
<i>Pelecanus conspicillatus</i>	43932	1.21
<i>Threskiornis spinicollis</i>	45616	1.26
<i>Falco berigora</i>	45939	1.27
<i>Haliastur sphenurus</i>	47770	1.32
<i>Aquila audax</i>	49738	1.37
<i>Platycercus eximius</i>	50640	1.40
<i>Merops ornatus</i>	52162	1.44
<i>Geopelia striata</i>	52576	1.45
<i>Cygnus atratus</i>	53652	1.48
<i>Threskiornis molucca</i>	53725	1.48
<i>Anas gracilis</i>	56834	1.57
<i>Trichoglossus haematodus</i>	58506	1.62
<i>Chenonetta jubata</i>	61759	1.71
<i>Falco cenchroides</i>	62294	1.72

<i>Cacatua galerita</i>	68724	1.90
<i>Platycercus elegans</i>	69114	1.91
<i>Ocyphaps lophotes</i>	87394	2.41
<i>Vanellus miles</i>	87430	2.42
<i>Egretta novaehollandiae</i>	88916	2.46
<i>Anas superciliosa</i>	94270	2.60
<i>Eolophus roseicapillus</i>	97176	2.69
<i>Dacelo novaeguineae</i>	113256	3.13
Total	1830778	50.59

Only three species of birds are represented by 30 or fewer individual record sites in the ANHAT database. None are listed as threatened.

Table 31 Non-passerine species with 30 or fewer individual site records in the ANHAT database.

Species	No. Records	% in Pas	Location	Veg type	Area (km ²)	EPBC status
<i>Leucocarbo atriceps</i>	4	0			400	NL
<i>Collocalia esculenta</i>	18	61.1	UnV		1600	NL
<i>Charadrius hiaticula</i>	26	7.7	UnV		2100	NL

Removal of extinct and poorly recorded species leaves 3564629 records in ANHAT for 282 species (and subspecies). The mean number of records per species for species with greater than 30 records was 14316, with the mean of 22.6 for the percent of records in PAs.

Only 12 species of non-passerines had 45% or greater of individual site records located within the NRS. Of those 12 species, two species are classified as threatened, including one species classified as critically endangered. The small number of species prevents a consideration of trends in this category, but it is noted that this is a very small number of species having “high” reservation compared to the other vertebrates. No species has all or even a very high percentage of its records within reserves.

Table 32 Non-passerine species with >45% of site records within PAs.

Species	No. Records	No. in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Ninox rufa</i>	422	200 (47.4%)	N	For	16100	NL
<i>Neophema chrysogaster</i>	845	404 (47.8%)	SE	For, He, SM, GrL	20000	CE
<i>Casuaris casuarius</i>	443	216 (48.7%)	NE	RF	16100	EN
<i>Tyto multipunctata</i>	168	84 (50.0%)	NE	For	5300	NL
<i>Cacomantis castaneiventris</i>	193	109 (56.5%)	NE	RF	6300	NL
<i>Geophaps smithii</i>	1986	1165 (58.7%)	NE	WL, Op	24900	NL
<i>Geoffroyus geoffroyi</i>	201	127 (63.2%)	NE	RF	3400	NL

<i>Podargus ocellatus</i>	696	456 (65.5%)	NE, E	RF	7400	NL
<i>Eclectus roratus</i>	237	178 (75.1%)	NE	RF	3700	NL
<i>Pezoporus wallicus</i>	2115	1607 (76.0%)	Co, E, SE, Tas	Wet, He, Sand, RE,	32900	NL
<i>Petrophassa rufipennis</i>	479	370 (77.2%)	NC	RG	9500	NL
<i>Ptilinopus cinctus</i>	283	223 (78.8%)	NC	WL, RE, For	7800	NL

Thirteen species had less than 10% of ANHAT records located within the NRS. Four of the 13 species are classified as threatened, including one endangered species. Again, the small number of species in this category provides little scope for identifying trends, but it is clear that a relatively large number of species in this group use woodlands, which is a group that has recently been viewed as of considerable concern for their long-term survival. All species have records from within the reserve system.

Table 33 Non-passerine species with <10% of ANHAT records located within PAs.

Species	No. Records	Inside NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Polytelis swainsonii</i>	2926	128 (4.4%)	SE	For, WL	70000	VU
<i>Psephotus chrysopterygius</i>	176	8 (4.5%)	NE	SaW	5400	EN
<i>Nettapus coromandelianus</i>	1451	77 (5.3%)	NE	WL	47300	NL
<i>Bubulcus ibis</i>	11861	827 (7.0%)	MW	GrL, WL	242300	NL
<i>Gallinula tenebrosa</i>	30388	2397 (7.9%)	E, SW	WL	404100	NL
<i>Pedionomus torquatus</i>	1541	123 (8.0%)	SE, C	GrL	27300	VU
<i>Rostratula benghalensis</i>	749	63 (8.4%)	E, NC	Ma		NL
<i>Polytelis alexandrae</i>	196	17 (8.7%)	CW	Mul, Sp, Ar	16100	VU
<i>Vanellus tricolor</i>	10770	1015 (9.4%)	E, SW, Tas	GrL, Op	454400	NL
<i>Elanus axillaris</i>	28580	2700 (9.4%)	MW	WL	674700	NL
<i>Cacatua tenuirostris</i>	8712	828 (9.5%)	E	WL	140800	NL
<i>Porzana pusilla</i>	1542	150 (9.7%)	MW	WL	74800	NL
<i>Cacatua pastinator</i>	314	31 (9.9%)	SW	WL	15300	NL

A total of 171 non-passerine species had records in more than 100 separate PAs. All species in this list had over a thousand records, with an average of 20256 records per species, reflecting the high visibility of common birds to the public in general. Only two species were listed as threatened.

Table 34 Non-passerine species recorded at more than 100 PAs.

Species	No. Records	No. Reserves	No. reserves >1000ha	EPBC status
<i>Phalacrocorax fuscescens</i>	2272	100	74	NL
<i>Porzana tabuensis</i>	1312	101	62	NL
<i>Irediparra gallinacea</i>	5303	101	73	NL
<i>Platycercus icterotis</i>	4494	102	66	NL
<i>Purpureicephalus spurius</i>	5190	105	65	NL
<i>Chrysococcyx minutillus</i>	1849	106	78	NL
<i>Ptilinopus superbus</i>	1536	109	80	NL
<i>Esacus neglectus</i>	2091	109	64	NL
<i>Polytelis anthopeplus</i>	3167	109	85	NL
<i>Stictonetta naevosa</i>	2383	112	57	NL
<i>Porzana fluminea</i>	2277	117	77	NL
<i>Ducula bicolour</i>	3897	117	76	NL
<i>Anseranas semipalmate</i>	11401	119	77	NL
<i>Botaurus poiciloptilus</i>	1668	126	82	NL
<i>Megapodius reinwardt</i>	3507	127	83	NL
<i>Ixobrychus flavicollis</i>	1839	128	98	NL
<i>Hamirostra melanosternon</i>	2938	128	115	NL
<i>Cladorhynchus leucocephalus</i>	2490	130	61	NL
<i>Charadrius bicinctus</i>	2890	132	80	NL
<i>Neophema pulchella</i>	3445	133	104	NL
<i>Dendrocygna eytoni</i>	6056	137	98	NL
<i>Cacatua leadbeateri</i>	6776	139	124	NL
<i>Neophema elegans</i>	3089	141	88	NL
<i>Thinornis rubricollis</i>	3855	146	110	NL
<i>Ardea striata</i>	4084	146	88	NL
<i>Pluvialis fulva</i>	3512	148	87	NL
<i>Oxyura australis</i>	5520	160	77	NL
<i>Platycercus caledonicus</i>	7501	160	98	NL
<i>Leipoa ocellate</i>	2687	163	130	VU
<i>Falco subniger</i>	4139	166	131	NL
<i>Egretta sacra</i>	3663	168	111	NL
<i>Cacatua tenuirostris</i>	8712	168	78	NL
<i>Ephippiorhynchus asiaticus</i>	10854	173	129	NL
<i>Dacelo leachii</i>	13756	173	141	NL
<i>Northiella haematogaster</i>	10487	174	122	NL
<i>Plegadis falcinellus</i>	7172	175	114	NL
<i>Bubulcus ibis</i>	11861	175	123	NL
<i>Turnix velox</i>	4587	178	157	NL
<i>Haliastur indus</i>	8666	192	109	NL
<i>Recurvirostra novaehollandiae</i>	5995	193	106	NL

<i>Lathamus discolor</i>	5187	195	125	EN
<i>Neophema chrysostoma</i>	4175	197	128	NL
<i>Gallirallus philippensis</i>	4670	198	134	NL
<i>Tyto tenebricosa</i>	3786	201	171	NL
<i>Ptilinopus magnificus</i>	5175	201	144	NL
<i>Ardeotis australis</i>	8158	201	184	NL
<i>Columba leucomela</i>	6349	206	149	NL
<i>Podiceps cristatus</i>	6448	209	110	NL
<i>Lophoictinia isura</i>	2903	210	181	NL
<i>Apus pacificus</i>	2526	212	169	NL
<i>Ptilinopus regina</i>	4026	219	146	NL
<i>Erythrogonyx cinctus</i>	7560	220	142	NL
<i>Eurostopodus argus</i>	3742	227	204	NL
<i>Aprosmictus erythropterus</i>	15470	230	192	NL
<i>Gallinula ventralis</i>	7543	234	152	NL
<i>Lopholaimus antarcticus</i>	5012	235	177	NL
<i>Chrysococcyx osculans</i>	3178	240	212	NL
<i>Geopelia cuneata</i>	12213	246	214	NL
<i>Grus rubicundus</i>	12274	252	156	NL
<i>Tyto novaehollandiae</i>	2569	253	217	NL
<i>Burhinus grallarius</i>	8747	260	204	NL
<i>Todiramphus pyrrhopygia</i>	11376	261	230	NL
<i>Ninox connivens</i>	4161	262	218	NL
<i>Aviceda subcristata</i>	6047	268	190	NL
<i>Psephotus varius</i>	12073	269	203	NL
<i>Malacorhynchus membranaceus</i>	11491	272	147	NL
<i>Ardea intermedia</i>	12122	273	186	NL
<i>Callocephalon fimbriatum</i>	12624	278	193	NL
<i>Circus assimilis</i>	7962	279	232	NL
<i>Pandion haliaetus</i>	8840	280	183	NL
<i>Chalcophaps indica</i>	5847	288	196	NL
<i>Vanellus tricolour</i>	10770	289	235	NL
<i>Eurostopodus mystacalis</i>	3686	291	237	NL
<i>Todiramphus macleayi</i>	13809	295	193	NL
<i>Alectura lathamii</i>	8836	307	218	NL
<i>Melopsittacus undulates</i>	17134	311	258	NL
<i>Coturnix pectoralis</i>	7949	317	235	NL
<i>Egretta garzetta</i>	12485	319	210	NL
<i>Trichoglossus chlorolepidotus</i>	19198	319	190	NL
<i>Accipiter novaehollandiae</i>	5846	323	238	NL
<i>Anas rhynchotis</i>	13282	326	141	NL
<i>Tyto alba</i>	7270	332	269	NL
<i>Glossopsitta porphyrocephala</i>	8706	334	195	NL
<i>Macropygia amboinensis</i>	12428	340	232	NL
<i>Cacatua sanguinea</i>	19910	341	247	NL
<i>Calyptorhynchus lathamii</i>	10543	343	261	NL
<i>Milvus migrans</i>	26762	343	272	NL
<i>Calyptorhynchus banksii</i>	18223	349	259	NL
<i>Leucosarcia melanoleuca</i>	10192	356	282	NL
<i>Phaps elegans</i>	5446	362	255	NL

<i>Ninox strenua</i>	6941	364	271	NL
<i>Scythrops novaehollandiae</i>	9917	369	269	NL
<i>Alcedo azurea</i>	11785	377	282	NL
<i>Glossopsitta concinna</i>	13868	377	213	NL
<i>Eudynamys scolopacea</i>	14945	378	262	NL
<i>Biziura lobata</i>	15103	381	199	NL
<i>Turnix varia</i>	4888	384	280	NL
<i>Nymphicus hollandicus</i>	21854	390	298	NL
<i>Glossopsitta pusilla</i>	10630	406	288	NL
<i>Charadrius ruficapillus</i>	14287	407	258	NL
<i>Centropus phasianinus</i>	19662	409	271	NL
<i>Cacomantis variolosus</i>	10168	410	306	NL
<i>Himantopus himantopus</i>	22448	420	236	NL
<i>Anhinga melanogaster</i>	21751	427	309	NL
<i>Platalea regia</i>	20911	428	231	NL
<i>Nycticorax caledonicus</i>	13108	429	304	NL
<i>Aythya australis</i>	23103	430	242	NL
<i>Gallinula tenebrosa</i>	30388	450	254	NL
<i>Anas castanea</i>	24435	465	235	NL
<i>Phalacrocorax varius</i>	19211	505	321	NL
<i>Platalea flavipes</i>	23539	505	285	NL
<i>Poliocephalus poliocephalus</i>	23541	509	279	NL
<i>Coturnix ypsilophora</i>	9902	511	393	NL
<i>Falco longipennis</i>	13851	512	370	NL
<i>Hirundapus caudacutus</i>	11126	513	371	NL
<i>Geopelia humeralis</i>	32636	520	327	NL
<i>Alisterus scapularis</i>	24696	522	375	NL
<i>Eurystomus orientalis</i>	21571	529	350	NL
<i>Porphyrio porphyrio</i>	32811	533	281	NL
<i>Circus approximans</i>	15938	534	292	NL
<i>Ardea alba</i>	32915	541	356	NL
<i>Platycercus adscitus</i>	29221	542	337	NL
<i>Psephotus haematonotus</i>	40490	542	265	NL
<i>Hieraaetus morphnoides</i>	14013	551	392	NL
<i>Elseyornis melanops</i>	27902	581	387	NL
<i>Elanus axillaris</i>	28580	585	391	NL
<i>Dromaius novaehollandiae</i>	23420	590	489	NL
<i>Tadorna tadornoides</i>	30193	591	260	NL
<i>Haliaeetus leucogaster</i>	19983	601	369	NL
<i>Accipiter cirrhocephalus</i>	10644	606	483	NL
<i>Fulica atra</i>	38767	607	324	NL
<i>Platycercus eximius</i>	50640	608	318	NL
<i>Falco peregrinus</i>	12198	632	451	NL
<i>Pelecanus conspicillatus</i>	43932	687	388	NL
<i>Phalacrocorax carbo</i>	31476	688	422	NL
<i>Threskiornis molucca</i>	53725	692	351	NL
<i>Calyptorhynchus funereus</i>	26142	693	434	NL
<i>Ardea pacifica</i>	34101	696	462	NL
<i>Tachybaptus novaehollandiae</i>	38191	698	434	NL
<i>Microcarbo melanoleucos</i>	42616	705	486	NL

<i>Phalacrocorax sulcirostris</i>	37557	707	433	NL
<i>Threskiornis spinicollis</i>	45616	734	411	NL
<i>Geopelia striata</i>	52576	751	488	NL
<i>Cuculus pallidus</i>	24002	774	552	NL
<i>Cygnus atratus</i>	53652	777	395	NL
<i>Trichoglossus haematodus</i>	58506	778	445	NL
<i>Chrysococcyx lucidus</i>	17410	797	543	NL
<i>Barnardius zonarius</i>	38788	806	555	NL
<i>Haliastur sphenurus</i>	47770	816	504	NL
<i>Anas gracilis</i>	56834	870	501	NL
<i>Aegotheles cristatus</i>	18372	885	674	NL
<i>Chrysococcyx basalis</i>	22074	898	630	NL
<i>Podargus strigoides</i>	24159	919	680	NL
<i>Chenonetta jubata</i>	61759	963	566	NL
<i>Accipiter fasciatus</i>	25873	978	681	NL
<i>Ocyphaps lophotes</i>	87394	978	583	NL
<i>Cacatua galerita</i>	68724	999	584	NL
<i>Merops ornatus</i>	52162	1000	652	NL
<i>Todiramphus sanctus</i>	41945	1029	653	NL
<i>Falco berigora</i>	45939	1043	727	NL
<i>Cacomantis flabelliformis</i>	34854	1046	692	NL
<i>Falco cenchroides</i>	62294	1078	738	NL
<i>Platycercus elegans</i>	69114	1114	611	NL
<i>Phaps chalcoptera</i>	38544	1116	732	NL
<i>Ninox novaeseelandiae</i>	33747	1126	830	NL
<i>Eolophus roseicapillus</i>	97176	1151	701	NL
<i>Vanellus miles</i>	87430	1178	646	NL
<i>Anas superciliosa</i>	94270	1249	682	NL
<i>Egretta novaehollandiae</i>	88916	1293	744	NL
<i>Aquila audax</i>	49738	1373	946	NL
<i>Dacelo novaeguineae</i>	113256	1468	796	NL

A total of seven species had records in five or fewer PAs (**Table 35**). One species is listed as endangered. Three species in this list had fewer than 100 individual site records, and no species had more than 500 site records.

Table 35 Non-passerine species recorded from five or fewer PAs.

Species	No. Records	No. reserves	EPBC Status
<i>Ardenia bulleri</i>	49	3	NL
<i>Petrophassa rufipennis</i>	479	3	NL
<i>Turnix olivii</i>	39	4	NL
<i>Psephotus chrysopterygius</i>	176	4	EN
<i>Ptilinopus cinctus</i>	283	4	NL
<i>Charadrius dubius</i>	64	5	NL
<i>Geoffroyus geoffroyi</i>	201	5	NL

Table 36 lists the seven species of non-passerines that have records in five or fewer PAs greater than 1000 hectares and directly reflects the results of **Table 35**.

Table 36 Non-passerine species recorded in five or fewer PAs greater than 1000 hectares.

Species	No. Records	No. Reserves >1000ha	EPBC status
<i>Ardenna bulleri</i>	49	1	NL
<i>Petrophassa rufipennis</i>	479	2	NL
<i>Turnix olivii</i>	39	3	NL
<i>Charadrius dubius</i>	64	4	NL
<i>Psephotus chrysopterygius</i>	176	4	EN
<i>Ptilinopus cinctus</i>	283	4	NL
<i>Geoffroyus geoffroyi</i>	201	5	NL

Passerines

Passerines, or the song or perching birds, are the most widely recognised and encountered group of vertebrates in Australia. The ANHAT database has 4970696 records for 321 species and subspecies of passerines. There are no extinct passerine species. Twenty-one passerine species account for almost 50% of the total species records in ANHAT (**Table 37**). These species have over 66000 records each, with the highly visible and widely distributed Australian Magpie (*Gymnorhina tibicen*) being the mostly highly recorded species with 177667 record sites.

Table 37 Passerine species that account for almost 50% of the total species records in ANHAT.

Species	No. Records	% total records
<i>Strepera graculina</i>	66000	1.74
<i>Pachycephala pectoralis</i>	66015	1.74
<i>Acanthiza chrysorrhoa</i>	66058	1.74
<i>Lichenostomus penicillatus</i>	67781	1.78
<i>Acanthiza pusilla</i>	70214	1.85
<i>Sericornis frontalis</i>	70430	1.85
<i>Cracticus torquatus</i>	71059	1.87
<i>Manorina melanocephala</i>	71091	1.87
<i>Anthochaera carunculata</i>	77365	2.03
<i>Rhipidura fuliginosa</i>	85792	2.26
<i>Pachycephala rufiventris</i>	88957	2.34
<i>Corvus coronoides</i>	89050	2.34
<i>Zosterops lateralis</i>	89787	2.36
<i>Pardalotus striatus</i>	94612	2.49
<i>Malurus cyaneus</i>	103747	2.73
<i>Hirundo neoxena</i>	107997	2.84
<i>Coracina novaehollandiae</i>	112681	2.96
<i>Colluricincla harmonica</i>	120510	3.17
<i>Grallina cyanoleuca</i>	142056	3.74
<i>Rhipidura leucophrys</i>	156110	4.10
<i>Gymnorhina tibicen</i>	177667	4.67
Total	1994979	52.47

Ten passerine species are represented by 30 or fewer record sites in the ANHAT database. None of these species are listed as threatened. The limited number of species does not allow trends to be identified in this group. However, several vagrants are present in the group and so are expected to be rarely recorded.

Table 38 Passerine species with 30 or fewer site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Anthus cervinus</i>	1	0.0	UR		100	NL
<i>Pitta moluccensis</i>	1	0.0	UR		400	NL
<i>Zosterops natalis</i>	2	0.0	Is	RF	300	NL
<i>Aplonis cantoroides</i>	3	0.0	UnV		100	NL
<i>Falcunculus leucogaster</i>	3	0.0	W	WL, Mal	100	NL
<i>Gerygone igata</i>	5	0.0	NZ		200	NL
<i>Arses lorealis</i>	12	75.0	NE	RF	700	NL
<i>Amytornis ballarae</i>	20	0.0	I	Sp, RH	1200	NL
<i>Acrocephalus orientalis</i>	24	16.7	UR	WL	1200	NL
<i>Cecropis daurica</i>	28	3.6	UnV		1700	NL

Removal of poorly recorded species leaves 4970597 records in ANHAT for 311 species (and subspecies). The mean number of records per species for species with greater than 30 records was 15983, with the mean of 28.9 for the percent of records in PAs.

Forty-seven species of passerines had 45% or greater of their individual record sites located within PAs. Five of these species are classified as threatened, including three species classified as endangered. Rainforest-dwelling species are well represented in group in line with the high reservation rates of this vegetation type. The species in this table generally come from eastern Australia and southern Australia. Very few species come from the western half of Australia.

Table 39 Passerine species with 45% or more of their record sites in PAs.

Species	No. Records	No. Records in PAs	% in PAs	Location	Veg type	Area (km ²)	EPBC status
					Sand, LS,		
<i>Origma solitaria</i>	2058	928	45.1	SE	RG	30800	NL
<i>Lichenostomus cratitius</i>	2248	1015	45.1	S	Mal, WL	76100	NL
<i>Pycnoptilus floccosus</i>	2810	1274	45.3	SE	WF	57100	NL
<i>Sericornis citreogularis</i>	4845	2290	47.3	E	WF	70800	NL
<i>Arses telescopthalmus</i>	304	144	47.4	NE	RF	5600	NL
<i>Lichenostomus ornatus</i>	11325	5396	47.6	S	Mal, WL	241600	NL
<i>Arses kaupi</i>	663	317	47.8	NE	RF	14700	NL
<i>Pitta erythrogaster</i>	89	43	48.3	NE	For	2700	NL
<i>Pachycephala inornata</i>	3050	1477	48.4	S	WL, Mal	92400	NL
<i>Drymodes brunneopygia</i>	2979	1465	49.2	S	Mal	102400	NL
<i>Dasyornis longirostris</i>	81	40	49.4	SW	He, CSw	3500	VU
<i>Ptiloris victoriae</i>	1287	655	50.9	NE	RF	15200	NL
<i>Machaerirhynchus flaviventer</i>	1110	570	51.3	NE	RF	20500	NL
<i>Amytornis housei</i>	83	43	51.8	NW	SP	3700	NL
<i>Monarcha frater</i>	107	56	52.3	NE	RF	3800	NL
<i>Pitta iris</i>	783	412	52.6	N	For	22500	NL
				SE, SW, TAS			
<i>Stipiturus malachurus</i>	6268	3300	52.6	TAS	He, Wet	104500	NL

<i>Zosterops citrinellus</i>	66	35	53.0	NE	WL, For	5700	NL
<i>Amytornis purnelli</i>	853	458	53.7	I	GrL	23900	NL
<i>Colluricincla woodwardi</i>	808	439	54.3	N	Sand, Cl	29500	NL
<i>Lichenostomus frenatus</i>	1032	567	54.9	NE	RF	12500	NL
<i>Dasyornis brachypterus</i>	1389	774	55.7	SE	He, CSw	9500	EN
<i>Calamanthus cautus</i>	2321	1298	55.9	S	Mal	82300	NL
<i>Poecilodryas albispecularis</i>	1362	770	56.5	NE	RF	11900	NL
<i>Scenopoeetes dentirostris</i>	627	356	56.8	NE	HRF	10100	NL
<i>Acanthiza katherina</i>	567	325	57.3	NE	RF	9000	NL
<i>Ptiloris paradiseus</i>	1797	1036	57.6	E	RF	31100	NL
<i>Colluricincla boweri</i>	744	430	57.8	NE	RF	10800	NL
<i>Cinclosoma castanotus</i>	2339	1373	58.7	S	Mal, Mu	92300	NL
<i>Amytornis striatus</i>	1121	666	59.4	NC	GrL, Mal	41700	NL
<i>Tregellasia leucops</i>	255	153	60.0	NE	RF	3500	NL
				SW,	Mal, He,		
<i>Psophodes nigrogularis</i>	418	252	60.3	SC	Th	16700	VU/EN
<i>Menura alberti</i>	1751	1064	60.8	E	RF	10300	NL
<i>Drymodes superciliaris</i>	176	107	60.8	NE	For	4000	NL
<i>Atrichornis clamosus</i>	126	77	61.1	SW	CV	3300	VU
<i>Orthonyx spaldingii</i>	807	498	61.7	NE	RF	14100	NL
<i>Microeca griseocephala</i>	125	78	62.4	NE	RF	3200	NL
<i>Sericornis keri</i>	344	216	62.8	NE	HRF	5900	NL
<i>Prionodura newtoniana</i>	338	219	64.8	NE	HRF	7200	NL
<i>Meliphaga albilineata</i>	491	340	69.2	NW	Gor	13200	NL
<i>Erythrura trichroa</i>	140	99	70.7	NE	RF	2600	NL
<i>Pachycephala rufogularis</i>	422	300	71.1	SE	Mal	17700	NL
<i>Oreoscopus gutturalis</i>	524	374	71.4	NE	RF	8500	NL
<i>Timeliopsis fallax</i>	103	79	76.7	NE	RF	2400	NL
<i>Stipiturus mallee</i>	142	111	78.2	SE	Mal	4900	EN
<i>Amytornis woodwardi</i>	101	82	81.2	N	Sp	3400	NL
<i>Atrichornis rufescens</i>	756	640	84.7	SE	For	9700	NL

Thirteen species had less than 10% of ANHAT records located within the NRS. One of the 13 species is classified as endangered. The species in this table are scattered across Australia. There is also no obvious habitat type that dominates the preference of this group.

Table 40 Passerine species with <10% of ANHAT records located within the NRS.

Species	No. Records	No. in PAs	Location	Veg type	Area (km ²)	EPBC status
<i>Amytornis barbatus</i>	95	1 (1.0%)	C	GrL	4300	NL
<i>Aphelocephala pectoralis</i>	102	4 (3.9%)	ICS	Ar	5900	NL
<i>Gerygone tenebrosa</i>	232	10 (4.3%)	NW	Man, Gor	10800	NL
<i>Pachycephala lanioides</i>	346	16 (4.6%)	N	Man	15500	NL
<i>Hirundo rustica</i>	226	11 (4.9%)	N	Op, Ur	10300	NL
<i>Amytornis dorotheae</i>	77	4 (5.2%)	NC	SP	3000	NL

<i>Neochmia modesta</i>	2069	146 (7.1%)	E	WL	106000	NL
<i>Amytornis textilis</i>	260	20 (7.7%)	SC, W	SB, GrL	26100	NL
<i>Erythrura gouldiae</i>	1911	152 (7.9%)	N	WL, GrL	46200	EN
<i>Mirafra javanica</i>	7123	615 (8.6%)	E, N	GrL	332800	NL
<i>Acrocephalus australis</i>	17878	1601 (9.0%)	MW	WL	365000	NL
<i>Coracina maxima</i>	4177	386 (9.2%)	I	WL	246800	NL
<i>Manorina melanocephala</i>	71091	6919 (9.7%)	E, Tas	WL	752100	NL

A total of 167 passerine species had records in more than 100 separate PAs. All species had over a thousand records, with an average of 28471 records per species. None of these species are listed as threatened.

Table 41 Passerine species recorded at more than 100 PAs.

Species	No. Records	No. PAs	No. Pas >1000ha	EPBC status
<i>Epthianura aurifrons</i>	3892	102	96	NL
<i>Orthonyx temminckii</i>	2794	106	87	NL
<i>Nectarinia jugularis</i>	4470	107	65	NL
<i>Cinclosoma castanotus</i>	2339	108	93	NL
<i>Chlamydera maculata</i>	4597	109	97	NL
<i>Acanthiza ewingii</i>	3692	111	83	NL
<i>Acanthorhynchus superciliosus</i>	5327	112	76	NL
<i>Certhionyx variegatus</i>	2458	114	103	NL
<i>Eopsaltria griseogularis</i>	2387	115	91	NL
<i>Strepera fuliginosa</i>	4410	116	85	NL
<i>Monarcha leucotis</i>	1755	117	81	NL
<i>Symposiachrus trivirgatus</i>	2321	120	89	NL
<i>Pardalotus rubricatus</i>	5574	123	111	NL
<i>Sericulus chrysocephalus</i>	3697	124	88	NL
<i>Coracina maxima</i>	4177	127	114	NL
<i>Lichenostomus plumulus</i>	3839	128	113	NL
<i>Calamanthus fuliginosus</i>	3480	136	112	NL
<i>Lichenostomus cratitius</i>	2248	137	99	NL
<i>Pachycephala inornata</i>	3050	137	103	NL
<i>Calamanthus pyrrhopygius</i>	1945	142	115	NL
<i>Lichenostomus flavicollis</i>	7136	144	90	NL
<i>Pyrrholaemus brunneus</i>	2644	145	128	NL
<i>Calamanthus cautus</i>	2321	149	113	NL
<i>Megalurus timoriensis</i>	4263	150	100	NL
<i>Lonchura castaneothorax</i>	5902	158	110	NL
<i>Myzomela obscura</i>	7691	158	109	NL
<i>Petroica rodinogaster</i>	3011	158	116	NL
<i>Tregellasia capito</i>	3783	159	118	NL
<i>Stagonopleura bella</i>	3114	165	117	NL

<i>Mirafra javanica</i>	7123	174	139	NL
<i>Drymodes brunneopygia</i>	2979	181	126	NL
<i>Manorina melanophrys</i>	11083	185	129	NL
<i>Pyrrholaemus sagittatus</i>	7744	187	128	NL
<i>Sericornis citreogularis</i>	4845	187	151	NL
<i>Artamus minor</i>	6516	195	176	NL
<i>Epthianura tricolor</i>	8001	195	176	NL
<i>Struthidea cinerea</i>	17379	199	164	NL
<i>Malurus leucopterus</i>	13273	201	176	NL
<i>Cheramoeca leucosternus</i>	7598	210	182	NL
<i>Pitta versicolor</i>	3832	212	149	NL
<i>Corvus bennetti</i>	9673	214	196	NL
<i>Climacteris erythrops</i>	4475	216	181	NL
<i>Ailuroedus crassirostris</i>	6806	219	169	NL
<i>Stipiturus malachurus</i>	6268	220	160	NL
<i>Pachycephala olivacea</i>	5637	225	171	NL
<i>Alauda arvensis</i>	10374	230	122	NL
<i>Phylidonyris nigra</i>	10037	237	165	NL
<i>Stagonopleura guttata</i>	10098	245	154	NL
<i>Corvus tasmanicus</i>	8739	253	161	NL
<i>Megalurus gramineus</i>	9149	255	158	NL
<i>Lichenostomus ornatus</i>	11325	270	179	NL
<i>Phylidonyris albifrons</i>	8666	273	207	NL
<i>Colluricincla megarhyncha</i>	10131	274	180	NL
<i>Lichenostomus melanops</i>	16790	276	196	NL
<i>Menura novaehollandiae</i>	13145	280	226	NL
<i>Plectorhyncha lanceolata</i>	14696	287	212	NL
<i>Sericornis magnirostris</i>	8915	290	215	NL
<i>Gliciphila melanops</i>	5501	292	221	NL
<i>Melithreptus gularis</i>	8149	292	198	NL
<i>Petroica boodang</i>	5804	296	191	NL
<i>Cinclosoma punctatum</i>	4684	309	258	NL
<i>Lichenostomus fuscus</i>	13863	312	208	NL
<i>Lalage leucomela</i>	11625	314	206	NL
<i>Cincloramphus cruralis</i>	12356	322	247	NL
<i>Acrocephalus australis</i>	17878	324	213	NL
<i>Aphelocephala leucopsis</i>	16467	325	242	NL
<i>Malurus splendens</i>	14365	333	233	NL
<i>Melithreptus albogularis</i>	20650	333	229	NL
<i>Taeniopygia guttata</i>	34652	333	271	NL
<i>Gerygone mouki</i>	11248	346	242	NL
<i>Zoothera lunulata</i>	6687	346	251	NL
<i>Malurus melanocephalus</i>	22418	355	241	NL
<i>Sphecotheres vieilloti</i>	20955	361	220	NL
<i>Cisticola exilis</i>	17984	369	219	NL
<i>Ptilonorhynchus violaceus</i>	17587	371	282	NL
<i>Artamus personatus</i>	9312	372	302	NL
<i>Entomyzon cyanotis</i>	25552	372	279	NL
<i>Monarcha melanopsis</i>	9483	372	260	NL
<i>Phylidonyris pyrrhoptera</i>	15614	372	234	NL

<i>Petroica rosea</i>	9205	373	269	NL
<i>Artamus leucorhynchus</i>	16247	381	267	NL
<i>Myiagra cyanoleuca</i>	6391	382	258	NL
<i>Oreoica gutturalis</i>	20700	385	313	NL
<i>Acanthiza uropygialis</i>	17656	389	278	NL
<i>Artamus cinereus</i>	31963	401	331	NL
<i>Gerygone fusca</i>	15446	408	267	NL
<i>Petroica phoenicea</i>	15616	410	275	NL
<i>Pomatostomus temporalis</i>	27370	410	324	NL
<i>Dicrurus bracteatus</i>	20583	411	251	NL
<i>Myzomela sanguinolenta</i>	16210	414	274	NL
<i>Taeniopygia bichenovii</i>	27131	418	302	NL
<i>Artamus superciliosus</i>	12171	445	318	NL
<i>Philemon citreogularis</i>	26454	455	329	NL
<i>Cincloramphus mathewsi</i>	17992	456	329	NL
<i>Coracina tenuirostris</i>	9681	461	334	NL
<i>Coracina papuensis</i>	18133	466	342	NL
<i>Epthianura albifrons</i>	17004	471	312	NL
<i>Melanodryas cucullata</i>	16563	477	354	NL
<i>Manorina flavigula</i>	37931	488	393	NL
<i>Petroica multicolor</i>	19160	507	319	NL
<i>Anthochaera chrysoptera</i>	27735	508	298	NL
<i>Petrochelidon ariel</i>	24851	527	384	NL
<i>Psophodes olivaceus</i>	35974	532	345	NL
<i>Falcunculus frontatus</i>	17332	546	360	NL
<i>Gerygone olivacea</i>	19396	547	361	NL
<i>Meliphaga lewinii</i>	39646	556	356	NL
<i>Acanthiza apicalis</i>	18109	557	392	NL
<i>Rhipidura rufifrons</i>	17975	562	372	NL
<i>Pomatostomus superciliosus</i>	24648	564	356	NL
<i>Corvus orru</i>	48538	569	384	NL
<i>Petroica goodenovii</i>	27390	588	404	NL
<i>Corvus mellori</i>	29370	601	298	NL
<i>Acanthiza nana</i>	27086	614	381	NL
<i>Acanthagenys rufogularis</i>	38173	615	427	NL
<i>Lalage tricolor</i>	23695	629	468	NL
<i>Acanthiza reguloides</i>	20202	630	399	NL
<i>Rhipidura albiscapa</i>	20508	661	425	NL
<i>Myiagra rubecula</i>	20549	682	462	NL
<i>Corcorax melanorhamphos</i>	33685	694	414	NL
<i>Lichmera indistincta</i>	48244	701	459	NL
<i>Climacteris picumnus</i>	30135	704	450	NL
<i>Lichenostomus virescens</i>	45158	712	454	NL
<i>Philemon corniculatus</i>	39457	727	480	NL
<i>Lichenostomus penicillatus</i>	67781	730	379	NL
<i>Cracticus nigrogularis</i>	62161	733	523	NL
<i>Myiagra inquieta</i>	34650	755	510	NL
<i>Melithreptus lunatus</i>	31042	762	475	NL
<i>Oriolus sagittatus</i>	28561	774	502	NL
<i>Malurus lamberti</i>	36359	781	554	NL

<i>Strepera versicolor</i>	26003	791	472	NL
<i>Acanthiza lineata</i>	39424	795	461	NL
<i>Microeca fascians</i>	35467	797	574	NL
<i>Melithreptus brevirostris</i>	26894	807	502	NL
<i>Lichenostomus leucotis</i>	32381	811	511	NL
<i>Manorina melanocephala</i>	71091	814	447	NL
<i>Neochmia temporalis</i>	53443	818	467	NL
<i>Cormobates leucophaeus</i>	46935	820	489	NL
<i>Phylidonyris novaehollandiae</i>	51437	821	448	NL
<i>Acanthorhynchus tenuirostris</i>	52543	860	516	NL
<i>Daphoenositta chrysoptera</i>	24023	907	630	NL
<i>Artamus cyanopterus</i>	32212	920	595	NL
<i>Strepera graculina</i>	66000	927	570	NL
<i>Eopsaltria australis</i>	65430	943	574	NL
<i>Anthus australis</i>	49612	945	700	NL
<i>Lichenostomus chrysops</i>	59178	957	539	NL
<i>Smicrorhis brevirostris</i>	51821	1097	697	NL
<i>Petrochelidon nigricans</i>	41282	1124	728	NL
<i>Acanthiza pusilla</i>	70214	1133	620	NL
<i>Acanthiza chrysorrhoa</i>	66058	1167	670	NL
<i>Anthochaera carunculata</i>	77365	1190	634	NL
<i>Dicaeum hirundinaceum</i>	55482	1191	764	NL
<i>Cracticus torquatus</i>	71059	1264	822	NL
<i>Malurus cyaneus</i>	103747	1281	640	NL
<i>Sericornis frontalis</i>	70430	1306	796	NL
<i>Corvus coronoides</i>	89050	1362	783	NL
<i>Pachycephala pectoralis</i>	66015	1374	819	NL
<i>Grallina cyanoleuca</i>	142056	1398	815	NL
<i>Pardalotus punctatus</i>	59588	1400	877	NL
<i>Hirundo neoxena</i>	107997	1459	828	NL
<i>Pachycephala rufiventris</i>	88957	1476	910	NL
<i>Rhipidura fuliginosa</i>	85792	1505	910	NL
<i>Zosterops lateralis</i>	89787	1513	864	NL
<i>Pardalotus striatus</i>	94612	1650	972	NL
<i>Rhipidura leucophrys</i>	156110	1668	961	NL
<i>Coracina novaehollandiae</i>	112681	1724	1050	NL
<i>Gymnorhina tibicen</i>	177667	1958	1007	NL
<i>Colluricincla harmonica</i>	120510	1976	1121	NL

A total of 14 species had records in five or fewer PAs (**Table 42**). One species is listed as threatened. The majority of species in this list had fewer than 100 individual site records, and no species had more than 500 site records. The genus *Amytornis* had four representatives. These are the grass wrens that inhabit grasslands and shrublands of drier parts of Australia. Such areas are generally not well reserved, which reflects the results for the grass wrens.

Table 42 Passerine species recorded from five or fewer PAs.

Species	No. Records	No. PAs	EPBC status
<i>Amytornis barbatus</i>	95	1	NL
<i>Lichenostomus hindwoodi</i>	307	1	NL
<i>Falcunculus whitei</i>	36	2	NL
<i>Anthochaera lunulata</i>	64	2	NL
<i>Amytornis dorotheae</i>	77	2	NL
<i>Amytornis housei</i>	83	3	NL
<i>Amytornis woodwardi</i>	101	3	NL
<i>Aphelocephala pectoralis</i>	102	3	NL
<i>Motacilla cinerea</i>	34	4	NL
<i>Pitta erythrogaster</i>	89	4	NL
<i>Dasyornis longirostris</i>	81	5	VU
<i>Chlamydera cerviniventris</i>	209	5	NL
<i>Tregellasia leucops</i>	255	5	NL
<i>Meliphaga albilineata</i>	491	5	NL

Eighteen species of passerines had records in five or fewer PAs greater than 1000 hectares, including one threatened species (**Table 43**). All occurred in at least one PA greater than 1000 ha in size.

Table 43 Passerine species recorded in five or fewer PAs greater than 1000 hectares.

Species	No. Records	No. PAs >1000ha	EPBC status
<i>Amytornis barbatus</i>	95	1	NL
<i>Lichenostomus hindwoodi</i>	307	1	NL
<i>Falcunculus whitei</i>	36	2	NL
<i>Anthochaera lunulata</i>	64	2	NL
<i>Amytornis dorotheae</i>	77	2	NL
<i>Aphelocephala pectoralis</i>	102	2	NL
<i>Motacilla cinerea</i>	34	3	NL
<i>Zosterops citrinellus</i>	66	3	NL
<i>Amytornis housei</i>	83	3	NL
<i>Pitta erythrogaster</i>	89	3	NL
<i>Amytornis woodwardi</i>	101	3	NL
<i>Monarcha frater</i>	107	4	NL
<i>Dasyornis longirostris</i>	81	5	VU
<i>Chlamydera cerviniventris</i>	209	5	NL
<i>Hirundo rustica</i>	226	5	NL
<i>Tregellasia leucops</i>	255	5	NL
<i>Phonygammus keraudrenii</i>	378	5	NL
<i>Meliphaga albilineata</i>	491	5	NL

Dragonflies and Damselflies (Odonata)

The ANHAT database has 9751 records for 283 species and subspecies of dragonflies and damselflies. Thirty-two species account for approximately 50% of the total species records in ANHAT. These species have over 80 records each, and, in the case of the *Austroargiolestes icteromelas*, over 400 records.

Table 44 Dragonfly and damselfly species that account for approximately 50% of the total species records in ANHAT.

Species	No. Records	% total records
<i>Austroargiolestes aureus</i>	85	0.87
<i>Austroagrion watsoni</i>	87	0.89
<i>Austrolestes annulosus</i>	88	0.90
<i>Austroagrion exclamationis</i>	89	0.91
<i>Pseudagrion aureofrons</i>	90	0.92
<i>Synthemis eustalacta</i>	94	0.96
<i>Hemicordulia intermedia</i>	96	0.98
<i>Ceriagrion aeruginosum</i>	96	0.98
<i>Austrolestes analis</i>	102	1.05
<i>Austroaeschna pulchra</i>	104	1.07
<i>Adversaeschna brevistyla</i>	109	1.12
<i>Hemigomphus heteroclytus</i>	114	1.17
<i>Archiargiolestes pusillus</i>	119	1.22
<i>Austrolestes cingulatus</i>	120	1.23
<i>Diphlebia euphoeoides</i>	127	1.30
<i>Choristhemis flavoterminalata</i>	132	1.35
<i>Agriocnemis pygmaea</i>	135	1.38
<i>Nososticta solitaria</i>	149	1.53
<i>Austrolestes psyche</i>	150	1.54
<i>Argiocnemis rubescens</i>	153	1.57
<i>Pseudagrion ignifer</i>	155	1.59
<i>Xanthagrion erythroneurum</i>	157	1.61
<i>Austrolestes leda</i>	166	1.70
<i>Hemicordulia australiae</i>	169	1.73
<i>Petalura gigantea</i>	169	1.73
<i>Synlestes weyersii</i>	182	1.87
<i>Hemicordulia tau</i>	182	1.87
<i>Hemianax papuensis</i>	204	2.09
<i>Pseudagrion microcephalum</i>	227	2.33
<i>Ischnura aurora</i>	260	2.67
<i>Ischnura heterosticta</i>	353	3.62
<i>Austroargiolestes icteromelas</i>	445	4.56
Total	4908	50.31

One hundred and fifteen species are represented by 10 or fewer individual site records in the ANHAT database. None of these species are listed as threatened. Given the limited number of records available for most species, this would appear likely to change if the species were to be assessed for listing under the EPBC Act. By their nature, this group of invertebrates are relatively dependent on wetlands and so this comes out as a common factor linking species in this table. However, a number of species are also associated with rainforest environments where their wetlands are located. Additionally, there are several species from montane areas on this list. As expected, there are very few species that are present within more inland and so arid areas as water supplies are less favourable for this group. The majority of species in this category are from the northern half of Australia.

Table 45 Dragonfly and damselfly species with 10 or fewer individual site records in the ANHAT database.

Species	No. Records	% in PAs	Location	Veg type	Area (km ²)	EPBC status
<i>Agyrtacantha dirupta</i>	1	100.0	NE		100	NL
<i>Anax georgius</i>	1	100.0	NW	Wet	100	NL
<i>Austrocordulia territoria</i>	1	100.0	CN	Wet	100	NL
<i>Choristhemis olivei</i>	1	100.0	NE		100	NL
<i>Cordulephya divergens</i>	1	100.0	SE	Wet	100	NL
<i>Eurysticta reevesi</i>	1	100.0	NE	Wet	100	NL
<i>Eusynthemis barbarae</i>	1	100.0	NE	RF Wet	100	NL
<i>Hemigomphus atratus</i>	1	100.0	NE	RF Wet	100	NL
<i>Lathrocordulia garrisoni</i>	1	100.0	NE	RF Wet	100	NL
<i>Neosticta silvarum</i>	1	100.0	NE	RF Wet	200	NL
<i>Petalura pulcherrima</i>	1	100.0	NE	RF Wet	200	NL
<i>Acanthaeschna victoria</i>	1	0.0	E	Wet	100	NL
<i>Agrionoptera insignis allogenae</i>	1	0.0	CN, NE, E	Wet	100	NL
<i>Antipodogomphus dentosus</i>	1	0.0	CN	Wet	100	NL
<i>Austroargiolestes icteromelas nigrolabiat</i>	1	0.0	NE	Wet	200	NL
<i>Austrogomphus angelorum</i>	1	0.0	E, SE	Wet	100	NL
<i>Eusynthemis ursula</i>	1	0.0	SE	Wet > 980m	100	NL
<i>Micromidia rodericki</i>	1	0.0	NE	RF Wet	100	NL
<i>Potamarcha congener</i>	1	0.0	CN, NE	Wet	200	NL
<i>Raphismia bispina</i>	1	0.0	NE	Man, Wet	100	NL
<i>Rhodothemis lieftincki</i>	1	0.0	W, CN, NE, E	Wet	500	NL
<i>Zyxomma petiolatum</i>	1	0.0	CN, NE	Wet	200	NL
<i>Archaeosynthemis spiniger</i>	2	100.0	SW	Wet	100	NL
<i>Austroaeschna christine</i>	2	50.0	NE	Mon, RF, Wet	200	NL
<i>Austroaeschna eungella</i>	2	50.0	NE	Mon, RF, Wet	200	NL
<i>Austrophlebia subcostalis</i>	2	50.0	NE	RF Wet	200	NL
<i>Eusynthemis tenera</i>	2	50.0	NE	RF Wet	200	NL
<i>Eusynthemis ursa</i>	2	100.0	SE		200	NL
<i>Hemicordulia kalliste</i>	2	50.0	CN, NE		200	NL
<i>Lathrocordulia metallica</i>	2	50.0	SW	Wet	300	NL
<i>Macromia viridescens</i>	2	100.0	NE	Wet	300	NL
<i>Odontogomphus donnellyi</i>	2	100.0	NE	RF Wet	200	NL

<i>Telephlebia undia</i>	2	100.0	IE	Wet	200	NL
<i>Austroaeschna speciosa</i>	2	0.0	NE	Wet	200	NL
<i>Austrogomphus doddi</i>	2	0.0	NE	Wet	300	NL
<i>Diplacodes melanopsis</i>	2	0.0	E, SE	Wet	200	NL
<i>Gynacantha kirbyi</i>	2	0.0	NE		300	NL
<i>Ischnura heterosticta tasmanica</i>	2	0.0	TAS	Wet	200	NL
<i>Nannophya paulsoni</i>	2	0.0	SE	Wet	200	NL
<i>Nososticta taracumbi</i>	2	0.0	CN	Wet	600	NL
<i>Orthetrum sabina</i>	2	0.0			1900	NL
<i>Petalura litorea</i>	2	0.0	E	Wet	300	NL
<i>Tetrathemis irregularis</i>						
<i>cladophila</i>	2	0.0	NE	RF Wet	100	NL
<i>Tramea stenoloba</i>	2	0.0	W, C, NE, E	Wet		NL
<i>Anaciaeschna jaspidea</i>	3	33.3	CN, NE, E	Wet	400	NL
<i>Austroargiolestes elke</i>	3	33.3	NE	RF Wet	200	NL
<i>Austropetalia tonyana</i>	3	66.7	SE	Wet	300	NL
<i>Austrosticta soror</i>	3	33.3	NW	Wet	300	NL
<i>Griseargiolestes bucki</i>	3	33.3	E	Wet	200	NL
<i>Hemigomphus cooloola</i>	3	100.0	E	Wet	200	NL
<i>Zephyrogomphus longipositor</i>	3	66.7	NE	RF Wet	300	NL
<i>Episynlestes intermedius</i>	3	0.0	NE	Wet	200	NL
<i>Eurysticta kununurra</i>	3	0.0	CN	Wet	300	NL
<i>Orthetrum migratum</i>	3	0.0	W, C, E, NE	Wet	1500	NL
<i>Telephlebia tryoni</i>	3	0.0	E	RF Wet	400	NL
<i>Zyxomma elgneri</i>	3	0.0	W, CN, NE, E	Wet	300	NL
<i>Archaeophya adamsi</i>	4	25.0	E, SE	Wet	400	NL
<i>Austrocordulia leonardi</i>	4	25.0	SE	Wet	400	NL
<i>Austroepigomphus turneri</i>	4	25.0	CN, NE	Wet	500	NL
<i>Hemicordulia koomina</i>	4	50.0	W	Wet	300	NL
<i>Nannophya australis</i>	4	50.0	NE, E, SE	Wet	300	NL
<i>Tonyosynthemis ofarrelli</i>	4	75.0	E	Wet	400	NL
<i>Antipodogomphus edentulus</i>	4	0.0	NE	Wet	300	NL
<i>Crocothemis nigrifrons</i>	4	0.0	Co MAW	Wet	1300	NL
<i>Aethriamanta nymphaeae</i>	5	40.0	CN, E, NE	Wet	800	NL
<i>Antipodogomphus hodgkini</i>	5	80.0	W	Wet	300	NL
<i>Hemicordulia flava</i>	5	100.0	CI, WI	Wet	500	NL
<i>Hemigomphus magela</i>	5	80.0	CN		400	NL
<i>Lestoidea barbarae</i>	5	100.0	NE	RF Wet	300	NL
<i>Spinaeschna watsoni</i>	5	60.0	NE	Wet	500	NL
<i>Apocordulia macrops</i>	5	0.0	SE		400	NL
<i>Cordulephya bidens</i>	5	0.0	NE	RF Wet	300	NL
<i>Tramea eurybia</i>	5	0.0	E	Wet		NL
<i>Tonyosynthemis claviculata</i>	5	20.0	NE	Wet	400	NL
<i>Aethriamanta nymphaeae</i>	5	40.0	CN, E, NE	Wet	800	NL
<i>Antipodogomphus hodgkini</i>	5	80.0	W	Wet	300	NL
<i>Apocordulia macrops</i>	5	0.0	SE		400	NL
<i>Cordulephya bidens</i>	5	0.0	NE	RF Wet	300	NL
<i>Hemicordulia flava</i>	5	100.0	CI, WI	Wet	500	NL
<i>Hemigomphus magela</i>	5	80.0	CN		400	NL
<i>Lestoidea barbarae</i>	5	100.0	NE	RF Wet	300	NL

<i>Spinaeschna watsoni</i>	5	60.0	NE	Wet	500	NL
<i>Tonyosynthemis claviculata</i>	5	20.0	NE	Wet	400	NL
<i>Tramea eurybia</i>	5	0.0	E	Wet		NL
<i>Austroargiolestes alpinus</i>	6	33.3	E	Wet	400	NL
<i>Caliagrion billinghami</i>	6	0.0	E, SE	Wet	300	NL
<i>Diphlebia coerulescens</i>	6	16.7	NE, E	Wet	400	NL
<i>Eurysticta coolawanyah</i>	6	50.0	W	Wet	400	NL
<i>Eusynthemis deniseae</i>	6	100.0	EI	Wet	100	NL
<i>Ictinogomphus paulini</i>	6	66.7	NE	Wet	300	NL
<i>Micromidia convergens</i>	6	50.0	E	Wet	300	NL
<i>Petalura hesperia</i>	6	0.0	SW	Wet	600	NL
<i>Synlestes weyersii tillyardi</i>	6	66.7	E	Mon Wet	500	NL
<i>Archipetalia auriculata</i>	7	85.7	TAS	Wet	1300	NL
<i>Armogomphus armiger</i>	7	57.1	SW	Wet	600	NL
<i>Lithosticta macra</i>	7	28.6	CN	Wet	400	NL
<i>Antipodophlebia asthenes</i>	8	25.0	E	Wet	800	NL
<i>Archaeophya magnifica</i>	8	12.5	NE	RF Wet	700	NL
<i>Austroaeschna atrata</i>	8	75.0	SE	Mon, Wet	900	NL
<i>Austrophya mystica</i>	8	0.0	NE	RF Wet	700	NL
<i>Cordulephya montana</i>	8	75.0	SE	Wet	600	NL
<i>Eurysticta coomalie</i>	8	25.0	CN	Wet	700	NL
<i>Petalura ingentissima</i>	8	12.5	NE	RF Wet	600	NL
<i>Pseudocordulia circularis</i>	8	25.0	NE	RF Wet	500	NL
<i>Zephyrogomphus lateralis</i>	8	12.5	SW	Wet	900	NL
<i>Antipodogomphus acolythus</i>	9	0.0	NE, E, SE	Wet	900	NL
<i>Antipodogomphus neophytus</i>	9	22.2	NW, CN, NE	Wet	800	NL
<i>Austroaeschna flavomaculata</i>	9	100.0	SE	RF Wet	800	NL
<i>Hemicordulia superba</i>	9	44.4	E	Wet	800	NL
<i>Hemigomphus theischingeri</i>	9	44.4	NE	RF Wet	500	NL
<i>Pseudocordulia elliptica</i>	9	66.7	NE	RF Wet	600	NL
<i>Tholymis tillarga</i>	9	33.3	CN, NE, E	Wet	1600	NL
<i>Aethriamanta circumsignata</i>	10	40.0	N, E	Wet	1000	NL
<i>Austroaeschna muelleri</i>	10	100.0	E	Wet	200	NL
<i>Austroargiolestes chrysoides</i>	10	40.0	E	RF Wet	800	NL
<i>Austrogomphus arbustorum</i>	10	0.0	NE	Wet	600	NL
<i>Austropetalia patricia</i>	10	20.0	SE	Wet	700	NL
<i>Eusynthemis rentziana</i>	10	30.0	E	Wet	900	NL
<i>Griseargiolestes fontanus</i>	10	30.0	E	Wet	700	NL
<i>Hesperocordulia berthoudi</i>	10	20.0	SW	Wet	700	NL
<i>Nososticta kalumburu</i>	10	100.0	CN	Wet	800	NL
<i>Nososticta pilbara</i>	10	70.0	W	Wet	500	NL
<i>Pantala flavescens</i>	10	20.0	MAW	Wet	4300	NL
<i>Podopteryx selysi</i>	10	30.0	CN, NE	RF Wet	600	NL
<i>Synthemopsis</i>						
<i>gomphomacromioides</i>	10	90.0	TAS	Mon Wet	700	NL

The removal of the records of the poorly recorded species leaves 9227 records in ANHAT for 168 species (and subspecies). The mean number of records per species for species with greater than 10 records was 55, with a mean of 29 for the percent of records in PAs. Of

these, 38 species had 45% or greater of individual site records located within the NRS (**Table 46**), none which have yet been listed as threatened. This is an area that needs addressing. There are three rainforest and four montane wetland species in this list. No species had all records within PAs.

Table 46 Dragonfly and damselfly species with >45% of site records within the NRS.

Species	No. Records	Records in PAs	Location	Veg type	Area (km ²)	EPBC status
<i>Nososticta fraterna</i>	84	38 (45.2%)	CN, NE	Wet	4900	NL
<i>Austroaeschna tasmanica</i>	22	10 (45.4%)	TAS	Wet	1700	NL
<i>Austroaeschna subapicalis</i>	39	18 (46.1%)	E, SE	Mon, Wet	2800	NL
<i>Synlestes tropicus</i>	39	18 (46.1%)	NE	RF Wet	1300	NL
<i>Griseargiolestes albescens</i>	15	7 (46.7%)	E	Wet	1000	NL
<i>Austroaeschna multipunctata</i>	30	14 (46.7%)	SE	Mon, Wet	2300	NL
<i>Eusynthemis aurolineata</i>	30	14 (46.7%)	E	Mon, Wet	2300	NL
<i>Austroepigomphus gordonii</i>	17	8 (47.1%)	W, I	Wet	1300	NL
<i>Archaeosynthemis orientalis</i>	19	9 (47.4%)	E, SE, CS	Wet	1500	NL
<i>Chorismagrion risi</i>	40	19 (47.5%)	NE	RF Wet	2100	NL
<i>Austrogomphus mjobergi</i>	23	11 (47.8%)	NW, CN, NE	Wet	1300	NL
<i>Ischnura pruinescens</i>	63	31 (49.2%)	CN, NE, E	Wet	2500	NL
<i>Austroargiolestes brookhousei</i>	12	6 (50.0%)	E	Wet	900	NL
<i>Austroagrion pindrina</i>	20	10 (50.0%)	NW	Wet	700	NL
<i>Austroargiolestes isabellae</i>	28	14 (50.0%)	SE	Wet	1700	NL
<i>Eusynthemis brevistyla</i>	56	29 (51.8%)	SE	Wet	4500	NL
<i>Telephlebia brevicauda</i>	46	24 (52.2%)	SE	Al Wet	3700	NL
<i>Nannophlebia injibandi</i>	13	7 (53.8%)	W	Wet	900	NL
<i>Griseargiolestes intermedius</i>	11	6 (54.5%)	SE	Wet	1100	NL
<i>Indolestes obiri</i>	11	6 (54.5%)	CN	Wet	800	NL
<i>Nososticta baroalba</i>	22	12 (54.5%)	CN	Wet	800	NL
<i>Austroaeschna inermis</i>	20	11 (55.0%)	SE	Mon, Wet	1800	NL
<i>Agriocnemis kunjina</i>	29	16 (55.2%)	W	Wet	700	NL
<i>Petalura gigantea</i>	169	94 (55.6%)	E	Wet	4400	NL
<i>Austroargiolestes calcaris</i>	34	20 (58.8%)	SE	Wet	2600	NL
<i>Austroaeschna hardyi</i>	45	27 (60.0%)	TAS	Al Th	3800	NL
<i>Eusynthemis guttata</i>	24	15 (62.5%)	SE	Al Mon WL	2300	NL
<i>Griseargiolestes eboracus</i>	24	15 (62.5%)	E, SE	Wet	2200	NL
<i>Synthemis tasmanica</i>	45	29 (64.4%)	TAS	Wet	3100	NL
<i>Austrolestes minjerriba</i>	26	17 (65.4%)	E	Wet	1800	NL
<i>Urothemis aliena</i>	12	8 (66.7%)	CN, NE, E	Wet	900	NL
<i>Nannophlebia mudginberri</i>	15	10 (66.7%)	CN	Wet	1000	NL
<i>Austroargiolestes christine</i>	16	11 (68.7%)	E	Wet	1300	NL
<i>Austrocnemis maccullochi</i>	54	38 (70.4%)	CN, NE	Wet	1800	NL
<i>Ictinogomphus dobsoni</i>	11	9 (72.7%)	W	Wet	700	NL
<i>Pentathemis membranulata</i>	15	11 (73.3%)	CN, NE	Wet	1200	NL
<i>Nososticta koongarra</i>	27	20 (74.1%)	CN	Wet	400	NL
<i>Episynlestes cristatus</i>	11	10 (91.0%)	NE	RF Wet	500	NL

Thirty species had less than 10% of ANHAT records located within the NRS (**Table 47**). None of the species are listed as threatened. One species had no records from the reserve system. Notably, four species had very broad ranges across Australia, but still had few records and few in reserves. Species from the west of Australia were represented in this under-reserved group.

Table 47 Dragonfly and damselfly species with <10% of ANHAT records located within the NRS.

Species	No. Records	Inside PAs	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Austrogomphus bifurcatus</i>	16	0	0.00	NE	Wet	900	NL
<i>Pseudagrion aureofrons</i>	90	0	0.00	W, CN, NE,E, SE	Wet	4200	NL
<i>Austrogomphus australis</i>	34	1	2.94	E, SE	Wet	3300	NL
<i>Gynacantha rosenbergi</i>	24	1	4.17	NE	Wet	1300	NL
<i>Austrogomphus collaris</i>	45	2	4.44	SW	Wet	4400	NL
<i>Archiargiolestes parvulus</i>	21	1	4.76	SW	Wet	1500	NL
<i>Austroepigomphus melaleucae</i>	18	1	5.56	E, NE	Wet	1300	NL
<i>Orthetrum caledonicum</i>	35	2	5.71	AW	Wet	14000	NL
<i>Austroaeschna anacantha</i>	17	1	5.88	SW	Wet	1500	NL
<i>Anax guttatus</i>	16	1	6.25	NW, CN, NE, E	Wet	2000	NL
<i>Antipodogomphus proselythus</i>	16	1	6.25	NE, E	Wet	800	NL
<i>Indolestes alleni</i>	16	1	6.25	CN, NE	Wet	1200	NL
<i>Archaeosynthemis leachii</i>	15	1	6.67	SW	Wet	1100	NL
<i>Archiargiolestes pusillus</i>	119	8	6.72	SW	Wet	9600	NL
<i>Diphlebia nymphoides</i>	43	3	6.98	E, SE	Wet	3400	NL
<i>Procordulia affinis</i>	14	1	7.14	SE	Wet	1500	NL
<i>Nososticta solida</i>	56	4	7.14	NE, E, NE	Wet	4000	NL
<i>Parasynthemis regina</i>	27	2	7.41	E, SE	Wet	2100	NL
<i>Gynacantha mocsaryi</i>	13	1	7.69	NE	Wet	1300	NL
<i>Macromia tillyardi</i>	13	1	7.69	CN, NE, E	Wet	900	NL
<i>Archaeosynthemis occidentalis</i>	12	1	8.33	SW	Wet	900	NL
<i>Austrosynthemis cyanitincta</i>	12	1	8.33	SW	Wet	1100	NL
<i>Diplacodes bipunctata</i>	12	1	8.33	MAW	Wet	12500	NL
<i>Orthetrum villosovittatum</i>	12	1	8.33	CN, NE,E, SE	Wet	1400	NL
<i>Indolestes tenuissimus</i>	23	2	8.70	NE	Wet	1200	NL
<i>Anax gibbosulus</i>	11	1	9.09	NW, CN, NE, E	Wet	1700	NL
<i>Austroagrion cyane</i>	75	7	9.33	SW, CS	Wet	5000	NL
<i>Agriocnemis dobsoni</i>	21	2	9.52	NE	Wet	500	NL
<i>Telephlebia tillyardi</i>	21	2	9.52	NE	Wet	1700	NL
<i>Austrogynacantha heterogena</i>	50	5	10.00	MAW	Wet	5100	NL

The dragonfly or damselfly group is relatively poorly represented by records and no species had records in more than 100 separate PAs. In fact, only one species had records in more than 50 separate PAs. This is not a reflection on this group in general having only small ranges, but rather the relatively poor levels of surveys and records.

Table 48 Dragonfly and damselfly species recorded at more than 50 PAs.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Austroargiolestes icteromelas</i>	445	53	49	NL

A total of 90 species had five or fewer records in 100 separate reserves and 89 species had five or fewer records in reserves 1000 ha or greater. None of these species are listed as threatened. The majority of species in this list had fewer than 100 individual site records, and no species had more than 135 site records.

Table 49 Dragonfly and damselfly species with records in five or fewer PAs and PAs of 1000 ha or more.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Diplacodes bipunctata</i>	12	1	0	NL
<i>Austrocnemis splendida</i>	32	1	0	NL
<i>Orthetrum villosivittatum</i>	12	1	0	NL
<i>Agriocnemis rubricauda</i>	20	1	1	NL
<i>Anax gibbosulus</i>	11	1	1	NL
<i>Anax guttatus</i>	16	1	1	NL
<i>Macromia tillyardi</i>	13	1	1	NL
<i>Antipodogomphus proselythus</i>	16	1	1	NL
<i>Archaeosynthemis leachii</i>	15	1	1	NL
<i>Indolestes obiri</i>	11	1	1	NL
<i>Austrosynthemis cyanitincta</i>	12	1	1	NL
<i>Indolestes alleni</i>	16	1	1	NL
<i>Archaeosynthemis occidentalis</i>	12	1	1	NL
<i>Archiargiolestes parvulus</i>	21	1	1	NL
<i>Gynacantha rosenbergi</i>	24	1	1	NL
<i>Gynacantha mocsaryi</i>	13	1	1	NL
<i>Indolestes tenuissimus</i>	23	1	1	NL
<i>Austroepigomphus melaleucae</i>	18	1	1	NL
<i>Teinobasis rufithorax</i>	14	1	1	NL
<i>Agriocnemis argentea</i>	56	1	1	NL
<i>Nososticta koongarra</i>	27	1	1	NL
<i>Austroagrion pindrina</i>	20	1	1	NL
<i>Rhadinosticta banksi</i>	19	1	1	NL
<i>Austrogomphus collaris</i>	45	1	1	NL
<i>Agriocnemis dobsoni</i>	21	1	1	NL

<i>Agriocnemis kunjina</i>	29	1	1	NL
<i>Austrogomphus australis</i>	34	1	1	NL
<i>Procordulia affinis</i>	14	1	1	NL
<i>Nososticta koolpinyah</i>	16	1	1	NL
<i>Austroargiolestes amabilis</i>	23	1	1	NL
<i>Austroaeschna anacantha</i>	17	1	1	NL
<i>Orthetrum caledonicum</i>	35	2	1	NL
<i>Austrolestes aleison</i>	12	2	1	NL
<i>Diphlebia hybridoides</i>	17	2	2	NL
<i>Dendroaeschna conspersa</i>	11	2	2	NL
<i>Archibasis mimetes</i>	24	2	2	NL
<i>Urothemis aliena</i>	12	2	2	NL
<i>Griseargiolestes albescens</i>	15	2	2	NL
<i>Griseargiolestes metallicus</i>	11	2	2	NL
<i>Austrosticta fieldi</i>	11	2	2	NL
<i>Austrocnemis maccullochi</i>	54	2	2	NL
<i>Diphlebia nymphoides</i>	43	2	2	NL
<i>Telephlebia tillyardi</i>	21	2	2	NL
<i>Austroargiolestes brookhousei</i>	12	2	2	NL
<i>Ictinogomphus dobsoni</i>	11	2	2	NL
<i>Pseudagrion cingillum</i>	19	2	2	NL
<i>Diplacodes haematodes</i>	16	2	2	NL
<i>Labidiosticta vallis</i>	17	2	2	NL
<i>Parasynthemis regina</i>	27	2	2	NL
<i>Nannophlebia mudginberri</i>	15	2	2	NL
<i>Nososticta baroalba</i>	22	2	2	NL
<i>Hemiphlebia mirabilis</i>	29	2	2	NL
<i>Neosticta fraseri</i>	19	3	3	NL
<i>Pentathemis membranulata</i>	15	3	3	NL
<i>Nososticta liveringa</i>	13	3	3	NL
<i>Austrogomphus mjobergi</i>	23	3	3	NL
<i>Austrophlebia costalis</i>	13	3	3	NL
<i>Neosticta canescens</i>	14	3	3	NL
<i>Coenagrion lyelli</i>	14	3	3	NL
<i>Miniargiolestes minimus</i>	34	3	3	NL
<i>Ischnura pruinescens</i>	63	3	3	NL
<i>Hemicordulia continentalis</i>	35	3	3	NL
<i>Austrolestes io</i>	32	3	3	NL
<i>Gynacantha dobsoni</i>	37	4	3	NL
<i>Nososticta solida</i>	56	4	3	NL
<i>Oristicta filicicola</i>	22	4	3	NL
<i>Macrodiplax cora</i>	36	4	3	NL
<i>Archiargiolestes pusillissimus</i>	20	4	3	NL
<i>Austroaeschna weiskei</i>	18	4	4	NL
<i>Austroagrion cyane</i>	75	4	4	NL
<i>Griseargiolestes intermedius</i>	11	4	4	NL
<i>Rhadinosticta simplex</i>	40	4	4	NL
<i>Notoaeschna sagittata</i>	25	4	4	NL
<i>Nannophlebia injibandi</i>	13	4	4	NL
<i>Micromidia atrifrons</i>	19	4	4	NL

<i>Hemigomphus comitatus</i>	20	4	4	NL
<i>Episynlestes cristatus</i>	11	4	4	NL
<i>Austrogomphus divaricatus</i>	21	4	4	NL
<i>Austroepigomphus gordonii</i>	17	4	4	NL
<i>Austrolestes insularis</i>	28	5	4	NL
<i>Lestes concinnus</i>	68	5	4	NL
<i>Austrogynacantha heterogena</i>	50	5	4	NL
<i>Agriocnemis pygmaea</i>	135	5	4	NL
<i>Cordulephya pygmaea</i>	34	5	5	NL
<i>Aciagrion fragilis</i>	83	5	5	NL
<i>Austroaeschna obscura</i>	35	5	5	NL
<i>Austroargiolestes christine</i>	16	5	5	NL
<i>Eusynthemis nigra</i>	33	5	5	NL
<i>Nannophlebia risi</i>	55	5	5	NL
<i>Pseudagrion jedda</i>	60	5	5	NL
<i>Austroagrion exclamationis</i>	89	6	5	NL
<i>Ictinogomphus australis</i>	63	6	5	NL

Butterflies (Lepidoptera)

The ANHAT database has 53246 records for 442 species and subspecies of butterflies. Fifty-five species account for approximately 50% of the total species records in ANHAT. These species have over 250 records each and *Danaus plexippus* over 1200 records.

Table 50 Butterfly species that account for approximately 50% of the total species records in ANHAT.

Species	No. Records	% total records
<i>Hesperilla ornata</i>	259	0.49
<i>Taractrocera papyria</i>	262	0.49
<i>Appias paulina</i>	265	0.50
<i>Hypocysta metirius</i>	272	0.51
<i>Dispar compacta</i>	275	0.52
<i>Toxidia peron</i>	276	0.52
<i>Signeta flammeata</i>	281	0.53
<i>Neolucia agricola</i>	282	0.53
<i>Nacaduba biocellata</i>	283	0.53
<i>Oreixenica kershawi</i>	285	0.54
<i>Hesperilla idothea</i>	295	0.55
<i>Psychonotis caelius</i>	302	0.57
<i>Papilio demoleus</i>	316	0.59
<i>Mycalesis terminus</i>	322	0.60
<i>Delias harpalyce</i>	331	0.62
<i>Ypthima arctous</i>	335	0.63
<i>Delias aganippe</i>	338	0.63
<i>Jalmenus evagoras</i>	342	0.64
<i>Theclinesthes miskini</i>	345	0.65
<i>Papilio anactus</i>	349	0.66
<i>Geitoneura acantha</i>	352	0.66
<i>Lampides boeticus</i>	353	0.66
<i>Oreixenica lathoniella</i>	357	0.67
<i>Graphium macleayanus</i>	362	0.68
<i>Hypocysta adiante</i>	376	0.71
<i>Polyura sempronius</i>	380	0.71
<i>Cressida cressida</i>	382	0.72
<i>Ogyris olane</i>	399	0.75
<i>Delias argenthona</i>	400	0.75
<i>Heteronympha penelope</i>	400	0.75
<i>Ogyris amaryllis</i>	414	0.78
<i>Ocybadistes walkeri</i>	484	0.91
<i>Delias nigrina</i>	501	0.94
<i>Tirumala hamata</i>	517	0.97
<i>Acraea andromacha</i>	520	0.98
<i>Vanessa itea</i>	522	0.98
<i>Hypolimnna bolina</i>	565	1.06
<i>Geitoneura klugii</i>	589	1.11
<i>Graphium sarpedon</i>	614	1.15

<i>Hesperilla donnysa</i>	621	1.17
<i>Eurema hecabe</i>	627	1.18
<i>Danaus chrysippus</i>	690	1.30
<i>Candalides hyacinthina</i>	702	1.32
<i>Junonia villida</i>	719	1.35
<i>Tisiphone abeona</i>	732	1.37
<i>Catopsilia pomona</i>	733	1.38
<i>Melanitis leda</i>	766	1.44
<i>Papilio aegeus</i>	770	1.45
<i>Belenois java</i>	877	1.65
<i>Vanessa kershawi</i>	887	1.67
<i>Euploea core</i>	928	1.74
<i>Heteronympha merope</i>	935	1.76
<i>Zizina labradus</i>	1006	1.89
<i>Danaus plexippus</i>	1271	2.39
Total	26766	50.3

Eighty butterflies had 10 or fewer individual record sites present in the ANHAT database. One species is listed as endangered.

Table 51 Butterfly species with 10 or fewer individual site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Arhopala micale amytis</i>	1	100.0	NE	RF, Man	4200	NL
<i>Deudorix epirus agimar</i>	1	100.0	NE	RF	200	NL
<i>Heteronympha banksii mariposa</i>	1	100.0	E	RF, For	200	NL
<i>Hypochrysops elgneri barnardi</i>	1	100.0	NE	RF, For	100	NL
<i>Philiris nitens lucina</i>	1	100.0	NE	RF	300	NL
<i>Praetaxila segecia</i>	1	100.0	NE	RF	200	NL
<i>Tellervo zoilus gelo</i>	1	100.0	NE	RF	900	NL
<i>Borbo cinnara</i>	1	0.0	N	RF	600	NL
<i>Candalides cyprotus pallescens</i>	1	0.0	EC-SE	WL	800	NL
<i>Catochrysops amasea</i>	1	0.0	NE	??	700	NL
<i>Catopyrops ancyr</i>	1	0.0	NE	RF	700	NL
<i>Euploea algea</i>	1	0.0	NE	For	800	NL
<i>Junonia erigone</i>	1	0.0	NC	For	100	NL
<i>Neopithecops lucifer</i>	1	0.0	NE	RF	400	NL
<i>Papilio aegeus ormenus</i>	1	0.0	NE	RF	400	NL
<i>Philiris azula</i>	1	0.0	NE	RF	100	NL
<i>Taractrocera ilia</i>	1	0.0	NC	RH	700	NL
<i>Theclines thes onycha capricornia</i>	1	0.0	NE	For	1700	NL
<i>Tisiphone abeona morrisi</i>	1	0.0	E	Gen	2700	NL
<i>Elodina walkeri</i>	2	50.0	N	RF, For	1300	NL
<i>Eurema alitha</i>	2	100.0	NC-NE	WL, GrL	1300	NL
<i>Lexias aeropa</i>	2	100.0	NE	RF	300	NL
<i>Theclines thes miskini eucalypti</i>	2	50.0	NE	WL	2500	NL
<i>Trapezites genevieveae</i>	2	100.0	E	RF	200	NL

<i>Udara tenella</i>	2	50.0	NE	RF	200	NL
<i>Chaetocneme critomedia</i>	2	0.0	NE	For	400	NL
<i>Delias ennia tindalii</i>	2	0.0	NE	RF	200	NL
<i>Heteronympha cordace wilsoni</i>	2	0.0	SE	SE	500	NL
<i>Leptosia nina</i>	2	0.0	NW	For	400	NL
<i>Taenaris artemis</i>	2	0.0	NE	RF	600	NL
<i>Appias albina</i>	3	33.3	N	For	500	NL
<i>Croitana aestiva</i>	3	33.3	CI	WL	200	EN
<i>Hesperilla crypsargyra hopsoni</i>	3	66.7	SE	For	400	NL
<i>Hypochrysops cleon</i>	3	66.7	NE	RF	200	NL
<i>Ionolyce helicon hyllus</i>	3	66.7	NE	RF	300	NL
<i>Apaturina erminea</i>	3	0.0	NE	RF	100	NL
<i>Hypolimnas anomala</i>	3	0.0	NE	RF	600	NL
<i>Jamides amaraugae</i>	3	0.0	NE	RF	700	NL
<i>Leptotes plinius</i>	3	0.0	NCI-E	WL	3000	NL
<i>Rapala varuna simsoni</i>	3	0.0	NE	Gen	1300	NL
<i>Allora major</i>	4	25.0	NE	RF	100	NL
<i>Elodina queenslandica</i>	4	100.0	NE	RF	1200	NL
<i>Mesodina gracillima</i>	4	25.0	NC	WL	1200	NL
<i>Oreixenica latialis theddora</i>	4	100.0	SE	GrL	200	NL
<i>Pithecopus dionisius</i>	4	75.0	NE	RF	500	NL
<i>Troides priamus macalpinei</i>	4	25.0	NE	RF	600	NL
<i>Acrodipsas melania</i>	4	0.0	NE	WL	400	NL
<i>Everes lacturnus australis</i>	5	60.0	NC-SE??	For	3700	NL
<i>Hypochrysops theon medocus</i>	5	60.0	NE	RF	400	NL
<i>Pseudodipsas eone</i>	5	40.0	NE	RF, For	800	NL
<i>Libythea geoffroy</i>	5	0.0	N	For	2200	NL
<i>Heteronympha banksii nevina</i>	5	20.0	SE	RF, For	1000	NL
<i>Jalmenus clementi</i>	5	20.0	WC	SL	700	NL
<i>Oreixenica kershawi kanunda</i>	5	20.0	SE	Wet	900	NL
<i>Zizina labradus labdalon</i>	5	20.0	NE	Gen	700	NL
<i>Hypochrysops apollo phoebus</i>	6	83.3	NE	Wet	400	NL
<i>Hypochrysops pythias euclides</i>	6	0.0	NE	RF	700	NL
<i>Netrocoryne repanda expansa</i>	6	16.7	E	RF, WL	500	NL
<i>Orsotriaena medus</i>	6	0.0	NE	Wet	1100	NL
<i>Borbo impar</i>	7	42.9	NC	RF, WL	800	NL
<i>Catochrysops panormus platissa</i>	7	42.9	NC	For-WL	4700	NL
<i>Catopyrops florinda halys</i>	7	14.3	EC	RF	2600	NL
<i>Croitana arenaria</i>	7	42.9	CI	WL	700	NL
<i>Ionolyce helicon</i>	7	28.6	NE	RF	1100	NL
<i>Jalmenus inous notocrucifer</i>	7	0.0	SW	WL	200	NL
<i>Nacaduba kurava parma</i>	7	42.9	NE-EC	RF, WL	3100	NL
<i>Petrelaea tombugensis</i>	7	42.9	NC-NE	RF	1500	NL
<i>Candalides delospila</i>	8	12.5	NI	WL, GrL	1300	NL
<i>Deudorix smilis</i>	8	12.5	NC	For	1200	NL
<i>Jalmenus aridus</i>	8	0.0	SWI	SL	300	NL
<i>Neohesperilla senta</i>	8	12.5	N	WL, GrL	1100	NL
<i>Pantoporia venilia</i>	8	87.5	NE	For	1500	NL
<i>Philiris ziska</i>	8	50.0	NE	RF	200	NL
<i>Toxidia rietmanni parasema</i>	8	12.5	E	RF, For	300	NL

<i>Acrodipsas hirtipes</i>	9	0.0	NE	WL	400	NL
<i>Charaxes latona</i>	9	66.7	NE	RF	200	NL
<i>Danaus genutia</i>	9	0.0	NC	Wet	1100	NL
<i>Allora doleschallii</i>	10	10.0	NE	RF	1400	NL
<i>Chaetocneme porphyropis</i>	10	20.0	NE	RF	1600	NL
<i>Jalmenus lithochroa</i>	10	0.0	SC	WL	900	NL

Removal of the poorly recorded species leaves 52914 records in ANHAT for 362 species (and subspecies). The mean number of records per species for species with greater than 10 records was 146.2, with a mean of 24.4 for the percent of records in NRS. Of these remaining species, 46 species had 45% or greater of individual site records located within the NRS. Of those 46 species, none were listed as threatened. The majority of species had preferences for environments with trees with areas of forest and woodland dominating. Rainforest was also a prevalent habitat used by this list of species, but not greatly considering its extensive reservation and relatively large number of species known to use rainforest. Almost all of the species in the list come from eastern Australia, indicating that species from two-thirds of Australia are not well studied or recorded.

Table 52 Butterfly species with greater than 45% of site records within the NRS.

Species	Total Records	Records in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Mimene atropatene</i>	11	5 (45.4%)	NE	RF	200	NL
<i>Hesperilla ornata</i>		10			1000	
<i>monotherm</i>	22	(45.4%)	E	For		NL
		17			3900	
<i>Neolucia matthewi</i>	37	(45.5%)	SE	WL, SL		NL
		44		WL,	4500	
<i>Oreisplanus munionga</i>	95	(46.3%)	SE, Tas	Wet		NL
		19			3000	
<i>Proeidosia polysema</i>	41	(46.3%)	N	WL		NL
		95			12300	
<i>Argynnina cyrila</i>	205	(46.3%)	SE	RF, For		NL
<i>Pseudalmenus</i>		91		For,	14400	
<i>chlorinda</i>	196	(46.4%)	SE, Tas	WL		NL
		28			3100	
<i>Trapezites iacchoides</i>	60	(46.7%)	SE	For		NL
		54			7000	
<i>Hypochrysops byzos</i>	115	(47.0%)	SE	For		NL
		133			17100	
<i>Signeta flammeata</i>	281	(47.3%)	SE	For		NL
		11			1400	
<i>Elymnias agondas</i>	23	(47.3%)	NE	RF		NL
		12			200	
<i>Hypochrysops hippuris</i>	25	(48.0%)	NE	RF		NL
		16			800	
<i>Hypocysta angustata</i>	33	(48.5%)	NE	RF		NL
<i>Pasma tasmanica</i>	82	40	SW, Tas	For,	8000	NL

		(48.8%)		WL		
<i>Theclines</i>		23			4000	
<i>albocincta</i>	47	(49.0%)	W-SEI	WL, SL		NL
		24		For,	2700	
<i>Hesperilla furva</i>	49	(49.0%)	CE	WL		NL
		49			7900	
<i>Heteronympha mirifica</i>	100	(49.0%)	SE	RF, For		NL
		13			3200	
<i>Cethosia penthesilea</i>	26	(50.0%)	NC	RF		NL
<i>Trapezites sciron</i>		21			1400	
<i>eremicola</i>	42	(50.0%)	S	WL, He		NL
		182			23800	
<i>Graphium macleayanus</i>	362	(50.2%)	E, Tas	RF, WL		NL
		14			2900	
<i>Signeta tymbophora</i>	27	(51.8%)	SE	RF		NL
		24			1200	
<i>Hesperilla sarnia</i>	46	(52.2%)	NE	For		NL
<i>Acrodipsas</i>		71		For,	6100	
<i>brisbanensis</i>	136	(52.2%)	E-SE	WL		NL
<i>Candalides consimilis</i>					1400	
<i>goodingi</i>	17	9 (52.9%)	SE	For		NL
		34			5300	
<i>Hypocysta euphemia</i>	64	(53.1%)	SE	RH		NL
<i>Nesolycaena urumelia</i>	11	6 (54.5%)	NC	WL	1800	NL
		42			4800	
<i>Toxidia andersoni</i>	77	(54.5%)	SE	For		NL
		23			2200	
<i>Appias ada</i>	42	(54.8%)	NE	RF		NL
		22			3700	
<i>Ogyris otanes</i>	40	(55.0%)	SE-SC	WL		NL
		88		WL,	8500	
<i>Anisynta dominula</i>	156	(56.4%)	Tas, SE	GrL		NL
		18			500	
<i>Jamides cyta</i>	31	(58.0%)	NE	RF		NL
		43			5000	
<i>Anisynta monticolae</i>	74	(58.1%)	SE	For		NL
<i>Hypochrysops elgneri</i>	12	7 (58.3%)	NE	RF, For	800	NL
<i>Philiris Diana</i>	12	7 (58.3%)	NE	RF-For	1100	NL
<i>Hypolimnna alimena</i>		10			3200	
<i>lamina</i>	17	(58.8%)	NE	RF		NL
		89			3600	
<i>Hesperilla crypsargyra</i>	149	(59.7%)	SE	For		NL
		42			3300	
<i>Oreixenica latialis</i>	69	(60.9%)	SE	GrL		NL
		13			700	
<i>Toxidia inornatus</i>	21	(61.9%)	NE	RF		NL
<i>Rachelia extrusa</i>	11	7 (63.6%)	NE	RF	300	NL
		135			9800	
<i>Heteronympha solandri</i>	211	(64.0%)	SE	WL		NL

<i>Nesoxenica leprea</i>	159	108 (67.9%)	Tas	RF, For	5900	NL
<i>Oreixenica orichora</i>	117	80 (68.4%)	SE, Tas	GrL	4400	NL
<i>Oreixenica correae</i>	178	126 (70.8%)	SE	WL	6000	NL
<i>Neolucia hobartensis</i>	104	74 (71.1%)	SE, Tas	WL	5600	NL
<i>Antipodia chaostola</i>		44		For,	1600	
<i>chares</i>	61	(72.1%)	SE	WL		NL
<i>Nesolycaena</i>		29			2400	
<i>albosericea</i>	38	(76.3%)	EC	WL		NL

Forty-nine species had less than 10% of ANHAT records located within PAs (**Table 53**). This represents a relatively large proportion of the identified butterflies. One of the 49 species is classified as threatened, being listed as vulnerable. The majority of species in this table again come from eastern Australia. However, there are also species from south-western Australia and species from all parts of Australia are listed. Woodland and forest species are dominant on the list. There are also 11 species that use rainforest, even though this system is well reserved. Four species have no records within the reserve system.

Table 53 Butterfly species with <10% of ANHAT records located within the NRS.

Species	No. Records	Records in NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Arrhenes marnas</i>	32	0	0.00	NE	Wet	2000	NL
<i>Euschemon rafflesia alba</i>	16	0	0.00	E	RF	700	NL
<i>Ogyris barnardi</i>	31	0	0.00	EI	WL	1300	NL
<i>Ogyris iphis</i>	51	0	0.00	NE	WL	1100	NL
<i>Vanessa cardui</i>	89	1	1.12	SW	Gen	6400	NL
<i>Trapezites argenteornatus</i>	51	1	1.96	SW	He	4300	NL
<i>Hypochrysops halyaetus</i>	50	1	2.00	W	WL	3400	NL
<i>Anisynta cynone</i>	48	1	2.08	SE	WL, GrL	2800	NL
<i>Hypochrysops epicurus</i>	46	1	2.17	E	Man	2200	NL
<i>Ogyris amaryllis hewitsoni</i>	37	1	2.70	NE	Gen	1700	NL
<i>Jalmenus pseudictinus</i>	36	1	2.78	NE-EC	For, WL	2000	NL
<i>Argyreus hyperbius</i>	29	1	3.45	E	Wet	2400	NL
<i>Hypochrysops cyane</i>	27	1	3.70	E	For, WL	3400	NL
<i>Ogyris zosine</i>	149	6	4.03	N, NI	WL	10000	NL
<i>Acrodipsas arcana</i>	24	1	4.17	E	For	400	NL
<i>Hasora chromus</i>	24	1	4.17	NC-NE	RF, Man	2800	NL
<i>Hypolycaena danis turneri</i>	23	1	4.35	NE	RF	900	NL

<i>Trapezites macqueeni</i>	23	1	4.35	NE	For, WL	1900	NL
<i>Hypochrysops digglesii</i>	67	3	4.48	NE-E	For, WL	4000	NL
<i>Trapezites lutea</i>	112	6	5.36	SE	WL	7100	NL
<i>Ogyris amaryllis meridionalis</i>	37	2	5.41	Aus	Gen WL,	13800	NL
<i>Zizula hylax attenuata</i>	17	1	5.88	N	Wet	1300	NL
<i>Ogyris aenone</i>	68	4	5.88	NE-E	WL	1400	NL
<i>Deudorix diovis</i>	100	6	6.00	NC-SE	RF, For	6600	NL
<i>Croitana croites</i>	49	3	6.12	SW	WL	3200	NL
<i>Hypolimnas misippus</i>	79	5	6.33	NC-SE	RF, For	8200	NL
<i>Geitoneura minyas</i>	46	3	6.52	SW	WL	6500	NL
<i>Paralucia spinifera</i>	106	7	6.60	E	WL	1300	VU
<i>Hasora discolor</i>	60	4	6.67	NE-EC	RF	4100	NL
<i>Arhopala madytus</i>	43	3	6.98	NE	RF	4100	NL
<i>Rapala varuna</i>	70	5	7.14	NE	Gen	4100	NL
<i>Ogyris amaryllis</i>	414	31	7.49	SE	Gen	26100	NL
<i>Chaetocneme beata</i>	40	3	7.50	E	RF	5100	NL
<i>Hypochrysops delicia duaringae</i>	13	1	7.69	NE	For, WL	400	NL
<i>Mesodina cyanophracta</i>	13	1	7.69	SW	WL	2500	NL
<i>Hesperilla chrysotricha cyclopsila</i>	104	8	7.69	SE	Wet	3900	NL
<i>Hesperilla flavescens</i>	205	16	7.80	SE	Wet WL,	4600	NL
<i>Oreixenica ptunarra</i>	162	13	8.02	Tas	GrL	3100	NL
<i>Hypochrysops pythias</i>	12	1	8.33	NE	RF	1400	NL
<i>Cephrenes trichopepla</i>	118	10	8.47	SW-E	For, WL	9700	NL
<i>Hypochrysops piceata</i>	47	4	8.51	E	WL	700	NL
<i>Ogyris abrota</i>	176	15	8.52	E	For, WL	8900	NL
<i>Zizula hylax</i>	35	3	8.57	NE	WL, Wet	4900	NL
<i>Acrodipsas myrmecophila</i>	116	10	8.62	NC-SE	For, WL	3000	NL
<i>Anisynta sphenosema</i>	23	2	8.70	SW	For	2800	NL
<i>Troides euphorion</i>	11	1	9.09	NE	RF	1100	NL
<i>Papilio anactus</i>	349	32	9.17	E, EI	For, WL	22000	NL
<i>Danaus plexippus</i>	1271	118	9.28	Aus	Gen	49800	NL
<i>Papilio fuscus canopus</i>	31	3	9.68	CN	RF	2900	NL

Three butterfly species had records in more than 100 separate PAs (Table 54). One species in this list had over a thousand records, with an average of 943 records per species. None of the species are listed as threatened.

Table 54 Butterfly species recorded at more than 100 PAs.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Heteronympha merope</i>	935	102	85	NL
<i>Vanessa kershawi</i>	887	101	84	NL
<i>Zizina labradus</i>	1006	111	100	NL

A total of 130 species had records in five or fewer PAs and 136 had records in five or fewer PAs greater than 1000 hectares in size (**Table 55**). One species is listed as vulnerable. The majority of species in this list had fewer than 100 individual record sites, and no species had more than 205 record sites. All species were recorded from at least one PA, but three species did not occur in a PA greater than 1000 hectares. None the less, there are many species that have rarely been recorded within the NRS and can be assumed to not be well protected by it.

Table 55 Butterfly species recorded from five or fewer PAs and five or fewer PAs larger than 1000 hectares.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Ogyris genoveva</i>	19	1	0	NL
<i>Ogyris amaryllis hewitsoni</i>	37	1	0	NL
<i>Trapezites argenteoornatus</i>	51	1	0	NL
<i>Hypochrysops elgneri</i>	12	1	1	NL
<i>Argyreus hyperbius</i>	29	1	1	NL
<i>Jalmenus pseudictinus</i>	36	1	1	NL
<i>Zizula hylax attenuata</i>	17	1	1	NL
<i>Acrodipsas arcana</i>	24	1	1	NL
<i>Hypochrysops pythias</i>	12	1	1	NL
<i>Mesodina cyanophracta</i>	13	1	1	NL
<i>Paralucia spinifera</i>	106	1	1	VU
<i>Hypochrysops halyaetus</i>	50	1	1	NL
<i>Hypolycaena danis turneri</i>	23	1	1	NL
<i>Anisynta cynone</i>	48	1	1	NL
<i>Hypochrysops delicia duaringae</i>	13	1	1	NL
<i>Trapezites macqueeni</i>	23	1	1	NL
<i>Ogyris amaryllis meridionalis</i>	37	1	1	NL
<i>Vanessa cardui</i>	89	1	1	NL
<i>Vagrans egista</i>	27	1	1	NL
<i>Troides euphorion</i>	11	1	1	NL
<i>Hypochrysops epicurus</i>	46	1	1	NL
<i>Hypochrysops cyane</i>	27	1	1	NL

<i>Ogyris aenone</i>	68	1	1	NL
<i>Hasora chromus</i>	24	1	1	NL
<i>Herimosa albovenata</i>	19	1	1	NL
<i>Hypochrysops piceata</i>	47	2		NL
<i>Theclinesthes hesperia</i>	17	2	1	NL
<i>Acrodipsas illidgei</i>	37	2	1	NL
<i>Nesolycaena urumelia</i>	11	2	2	NL
<i>Chaetocneme beata</i>	40	2	2	NL
<i>Chaetocneme denitza</i>	12	2	2	NL
<i>Cethosia penthesilea</i>	26	2	2	NL
<i>Mimene atropatene</i>	11	2	2	NL
<i>Megisba strongyle nigra</i>	12	2	2	NL
<i>Jamides cyta</i>	31	2	2	NL
<i>Hypocysta angustata</i>	33	2	2	NL
<i>Hypochrysops polycletus</i>	21	2	2	NL
<i>Hypochrysops hippuris</i>	25	2	2	NL
<i>Graphium aristeus</i>	25	2	2	NL
<i>Exometoeca nycteris</i>	11	2	2	NL
<i>Euploea darchia niveata</i>	14	2	2	NL
<i>Erysichton palmyra</i>	27	2	2	NL
<i>Hypochrysops polycletus rovena</i>	13	2	2	NL
<i>Philiris fulgens kurandae</i>	20	2	2	NL
<i>Rachelia extrusa</i>	11	2	2	NL
<i>Telicota brachydesma</i>	19	2	2	NL
<i>Proeidosia polysema</i>	41	2	2	NL
<i>Anisynta sphenosema</i>	23	2	2	NL
<i>Zizula hylax</i>	35	2	2	NL
<i>Bindahara phocides yurgama</i>	13	3	1	NL
<i>Acrodipsas myrmecophila</i>	116	3	2	NL
<i>Hesperilla sarnia</i>	46	3	2	NL
<i>Toxidia melania</i>	26	3	2	NL
<i>Tisiphone abeona rawnsleyi</i>	25	3	2	NL
<i>Heteronympha penelope alope</i>	19	3	3	NL
<i>Sabera fuliginosa</i>	66	3	3	NL
<i>Taractrocera dolon</i>	30	3	3	NL
<i>Elymnias agondas</i>	23	3	3	NL
<i>Mesodina aeluropis</i>	38	3	3	NL
<i>Euploea alcatheae</i>	43	3	3	NL
<i>Hypochrysops digglesii</i>	67	3	3	NL
<i>Hypochrysops apelles</i>	117	3	3	NL
<i>Hypochrysops theon</i>	19	3	3	NL
<i>Trapezites symmommus soma</i>	32	3	3	NL
<i>Eurema puella</i>	34	3	3	NL
<i>Deudorix democles</i>	26	3	3	NL
<i>Hasora hurama</i>	18	3	3	NL
<i>Graphium macfarlanei</i>	19	3	3	NL
<i>Geitoneura minyas</i>	46	3	3	NL
<i>Deudorix epirus</i>	12	3	3	NL
<i>Ogyris ianthis</i>	58	3	3	NL
<i>Papilio fuscus canopus</i>	31	3	3	NL

<i>Arhopala madytus</i>	43	3	3	NL
<i>Phalanta phalantha</i>	21	3	3	NL
<i>Appias ada</i>	42	3	3	NL
<i>Liphyra brassolis</i>	23	3	3	NL
<i>Jamides aleuas coelestis</i>	18	3	3	NL
<i>Jalmenus inous</i>	23	3	3	NL
<i>Jalmenus evagoras eubulus</i>	18	3	3	NL
<i>Croitana croites</i>	49	3	3	NL
<i>Hesperilla chrysotricha cyclospila</i>	104	4	3	NL
<i>Parnara amalia</i>	50	4	3	NL
<i>Oreixenica ptunarra</i>	162	4	3	NL
<i>Telicota eurotas</i>	32	4	3	NL
<i>Hypochrysops ignita chrysonotus</i>	39	4	3	NL
<i>Danis danis serapis</i>	36	4	3	NL
<i>Hypolimnias misippus</i>	79	4	4	NL
<i>Toxidia inornatus</i>	21	4	4	NL
<i>Delias ennia nigridius</i>	24	4	4	NL
<i>Hasora discolor</i>	60	4	4	NL
<i>Hesperilla furva</i>	49	4	4	NL
<i>Trapezites heteromacula</i>	21	4	4	NL
<i>Freyeria pulti</i>	40	4	4	NL
<i>Delias aruna</i>	22	4	4	NL
<i>Ogyris idmo</i>	51	4	4	NL
<i>Nacaduba cyanea arinia</i>	25	4	4	NL
<i>Jamides aleuas</i>	43	4	4	NL
<i>Hypochrysops miskini</i>	42	4	4	NL
<i>Candalides gilberti</i>	16	4	4	NL
<i>Hesperilla ornata monotherm</i>	22	4	4	NL
<i>Telicota ohara</i>	29	4	4	NL
<i>Megisba strongyle</i>	34	4	4	NL
<i>Hypochrysops apollo</i>	33	4	4	NL
<i>Jalmenus eichhorni</i>	39	4	4	NL
<i>Anisynta tillyardi</i>	42	4	4	NL
<i>Hesperilla flavescens</i>	205	5	1	NL
<i>Bindahara phocides</i>	34	5	3	NL
<i>Danis danis</i>	86	5	4	NL
<i>Antipodia atralba</i>	66	5	4	NL
<i>Antipodia chaostola</i>	65	5	4	NL
<i>Deudorix diovis</i>	100	5	4	NL
<i>Elodina perdita</i>	45	5	4	NL
<i>Jalmenus daemeli</i>	82	5	4	NL
<i>Suniana lascivia</i>	20	5	4	NL
<i>Antipodia dactyliota</i>	34	5	5	NL
<i>Candalides consimilis goodingi</i>	17	5	5	NL
<i>Antipodia chaostola chares</i>	61	5	5	NL
<i>Neohesperilla croceus</i>	55	5	5	NL
<i>Prosotas felderi</i>	23	5	5	NL
<i>Rapala varuna</i>	70	5	5	NL
<i>Hypolycaena danis</i>	24	5	5	NL
<i>Sabera caesina</i>	86	5	5	NL

<i>Sabera dobboe</i>	48	5	5	NL
<i>Pseudalmenus chlorinda zephyrus</i>	35	5	5	NL
<i>Nesolycaena albosericea</i>	38	5	5	NL
<i>Pantoporia consimilis</i>	17	5	5	NL
<i>Nacaduba cyanea</i>	56	5	5	NL
<i>Mynes geoffroyi</i>	32	5	5	NL
<i>Telicota anisodesma</i>	45	5	5	NL
<i>Theclinesthes sulpitius</i>	54	5	5	NL
<i>Trapezites lutea</i>	112	6	2	NL
<i>Parnara bada</i>	49	6	4	NL
<i>Ogyris zosine</i>	149	6	4	NL
<i>Philiris diana</i>	12	6	5	NL
<i>Paralucia pyrodiscus</i>	173	7	4	NL
<i>Ogyris otanes</i>	40	7	5	NL
<i>Hesperilla malindeva</i>	80	7	5	NL
<i>Lucia limbaria</i>	92	8	5	NL
<i>Theclinesthes albocincta</i>	47	8	5	NL
<i>Jalmenus ictinus</i>	149	10	4	NL

Land snails (Pulmonata)

The ANHAT database has 43124 records for 1914 species and subspecies of land snails. Of these, 135 species account for almost 50% of the total species records in ANHAT. These species have over 70 records each and are identified in **Table 56**. Given snails do not generally have a high-profile among the public, this is a relatively extensive list of species with a reasonable number of records.

Table 56 Land snail species that account for almost 50% of the total species records in ANHAT.

<i>Species</i>	No. Records	% total records
<i>Helicarionidae</i> sq 3	74	0.17
<i>Rhytididae</i> sq 3	75	0.17
<i>Bothriembryon sayi</i>	75	0.17
<i>Bothriembryon kendricki</i>	76	0.18
<i>Meridolum</i> sn 18	76	0.18
<i>Pleuroxia elfina</i>	77	0.18
<i>Sinumelon perinflata</i>	77	0.18
<i>Sinumelon dulcensis</i>	77	0.18
<i>Neveritis aridorum</i>	78	0.18
<i>Planilaoma luckmanii</i>	78	0.18
<i>Pedinogyra rotabilis</i>	79	0.18
<i>Punctidae</i> mv 1	79	0.18
<i>Pupillidae</i> mv 1	79	0.18
<i>Rhytididae</i> mv 7	79	0.18
<i>Nitor subrugata</i>	80	0.19
<i>Sphaerospira informis</i>	81	0.19
<i>Fastosarion freycineti</i>	81	0.19
<i>Hadra webbi</i>	82	0.19
<i>Pleuroxia oligopleura</i>	82	0.19
<i>Sphaerospira incei lessoni</i>	83	0.19
<i>Tarocystis fulva</i>	83	0.19
<i>Sphaerospira yulei</i>	83	0.19
<i>Tolgachloritis jacksoni</i>	83	0.19
<i>Fastosarion brazieri</i>	84	0.19
<i>Amimopina macleayi</i>	84	0.19
<i>Rhytididae</i> sq 8	86	0.20
<i>Lacustrelax eyrie</i>	86	0.20
<i>Helicarionidae</i> cy 8	87	0.20
<i>Victaphanta compacta</i>	87	0.20
<i>Parmacochlea fischeri</i>	88	0.20
<i>Gastrocopta stupefaciens</i>	89	0.21
<i>Mulathena fordei</i>	89	0.21
<i>Sinumelon expositum</i>	91	0.21
<i>Fastosarion aquila</i>	93	0.22
<i>Helicarionidae</i> br 5	93	0.22
<i>Decoriropa lirata</i>	93	0.22
<i>Turrisitala normalis</i>	93	0.22

<i>Laomavix collisi</i>	94	0.22
<i>Gastrocopta margaretae</i>	95	0.22
<i>Rhytididae</i> ne 4	96	0.22
<i>Galadistes</i> ne 15	97	0.22
* <i>Austrochloritis</i> location 138	97	0.22
<i>Amplirhagada percita</i>	98	0.23
<i>Amplirhagada burneriensis</i>	100	0.23
<i>Austrochloritis victoriae</i>	100	0.23
<i>Saladelos commixta</i>	101	0.23
<i>Victaphanta lampra</i>	101	0.23
<i>Meridolum middenense</i>	103	0.24
<i>Glyptopupoides egregia</i>	103	0.24
<i>Coneuplecta microconus</i>	105	0.24
<i>Bothriembryon distinctus</i>	106	0.25
<i>Gastrocopta strangeana</i>	107	0.25
<i>Hedleyconcha delta</i>	107	0.25
<i>Pupilla australis</i>	107	0.25
<i>Strangesta sheridani</i>	108	0.25
<i>Gastrocopta macdonnelli</i>	109	0.25
<i>Sinmelon pedasum</i>	109	0.25
<i>Amplirhagada napierana</i>	110	0.26
<i>Rhagada convicta</i>	110	0.26
<i>Elsothera ricei</i>	112	0.26
<i>Pleuroxia phillipsiana</i>	112	0.26
<i>Ramogenia challengerii</i>	112	0.26
<i>Galadistes liverpoolensis</i>	113	0.26
<i>Gyrocochlea planorbis</i>	113	0.26
<i>Semotrachia setigera</i>	114	0.26
<i>Magilaoma penolensis</i>	115	0.27
<i>Meridolum gilberti</i>	118	0.27
<i>Tarocystis responsivus</i>	119	0.28
<i>Tasmaphena sinclairi</i>	120	0.28
<i>Cystopelta petterdi</i>	123	0.29
<i>Xanthomelon obliquirugosa</i>	123	0.29
<i>Thersites mitchellae</i>	125	0.29
<i>Gloreugenia hedleyi</i>	127	0.29
<i>Saladelos macquariensis</i>	128	0.30
<i>Sphaerospira appendiculate</i>	129	0.30
<i>Gnarosophia bellendenkerensis</i>	130	0.30
<i>Saladelos dulcis</i>	132	0.31
<i>Meridolum</i> ne 16	132	0.31
<i>Xanthomelon durvillii</i>	133	0.31
<i>Pumilicopta kessneri</i>	136	0.32
<i>Nitor medioximus</i>	136	0.32
<i>Pernagera officieri</i>	138	0.32
<i>Nitor pudibunda</i>	138	0.32
<i>Nautiliropa omicron</i>	139	0.32
<i>Wilhelminaia mathildae</i>	141	0.33
<i>Hadra bipartite</i>	141	0.33
<i>Nesopupa mooreana</i>	144	0.33

<i>Pupisoma orcula</i>	145	0.34
<i>Pupoides adalaidae</i>	147	0.34
<i>Thersites novaehollandiae</i>	147	0.34
<i>Coenocharopa multiradiata</i>	148	0.34
<i>Sinumelon aversum</i>	152	0.35
<i>Coneuplecta callosa</i>	155	0.36
<i>Tornatellinops jacksonensis</i>	156	0.36
<i>Bothriembryon bulla</i>	158	0.37
<i>Lamellaxis clavulinus</i>	160	0.37
<i>Sphaerospira blomfieldi</i>	164	0.38
<i>Strangesta franklandiensis</i>	164	0.38
<i>Pleuroxia adcockiana</i>	164	0.38
<i>Pupisoma circumlitum</i>	167	0.39
<i>Neveritis misella</i>	167	0.39
<i>Pernagera kingstonensis</i>	176	0.41
<i>Trachiopsis mucosa</i>	183	0.42
<i>Elsothera sericatula</i>	185	0.43
<i>Fastosarion virens</i>	190	0.44
<i>Liardetia scandens</i>	199	0.46
<i>Helicarion mastersi</i>	207	0.48
<i>Sinumelon nullarboricum</i>	212	0.49
<i>Rhytididae mv 3</i>	215	0.50
<i>Thryasoma diemenensis</i>	219	0.51
<i>Hedleyella falconeri</i>	220	0.51
<i>Triboniophorus graeffei</i>	236	0.55
<i>Pumilicopta bifurcata</i>	237	0.55
<i>Helicarion cuvieri</i>	238	0.55
<i>Bothriembryon barrette</i>	255	0.59
<i>Iotula microcosmos</i>	264	0.61
<i>Gastrocopta pediculus</i>	273	0.63
<i>Succinea australis</i>	274	0.64
<i>Discocharopa aperta</i>	283	0.66
<i>Westracystis lissus</i>	287	0.67
<i>Caryodes dufresnii</i>	296	0.69
<i>Sphaerospira fraseri</i>	315	0.73
<i>Elsothera funereal</i>	319	0.74
<i>Eremopeas interioris</i>	321	0.74
<i>Bothriembryon dux</i>	332	0.77
<i>Anoglypta launcestonensis</i>	332	0.77
<i>Stenacapha hamiltoni</i>	360	0.83
<i>Sphaerospira challisi</i>	366	0.85
<i>Stenopylis coarctate</i>	370	0.86
<i>Pupoides pacificus</i>	417	0.97
<i>Austrorhytida capillacea</i>	538	1.25
<i>Xanthomelon pachystylum</i>	547	1.27
<i>Eremopeas tuckeri</i>	562	1.30
<i>Meridolum corneovirens</i>	620	1.44
<i>Paralaoma caputspinulae</i>	637	1.48
Total	21745	50.45

Whilst there are a number of species of land snails with a relatively large number of records available for them, the reality is that most species have very few records available by which to assess their representation in the NRS. One thousand, one hundred and eighty seven land snails had 10 or fewer individual site records in the ANHAT database and so are not able to be practically assessed (**Table 57**). Furthermore, for many of these species, the information is so poor, it is impossible to assign them a preferred habitat. In many instances, the snail is known only by a reference number and relatively few specimens. Information on the habitats in which they were collected is not available, nor are there any observations of their habits. In this case, only very broad assumptions can be made about their requirements and any assessments made with due caution. There are so many species present in this group that essentially all areas of Australia are covered and it is not reasonably practical to point to any trends in the data. The presence of large highly localised radiations in particular genera also means that the species are highly localised and so are not likely or even able to provide large numbers of site records. Hence, the apparently large numbers of poorly recorded snails for a particular region (e.g. Kimberley) may not represent as an important region of poorly collected species as apparent (although it still can not be ignored). The listed snails encompass a broad range of habitats, but species dependent on rocky sites are present in larger numbers than may be anticipated. Species present in arid or semi-arid areas in particular are dependent on such sites and are likely to be highly endemic where rocky areas are isolated.

Table 57 Land snail species with 10 or fewer individual record sites in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
76 novae	1	0.0			100	NL
761 novae	1	0.0			100	NL
84 novae	1	0.0			100	NL
<i>Allocharopa erskinensis</i>	1	100.0	SE	For	300	NL
<i>Amphidromus cognatus</i>	1	0.0	NC	WL	100	NL
<i>Amplirhagada</i> 22	1	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 24	1	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 66	1	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 69	1	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 71	1	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 72	1	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 73	1	0.0	NW	RH	100	NL
<i>Amplirhagada alta</i>	1	0.0	NW	RH	100	NL
<i>Amplirhagada constricta</i>	1	0.0	NW		100	NL
<i>Amplirhagada</i> hc 1	1	0.0	NW		100	NL
<i>Auriculastra nevillei</i>	1	0.0	NE		100	NL
<i>Austrochloritis</i> br 2	1	0.0	EC		100	NL
<i>Austrochloritis</i> mv 9	1	0.0		RF	100	NL
<i>Austrochloritis</i> nn 4	1	0.0	EC	For	100	NL
<i>Austrochloritis</i> vc 3	1	100.0	EC	For	100	NL
* <i>Bothriembryon</i> location 5	1	100.0	SW	RH	100	NL
<i>Bothriembryon</i> aff <i>barretti</i>	1	0.0	SW	RH	100	NL
<i>Bothriembryon attenuata</i>	1	100.0	SW	RH	100	NL

<i>*Bothriembryon</i> location 6b	1	0.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 6c	1	0.0	SW	RH	100	NL
<i>Bothriembryon brugieri</i>	1	0.0	SW	RH	100	NL
<i>Bothriembryon c.f. colutleyi</i>	1	100.0	SW	RH	100	NL
<i>Bothriembryon cf sayi</i>	1	100.0	SW	RH	100	NL
<i>Bothriembryon coalseam</i>	1	100.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 8	1	0.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 11	1	0.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 12	1	0.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 13	1	100.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 17	1	0.0	SW	RH	100	NL
<i>Bothriembryon gratwicki cf.</i>	1	0.0	SW	RH	100	NL
<i>Bothriembryon hamersleyensis</i>	1	100.0	NWI	RH	100	NL
<i>*Bothriembryon</i> location 21	1	0.0	NWI	RH	100	NL
<i>*Bothriembryon</i> location 22	1	100.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 24	1	100.0	SW	RH	300	NL
<i>Bothriembryon irwin</i>	1	0.0	SW	RH	100	NL
<i>Bothriembryon kojonup</i>	1	0.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 26	1	100.0	SWI	RH	100	NL
<i>*Bothriembryon</i> location 29	1	0.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 33	1	0.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 35	1	0.0	SWI	RH	100	NL
<i>Bothriembryon perobesus cf.</i>	1	0.0	SW	RH	100	NL
<i>Bothriembryon revectus cf.</i>	1	0.0	SW	SL	100	NL
<i>*Bothriembryon</i> location 42	1	0.0	SW	RH	100	NL
<i>Camaenidae</i> 3	1	0.0			200	NL
<i>Camaenidae</i> bl 37	1	0.0	ECI		100	NL
<i>Camaenidae</i> bl 41	1	0.0	ECI		200	NL
<i>Camaenidae</i> bl 64	1	0.0	ECI		100	NL
<i>Camaenidae</i> bl 9	1	0.0	ECI		100	NL
<i>Camaenidae</i> br 6	1	0.0	EC		100	NL
<i>Camaenidae</i> br 7	1	100.0	EC		100	NL
<i>Camaenidae</i> cy 11	1	0.0	NE		100	NL
<i>Camaenidae</i> cy 7	1	0.0	NE		100	NL
<i>Camaenidae</i> mq 1	1	100.0	NE		100	NL
<i>Camaenidae</i> mq 4	1	0.0	NE		100	NL
<i>Camaenidae</i> ne 14	1	0.0	EC		200	NL
<i>Camaenidae</i> ne 20	1	0.0	EC		100	NL
<i>Camaenidae</i> nn 2	1	100.0	ECI		100	NL
<i>Camaenidae</i> nn 4	1	0.0	ECI		100	NL
<i>Camaenidae</i> nn 7	1	100.0	ECI		100	NL
<i>Camaenidae</i> nn 8	1	100.0	ECI		100	NL
<i>Camaenidae</i> nn 9	1	0.0	ECI		100	NL
<i>Camaenidae</i> sn 11	1	100.0	EC		100	NL
<i>Camaenidae</i> sn 19	1	0.0	EC		100	NL
<i>Camaenidae</i> sn 21	1	100.0	EC		100	NL
<i>Camaenidae</i> sn 3	1	0.0	EC		100	NL
<i>Camaenidae</i> sq 12	1	0.0	EC		100	NL
<i>Camaenidae</i> sq 3	1	100.0	EC		100	NL

<i>Camaenidae</i> sq 7	1	100.0	EC		100	NL
<i>Camaenidae</i> st 21	1	100.0	SE		100	NL
<i>Camaenidae</i> wt 8	1	100.0	NE		100	NL
<i>Cassidula aurisfelis</i>	1	100.0	NW	Littoral	100	NL
<i>Cassidula cf granulosa</i>	1	0.0	SE	Littoral	100	NL
<i>Cassidula cf truncata</i>	1	0.0	N	Littoral	100	NL
<i>Cassidula doliolum</i>	1	0.0	NE-NE	Littoral	200	NL
<i>Charopidae</i> bl 1	1	100.0	ECI		200	NL
<i>Charopidae</i> bl 12	1	0.0	ECI		200	NL
<i>Charopidae</i> bl 13	1	100.0	ECI		100	NL
<i>Charopidae</i> bl 16	1	0.0	ECI		100	NL
<i>Charopidae</i> bl 17	1	0.0	ECI		100	NL
<i>Charopidae</i> bl 20	1	100.0	ECI		100	NL
<i>Charopidae</i> bl 21	1	100.0	ECI		100	NL
<i>Charopidae</i> bl 24	1	0.0	ECI		100	NL
<i>Charopidae</i> bl 25	1	0.0	ECI		100	NL
<i>Charopidae</i> bl 7	1	0.0	ECI		100	NL
<i>Charopidae</i> bl 8	1	100.0	ECI		100	NL
<i>Charopidae</i> br 19	1	0.0	EC		100	NL
<i>Charopidae</i> br 21	1	0.0	EC		100	NL
<i>Charopidae</i> br 24	1	100.0	EC		100	NL
<i>Charopidae</i> br 41	1	0.0	EC		100	NL
<i>Charopidae</i> br 42	1	0.0	EC		100	NL
<i>Charopidae</i> br 43	1	0.0	EC		100	NL
<i>Charopidae</i> br 45	1	0.0	EC		100	NL
<i>Charopidae</i> br 9	1	0.0	EC		200	NL
<i>Charopidae</i> cy 1	1	0.0	NE		100	NL
<i>Charopidae</i> cy 3	1	0.0	NE		100	NL
<i>Charopidae</i> cy 5	1	0.0	NE		100	NL
<i>Charopidae</i> cy 6	1	0.0	NE		100	NL
<i>Charopidae</i> eu 3	1	0.0	NE		200	NL
<i>Charopidae</i> eu 4	1	0.0	NE		100	NL
<i>Charopidae</i> mq 16	1	0.0	NE		100	NL
<i>Charopidae</i> mv 10	1	100.0	EC		100	NL
<i>Charopidae</i> mv 15	1	0.0	EC		100	NL
<i>Charopidae</i> mv 19	1	100.0	EC		100	NL
<i>Charopidae</i> mv 21	1	0.0	EC		100	NL
<i>Charopidae</i> mv 32	1	100.0	EC		100	NL
<i>Charopidae</i> mv 42	1	100.0	EC		100	NL
<i>Charopidae</i> mv 43	1	100.0	EC		100	NL
<i>Charopidae</i> ne 12	1	0.0	EC		100	NL
<i>Charopidae</i> ne 18	1	0.0	EC		100	NL
<i>Charopidae</i> ne 21	1	0.0	EC		100	NL
<i>Charopidae</i> ne 29	1	0.0	EC		100	NL
<i>Charopidae</i> ne 5	1	0.0	EC		100	NL
<i>Charopidae</i> ne 6	1	0.0	EC		100	NL
<i>Charopidae</i> nn 10	1	100.0	CEI		100	NL
<i>Charopidae</i> nn 18	1	100.0	CEI		100	NL
<i>Charopidae</i> nn 19	1	100.0	CEI		100	NL
<i>Charopidae</i> nn 2	1	0.0	CEI		100	NL

<i>Charopidae</i> nn 20	1	0.0	CEI		200	NL
<i>Charopidae</i> sn 20	1	0.0	EC		100	NL
<i>Charopidae</i> sn 21	1	100.0	EC		100	NL
<i>Charopidae</i> sn 27	1	100.0	EC		100	NL
<i>Charopidae</i> sn 28	1	0.0	EC		100	NL
<i>Charopidae</i> sp b	1	100.0	NC		100	NL
<i>Charopidae</i> sq 35	1	100.0	EC		200	NL
<i>Charopidae</i> sq 36	1	100.0	EC		100	NL
<i>Charopidae</i> sq 37	1	0.0	EC		100	NL
<i>Charopidae</i> sq 40	1	0.0	EC		100	NL
<i>Charopidae</i> sq 43	1	100.0	EC		100	NL
<i>Charopidae</i> sq 45	1	0.0	EC		100	NL
<i>Charopidae</i> sq 5	1	0.0	EC		100	NL
<i>Charopidae</i> sq 7	1	0.0	EC		100	NL
<i>Charopidae</i> st 1	1	100.0	SE		100	NL
<i>Charopidae</i> st 12	1	100.0	SE		100	NL
<i>Charopidae</i> st 16	1	0.0	SE		100	NL
<i>Charopidae</i> st 21	1	100.0	SE		100	NL
<i>Charopidae</i> st 22	1	0.0	SE		100	NL
<i>Charopidae</i> st 23	1	0.0	SE		100	NL
<i>Charopidae</i> st 28	1	0.0	SE		100	NL
<i>Charopidae</i> st 29	1	0.0	SE		100	NL
<i>Charopidae</i> wt 12	1	100.0	NE		100	NL
<i>Charopidae</i> wt 16	1	100.0	NE		100	NL
<i>Charopidae</i> wt 17	1	100.0	NE		100	NL
<i>Charopidae</i> wt 22	1	100.0	NE		100	NL
<i>Charopidae</i> wt 33	1	0.0	NE		100	NL
<i>Charopidae</i> wt 35	1	0.0	NE		100	NL
<i>Charopidae</i> wt 37	1	100.0	NE		100	NL
<i>Charopidae</i> wt 4	1	0.0	NE		100	NL
<i>Charopidae</i> wt 47	1	100.0	NE		100	NL
<i>Charopidae</i> wt 50	1	0.0	NE		100	NL
<i>Charopidae</i> wt 54	1	0.0	NE		100	NL
<i>Charopidae</i> wt 56	1	100.0	NE		100	NL
<i>Charopidae</i> wt 57	1	100.0	NE		100	NL
<i>Charopidae</i> wt 61	1	100.0	NE		100	NL
<i>Charopidae</i> wt 62	1	0.0	NE		100	NL
<i>Charopidae</i> wt 64	1	100.0	NE		100	NL
<i>Charopidae</i> wt 68	1	100.0	NE		100	NL
<i>Charopidae</i> wt 72	1	100.0	NE		100	NL
<i>Charopidae</i> wt 78	1	100.0	NE		100	NL
<i>Charopidae</i> wt 8	1	100.0	NE		100	NL
<i>Charopidae</i> wt 80	1	100.0	NE		100	NL
<i>Charopidae</i> wt 82	1	0.0	NE		100	NL
<i>Charopidae</i> wt 83	1	0.0	NE		100	NL
<i>Coricudgia wollemiana</i>	1	0.0	EC	For	100	NL
<i>Cupedora bitaeniatus</i>	1	0.0	SC	RH	100	NL
<i>Cupedora cooperi</i>	1	0.0	SCI	RH	900	NL
				Littoral		
<i>Cylindrotis quadrasi</i>	1	0.0	NC	?	200	NL

<i>Cystopeltidae</i> nn 1	1	0.0	ECI		100	NL
<i>Cystopeltidae</i> sn 1	1	0.0	EC		100	NL
<i>Damochlora</i> 41	1	0.0	NW	RH	100	NL
<i>Damochlora</i> 42	1	0.0	NW	RH	300	NL
<i>Delinitesta gayndahensis</i>	1	0.0	NE	For	400	NL
<i>Dentherona aff tasmaniae</i>	1	0.0	Tas	WL	100	NL
<i>Dipnelix pertriosa</i>	1	100.0	SC	Sl	400	NL
<i>Echotruda</i> sq 1	1	100.0	EC		100	NL
<i>Elasmias pressus</i>	1	0.0	NC?	For	100	NL
<i>Epiniacium restifer</i>	1	100.0	SWI	WL	100	NL
<i>Exiligada qualis</i>	1	0.0	NW	RH	100	NL
<i>Expocystis</i> 2	1	0.0	EC?		100	NL
<i>Fastosarion bullaceus</i>	1	100.0	NE	For	100	NL
<i>Fastosarion strangei</i>	1	0.0	EC	For	400	NL
<i>Galadistes stutschburyi</i>	1	0.0	EC	For	200	NL
<i>Gastrocopta aff. adalaidae</i>	1	0.0	SC		100	NL
<i>Gastrocopta recondita</i>	1	0.0	NC	RH	100	NL
<i>Glyptorhagada bunyerooana</i>	1	100.0	SC	RH	100	NL
<i>Glyptorhagada pecuniosa</i>	1	100.0	SCI	RH	100	NL
<i>Gratilaoma cara</i>	1	100.0	SW	WL	200	NL
<i>Greenwoodoconcha nux</i>	1	0.0	Norfolk Is.	WL	200	NL
<i>Gyrocochlea aff. prava</i>	1	0.0	EC	For	100	NL
<i>Hedleyella whitei</i>	1	0.0	NE	For	100	NL
<i>Hedleyropa</i>						
<i>yarrangobillyensis</i>	1	0.0	SE	RH	100	NL
<i>Helicarion strangei</i>	1	0.0	SE?	For?	200	NL
<i>Helicarionidae</i> bl 13	1	100.0	ECI		100	NL
<i>Helicarionidae</i> bl 19	1	100.0	ECI		100	NL
<i>Helicarionidae</i> bl 20	1	100.0	ECI		100	NL
<i>Helicarionidae</i> bl 3	1	0.0	ECI		100	NL
<i>Helicarionidae</i> cc 1	1	0.0	NEI		100	NL
<i>Helicarionidae</i> cy 7	1	0.0	NE		100	NL
<i>Helicarionidae</i> eu 4	1	100.0	NE		100	NL
<i>Helicarionidae</i> mq 14	1	0.0	NE		100	NL
<i>Helicarionidae</i> mq 5	1	0.0	NE		100	NL
<i>Helicarionidae</i> mq 6	1	0.0	NE		100	NL
<i>Helicarionidae</i> mv 6	1	0.0	EC		100	NL
<i>Helicarionidae</i> nn 11	1	0.0	ECI		100	NL
<i>Helicarionidae</i> nn 6	1	0.0	ECI		100	NL
<i>Helicarionidae</i> sn 5	1	100.0	EC		100	NL
<i>Helicarionidae</i> sn 9	1	0.0	EC		100	NL
<i>Helicarionidae</i> sq 10	1	0.0	EC		100	NL
<i>Helicarionidae</i> st 1	1	0.0	SE		100	NL
<i>Helicarionidae</i> wt 28	1	100.0	NE		100	NL
<i>Helicarionidae</i> wt 30	1	100.0	NE		100	NL
<i>Insullaoma predicta</i>	1	100.0	SW	For	200	NL
<i>Laemodonta octanfracta</i>	1	100.0	Aus	Man	600	NL
<i>Laemodonta punctigera</i>	1	100.0	EC	Man	100	NL
<i>Lenwebbia paluma</i>	1	100.0	NE	For	100	NL
<i>Liardetia sculpta</i>	1	0.0			100	NL

<i>Luinodiscus sublesta</i>	1	0.0	SE	WL	200	NL
<i>Melampus fasciatus</i>	1	0.0	NC-NE	Littoral	100	NL
<i>Melampus flavus</i>	1	0.0		Littoral	100	NL
<i>Melampus granifer</i>	1	100.0	NW, NE	Littoral	100	NL
<i>Ningbingia laurina?</i>	1	0.0	NW	RH	100	NL
<i>Noctepuna poiretiana</i>	1	0.0	NE	RF	400	NL
<i>Ophicardelus sulcatus</i>	1	0.0	SE	Wet	300	NL
<i>Paralaoma predicta</i>	1	100.0		?	100	NL
<i>Paralaoma retinoides</i>	1	100.0	NC	SL	200	NL
<i>Paralaoma</i> sn 1	1	0.0	EC		100	NL
<i>Parmacochlea semoni</i>	1	0.0	NE	For	100	NL
<i>Pernagera albolabris</i>	1	0.0			100	NL
<i>Pillomena a</i>	1	100.0			100	NL
<i>Pilsbrycharopa tumida</i>	1	0.0	NE	WL	100	NL
<i>Pleuroxia truca</i>	1	100.0	CI	RH	100	NL
<i>Pravonitor</i> cy 13	1	0.0	NE	For	100	NL
<i>Punctidae</i> bl 1	1	0.0	ECI		100	NL
<i>Punctidae</i> mq 1	1	0.0	NE		100	NL
<i>Punctidae</i> nn 1	1	100.0	ECI		100	NL
<i>Punctidae</i> st 4	1	100.	SE		100	NL
<i>Punctidae</i> st 5	1	100.0	SE		100	NL
<i>Punctidae</i> wt 1	1	0.00	NE		100	NL
<i>Pupillidae</i> wt 2	1	100.0	NE		100	NL
<i>Pupisoma novae</i>	1	100.0			100	NL
<i>Quistrachia</i> 1984	1	0.00	NW		100	NL
<i>Quistrachia</i> gc	1	0.00	NC		100	NL
<i>Quistrachia herbertana</i>	1	100.0	NW		100	NL
* <i>Quistrachia</i> location 6	1	100.0	NW		100	NL
<i>Rhagada</i> 1	1	0.00	NW	RH	300	NL
<i>Rhagada</i> aff. <i>construa</i>	1	0.00	NW	RH	100	NL
<i>Rhophodon colmani</i>	1	0.00	EC	For	100	NL
<i>Rhophodon</i> f	1	100.0	EC	For	100	NL
<i>Rhytididae</i> bl 6	1	100.0	ECI		100	NL
<i>Rhytididae</i> mq 3	1	100.0	NE		100	NL
<i>Rhytididae</i> wt 7	1	0.00	NE		100	NL
<i>Roblinella</i> aff. <i>mathinnae</i>	1	100.0	Tas	For	100	NL
<i>Roblinella meehan</i>	1	0.0	Tas	For	100	NL
* <i>Roblinella</i> location 42a	1	0.0	EC	For	100	NL
<i>Semotrachia</i> sr 1	1	0.0	CI	RH	100	NL
<i>Semotrachia</i> st 1	1	0.0	CI	RH	100	NL
<i>Setobaudinia</i> 2	1	0.0	NW	RH	100	NL
<i>Setobaudinia</i> 55	1	0.0	NW	RH	200	NL
<i>Setobaudinia</i> 57	1	0.0	NW	RH	200	NL
<i>Setobaudinia</i> 60	1	0.0	NW	RH	100	NL
<i>Sharniropa borenorensis</i>	1	0.0	EC	RH	100	NL
<i>Sinployea intermedia</i>	1	0.0			100	NL
<i>Sinumelon hortulana</i>	1	0.0	CI	RH	100	NL
<i>Sinumelon olgana</i>	1	100.0	CI	RH	100	NL
<i>Sinumelon simulante</i>	1	0.0	SEI	RH	100	NL
<i>Sphaerospira whartoni</i>	1	0.0	Holbourne Is.	WL	400	NL

<i>Spurlingia gemma</i> ?	1	0.0	NE	For	100	NL
<i>Stenacapha d</i>	1	100.0	Tas	For	100	NL
<i>Steorra dougsparkesi</i>	1	0.0			100	NL
<i>Steorra estherlilleya</i>	1	0.0			200	NL
<i>Steorra montstuartensis</i>	1	0.0			100	NL
<i>Strangesta sanguinolenta</i>	1	0.0	SE	For	100	NL
<i>Strepsitaurus milyeringus</i>	1	100.0	WC	RH	100	NL
<i>Succinea caurina</i>	1	0.0			100	NL
<i>Succinea contenta</i>	1	0.0	SW	SL, Wet	100	NL
<i>Tasmaphena helmsiana</i>	1	0.0	SE	WL	300	NL
<i>Thersites theses</i>	1	0.0	EC	RF, For	100	NL
<i>Torresitrachia</i> 46	1	0.0	NW	RH	200	NL
<i>Torresitrachia</i> 48	1	0.0	NW	RH	300	NL
<i>Torresitrachia blackiana</i>	1	0.0	NW	RH	200	NL
<i>Torresitrachia</i> cc 1	1	0.0	NW	RH	100	NL
<i>Torresitrachia</i> rfs	1	100.0	NW	RH	100	NL
<i>Trocholaoma ninguicola</i>	1	0.0	SE	For	100	NL
<i>Trocholaoma spiceri</i>	1	100.0	Tas	For		NL
<i>Allocharopa macgregor</i>	2	0.0	SE	For	200	NL
<i>Allocharopa okeana</i>	2	0.0	SE, Mon	WL	500	NL
* <i>Allocharopa</i> location 2	2	100.0	SE	For	200	NL
<i>Amplirhagada</i> 1	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 18	2	100.0	NW	RH	100	NL
<i>Amplirhagada</i> 19	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 2	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 20	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 21	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 23	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 26	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 28	2	100.0	NW	RH	100	NL
<i>Amplirhagada</i> 29	2	100.0	NW	RH	100	NL
<i>Amplirhagada</i> 31	2	100.0	NW	RH	100	NL
<i>Amplirhagada</i> 32	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 33	2	100.0	NW	RH	100	NL
<i>Amplirhagada</i> 35	2	0.0	NW	RH	100	NL
<i>Amplirhagada</i> 38	2	100.0	NW	RH	100	NL
<i>Amplirhagada</i> 64	2	0.0	NW	RH	400	NL
<i>Amplirhagada</i> 67	2	0.0	NW	RH	200	NL
<i>Amplirhagada</i> 74	2	0.0	NW	RH	200	NL
<i>Amplirhagada</i> <i>cambridgensis</i>	2	0.0	NW	RH	100	NL
<i>Amplirhagada percita</i> <i>ignora</i>	2	0.0	NW	RH	200	NL
<i>Austrochloritis</i> ne 3	2	0.0	NE	For	200	NL
<i>Austrochloritis</i> sn 23	2	0.0	EC	For	100	NL
<i>Austrorhytida otwayensis</i>	2	0.0	SE	For	100	NL
<i>Bothriembryon</i> 1976	2	50.0	SW	RH	300	NL
* <i>Bothriembryon</i> location 6a	2	0.0	SC	RH	200	NL
* <i>Bothriembryon</i> location 9	2	0.0	SW	RH	200	NL
<i>Bothriembryon decrensensis</i>	2	0.0	SW	RH	200	NL

<i>*Bothriembryon</i> location 19	2	50.0	SW	RH	200	NL
<i>Bothriembryon gratwicki</i>	2	50.0	SW	RH	800	NL
<i>Bothriembryon maxwelli</i>	2	100.0	SW	RH	200	NL
<i>Bothriembryon minor</i>	2	50.0	SW	RH	200	NL
<i>*Bothriembryon</i> location 30	2	100.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 31	2	100.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 32	2	100.0	SW	RH	100	NL
<i>*Bothriembryon</i> location 34	2	0.0	SW	RH	200	NL
<i>Bothriembryon novae</i>	2	50.0	SW	RH	200	NL
<i>Bothriembryon praecelsus</i>						
cf.	2	0.0	SW	RH	200	NL
<i>Bothriembryon rothsay</i>	2	0.0	SW	RH	300	NL
<i>Camaenidae</i> 1	2	0.0			400	NL
<i>Camaenidae</i> bl 16	2	50.0	ECI		200	NL
<i>Camaenidae</i> bl 23	2	50.0	ECI		200	NL
<i>Camaenidae</i> bl 26	2	0.0	ECI		200	NL
<i>Camaenidae</i> bl 34	2	100.0	ECI		200	NL
<i>Camaenidae</i> bl 35	2	0.0	ECI		100	NL
<i>Camaenidae</i> bl 36	2	0.0	ECI		100	NL
<i>Camaenidae</i> bl 4	2	0.0	ECI		200	NL
<i>Camaenidae</i> bl 40	2	0.0	ECI		300	NL
<i>Camaenidae</i> bl 44	2	50.0	ECI		100	NL
<i>Camaenidae</i> bl 7	2	50.0	ECI		200	NL
<i>Camaenidae</i> br 3	2	50.0	EC		300	NL
<i>Camaenidae</i> eu 1	2	0.0	NE		100	NL
<i>Camaenidae</i> eu 4	2	0.0	NE		100	NL
<i>Camaenidae</i> eu 5	2	100.0	NE		200	NL
<i>Camaenidae</i> gc 1	2	0.0	NC		100	NL
<i>Camaenidae</i> mv 13	2	100.0	EC		100	NL
<i>Camaenidae</i> ne 16	2	50.0	EC		200	NL
<i>Camaenidae</i> nn 1	2	0.0	ECI		100	NL
<i>Camaenidae</i> sn 1	2	100.0	EC		200	NL
<i>Camaenidae</i> sn 4	2	100.0	EC		200	NL
<i>Camaenidae</i> sn 5	2	0.0	EC		200	NL
<i>Camaenidae</i> sn 7	2	100.0	EC		200	NL
<i>Camaenidae</i> sq 10	2	0.0	EC		200	NL
<i>Camaenidae</i> st 4	2	0.0	SE		200	NL
<i>Camaenidae</i> vc 2	2	50.0	SE		200	NL
<i>Charopidae</i> bl 10	2	100.0	ECI		100	NL
<i>Charopidae</i> bl 14	2	0.0	ECI		200	NL
<i>Charopidae</i> bl 15	2	100.0	ECI		200	NL
<i>Charopidae</i> bl 19	2	0.0	ECI		200	NL
<i>Charopidae</i> bl 2	2	0.0	ECI		200	NL
<i>Charopidae</i> bl 23	2	0.0	ECI		200	NL
<i>Charopidae</i> bl 4	2	100.0	ECI		200	NL
<i>Charopidae</i> bl 6	2	50.0	ECI		100	NL
<i>Charopidae</i> br 11	2	50.0	EC		300	NL
<i>Charopidae</i> br 16	2	0.0	EC		200	NL
<i>Charopidae</i> br 36	2	50.0	EC		300	NL
<i>Charopidae</i> br 37	2	0.0	EC		200	NL

<i>Charopidae</i> br 4	2	100.0	EC	400	NL
<i>Charopidae</i> eu 2	2	0.0	NE	200	NL
<i>Charopidae</i> mq 13	2	100.0	NE	300	NL
<i>Charopidae</i> mq 14	2	0.0	NE	200	NL
<i>Charopidae</i> mq 18	2	100.0	NE	200	NL
<i>Charopidae</i> mv 20	2	100.0	EC	100	NL
<i>Charopidae</i> mv 28	2	100.0	EC	100	NL
<i>Charopidae</i> mv 3	2	100.0	EC	100	NL
<i>Charopidae</i> mv 39	2	100.0	EC	200	NL
<i>Charopidae</i> mv 41	2	100.0	EC	200	NL
<i>Charopidae</i> mv 9	2	100.0	EC	200	NL
<i>Charopidae</i> ne 10	2	0.0	EC	200	NL
<i>Charopidae</i> ne 15	2	0.0	EC	200	NL
<i>Charopidae</i> ne 2	2	0.0	EC	200	NL
<i>Charopidae</i> ne 20	2	0.0	EC	200	NL
<i>Charopidae</i> ne 31	2	0.0	EC	200	NL
<i>Charopidae</i> nn 3	2	50.0	CEI	200	NL
<i>Charopidae</i> nn 7	2	0.0	CEI	200	NL
<i>Charopidae</i> sn 1	2	0.0	EC	200	NL
<i>Charopidae</i> sn 15	2	100.0	EC	200	NL
<i>Charopidae</i> sn 16	2	100.0	EC	200	NL
<i>Charopidae</i> sn 22	2	0.0	EC	100	NL
<i>Charopidae</i> sn 3	2	50.0	EC	100	NL
<i>Charopidae</i> sp f	2	100.0	NC	200	NL
<i>Charopidae</i> sq 1	2	0.0	EC	200	NL
<i>Charopidae</i> sq 10	2	50.0	EC	200	NL
<i>Charopidae</i> sq 12	2	0.0	EC	300	NL
<i>Charopidae</i> sq 18	2	0.0	EC	100	NL
<i>Charopidae</i> sq 22	2	50.0	EC	300	NL
<i>Charopidae</i> sq 29	2	100.0	EC	200	NL
<i>Charopidae</i> sq 38	2	50.0	EC	200	NL
<i>Charopidae</i> st 14	2	0.0	SE	200	NL
<i>Charopidae</i> st 15	2	50.0	SE	200	NL
<i>Charopidae</i> st 20	2	50.0	SE	200	NL
<i>Charopidae</i> st 24	2	50.0	SE	200	NL
<i>Charopidae</i> st 3	2	0.0	SE	100	NL
<i>Charopidae</i> st 4	2	100.0	SE	100	NL
<i>Charopidae</i> st 8	2	50.0	SE	200	NL
<i>Charopidae</i> st 9	2	50.0	SE	200	NL
<i>Charopidae</i> wt 10	2	50.0	NE	200	NL
<i>Charopidae</i> wt 11	2	100.0	NE	200	NL
<i>Charopidae</i> wt 15	2	100.0	NE	200	NL
<i>Charopidae</i> wt 20	2	100.0	NE	100	NL
<i>Charopidae</i> wt 24	2	0.0	NE	100	NL
<i>Charopidae</i> wt 26	2	50.0	NE	200	NL
<i>Charopidae</i> wt 27	2	100.0	NE	100	NL
<i>Charopidae</i> wt 30	2	100.0	NE	200	NL
<i>Charopidae</i> wt 44	2	100.0	NE	200	NL
<i>Charopidae</i> wt 46	2	100.0	NE	200	NL
<i>Charopidae</i> wt 49	2	100.0	NE	200	NL

<i>Charopidae</i> wt 53	2	100.0	NE		200	NL
<i>Charopidae</i> wt 55	2	50.0	NE		200	NL
<i>Charopidae</i> wt 58	2	100.0	NE		100	NL
<i>Charopidae</i> wt 59	2	100.0	NE		100	NL
<i>Charopidae</i> wt 6	2	100.0	NE		200	NL
<i>Charopidae</i> wt 65	2	100.0	NE		200	NL
<i>Charopidae</i> wt 7	2	50.0	NE		200	NL
<i>Charopidae</i> wt 73	2	100.0	NE		100	NL
<i>Charopidae</i> wt 79	2	50.0	NE		100	NL
<i>Charopidae</i> wt 81	2	0.0	NE		200	NL
<i>Craterodiscus pricei</i>	2	100.0	NE	For	100	NL
<i>Cristilabrum</i> 1990	2	0.0	NW	RH	100	NL
<i>Cucullarion parkini</i>	2	0.0	EC	For	200	NL
<i>Cupedora nottensis</i>	2	0.0	SC	RH	100	NL
<i>Damochlora</i> 15	2	100.0	NW	RH	100	NL
<i>Damochlora</i> 4	2	0.0	NW	RH	200	NL
<i>Danielleilona multicostata</i>	2	0.0	NE, Mon	For	100	NL
				WL,		
<i>Discomelon</i> ne 24	2	0.0	SEI	RH	100	NL
<i>Echonitor albumenoides</i>	2	0.0	SC	RH	500	NL
<i>Egilomen cochlidium</i>	2	50.0	NC	For	300	NL
<i>Elsothera murrayana</i>	2	0.0	SC	WL	800	NL
<i>Elsothera submurrayana</i>	2	0.0	EC	For	200	NL
				WL,		
<i>Galadistes bourkensis</i>	2	0.0	ECI	RH	200	NL
<i>Gastrocopta margaretae</i>						
<i>pilbarana</i>	2	0.0	WC	RH	100	NL
<i>Gastrocopta servilis</i>	2	0.0	N	Gen	400	NL
<i>Gastrocopta tatei</i>	2	0.0	CI	RH	300	NL
<i>Geminoropa a</i>	2	0.0	Tas?	For?	300	NL
<i>Glyptorhagada carinata</i>	2	50.0	SC	RH	400	NL
<i>Glyptorhagada</i>						
<i>tattawuppana</i>	2	0.0	SC	RH	100	NL
<i>Glyptorhagada wilkawillina</i>	2	50.0	SC, SCI	RH	300	NL
<i>Glyptorhagada wilkawillina</i>						
<i>wilkawillina</i>	2	100.0	SC, SCI	RH	400	NL
<i>Granulomelon</i> mc 1	2	0.0	CI	RH	200	NL
<i>Hadra funiculata</i>	2	0.0	Torres St.	RF	1000	NL
<i>Helicarion hyalinus</i>	2	50.0	EC	For	200	NL
<i>Helicarionidae</i> bl 15	2	0.0	ECI		300	NL
<i>Helicarionidae</i> bl 21	2	50.0	ECI		200	NL
<i>Helicarionidae</i> cy 5	2	100.0	NE		200	NL
<i>Helicarionidae</i> mq 10	2	100.0	NE		100	NL
<i>Helicarionidae</i> mq 2	2	50.0	NE		100	NL
<i>Helicarionidae</i> mq 4	2	0.0	NE		400	NL
<i>Helicarionidae</i> ne 3	2	100.0	EC		100	NL
<i>Helicarionidae</i> nn 1	2	50.0	ECI		200	NL
<i>Helicarionidae</i> nn 7	2	50.0	ECI		300	NL
<i>Helicarionidae</i> sq 8	2	0.0	EC		200	NL
<i>Helicarionidae</i> wt 20	2	100.0	NE		100	NL

<i>Helicarionidae</i> wt 22	2	100.0	NE		100	NL
<i>Helicarionidae</i> wt 5	2	50.0	NE		200	NL
<i>Kimboraga</i> 11	2	0.0	NW	RH	100	NL
<i>Lacustrelax yerelinana</i>	2	0.0	SCI	RH	500	NL
<i>Letomola barrenensis</i>	2	100.0	Tas	Sl	300	NL
<i>Liardetia doliolum</i>	2	0.0	NC-NE	SL	400	NL
<i>Macrophallikaropa stenoumbilicata</i>	2	0.0	Tas	For	100	NL
<i>Magilaoma a</i>	2	100.0	SE?	WL?	200	NL
<i>Meridolum</i> sn 14	2	100.0	EC	For	100	NL
<i>Montanomelon angatjana</i>	2	0.0	CI	RH	100	NL
<i>Mulathena a</i>	2	50.0	Tas	For	300	NL
<i>Mulathena b</i>	2	100.0	Tas	For	200	NL
<i>Mussonula fallax</i>	2	50.0	EC	For	400	NL
<i>Mysticarion hyalina</i>	2	50.0	EC	For	200	NL
<i>Noctepuna poiretiana clenchi</i>	2	0.0	NE	RF, For	200	NL
<i>Pillomena otwayensis</i>	2	100.0	SE	For	100	NL
<i>Pleuroxia a</i>	2	0.0		RH	100	NL
<i>Pleuroxia commenta</i>	2	0.0	SCI	RH	500	NL
<i>Pleuroxia italowiana</i>	2	100.0	SCI	RH	400	NL
<i>Pleuroxia mawsoni</i>	2	50.0	SCI	RH	400	NL
<i>Pravonitor cy</i> 8	2	50.0	NE	For	200	NL
<i>Punctidae</i> sn 2	2	0.0	EC		100	NL
<i>Punctidae</i> wt 3	2	0.0	NE		200	NL
<i>Pythia undata</i>	2	50.0		Man	300	NL
<i>Retroterra</i> 9	2	0.0	NW	For	200	NL
<i>Rhagada</i> 2	2	0.0	NW	RH	300	NL
<i>Rhophodon elizabethae</i>	2	50.0	EC	For	200	NL
<i>Rhytididae</i> bl 5	2	50.0	ECI		200	NL
<i>Rhytididae</i> mq 1	2	100.0	NE		200	NL
<i>Rhytididae</i> mv 4	2	100.0	EC		100	NL
<i>Rhytididae</i> mv 5	2	0.0	EC		200	NL
<i>Rhytididae</i> nn 1	2	0.0	EC		100	NL
<i>Rhytididae</i> wt 3	2	0.0	NE		100	NL
<i>Roblinella a</i>	2	0.0	Tas	For	200	NL
<i>Semotrachia cr</i> 1	2	0.0	CI	RH	200	NL
<i>Semotrachia discoidea</i>	2	0.0	SC	RH	200	NL
<i>Semotrachia fr</i> 1	2	0.0	CI	RH	200	NL
<i>Semotrachia huckittana</i>	2	100.0	CI	RH	100	NL
<i>Setobaudinia</i> 1	2	0.0	NW	RH	100	NL
<i>Setobaudinia</i> 3	2	0.0	NW	RH	200	NL
<i>Setobaudinia</i> 51	2	0.0	NW	RH	100	NL
<i>Setobaudinia</i> 58	2	0.0	NW	RH	200	NL
<i>Setobaudinia</i> 59	2	0.0	NW	RH	200	NL
<i>Setobaudinia</i> 6	2	0.0	NW	RH	100	NL
<i>Setobaudinia</i> 62	2	0.0	NW	RH	300	NL
<i>Setomedea nudicostata</i>	2	100.0	NE	For	100	NL
<i>Sinumelon cooperi</i>	2	0.0	SC	RH	500	NL
<i>Sinumelon flindersi?</i>	2	100.0	SC	RH	200	NL

<i>Sinumelon hullanum</i>	2	0.0	NCI	RH	200	NL
<i>Sinumelon marshalli</i>	2	0.0	NEI	RH	200	NL
<i>Stenacapha vitriniformis</i>	2	100.0	Tas	For	200	NL
<i>Succineidae cy 1</i>	2	0.0	NE		200	NL
<i>Succineidae gc 1</i>	2	0.0	NC		200	NL
<i>Trocholaoma a</i>	2	100.0			100	NL
<i>Trochomorpha melvillensis</i>	2	0.0	Melville Is.	For	200	NL
<i>Victaphanta a</i>	2	100.0	SE?	For	100	NL
<i>Zachrysia provisoria</i>	2	100.0	Introduced	Gen	100	NL
<i>*Allocharopa location 1</i>	3	0.0	SE	WL	300	NL
<i>Amplirhagada 30</i>	3	0.0	NW	RH	300	NL
<i>Amplirhagada 34</i>	3	33.3	NW	RH	400	NL
<i>Amplirhagada 70</i>	3	0.0	NW	RH	100	NL
<i>Amplirhagada alta</i>						
<i>intermedia</i>	3	0.0	NW	RH	400	NL
<i>Amplirhagada burrowsena</i>	3	0.0	NW	RH	200	NL
<i>Austrochloritis astaeus</i>	3	66.7	NE	For	400	NL
<i>Austrochloritis ne 2</i>	3	0.0	NE	For	300	NL
<i>Austrochloritis ne 8</i>	3	0.0	NE	For	200	NL
<i>Austrochloritis sn 12</i>	3	33.3	EC	For	300	NL
<i>Baudinella 8</i>	3	0.0	NW	RH	200	NL
<i>*Bothriembryon location 16</i>	3	0.0	SW	SL	600	NL
<i>*Bothriembryon location 20</i>	3	66.7	SW	RH	400	NL
<i>*Bothriembryon location 23</i>	3	0.0	SWI	RH	300	NL
<i>*Bothriembryon location 28</i>	3	100.0	SW	RH	100	NL
<i>Bothriembryon praecelsus</i>	3	33.3	SW	RH	500	NL
<i>*Bothriembryon location 39</i>	3	33.3	SW	RH	200	NL
<i>Camaenidae bl 12</i>	3	0.0	ECI		300	NL
<i>Camaenidae bl 27</i>	3	0.0	ECI		100	NL
<i>Camaenidae bl 29</i>	3	0.0	ECI		300	NL
<i>Camaenidae bl 30</i>	3	33.3	ECI		200	NL
<i>Camaenidae bl 56</i>	3	100.0	ECI		300	NL
<i>Camaenidae bl 58</i>	3	0.0	ECI		100	NL
<i>Camaenidae bl 6</i>	3	66.7	ECI		300	NL
<i>Camaenidae bl 8</i>	3	100.0	ECI		200	NL
<i>Camaenidae br 2</i>	3	100.0	EC		300	NL
<i>Camaenidae br 5</i>	3	0.0	EC		400	NL
<i>Camaenidae eu 12</i>	3	0.0	NE		200	NL
<i>Camaenidae eu 19</i>	3	0.0	NE		400	NL
<i>Camaenidae eu 7</i>	3	0.0	NE		200	NL
<i>Camaenidae eu 8</i>	3	0.0	NE		300	NL
<i>Camaenidae mv 14</i>	3	66.7	EC		400	NL
<i>Camaenidae mv 3</i>	3	0.0	EC		200	NL
<i>Camaenidae ne 24</i>	3	66.7	EC		300	NL
<i>Camaenidae ne 5</i>	3	0.0	EC		300	NL
<i>Camaenidae nn 5</i>	3	66.7	ECI		300	NL
<i>Camaenidae sq 2</i>	3	33.3	EC		300	NL
<i>Charopidae bl 18</i>	3	0.0	ECI		300	NL
<i>Charopidae bl 9</i>	3	0.0	ECI		300	NL
<i>Charopidae br 18</i>	3	33.3	EC		400	NL

<i>Charopidae</i> br 25	3	66.7	EC		400	NL
<i>Charopidae</i> br 31	3	0.0	EC		300	NL
<i>Charopidae</i> br 34	3	33.3	EC		400	NL
<i>Charopidae</i> mq 2	3	0.0	NE		300	NL
<i>Charopidae</i> mv 1	3	33.3	EC		200	NL
<i>Charopidae</i> mv 29	3	66.7	EC		200	NL
<i>Charopidae</i> mv 34	3	100.0	EC		200	NL
<i>Charopidae</i> mv 36	3	66.7	EC		200	NL
<i>Charopidae</i> mv 37	3	100.0	EC		200	NL
<i>Charopidae</i> mv 44	3	100.0	EC		100	NL
<i>Charopidae</i> mv 5	3	66.7	EC		200	NL
<i>Charopidae</i> ne 14	3	0.0	EC		300	NL
<i>Charopidae</i> ne 27	3	0.0	EC		300	NL
<i>Charopidae</i> ne 28	3	0.0	EC		300	NL
<i>Charopidae</i> nn 23	3	33.3	CEI		300	NL
<i>Charopidae</i> nn 24	3	0.0	CEI		300	NL
<i>Charopidae</i> sn 18	3	0.0	EC		200	NL
<i>Charopidae</i> sn 25	3	33.3	EC		300	NL
<i>Charopidae</i> sn 4	3	0.0	EC		200	NL
<i>Charopidae</i> sn 7	3	0.0	EC		100	NL
<i>Charopidae</i> sq 13	3	0.0	EC		300	NL
<i>Charopidae</i> sq 14	3	0.0	EC		300	NL
<i>Charopidae</i> sq 2	3	33.3	EC		300	NL
<i>Charopidae</i> sq 24	3	66.7	EC		300	NL
<i>Charopidae</i> sq 30	3	0.0	EC		200	NL
<i>Charopidae</i> sq 42	3	33.3	EC		300	NL
<i>Charopidae</i> sq 46	3	66.7	EC		100	NL
<i>Charopidae</i> sq 8	3	0.0	EC		300	NL
<i>Charopidae</i> sq 9	3	0.0	EC		200	NL
<i>Charopidae</i> st 2	3	100.0	SE		400	NL
<i>Charopidae</i> st 27	3	100.0	SE		200	NL
<i>Charopidae</i> wt 14	3	100.0	NE		100	NL
<i>Charopidae</i> wt 23	3	33.3	NE		100	NL
<i>Charopidae</i> wt 3	3	0.00	NE		300	NL
<i>Charopidae</i> wt 31	3	66.7	NE		300	NL
<i>Charopidae</i> wt 38	3	33.3	NE		400	NL
<i>Charopidae</i> wt 41	3	0.0	NE		300	NL
<i>Charopidae</i> wt 43	3	100.0	NE		300	NL
<i>Charopidae</i> wt 45	3	100.0	NE		300	NL
<i>Charopidae</i> wt 52	3	100.0	NE		100	NL
<i>Charopidae</i> wt 76	3	33.3	NE		200	NL
<i>Cralopa kaputarensis</i>	3	66.7	EC-SE	For	200	NL
<i>Cystopelta</i> nn 1	3	66.7	ECI		300	NL
<i>Cystopeltidae</i> nn 2	3	33.3	ECI		300	NL
<i>Damochlora millepunctata</i>	3	0.0	NW	RH	200	NL
<i>Eclipsena elleryi</i>	3	66.7	NE		500	NL
<i>Fastosarion aquavitae</i>	3	0.0	NE	For	400	NL
<i>Glyptorhagada</i> 2	3	0.0	SC		300	NL
<i>Glyptorhagada euglypta</i>	3	0.0	SCI	SL, RH	400	NL
<i>Glyptorhagada wilkawillina</i>	3	0.0	SC, SCI	RH	400	NL

<i>umbilicata</i>						
<i>Gyrocochlea convoluta</i>	3	33.3	EC	For	400	NL
<i>Helicarion porrectus</i>	3	66.7	EC	For	200	NL
<i>Helicarionidae</i> bl 18	3	0.0	ECI		300	NL
<i>Helicarionidae</i> bl 6	3	0.0	ECI		400	NL
<i>Helicarionidae</i> bl 8	3	0.0	ECI		300	NL
<i>Helicarionidae</i> cy 11	3	0.0	NE		300	NL
<i>Helicarionidae</i> cy 12	3	66.7	NE		300	NL
<i>Helicarionidae</i> eu 5	3	0.0	NE		400	NL
<i>Helicarionidae</i> mq 11	3	33.3	NE		400	NL
<i>Helicarionidae</i> mq 13	3	0.0	NE		300	NL
<i>Helicarionidae</i> nn 10	3	0.0	ECI		300	NL
<i>Helicarionidae</i> nn 3	3	100.0	ECI		300	NL
<i>Helicarionidae</i> sn 4	3	66.7	EC		300	NL
<i>Helicarionidae</i> sq 14	3	100.0	EC		100	NL
<i>Helicarionidae</i> sq 6	3	100.0	EC		100	NL
<i>Helicarionidae</i> wt 14	3	66.7	NE		200	NL
<i>Helicarionidae</i> wt 16	3	100.0	NE		300	NL
<i>Melampus</i> cf <i>castaneus</i>	3	0.0	NW-NE	Littoral	300	NL
<i>Melocystis exclusus</i>	3	33.3	EC	For	200	NL
<i>Mysticarion leucospira</i>	3	0.0	EC	For	200	NL
<i>Ngairea levicostata</i>	3	100.0	EC	For	200	NL
<i>Pasmaditta jungermanniae</i>	3	0.0	Tas	WL	300	NL
<i>Pedicamista a</i>	3	33.3	Tas	WL	300	NL
<i>Pernagera lena</i>	3	100.0	SW	WL	300	NL
<i>Pleuroxia abstans</i>	3	66.7	WC	RH	200	NL
<i>Pleuroxia carmeena</i>	3	0.0	SCI	RH	200	NL
<i>Pleuroxia musga</i>	3	0.0	SCI	RH	300	NL
<i>Punctidae</i> bl 2	3	100.0	ECI		200	NL
<i>Punctidae</i> ne 1	3	66.7	ECI		300	NL
<i>Pupilla ficulnea</i>	3	33.3	NCI	RH	400	NL
<i>Pupillidae</i> st 1	3	66.7	SE		300	NL
<i>Pupillidae</i> wt 1	3	66.7	NE		300	NL
<i>Rhachistia histrio</i>	3	33.3	NE	For	1000	NL
<i>Rhagada crystallla</i>	3	0.0	NW	RH	200	NL
<i>Rhophodon paucidentata</i>	3	100.0	EC	For	200	NL
<i>Rhytididae</i> bl 8	3	0.0	ECI		300	NL
<i>Rhytididae</i> cy 2	3	33.3	NE		200	NL
<i>Rhytididae</i> sq 1	3	33.3	EC		300	NL
<i>Rhytididae</i> wt 2	3	66.7	NE		200	NL
<i>Rhytididae</i> wt 5	3	100.0	NE		200	NL
<i>Semotrachia illarana</i>	3	0.0	CI	RH	200	NL
<i>Semotrachia illbilleeana</i>	3	0.0	CI	RH	100	NL
<i>Semotrachia jinkana</i>	3	0.0	CI	RH	100	NL
<i>Semotrachia mannensis</i>	3	0.0	SCI	RH	200	NL
<i>Setobaudinia</i> 56	3	66.7	NW	RH	300	NL
<i>Setobaudinia</i> 61	3	0.0	NW	RH	300	NL
<i>Sinumelon schevilli</i>	3	0.0	CI	RH	400	NL
<i>Sphaerospira mossmani</i>	3	33.3	NE		200	NL
<i>Stenacapha b</i>	3	0.0	Tas	For	300	NL

<i>Steorra hannahrichardsae</i>	3	33.3			300	NL
<i>Strangesta strangei</i>	3	0.0	EC	For	2100	NL
<i>Succineidae</i> mv 1	3	0.0	EC		200	NL
<i>Tatemelon inexpectatum</i>	3	0.0	SC	RH	200	NL
				For,		
<i>Thryasona</i> aff. <i>diemenensis</i>	3	33.3	Tas	WL	200	NL
<i>Torresitrachia</i> 45	3	0.0	NW	RH	200	NL
<i>Triboniophorus</i> sn 1	3	33.3	EC		200	NL
4a novae	4	75.0			300	NL
<i>Amplirhagada</i> 17	4	0.0	NW	RH	200	NL
<i>Amplirhagada</i> 25	4	0.0	NW	RH	200	NL
<i>Amplirhagada</i> 36	4	0.0	NW	RH	200	NL
<i>Amplirhagada combeana</i>	4	0.0	Cassini Is.	RH	100	NL
<i>Amplirhagada katerana</i>	4	0.0	NW	WL, SL	500	NL
<i>Austrochloritis</i> ne 12	4	0.0	NE	For	400	NL
<i>Austrochloritis</i> ne 5	4	0.0	NE	For	300	NL
<i>Austrochloritis nundinalis</i>	4	0.0	EC	For	300	NL
<i>Austrochloritis pusilla</i>	4	50.0	NE	For	500	NL
<i>Basedowena olgana</i>	4	75.0	CI	RH	200	NL
<i>Baudinella</i> 7	4	50.0	NW	RH	200	NL
* <i>Bothriembryon</i> location 18	4	0.0	SW	RH	500	NL
* <i>Bothriembryon</i> location 25	4	0.0	SW	RH	400	NL
* <i>Bothriembryon</i> location						
26a	4	0.0	SW	RH	200	NL
<i>Camaenidae</i> bl 11	4	100.0	ECI		200	NL
<i>Camaenidae</i> bl 14	4	0.0	ECI		500	NL
		0.				
<i>Camaenidae</i> bl 22	4	00	ECI		400	NL
<i>Camaenidae</i> bl 24	4	75.0	ECI		200	NL
<i>Camaenidae</i> bl 38	4	0.0	ECI		100	NL
<i>Camaenidae</i> bl 46	4	0.0	ECI		200	NL
<i>Camaenidae</i> bl 48	4	100.0	ECI		400	NL
<i>Camaenidae</i> bl 57	4	0.0	ECI		400	NL
<i>Camaenidae</i> bl 62	4	0.0	ECI		300	NL
<i>Camaenidae</i> bl 65	4	25.0	ECI		300	NL
<i>Camaenidae</i> br 4	4	50.0	EC		400	NL
<i>Camaenidae</i> cc 1	4	0.0	NEI		500	NL
<i>Camaenidae</i> cy 6	4	0.0	NE		300	NL
<i>Camaenidae</i> ne 23	4	50.0	EC		200	NL
<i>Camaenidae</i> ne 6	4	0.0	EC		300	NL
<i>Camaenidae</i> sn 13	4	50.0	EC		500	NL
<i>Camaenidae</i> sn 8	4	75.0	EC		500	NL
<i>Camaenidae</i> sq 17	4	0.0	EC		400	NL
<i>Camaenidae</i> wt 1	4	100.0	NE		100	NL
<i>Camaenidae</i> wt 4	4	100.0	NE		200	NL
<i>Charopidae</i> bl 5	4	0.0	ECI		300	NL
<i>Charopidae</i> br 17	4	25.0	EC		300	NL
<i>Charopidae</i> br 20	4	0.0	EC		200	NL
<i>Charopidae</i> br 30	4	50.0	EC		400	NL
<i>Charopidae</i> br 8	4	25.0	EC		400	NL

<i>Charopidae</i> cy 4	4	0.0	NE		300	NL
<i>Charopidae</i> cy 8	4	0.0	NE		400	NL
<i>Charopidae</i> eu 1	4	0.0	NE		300	NL
<i>Charopidae</i> mq 12	4	25.0	NE		800	NL
<i>Charopidae</i> mq 3	4	25.0	NE		300	NL
<i>Charopidae</i> mq 4	4	25.0	NE		300	NL
<i>Charopidae</i> mv 16	4	0.0	EC		300	NL
<i>Charopidae</i> mv 18	4	75.0	EC		400	NL
<i>Charopidae</i> mv 2	4	0.0	EC		300	NL
<i>Charopidae</i> mv 27	4	100.0	EC		300	NL
<i>Charopidae</i> mv 40	4	100.0	EC		200	NL
<i>Charopidae</i> mv 46	4	25.0	EC		300	NL
<i>Charopidae</i> mv 8	4	50.0	EC		300	NL
<i>Charopidae</i> ne 11	4	50.0	EC		300	NL
<i>Charopidae</i> ne 13	4	0.0	EC		400	NL
<i>Charopidae</i> ne 25	4	0.0	EC		400	NL
<i>Charopidae</i> ne 26	4	0.0	EC		400	NL
<i>Charopidae</i> ne 3	4	50.0	EC		300	NL
<i>Charopidae</i> ne 7	4	0.0	EC		300	NL
<i>Charopidae</i> ne 9	4	75.0	EC		200	NL
<i>Charopidae</i> nn 12	4	25.0	CEI		500	NL
<i>Charopidae</i> nn 13	4	75.0	CEI		400	NL
<i>Charopidae</i> sn 19	4	50.0	EC		200	NL
<i>Charopidae</i> sp e	4	25.0	NC		400	NL
<i>Charopidae</i> sq 11	4	50.0	EC		400	NL
<i>Charopidae</i> sq 16	4	0.0	EC		200	NL
<i>Charopidae</i> sq 21	4	0.0	EC		300	NL
<i>Charopidae</i> sq 31	4	0.0	EC		300	NL
<i>Charopidae</i> sq 34	4	0.0	EC		300	NL
<i>Charopidae</i> sq 44	4	0.0	EC		500	NL
<i>Charopidae</i> st 10	4	75.0	SE		400	NL
<i>Charopidae</i> st 11	4	75.0	SE		200	NL
<i>Charopidae</i> st 18	4	0.0	SE		400	NL
<i>Charopidae</i> st 19	4	75.0	SE		400	NL
<i>Charopidae</i> st 6	4	75.0	SE		200	NL
<i>Charopidae</i> st 7	4	75.0	SE		200	NL
<i>Charopidae</i> wt 1	4	25.0	NE		200	NL
<i>Charopidae</i> wt 18	4	100.0	NE		200	NL
<i>Charopidae</i> wt 29	4	0.0	NE		300	NL
<i>Charopidae</i> wt 32	4	50.0	NE		400	NL
<i>Charopidae</i> wt 36	4	75.0	NE		400	NL
<i>Charopidae</i> wt 40	4	75.0	NE		400	NL
<i>Charopidae</i> wt 51	4	100.0	NE		300	NL
<i>Charopidae</i> wt 71	4	100.0	NE		400	NL
<i>Charopidae</i> wt 9	4	100.0	NE		100	NL
<i>Cristilabrum kessneri</i>	4	25.0	NW	RH	300	NL
<i>Cristilabrum rectum</i>	4	0.0	NW	RH	100	NL
<i>Cupedora marcidum</i>	4	0.0	SWI	RH	500	NL
<i>Cystopelta astra</i>	4	75.0	SE	WL	400	NL
<i>Diphyropa macleayana</i>	4	50.0			400	NL

<i>Divellomelon hillieri</i>	4	0.0	NCI	RH	300	NL
<i>Galadistes marcescens</i>	4	0.0	EC	For	600	NL
<i>Galadistes st 6</i>	4	0.0	SE		300	NL
<i>Gyliotrachela catherina</i>	4	25.0	NC	RH	300	NL
<i>Gyliotrachela napierana</i>	4	0.0	NW	RH	400	NL
				For,		
<i>Helicarion freycineti</i>	4	50.0	EC	WL	400	NL
<i>Helicarionidae bl 14</i>	4	75.0	ECI		400	NL
<i>Helicarionidae bl 17</i>	4	0.0	ECI		200	NL
<i>Helicarionidae bl 5</i>	4	75.0	ECI		400	NL
<i>Helicarionidae cy 3</i>	4	0.0	NE		400	NL
<i>Helicarionidae mq 12</i>	4	0.0	NE		400	NL
<i>Helicarionidae sn 7</i>	4	50.0	EC		300	NL
<i>Helicarionidae sn 8</i>	4	75.0	EC		400	NL
<i>Helicarionidae wt 17</i>	4	100.0	NE		100	NL
<i>Helicarionidae wt 2</i>	4	50.0	NE		400	NL
<i>Helicarionidae wt 24</i>	4	0.0	NE		300	NL
<i>Kimboraga 12</i>	4	0.0	NW	RH	200	NL
<i>Kimboraga yampiensis</i>	4	0.0	NW	Gen	700	NL
<i>Macrophallikaropa depressispira</i>	4	100.0	Tas	For	200	NL
<i>Meridolum ne 21</i>	4	0.0	EC	For	400	NL
<i>Mesodontrachia desmonda</i>	4	0.0	NW	RH	200	NL
<i>Nesopupa novopommerana</i>	4	25.0	NC	For	400	NL
<i>Offachloritis dryanderensis</i>	4	25.0	NE	For	200	NL
<i>Pedicamista coesus</i>	4	75.0	Tas	WL	700	NL
				For,		
<i>Pernagera albanensis</i>	4	100.0	SW	WL	700	NL
<i>Pleuroxia arcigerens</i>	4	0.0	SCI	RH	1100	NL
<i>Posorites turneri</i>	4	75.0	EC	For	400	NL
<i>Prolesophanta a</i>	4	75.0	Tas?	For	200	NL
<i>Pupillidae mv 2</i>	4	50.0	EC		400	NL
<i>Pupoides lepidulus</i>	4	0.0	NW	RH	400	NL
<i>Rhagada dampierana</i>	4	100.0	NW	RH	200	NL
<i>Rhagada minima</i>	4	100.0	NW	RH	300	NL
<i>Rhagada plicata</i>	4	50.0	Montebello Is.	RH	300	NL
<i>Rhytididae bl 4</i>	4	0.0	ECI		300	NL
<i>Rhytididae mq 2</i>	4	25.0	NE		400	NL
<i>Semotrachia strangwayana</i>	4	25.0	CI	RH	200	NL
<i>Setobaudinia pagoana</i>	4	0.0	NW	RH	300	NL
				Wet,		
<i>Setobaudinia victoriana</i>	4	0.0	NW	RH	200	NL
<i>Sphaerospira bellaria</i>	4	100.0	NE		500	NL
<i>Sphaerospira bencarlessi</i>	4	50.0	NE		200	NL
<i>Sphaerospira mulgravensis</i>	4	50.0	NE		600	NL
<i>Steorra jimfergusoni</i>	4	50.0			400	NL
<i>Strangesta harriettae</i>	4	75.0			400	NL
<i>Theskelomensor creon</i>	4	75.0	NE	For	400	NL
<i>Torresitrachia 2</i>	4	0.0	NW	RH	300	NL
<i>Torresitrachia thedana</i>	4	0.0	NW	RH	400	NL

<i>Westraltrachia ascita</i>	4	0.0	NW	RH	200	NL
<i>Westraltrachia porcata</i>	4	0.0	NW	RH	200	NL
<i>Westraltrachia subtila</i>	4	25.0	NW	RH	200	NL
<i>Xanthomelon rfs</i>	4	25.0	N	RH	400	NL
<i>Amplirhagada</i> 42	5	60.0	NW	RH	400	NL
<i>Amplirhagada alta alta</i>	5	0.0	NW	RH	300	NL
<i>Amplirhagada astuta</i>	5	0.0	Koolan Is.	RH	100	NL
<i>Amplirhagada</i>			West			
<i>montalivetensis</i>	5	0.0	Montalivet Is.		300	NL
<i>Austrochloritis mv</i> 10	5	20.0		RF	300	NL
<i>Austrochloritis mv</i> 11	5	80.0		RF	100	NL
<i>Austrochloritis ne</i> 11	5	40.0	NE	For	400	NL
<i>Austrochloritis ne</i> 6	5	20.0	NE	For	500	NL
<i>Bothriembryon</i> 1974	5	60.0	SW	RH	600	NL
<i>Bothriembryon irvineanus</i>	5	0.0	SW	SL	200	NL
* <i>Bothriembryon</i> location						
26b	5	20.0	SW	RH	500	NL
* <i>Bothriembryon</i> location 40	5	0.0	SW	RH	100	NL
<i>Camaenidae</i> 76	5	40.0			600	NL
<i>Camaenidae</i> bl 10	5	0.0	ECI		600	NL
<i>Camaenidae</i> bl 50	5	40.0	ECI		400	NL
<i>Camaenidae</i> bl 61	5	0.0	ECI		400	NL
<i>Camaenidae</i> bl 63	5	0.0	ECI		300	NL
<i>Camaenidae eu</i> 16	5	100.0	NE		200	NL
<i>Camaenidae eu</i> 6	5	100.0	NE		200	NL
<i>Camaenidae mv</i> 12	5	0.0	EC		200	NL
<i>Camaenidae mv</i> 5	5	100.0	EC		300	NL
<i>Camaenidae mv</i> 6	5	100.0	EC		300	NL
<i>Camaenidae mv</i> 7	5	20.0	EC		400	NL
<i>Camaenidae ne</i> 7	5	40.0	EC		300	NL
<i>Camaenidae sq</i> 6	5	60.0	EC		400	NL
<i>Camaenidae st</i> 5	5	20.0	SE		300	NL
<i>Camaenidae st</i> 9	5	0.0	SE		400	NL
<i>Cassidula nucleus</i>	5	60.0	NE-EC	Littoral	500	NL
<i>Cassidula rugata</i>	5	40.0	N	Littoral	1000	NL
<i>Charopidae</i> bl 11	5	40.0	ECI		600	NL
<i>Charopidae</i> br 22	5	20.0	EC		700	NL
<i>Charopidae</i> br 5	5	40.0	EC		700	NL
<i>Charopidae</i> mq 15	5	20.0	NE		600	NL
<i>Charopidae</i> mq 7	5	20.0	NE		1100	NL
<i>Charopidae</i> mq 8	5	40.0	NE		600	NL
<i>Charopidae</i> mq 9	5	40.0	NE		400	NL
<i>Charopidae mv</i> 11	5	0.0	EC		400	NL
<i>Charopidae mv</i> 12	5	80.0	EC		400	NL
<i>Charopidae mv</i> 13	5	60.0	EC		500	NL
<i>Charopidae mv</i> 14	5	100.0	EC		200	NL
<i>Charopidae ne</i> 1	5	0.0	EC		300	NL
<i>Charopidae ne</i> 16	5	0.0	EC		400	NL
<i>Charopidae sn</i> 9	5	0.0	EC		400	NL
<i>Charopidae sp c</i>	5	40.0	NC		300	NL

<i>Charopidae</i> sq 19	5	60.0	EC		400	NL
<i>Charopidae</i> sq 3	5	0.0	EC		600	NL
<i>Charopidae</i> sq 39	5	20.0	EC		300	NL
<i>Charopidae</i> st 17	5	100.0	SE		400	NL
<i>Charopidae</i> wt 2	5	100.0	NE		400	NL
<i>Charopidae</i> wt 21	5	100.0	NE		100	NL
<i>Charopidae</i> wt 25	5	100.0	NE		300	NL
<i>Charopidae</i> wt 28	5	100.0	NE		300	NL
<i>Charopidae</i> wt 63	5	60.0	NE		200	NL
<i>Charopidae</i> wt 66	5	80.0	NE		200	NL
<i>Charopidae</i> wt 69	5	100.0	NE		400	NL
<i>Charopidae</i> wt 74	5	80.0	NE		300	NL
<i>Cristilabrum bilarnium</i>	5	0.0	NW	RH	300	NL
<i>Cystopeltidae</i> st 1	5	40.0	SE		300	NL
<i>Discocharopa</i> ? novae	5	20.0		?	300	NL
<i>Echonitor cyrtochila</i>	5	40.0	SC	RH	1300	NL
<i>Fastosarion robusta</i>	5	0.0	EC	For	600	NL
<i>Galadistes</i> ne 22	5	0.0	EC		500	NL
<i>Galadistes</i> st 7	5	20.0	SE		500	NL
<i>Glyptorhagada</i> 1	5	80.0	SC		100	NL
<i>Helicarionidae</i> bl 4	5	80.0	ECI		500	NL
<i>Helicarionidae</i> cy 6	5	0.0	NE		200	NL
<i>Helicarionidae</i> sq 9	5	0.0	EC		300	NL
<i>Helicarionidae</i> wt 19	5	60.0	NE		200	NL
<i>Iotula kempseyensis</i>	5	40.0	EC	For	500	NL
<i>Laemodonta typica</i>	5	20.0	EC	Man	600	NL
				For,		
<i>Meridolum bennetti</i>	5	20.0	ECI	WL	500	NL
<i>Mesodontrachia</i>						
<i>cockburnensis</i>	5	0.0	NW	RH	300	NL
<i>Monteithosites</i>						
<i>helicostracum</i>	5	20.0	NE	For	400	NL
<i>Ningbingia australis</i>						
<i>elongata</i>	5	0.0	NW	RH	100	NL
<i>Oreokera nimbus</i>	5	100.0	NE, Mon	For	200	NL
<i>Oreomava otwayensis</i>	5	40.0	SE	For	1800	NL
<i>Pernagera waterfall</i>	5	20.0	?	?	300	NL
<i>Pillomena marysvillensis</i>	5	40.0	SE	For	700	NL
<i>Plectorhagada meilgana</i>	5	0.0	WC	RH	500	NL
<i>Punctidae</i> eu 1	5	20.0	NE		400	NL
<i>Punctidae</i> mq 2	5	60.0	NE		600	NL
<i>Pupillidae</i> bl 1	5	20.0	ECI		500	NL
<i>Rhagada</i> aff. <i>dringi</i>	5	0.0	NW	RH	500	NL
<i>Rhagada cygna</i>	5	0.0	NW	RH	500	NL
<i>Rhagada intermedia</i>	5	80.0	NW	RH	400	NL
<i>Rhagada mimika</i>	5	0.0	NW	RH	600	NL
<i>Rhophodon peregrinus</i>	5	40.0	EC	RF, For	600	NL
<i>Rhytididae</i> sn 3	5	20.0	EC		400	NL
<i>Semotrachia filixiana</i>	5	20.0	CI	RH	400	NL
<i>Semotrachia minuta</i>	5	0.0	CI	RH	200	NL

<i>Semotrachia runutjirbana</i>	5	100.0	CI	RH	100	NL
<i>Sinumelon finitum</i>	5	0.0	SEI	RH	500	NL
<i>Steorra tomsoni</i>	5	40.0			300	NL
<i>Succinea sn 1</i>	5	0.0	EC		500	NL
<i>Tasmaphena a</i>	5	20.0			500	NL
				For,		
<i>Thryasona a</i>	5	80.0	Tas?	WL	400	NL
<i>Torresitrachia 3</i>	5	0.0	NW	RH	400	NL
<i>Triboniophorus nn 1</i>	5	20.0	ECI		400	NL
<i>Vidumelon wattii</i>	5	20.0	CI	RH	200	NL
<i>Westralaoma aprica</i>	5	20.0	SW	SL	300	NL
<i>Westraltrachia instita</i>	5	60.0	NW	RH	500	NL
<i>Allocharopa brazieri</i>	6	83.3	EC	For	700	NL
<i>Amplirhagada 27</i>	6	0.0	NW	RH	300	NL
<i>Auriculastra subula</i>	6	0.0	NE	Littoral	500	NL
<i>Austrochloritis br 3</i>	6	33.3	EC		500	NL
<i>Austrochloritis ne 1</i>	6	33.3	NE	For	500	NL
<i>Austrochloritis ne 10</i>	6	50.0	NE	For	500	NL
<i>Austrochloritis ne 9</i>	6	0.0	NE	For	400	NL
<i>Austrochloritis nn 3</i>	6	16.7	EC	For	500	NL
<i>Austrochloritis sn 1</i>	6	50.0	EC	For	500	NL
<i>*Bothriembryon location 15</i>	6	66.7	SW	RH	400	NL
<i>*Bothriembryon location 27</i>	6	100.0	SW	RH	300	NL
<i>*Bothriembryon location 36</i>	6	100.0	SW	RH	100	NL
<i>Camaenidae bl 19</i>	6	33.3	ECI		400	NL
<i>Camaenidae bl 20</i>	6	0.0	ECI		700	NL
<i>Camaenidae bl 31</i>	6	83.3	ECI		200	NL
<i>Camaenidae bl 32</i>	6	33.3	ECI		500	NL
<i>Camaenidae bl 39</i>	6	0.0	ECI		400	NL
<i>Camaenidae bl 45</i>	6	0.0	ECI		700	NL
<i>Camaenidae bl 5</i>	6	0.0	ECI		600	NL
<i>Camaenidae eu 9</i>	6	0.0	NE		500	NL
<i>Camaenidae mv 9</i>	6	0.0	EC		500	NL
<i>Camaenidae sn 16</i>	6	50.0	EC		300	NL
<i>Camaenidae sn 17</i>	6	0.0	EC		500	NL
<i>Camaenidae st 1</i>	6	0.0	SE		500	NL
<i>Camaenidae st 2</i>	6	83.3	SE		500	NL
<i>Charopidae br 26</i>	6	16.7	EC		600	NL
<i>Charopidae br 7</i>	6	66.7	EC		600	NL
<i>Charopidae mq 1</i>	6	50.0	NE		700	NL
<i>Charopidae mq 6</i>	6	50.0	NE		600	NL
<i>Charopidae sn 11</i>	6	33.3	EC		600	NL
<i>Charopidae sq 20</i>	6	83.3	EC		200	NL
<i>Charopidae wt 19</i>	6	100.0	NE		400	NL
<i>Charopidae wt 60</i>	6	100.0	NE		400	NL
<i>Charopidae wt 67</i>	6	83.3	NE		200	NL
<i>Charopidae wt 70</i>	6	100.0	NE		400	NL
<i>Cooperconcha centralis</i>	6	50.0	SCI	RH	400	NL
<i>Cupedora yappalana</i>	6	0.0	SC	RH	600	NL
<i>Dirutrachia sublevata</i>	6	0.0	CI	RH	1100	NL

<i>Elsothera a</i>	6	66.7	EC		600	NL
<i>Elsothera genithecata</i>	6	66.7	EC	For	1000	NL
<i>Gyrocochlea eurythma</i>	6	0.0	EC	For	500	NL
<i>Hadra wilsoni</i>	6	100.0	NW	RH	300	NL
<i>Hedleyoconcha ailaketoae</i>	6	100.0	NE	For	300	NL
<i>Helicarionidae bl 1</i>	6	0.0	ECI		400	NL
<i>Helicarionidae br 3</i>	6	50.0	EC		200	NL
<i>Helicarionidae br 4</i>	6	83.3	EC		300	NL
<i>Helicarionidae cy 2</i>	6	0.0	NE		500	NL
<i>Helicarionidae mq 1</i>	6	33.3	NE		800	NL
<i>Helicarionidae ne 6</i>	6	0.0	EC		600	NL
<i>Helicarionidae sn 2</i>	6	0.0	EC		400	NL
<i>Kimboraga yammerana</i>	6	0.0	NW	RH	200	NL
<i>Noctepuna mayana</i>	6	83.3	NE	For	600	NL
<i>Obsteugenia inflecta</i>	6	33.3	NE	For	600	NL
<i>Ordtrachia elegans</i>	6	0.0	NE	RH	200	NL
<i>Paralaoma b</i>	6	33.3			600	NL
<i>*Pernagera location 4</i>	6	0.0			500	NL
<i>Punctidae wt 2</i>	6	83.3	NE		600	NL
				Man,		
<i>Pythia scarabaeus</i>	6	50.0	NE	WL	700	NL
<i>Rhytididae eu 1</i>	6	0.0	NE		300	NL
<i>Rhytididae ne 1</i>	6	66.7	EC		200	NL
<i>Rhytididae wt 4</i>	6	16.7	NE		600	NL
<i>Rhytididae wt 6</i>	6	66.7	NE		300	NL
<i>Roblinella b</i>	6	66.7	Tas	WL	400	NL
<i>Semotrachia winneckeana</i>	6	100.0	CI	RH	300	NL
<i>Sinumelon hamiltoni</i>	6	33.3	CI	RH	1100	NL
<i>Sinumelon subfodinale</i>	6	0.0	SEI	RH	800	NL
<i>Sphaerospira arthuriana</i>	6	83.3	NE	WL	500	NL
<i>Torresitrachia pc 1</i>	6	0.0	NW	RH	600	NL
<i>Westralaoma expicta</i>	6	0.0	SW	SL	100	NL
<i>Amplirhagada questroana</i>	7	0.0	NW	WL, SL	300	NL
				For,		
<i>Annoselix dolosa</i>	7	14.3	SW	WL	700	NL
<i>Austrochloritis buxtoni</i>	7	0.0	Thursday Is.	RF	1100	NL
<i>Basedowena katjawardana</i>	7	0.0	SCI	RH	300	NL
<i>Bischoffena bischoffensis</i>	7	42.4	Tas	For	600	NL
<i>Bothriembryon angasianus</i>	7	14.3	SC	RH	900	NL
<i>Bothriembryon location 10</i>	7	71.4	SW	RH	600	NL
<i>Bothriembryon location 38</i>	7	42.9	SW	RH	400	NL
<i>Camaenidae bl 15</i>	7	14.3	ECI		900	NL
<i>Camaenidae bl 25</i>	7	0.0	ECI		100	NL
<i>Camaenidae bl 43</i>	7	28.6	ECI		700	NL
<i>Camaenidae cy 1</i>	7	85.7	NE		600	NL
<i>Camaenidae cy 5</i>	7	14.3	NE		700	NL
<i>Camaenidae eu 15</i>	7	0.0	NE		500	NL
<i>Camaenidae mv 10</i>	7	0.0	EC		100	NL
<i>Camaenidae ne 4</i>	7	0.0	EC		600	NL
<i>Camaenidae sq 11</i>	7	14.3	EC		800	NL

<i>Camaenidae st 3</i>	7	85.7	SE		200	NL
<i>Charopidae br 14</i>	7	71.4	EC		300	NL
<i>Charopidae br 27</i>	7	28.6	EC		600	NL
<i>Charopidae mv 38</i>	7	85.7	EC		500	NL
<i>Charopidae ne 17</i>	7	14.3	EC		600	NL
<i>Charopidae ne 24</i>	7	14.3	EC		600	NL
<i>Charopidae ne 4</i>	7	0.0	EC		700	NL
<i>Charopidae nn 11</i>	7	42.9	CEI		700	NL
<i>Charopidae nn 17</i>	7	14.3	CEI		600	NL
<i>Charopidae nn 9</i>	7	42.9	CEI		600	NL
<i>Charopidae sn 2</i>	7	42.9	EC		600	NL
<i>Charopidae sn 24</i>	7	28.6	EC		600	NL
<i>Charopidae sn 8</i>	7	14.3	EC		500	NL
<i>Charopidae sq 26</i>	7	14.3	EC		500	NL
<i>Charopidae sq 6</i>	7	28.6	EC		600	NL
<i>Charopidae wt 13</i>	7	100.0	NE		100	NL
<i>Charopidae wt 48</i>	7	85.7	NE		800	NL
<i>Charopidae wt 75</i>	7	100.0	NE		600	NL
<i>Coenocharopa alata</i>	7	71.4	E	For	1100	NL
<i>Cystopeltidae ne 1</i>	7	14.3	EC		500	NL
<i>Dentherona illustra</i>	7	71.4	SE	For	800	NL
<i>Echotruda sq 4</i>	7	42.9	EC		700	NL
<i>Elsothera nautilodea</i>	7	0.0	EC	For	900	NL
<i>Elsothera sn 10</i>	7	0.0	EC		200	NL
<i>Glyptorhagada janaslini</i>	7	42.9	SC, SCI	RH	300	NL
<i>Glyptorhagada umberatana</i>	7	0.0	SCI	RH	1000	NL
<i>Granulomelon arcigerans</i>	7	0.0	CI	RH	400	NL
<i>Granulomelon</i>						
<i>grandituberculata</i>	7	0.0	CI	RH	300	NL
<i>Gyrocochlea conferta</i>	7	0.0	EC	For	500	NL
<i>Gyrocochlea paucilamellata</i>	7	0.0	EC	For	300	NL
<i>Helicarionidae bl 2</i>	7	14.3	ECI		900	NL
<i>Helicarionidae bl 7</i>	7	0.0	ECI		400	NL
<i>Helicarionidae cy 1</i>	7	71.4	NE		500	NL
<i>Helicarionidae cy 4</i>	7	0.0	NE		600	NL
<i>Helicarionidae mv 3</i>	7	28.6	EC		600	NL
<i>Helicarionidae nn 2</i>	7	57.1	ECI		500	NL
<i>Helicarionidae sn 6</i>	7	28.6	EC		600	NL
<i>Helicarionidae wt 21</i>	7	42.9	NE		700	NL
<i>Helicarionidae wt 26</i>	7	100.0	NE		300	NL
<i>Marinula xanthostoma</i>	7	0.0	SW-SE, Tas	Wet	1400	NL
<i>Meliobba shafferyi</i>	7	42.9	NE	For	400	NL
<i>Neveritis interna</i>	7	57.1	ECI	WL	600	NL
<i>Ordtrachia septentrionalis</i>	7	0.0	NE	RH	200	NL
<i>Peloparion submissus</i>	7	57.1	EC	For	400	NL
<i>Quistrachia montebelloensis</i>	7	71.4	Montebello Is.	RH	700	NL
<i>Rhagada elachystoma</i>	7	57.1	NW	RH	500	NL
<i>Rhagada gibbensis</i>	7	0.0	NW	RH	200	NL
<i>Rhagada perprima</i>	7	100.0	NW	RH	500	NL
<i>Rhytididae mv 6</i>	7	28.6	EC		600	NL

<i>Rhytididae ne 6</i>	7	57.1	EC		500	NL
<i>Roblinella mathinnae</i>	7	57.1	Tas	For	400	NL
<i>Semotrachia rossana</i>	7	0.0	CI	RH	500	NL
<i>Setobaudinia collingii</i>	7	14.3	NW	RH	600	NL
<i>Sphaerospira mortenseni</i>	7	0.0	NE	For	600	NL
<i>Torresitrachia 1</i>	7	0.0	NW	RH	400	NL
<i>Amplirhagada imitata</i>	8	0.0	NW		700	NL
<i>Austrochloritis sn 9</i>	8	0.0	EC	For	200	NL
<i>Bothriembryon betttie</i>	8	50.0	SW	RH	800	NL
<i>Bothriembryon busselton-</i> <i>bunbury</i>	8	0.0	SW	RH	300	NL
<i>Bothriembryon jacksoni</i>	8	75.0	SW	RH	800	NL
<i>*Bothriembryon location 37</i>	8	100.0	SW	RH	600	NL
<i>Bothriembryon spenceri</i>	8	87.5	NC	RH	800	NL
<i>Camaenidae bl 59</i>	8	0.0	ECI		1000	NL
<i>Camaenidae br 1</i>	8	37.5	EC		1200	NL
<i>Camaenidae eu 10</i>	8	50.0	NE		500	NL
<i>Camaenidae mq 2</i>	8	62.5	NE		700	NL
<i>Camaenidae sn 6</i>	8	37.5	EC		600	NL
<i>Camaenidae sq 1</i>	8	87.5	EC		600	NL
<i>Camaenidae st 8</i>	8	0.0	SE		600	NL
<i>Camaenidae wt 2</i>	8	50.0	NE		400	NL
<i>Camaenidae wt 3</i>	8	100.0	NE		600	NL
<i>Charopidae bl 3</i>	8	62.5	ECI		800	NL
<i>Charopidae br 13</i>	8	37.5	EC		500	NL
<i>Charopidae br 23</i>	8	0.0	EC		300	NL
<i>Charopidae br 6</i>	8	37.5	EC		900	NL
<i>Charopidae mv 24</i>	8	37.5	EC		600	NL
<i>Charopidae mv 26</i>	8	25.0	EC		300	NL
<i>Charopidae ne 22</i>	8	12.5	EC		800	NL
<i>Charopidae nn 22</i>	8	50.0	CEI		800	NL
<i>Charopidae nn 4</i>	8	62.5	CEI		700	NL
<i>Charopidae sn 17</i>	8	37.5	EC		800	NL
<i>Charopidae st 13</i>	8	100.0	SE		800	NL
<i>Coenocharopa</i> <i>yessabahensis</i>	8	100.0	EC	RH	200	NL
<i>Cristilabrum buryillum</i>	8	0.0	NW	RH	200	NL
<i>Cystopeltidae mv 1</i>	8	87.5	EC		600	NL
<i>Dentherona jemmysensis</i>	8	25.0	SE	For	1000	NL
<i>Glyptorhagada silveri</i>	8	0.0	SCI	RH	900	NL
<i>Granulomelon gilleni</i>	8	0.0	CI	RH	300	NL
<i>Gyliotrachela ningbingia</i>	8	0.0	NW	RH	500	NL
<i>Hadra bartschi</i>	8	0.0	NE	RF	900	NL
<i>Helicarionidae wt 18</i>	8	100.0	NE		300	NL
<i>Ngairia murphyi</i>	8	25.0	SE	RF, For	600	NL
<i>Paralaoma a</i>	8	50.0			1000	NL
<i>Retroterra 10</i>	8	75.0	NW	For	400	NL
<i>Rhagada millstream</i>	8	100.0	NW	RH	100	NL
<i>Rhytididae nn 2</i>	8	62.5	EC		700	NL
<i>Rhytididae nn 3</i>	8	50.0	EC		1000	NL

<i>Rotacharopa annabelli</i>	8	25.0	NE	For	800	NL
<i>Saladelos helmsiana</i>	8	75.0	SE	WL	700	NL
<i>Saladelos urarensis</i>	8	50.0	EC	For	400	NL
<i>Semotrachia caupona</i>	8	0.0	CI	RH	100	NL
<i>Semotrachia emilia</i>	8	75.0	CI	RH	200	NL
<i>Semotrachia hortulana</i>	8	0.0	CI	RH	400	NL
<i>Semotrachia hughana</i>	8	0.0	CI	RH	200	NL
<i>Steorra kirrama</i>	8	75.0			800	NL
<i>Steorra mourilyani</i>	8	0.0			600	NL
<i>Westraltrachia lievreana</i>	8	0.0	NW	RH	500	NL
<i>Adclarkia dawsonensis</i>	9	0.0	ECI	For, WL	500	CE
<i>Amplirhagada 37</i>	9	0.0	NW	RH	500	NL
<i>Arnemelassa creedi</i>	9	44.4	NC	?	1200	NL
<i>Basedowena cognata</i>	9	77.8	CI	RH	400	NL
<i>Basedowena papulankutjana</i>	9	88.9	CI	RH	500	NL
<i>Baudinella baudinensis</i>	9	0.0	NW	RH	400	NL
<i>Biomphalopa recava</i>	9	66.7	NE	For	800	NL
<i>Bothriembryon 1979</i>	9	33.3	SW	RH	1000	NL
<i>*Bothriembryon location 14</i>	9	66.7	SW	RH	200	NL
<i>*Bothriembryon location 42</i>	9	100.0	SW	RH	200	NL
<i>Camaenidae bl 18</i>	9	11.1	ECI		900	NL
<i>Camaenidae bl 42</i>	9	22.2	ECI		900	NL
<i>Camaenidae sn 9</i>	9	22.2	EC		600	NL
<i>Camaenidae wt 12</i>	9	100.0	NE		600	NL
<i>Charopidae br 32</i>	9	22.2	EC		600	NL
<i>Charopidae mq 5</i>	9	33.3	NE		1000	NL
<i>Charopidae mv 31</i>	9	33.3	EC		700	NL
<i>Charopidae sq 32</i>	9	44.4	EC		400	NL
<i>Charopidae wt 39</i>	9	66.7	NE		800	NL
<i>Charopidae wt 42</i>	9	100.0	NE		500	NL
<i>Charopidae wt 77</i>	9	77.8	NE		900	NL
<i>Cupedora bednalli</i>	9	22.2	SC	WL	2900	NL
<i>Cupedora evandaleana</i>	9	22.2	SC	RH	2500	NL
<i>Cupedora tomsetti</i>	9	77.8	Kangaroo Is.	RH	900	NL
<i>Danielleilona marycolliverae</i>	9	88.9	NE, Mon	For	300	NL
<i>Egilomen pexa</i>	9	11.1	EC	For	700	NL
<i>Galadistes ne 14</i>	9	33.3	EC		800	NL
<i>Galadistes ne 17</i>	9	66.7	EC		600	NL
<i>Glyptorhagada duvalae</i>	9	0.0	SC	RH	200	NL
<i>Helicarionidae sq 1</i>	9	11.1	EC		800	NL
<i>Helicarionidae sq 4</i>	9	0.0	EC		900	NL
<i>Helicarionidae wt 23</i>	9	44.4	NE		500	NL
<i>Helicarionidae wt 29</i>	9	66.7	NE		700	NL
<i>Helicarionidae wt 4</i>	9	100.0	NE		200	NL
<i>Letomola contortus</i>	9	88.9	EC	RH	300	NL
<i>Miselaoma weldii</i>	9	55.6	SE, Tas	For	1000	NL
<i>Ordtrachia australis</i>	9	0.0	NE	RH	500	NL
<i>Pandofella whitei</i>	9	44.4	NE	For	1400	NL

<i>Pupoides contrarius</i>	9	22.2	NW	RH	800	NL
<i>Roblinella agnewi</i>	9	88.9	Tas	WL	200	NL
<i>Roblinella intermedia</i>	9	88.9	EC	For	800	NL
<i>Semotrachia plana</i>	9	0.0	CI	RH	600	NL
<i>Sphaerospira mourilyani</i>	9	22.2	NE	For	600	NL
<i>Spurlingia gemma</i>	9	0.0	NE	For	900	NL
<i>Succineidae br 1</i>	9	11.1	EC		1100	NL
* <i>Bothriembryon</i> location 7	10	10.0	SWI	RH	1000	NL
<i>Camaenidae mq 3</i>	10	50.0	NE		1100	NL
<i>Camaenidae mv 11</i>	10	90.0	EC		700	NL
<i>Camaenidae mv 4</i>	10	40.0	EC		800	NL
<i>Camaenidae wt 9</i>	10	50.0	NE		700	NL
<i>Charopidae br 39</i>	10	30.0	EC		900	NL
<i>Charopidae mv 7</i>	10	20.0	EC		500	NL
<i>Charopidae nn 21</i>	10	30.0	CEI		700	NL
<i>Charopidae nn 5</i>	10	10.0	CEI		900	NL
<i>Charopidae sn 12</i>	10	20.0	EC		900	NL
<i>Charopidae sq 15</i>	10	30.0	EC		700	NL
<i>Charopidae wt 34</i>	10	60.0	NE		800	NL
				For,		
<i>Chloritisanax banneri</i>	10	60.0	NE	WL	1000	NL
<i>Cystopelta purpurea</i>	10	80.0	SE	For	1300	NL
<i>Eungarion mcdonaldi</i>	10	90.0	NE, Mon	For	700	NL
				For,		
<i>Flammulops excelsior</i>	10	40.0	SE	WL	1400	NL
<i>Gastrocopta solemorum</i>	10	50.0	NC	RH	800	NL
				WL,		
<i>Glyptorhagada bordaensis</i>	10	90.0	Kangaroo Is.	RH	1300	NL
<i>Gyrocochlea austera</i>	10	10.0	EC	For	1200	NL
<i>Helicarionidae br 2</i>	10	80.0	EC		400	NL
<i>Helicarionidae br 9</i>	10	60.0	EC		1300	NL
<i>Helicarionidae mq 8</i>	10	50.0	NE		1100	NL
<i>Helicarionidae sn 1</i>	10	10.0	EC		800	NL
<i>Helicarionidae wt 1</i>	10	50.0	NE		800	NL
<i>Helicarionidae wt 25</i>	10	80.0	NE		300	NL
<i>Kendrickia ignivenatus</i>	10	0.0	NW	RH	700	NL
<i>Kimboraga mccorryi</i>	10	0.0	NW	RH	400	NL
<i>Meridolum sn 15</i>	10	30.0	EC	For	700	NL
<i>Micromelon nepouieana</i>	10	10.0	CI	RH	400	NL
<i>Mussonena sq 4</i>	10	10.0	EC		900	NL
<i>Retroterra parva</i>	10	90.0	NW	WL	600	NL
<i>Rhytididae cy 1</i>	10	20.0	NE		1000	NL
<i>Rhytididae eu 2</i>	10	30.0	NE		900	NL
<i>Rhytididae sn 2</i>	10	40.0	EC		700	NL
<i>Semotrachia basedowi</i>	10	0.0	SCI	RH	700	NL
				For,		
<i>Sphaerospira volgiola</i>	10	0.0	NE	WL	1000	NL
<i>Spurlingia praeahadra</i>	10	0.0	NE	For	900	NL
<i>Steorra mitifica</i>	10	0.0			800	NL
<i>Strepsitaurus cardabius</i>	10	0.0	WC	GrL	800	NL

<i>Succinea sq 1</i>	10	0.0	EC?		1000	NL
<i>Torresitrachia regula</i>	10	100.0	NW	RH	700	NL
<i>Westraltrachia froggatti</i>	10	80.0	NW	RH	200	NL
<i>Westraltrachia recta</i>	10	0.0	NW	RH	500	NL

Removal of extinct and poorly recorded species leaves 38702 records in ANHAT for 727 species (and subspecies). The mean number of records per species for species with greater than 10 records was 53.2 with a mean of 30.6 for the percent of records in the NRS. Of these, 178 species had 45% or greater of individual site records located within The NRS (**Table 58**). This table is dominated by species from eastern Australia, with very few species from the western half of the continent being included, especially given their diversity in that half of Australia. The species are also far more likely to be from forested environments than would be expected given the broad habitat representation in this group. This is indicative of the relatively high reservation rate of this environment in eastern Australia. One species, *Kimboraga micromphala*, has all of its records held with the reserve system. Interestingly, this species comes from north-western Australia.

Table 58 Land snail species with >45% of site records within PAs

Species	No. Records	Records in NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Bothriembryon naturalistarum</i>	40	18	45.00	SW	SL	1300	NL
<i>Helicarionidae cy 10</i>	11	5	45.45	NE		1000	NL
<i>Saladelos nn 3</i>	11	5	45.45	EC	For	900	NL
<i>Rhytididae mv 7</i>	79	36	45.57	EC		4700	NL
<i>Strangesta confusa</i>	61	28	45.90	NE	For	5900	NL
<i>Sinumelon aversum</i>	152	70	46.05	SC	RH	8900	NL
<i>Bothriembryon jacksoni</i> cf.	13	6	46.15	SW	RH	800	NL
<i>Rhophodon consobrinus</i>	13	6	46.15	EC	For	1000	NL
<i>Strangesta alpica</i>	13	6	46.15	EC, Mon	For	1300	NL
<i>Pedinogyra allani</i>	26	12	46.15	NE	For	2300	NL
<i>Pallidelix greenhilli</i>	54	25	46.30	NE	WL	3500	NL
<i>Semotrachia elleryi</i>	15	7	46.67	CI	RH	600	NL
<i>Sphaerospira sardalabiata</i>	15	7	46.67	NE	For	3200	NL
<i>Austrochloritis victoriae</i>	100	47	47.00	EC	For	12000	NL
<i>Cystopelta bicolor</i>	70	33	47.14	Tas	For	6400	NL
<i>Ngairea dorrigoensis</i>	36	17	47.22	EC	For	2700	NL
<i>Caryodes dufresnii</i>	296	140	47.30	Tas	For	17700	NL
<i>Nitor br 7</i>	19	9	47.37	EC	For	1500	NL
<i>Setobaudinia doongana</i>	19	9	47.37	NW	WL,	800	NL

					RH		
<i>Strangesta bullacea</i>	38	18	47.37	NE-EC	For	3500	NL
<i>Rhytididae</i> br 1	61	29	47.54	EC		4600	NL
<i>Amplirhagada</i>							
<i>burnerensis burnerensis</i>	21	10	47.62	NW	RH	600	NL
<i>Gyrocochlea planorbis</i>	113	54	47.79	EC	For	5800	NL
<i>Amplirhagada castra</i>	23	11	47.83	NW	RF	500	NL
<i>Posorites conscendens</i>	39	19	48.72	EC	For	3300	NL
<i>Fastosarion brazieri</i>	84	41	48.81	NE	For	4500	NL
<i>Allocharopa legrandi</i>	45	22	48.89	Tas	For	4200	NL
<i>Thersites</i>							
<i>novaehollandiae</i>	147	73	49.66	EC	For	9100	NL
<i>Discocharopa vigens</i>	12	6	50.00	Tas	For	1300	NL
<i>Mouldingia</i>							
<i>occidentalis</i>	12	6	50.00	NW	RH	200	NL
<i>Mussonula verax</i>	12	6	50.00	EC	For	1200	NL
					For,		
<i>Sphaerospira macleayi</i>	16	8	50.00	NE	WL	1200	NL
<i>Westraltrachia cunicula</i>	16	8	50.00	NW	RH	500	NL
<i>Westraltrachia limbana</i>	24	12	50.00	NW	RH	800	NL
					For,		
<i>Meridolum mastersi</i>	28	14	50.00	SE	WL	2500	NL
<i>Paralaoma</i> st 2	30	15	50.00	SE		2500	NL
<i>Helicarionidae</i> mv 1	32	16	50.00	EC		2100	NL
<i>Rhytididae</i> mv 3	215	108	50.23	EC		13200	NL
<i>Hedleyoconcha delta</i>	107	55	51.40	EC	RF, For	8500	NL
<i>Charopidae</i> mv 22	35	18	51.43	EC		1900	NL
<i>Gyrocochlea prava</i>	35	18	51.43	EC	For	2900	NL
<i>Austrochloritis</i>							
<i>nambucca</i>	97	50	51.55	EC	For	5000	NL
<i>Hedleyella falconeri</i>	220	114	51.82	EC	For	13000	NL
<i>Saladelos bensa</i>	25	13	52.00	NE	For	2100	NL
<i>Bothriembryon sayi</i>	75	39	52.00	SW	RH	1600	NL
<i>Xanthomelon</i>							
<i>ruberpumilio</i>	48	25	52.08	NW	RH	3100	NL
<i>Rhopodon</i>							
<i>bairnsdalensis</i>	21	11	52.38	SE	For, SL	2300	NL
<i>Bothriembryon revector</i>	17	9	52.94	SW	SL	1300	NL
<i>Pupoides ischnus</i>	17	9	52.94	NW	RH	1700	NL
					For,		
<i>Helicarion nigra</i>	32	17	53.13	SE	WL	7100	NL
<i>Setomedea seticostata</i>	62	33	53.23	EC	For	4000	NL
<i>Pedinogyra</i> sq 1	15	8	53.33	EC	For	900	NL
<i>Bothriembryon notatus</i>	13	7	53.85	SW	RH	1300	NL

<i>Malandena suturalis</i>	63	34	53.97	NE	For	3300	NL
<i>Pygmipanda atomata</i>	70	38	54.29	EC	For	4800	NL
<i>Coneuplecta pampini</i>	11	6	54.55	CI	RH	1100	NL
<i>Quistrachia herberti</i>	11	6	54.55	NW		500	NL
<i>Saladelos hobsoni</i>	22	12	54.55	NE	For	2000	NL
<i>Westraltrachia oscarensis</i>	22	12	54.55	NW	RH	600	NL
<i>Montidelos orcadis</i>	20	11	55.00	EC	For	1100	NL
<i>Victaphanta compacta</i>	87	48	55.17	SE	For	2500	NL
<i>Helicarionidae</i> ne 2	18	10	55.56	EC		800	NL
<i>Ngairea canaliculata</i>	18	10	55.56	NE	For	1200	NL
<i>Sphaerospira rawnesleyi</i>	18	10	55.56	NE		1700	NL
<i>Torresitrachia monticola</i>	45	25	55.56	NW	RH	1700	NL
<i>Melocystis circumcincta</i>	70	39	55.71	SE	For	4000	NL
<i>Pernagera kingstonensis</i>	176	99	56.25	Tas	WL	10700	NL
<i>Pedinogyra rotabilis</i>	79	45	56.96	EC	For	5000	NL
<i>Helicarion mastersi</i>	207	118	57.00	EC-SE	For	9700	NL
<i>Charopidae</i> br 12	14	8	57.14	EC		1100	NL
<i>Gyrocochlea</i> sp.	14	8	57.14	EC	For	1500	NL
<i>Strepsitaurus williami</i>	14	8	57.14	WC	RH	700	NL
<i>Bothriembryon tasmanicus</i>	42	24	57.14	Tas	For	4500	NL
<i>Sinumelon hawkerana</i>	40	23	57.50	SC-SCI	RH	1700	NL
<i>Baudinella regia</i>	26	15	57.69	NW	RH	1200	NL
<i>Jacksonena rudis</i>	26	15	57.69	NE	For	1800	NL
<i>Camaenidae</i> nn 3	12	7	58.33	ECI		1100	NL
<i>Charopidae</i> mq 11	12	7	58.33	NE		1000	NL
<i>Parmavitrina planilabris</i>	65	38	58.46	EC	For	3700	NL
<i>Amplirhagada pusilla</i>	17	10	58.82	NW	SL	900	NL
<i>Austrochloritis</i> sn 6	39	23	58.97	EC	For	2200	NL
<i>Cooperconcha bunyerooana</i>	49	29	59.18	SCI	RH	1700	NL
<i>Austrochloritis porteri</i>	45	27	60.00	EC	For	3200	NL
<i>Charopidae</i> mv 25	18	11	61.11	EC		500	NL
<i>Strangesta sheridani</i>	108	66	61.11	NE	For	6800	NL
<i>Austrochloritis ascensa</i>	31	19	61.29	EC	For	1400	NL
<i>Dentherona dispar</i>	44	27	61.36	Tas	WL	2900	NL
<i>Helicarionidae</i> wt 3	57	35	61.40	NE		4300	NL
<i>Camaenidae</i> wt 7	13	8	61.54	NE		700	NL

<i>Helicarion dispositus</i>	26	16	61.54	EC, Mon	For	1400	NL
<i>Charopidae</i> sp d	21	13	61.90	NC		1300	NL
<i>Victaphanta milligani</i>	64	40	62.50	Tas	For	5400	NL
<i>Charopidae</i> mv 35	35	22	62.86	EC		2300	NL
<i>Rhytididae</i> mv 2	27	17	62.96	EC		1500	NL
<i>Camaenidae</i> sn 20	19	12	63.16	EC		1200	NL
<i>Helicarionidae</i> wt 15	19	12	63.16	NE		1400	NL
<i>Rhytididae</i> bl 3	19	12	63.16	ECI		1300	NL
<i>Ngairea corticicola</i>	38	24	63.16	EC	For	2300	NL
<i>Camaenidae</i> wt 5	11	7	63.64	NE		700	NL
<i>Thersites richmondiana</i>	58	37	63.79	NE	For, WL	3000	NL
<i>Austrochloritis</i> br 1	14	9	64.29	EC		1100	NL
<i>Camaenidae</i> wt 6	14	9	64.29	NE		800	NL
<i>Helicarionidae</i> mq 3	14	9	64.29	NE		1400	NL
<i>Sphaerospira mazee</i>	28	18	64.29	NE		2000	NL
<i>Westraltrachia rotunda</i>	31	20	64.52	NW	RH	900	NL
<i>Fastosarion superba</i>	29	19	65.52	NE	For	1900	NL
<i>Charopidae</i> sn 26	35	23	65.71	EC		1100	NL
<i>Tarocystis fulva</i>	83	55	66.27	NE	For WL,	4600	NL
<i>Galadistes expeditionis</i>	12	8	66.67	NE	For	900	NL
<i>Torresitrachia deflecta</i>	12	8	66.67	NW	RH	600	NL
<i>Austrochloritis</i> sn 7	15	10	66.67	EC	For	500	NL
<i>Bothriembryon fuscus</i>	15	10	66.67	SW	For	800	NL
<i>Austrorhytida</i> <i>glaciamans</i>	18	12	66.67	SE	For	1500	NL
<i>Rhagada pilbarana</i>	16	11	68.75	NW	RH	600	NL
<i>Gnarosophia</i> <i>bellendenkerensis</i>	130	91	70.00	NE	For	7200	NL
<i>Sinumelon gillensis</i>	17	12	70.59	CI	RH	700	NL
<i>Austrochloritis</i> <i>agamemnon</i>	34	24	70.59	NE	For	2200	NL
<i>Mussonena spinei</i>	14	10	71.43	EC	For	1100	NL
<i>Pillomena nivea</i>	14	10	71.43	SE, Mon	WL	1600	NL
<i>Austrochloritis</i> sn 8	28	20	71.43	EC	For	900	NL
<i>Meridolum depressa</i>	25	18	72.00	SC	For	1200	NL
<i>Bothriembryon</i> <i>rhodostomus</i>	11	8	72.73	Recherch he Isl.	SL	1400	NL
<i>Egilomen globosa</i>	11	8	72.73	EC	For	1200	NL
<i>Helicarionidae</i> wt 12	11	8	72.73	NE		900	NL
<i>Strangesta</i> sq 6	15	11	73.33	EC	For	900	NL
<i>Cystopelta</i> st 1	19	14	73.68	SE	For	1300	NL

<i>Westraltrachia froggatti froggatti</i>	23	17	73.91	NW	RH	400	NL
<i>Bothriembryon brazieri</i>	46	34	73.91	SW	WL	2400	NL
<i>Helicarionidae</i> br 1	27	20	74.07	EC		1200	NL
<i>Mulathena fordei</i>	89	66	74.16	SE, Tas	For	6600	NL
<i>Charopidae</i> wt 5	12	9	75.00	NE		1200	NL
<i>Semotrachia bagoti</i>	12	9	75.00	CI	RH	600	NL
<i>Semotrachia jessieana</i>	12	9	75.00	CI	RH	200	NL
<i>Setomedea janae</i>	12	9	75.00	NE	For	600	NL
<i>Setobaudinia interrex</i>	16	12	75.00	NW	RH	600	NL
<i>Westraltrachia derbyi</i>	53	40	75.47	NW	RH	900	NL
<i>Setomedea monteithi</i>	41	31	75.61	NE	For	1800	NL
<i>Amplirhagada drysdaleana</i>	13	10	76.92	NW	SL	700	NL
<i>Cystopeltidae</i> br 1	13	10	76.92	EC		900	NL
<i>Helicarionidae</i> wt 7	22	17	77.27	NE		1800	NL
<i>Helicarionidae</i> wt 8	22	17	77.27	NE		1300	NL
<i>Torresitrachia umbonis</i>	36	28	77.78	NW	RH	2100	NL
<i>Charopidae</i> br 1	14	11	78.57	EC		1500	NL
<i>Hadra semicastanea</i>	14	11	78.57	NE Is.	RF, For	1100	NL
<i>Rhytididae</i> ne 2	14	11	78.57	EC		500	NL
<i>Roblinella curacoae</i>	19	15	78.95	Tas	WL	1300	NL
<i>Rhytididae</i> wt 1	48	38	79.17	NE		2600	NL
<i>Helicarionidae</i> wt 11	15	12	80.00	NE		900	NL
<i>Jacksonena delicata</i>	20	16	80.00	NE	For	1300	NL
<i>Helicarionidae</i> wt 10	58	47	81.03	NE		2100	NL
<i>Helicarionidae</i> ne 1	16	13	81.25	EC		500	NL
<i>Pseudocupedora trezonana</i>	16	13	81.25	SCI	RH	400	NL
<i>Helicarionidae</i> wt 13	27	22	81.48	NE		1400	NL
<i>Marilyniropa jenolanensis</i>	11	9	81.82	EC	RH	100	NL
<i>Retroterra solituda</i>	11	9	81.82	NW	For	600	NL
<i>Gyrocochlea vinitincta</i>	17	14	82.35	EC	For	1600	NL
<i>Austrochloritis</i> st 2	23	19	82.61	EC	For	1300	NL
<i>Charopidae</i> br 2	12	10	83.33	EC		1300	NL
<i>Pernagera a</i>	12	10	83.33			500	NL
<i>Biomphalopa concinna</i>	18	15	83.33	NE	For	700	NL
<i>Thularion semoni</i>	42	35	83.33	NE	RF, For	1500	NL
<i>Charopidae</i> br 3	14	12	85.71	EC		1000	NL
<i>Oreokera cumulus</i>	29	25	86.21	NE	For	1400	NL
<i>Amplirhagada wilsoni</i>	22	19	86.36	NW	RH	1300	NL

<i>Bothriembryon glauerti</i>	48	42	87.50	SW	WL	600	NL
<i>Retroterra costa</i>	17	15	88.24	NW	For	900	NL
<i>Amplirhagada carinata</i>	18	16	88.89	NW	WL	1200	NL
<i>Pleuroxia hinsbyi</i>	11	10	90.91	SEI	RH	700	NL
<i>Noctepuna cerea</i>	14	13	92.86	NE	For	1000	NL
<i>Rhagada harti</i>	14	13	92.86	NW	RH	200	NL
<i>Stenacapha c</i>	56	52	92.86	Tas	For	1100	NL
<i>Malandena wt 9</i>	16	15	93.75	NE	For	400	NL
<i>Meridolum marshalli</i>	37	35	94.59	SC	For	500	NL
<i>Kimboraga exanimus</i>	11	11	100.00	NW	For	400	NL
<i>Helicarionidae mv 4</i>	12	12	100.00	EC		800	NL
<i>Minimelon colmani</i>	21	21	100.00	CI	RH	800	NL
<i>Quistrachia</i>				Barrow			
<i>barrowensis</i>	23	23	100.00	Is.		700	NL
<i>Kimboraga micromphala</i>	33	33	100.00	NW	RH	200	NL

One hundred and fifty-nine species had less than 10% of ANHAT records located within the NRS, including two threatened species – one endangered and one critically endangered (**Table 59**). The species most poorly represented in reserves are generally found in western parts of Australia, although as representation becomes slightly higher, other parts of Australia are also included. Eighty-six species have no records within the reserve system. Species requiring rocky environments for survival predominate in the species with <10% of records in reserves, especially amongst the most poorly represented species.

Table 59 Land snail species with <10% of ANHAT records located within PAs.

Species	No. Records	Inside NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Amplirhagada varia depressa</i>	11	0	0.00	NW	RH	600	NL
<i>Camaenidae bl 3</i>	11	0	0.00	ECI		700	NL
<i>Camaenidae bl 54</i>	11	0	0.00	ECI		1100	NL
<i>Cassidula coelata</i>	11	0	0.00	N	Littoral	900	NL
<i>Charopidae sq 23</i>	11	0	0.00	EC		600	NL
<i>Charopidae sq 33</i>	11	0	0.00	EC		700	NL
<i>Dirutrachia mersa</i>	11	0	0.00	SCI	RH	1000	NL
<i>Rhagada reinga</i>	11	0	0.00	NW	RH	900	NL
<i>Semotrachia euzyga</i>	11	0	0.00	CI	RH	800	EN
<i>Strangesta assimilians</i>	11	0	0.00	EC	For	800	NL
<i>Camaenidae bl 2</i>	12	0	0.00	ECI		1200	NL

<i>Camaenidae</i> eu 2	12	0	0.00	NE		500	NL
<i>Camaenidae</i> nn 6	12	0	0.00	ECI		700	NL
<i>Cassidula decussata</i>	12	0	0.00	N	Littoral	800	NL
<i>Helicarionidae</i> sq 2	12	0	0.00	EC		700	NL
<i>Pleuroxia radiata</i>	12	0	0.00	SC	RH	600	NL
<i>Quistrachia</i>							
<i>warroorana</i>	12	0	0.00	NW		600	NL
<i>Rhagada construa</i>	12	0	0.00	NW	RH	500	NL
<i>Rhagada dringi</i>	12	0	0.00	Torres St.	RH	800	NL
<i>Setobaudinia</i>							
<i>anatispretia</i>	12	0	0.00	NW	RH	500	NL
<i>Tatemelon everardensis</i>	12	0	0.00	SCI	RH	300	NL
<i>Turgenitubulus</i>							
<i>depressus</i>	12	0	0.00	NW	RH	100	NL
<i>Aslintesta camelus</i>	13	0	0.00	SCI	RH	1100	NL
<i>Pedinogyra</i> sq 3	13	0	0.00	EC	For	300	NL
<i>Pleuroxia cyrtopleura</i>	13	0	0.00	SCI	RH	2100	NL
<i>Turgenitubulus</i>							
<i>pagodula</i>	13	0	0.00	NW	RH	200	NL
<i>Amplirhagada alta</i>							
<i>crystalla</i>	14	0	0.00	NW	RH	100	NL
<i>Charopidae</i> cy 2	14	0	0.00	NE		300	NL
<i>Helicarionidae</i> eu 3	14	0	0.00	NE		1200	NL
<i>Montanomelon</i>							
<i>reynoldsi</i>	14	0	0.00	CI	RH	900	NL
<i>Sinumelon</i>							
<i>jimberlanensis</i>	14	0	0.00	WI	RH	700	NL
<i>Sinumelon pumilio</i>	14	0	0.00	SCI	RH	500	NL
<i>Turgenitubulus</i>							
<i>foramenus</i>	14	0	0.00	NW	RH	100	NL
<i>Turgenitubulus</i>							
<i>tanmurrana</i>	14	0	0.00	NW	RH	200	NL
<i>Cristilabrum isolatum</i>	15	0	0.00	NW	RH	300	NL
<i>Helicarionidae</i> eu 1	15	0	0.00	NE		800	NL
<i>Sinumelon musgravesi</i>	15	0	0.00	CI	RH	700	NL
<i>Westraltrachia</i>							
<i>pillarana</i>	15	0	0.00	NW	RH	600	NL
<i>Bothriembryon whitleyi</i>	16	0	0.00	WC	RH	1400	NL
<i>Mouldingia orientalis</i>	16	0	0.00	NW	RH	400	NL
<i>Semotrachia</i>							
<i>bensteadana</i>	16	0	0.00	CI	RH	500	NL

<i>Turgenitubulus aslini</i>	16	0	0.00	NW	RH	300	NL
<i>Westraltrachia complanata</i>	17	0	0.00	NW	RH	200	NL
<i>Basedowena cottoni</i>	18	0	0.00	SCI	RH	1500	NL
<i>Basedowena gigantea</i>	18	0	0.00	SCI	RH	600	NL
<i>Cristilabrum simplex</i>	19	0	0.00	NW	RH	200	NL
<i>Ningbingia australis</i>	19	0	0.00	NW	RH	400	NL
<i>Pleuroxia bethana</i>	19	0	0.00	WC	RH	400	NL
<i>Rhagada globosa</i>	19	0	0.00	NW	RH	1100	NL
<i>Rhagada basedowana</i>	20	0	0.00	NW	RH	800	NL
<i>Sinumelon amatensis</i>	20	0	0.00	CI	RH	1600	NL
<i>Camaenidae</i> cy 8	21	0	0.00	NE		600	NL
<i>Falspleuroxia overlandensis</i>	21	0	0.00	?	?	700	NL
<i>Helicarionidae</i> cy 9	21	0	0.00	NE		1900	NL
<i>Tatemelon musgum</i>	21	0	0.00	SCI	RH	700	NL
<i>Westraltrachia inopinata</i>	21	0	0.00	NW	RH	100	NL
<i>Cristilabrum grossum</i>	22	0	0.00	NW	RH	400	NL
<i>*Bothriembryon</i> location 140	23	0	0.00	WC	RH	1400	NL
<i>Camaenidae</i> eu 17	23	0	0.00	NE		700	NL
<i>Cristilabrum monodon</i>	23	0	0.00	NW	RH	200	NL
<i>Cristilabrum solitutum</i>	23	0	0.00	NW	RH	100	NL
<i>Cupedora lincolnensis</i>	23	0	0.00	SC	WL, RH	1800	NL
<i>Cooperconcha mawsoni</i>	25	0	0.00	SCi	RH	2000	NL
<i>Cristilabrum bubulum</i>	25	0	0.00	NW	RH	200	NL
<i>Cristilabrum spectaculum</i>	25	0	0.00	NW	RH	600	NL
<i>Ningbingia dentiens</i>	25	0	0.00	NW	RH	400	NL
<i>Turgenitubulus costus</i>	25	0	0.00	NW	RH	300	NL
<i>Discocharopa</i> ne 30	26	0	0.00	EC	?	1100	NL
<i>Westraltrachia ampla</i>	26	0	0.00	NW	RH	1000	NL
<i>Rhagada bulgana</i>	27	0	0.00	NW	RH	1300	NL
<i>Pleuroxia everardensis</i>	28	0	0.00	SCI	RH	700	NL
<i>Westraltrachia froggatti complanata</i>	29	0	0.00	NW	RH	400	NL
<i>Rhytididae</i> bl 1	30	0	0.00	ECI		2300	NL

<i>Turgenitubulus christenseni</i>	30	0	0.00	NW	RH	300	NL
<i>Sinumelon fodinalis</i>	31	0	0.00	SEI	RH	3700	NL
<i>Plectorhagada plectilis</i>	33	0	0.00	NW	RH	2600	NL
<i>Sinumelon remissum</i>	35	0	0.00	SCI	RH	4000	NL
<i>Turgenitubulus opiranus</i>	35	0	0.00	NW	RH	100	NL
<i>Ningbingia res</i>	36	0	0.00	NW	RH	300	NL
<i>Cristilabrum primum</i>	37	0	0.00	NW	RH	300	NL
<i>Ningbingia bulla</i>	42	0	0.00	NW	RH	400	NL
<i>Cupedora extensum</i>	46	0	0.00	SCI	RH	2800	NL
<i>Torresitrachia torresiana</i>	48	0	0.00	Torres St.	RH	5900	NL
<i>Ningbingia octava</i>	51	0	0.00	NW	RH	500	NL
<i>Westraltrachia woodwardi</i>	61	0	0.00	NW	RH	1200	NL
<i>Amplirhagada napierana</i>	110	0	0.00	NW	WL	1100	NL
<i>Amplirhagada percita</i>	98	1	1.02	NW	RH	900	NL
<i>Westraltrachia commoda</i>	71	1	1.41	NW	RH	600	NL
<i>Westraltrachia turbinata</i>	61	1	1.64	NW	RH	400	NL
<i>Plectorhagada carcharias</i>	44	1	2.27	WC	RH	2300	NL
<i>Torresitrachia bathurstensis</i>	44	1	2.27	NW	RH	3200	NL
<i>Ningbingia laurina</i>	37	1	2.70	NW	RH	300	NL
<i>Exiligada negriensis</i>	35	1	2.86	NW	RH	1800	NL
<i>Rhagada capensis</i>	35	1	2.86	NW	RH	1100	NL
<i>Amplirhagada burneriensis umbilicata</i>	34	1	2.94	NW	RH	600	NL
<i>Granulomelon acerbum</i>	34	1	2.94	CI	RH	1400	NL
<i>Sinumelon tarcoolatum</i>	33	1	3.03	WI-SC	RH	3300	NL
<i>Gyliotrachela australis</i>	62	2	3.23	NE	RH	3000	NL
<i>Hadra barneyi</i>	61	2	3.28	NE	For, WL	5800	NL
<i>Bothriembryon balteolus</i>	55	2	3.64	SW	RH	3200	NL
<i>Sinumelon pedasum</i>	109	4	3.67	SCI	RH	6400	NL
<i>Quistrachia leptogramma</i>	25	1	4.00	NW	RH	1500	NL
<i>Cupedora sublorioliana</i>	48	2	4.17	SCI	RH	4100	NL

<i>Ellobium aurisjudae</i>	23	1	4.35	NW-NE	Man	1900	NL
<i>Camaenidae</i> sq 14	22	1	4.55	EC		1400	NL
<i>Setobaudinia</i> 5	22	1	4.55	NW	RH	1300	NL
<i>Meridolum</i> ne 16	132	6	4.55	EC	For	9400	NL
<i>Damochlora rectilabrum</i>	21	1	4.76	NW	RH	800	NL
<i>Thersites mitchellae</i>	125	6	4.80	EC	For	2100	CE
<i>Ventopelita mansueta</i>	39	2	5.13	EC	For, WL	3200	NL
<i>Sinumelon perinflata</i>	77	4	5.19	CI	RH	6300	NL
<i>Galadistes intervenens</i>	19	1	5.26	ECI	WL	1700	NL
<i>Helicarionidae</i> eu 2	19	1	5.26	NE		1300	NL
<i>Ordtrachia intermedia</i>	19	1	5.26	NE	RH	1000	NL
<i>Sphaerospira incei</i>	19	1	5.26	NE	For	5200	NL
<i>Galadistes liverpoolensis</i>	113	6	5.31	ECI	WL, RH	6600	NL
<i>Cupedora cassandra</i>	37	2	5.41	SC	RH	4800	NL
<i>Glyptorhagada kooringsensis</i>	18	1	5.56	SCI	RH	1500	NL
<i>Cupedora broughami</i>	17	1	5.88	SC	WL, RH	2500	NL
<i>Ordtrachia grandis</i>	17	1	5.88	NE	RH	900	NL
<i>Rhytididae</i> sq 2	17	1	5.88	EC		900	NL
<i>Tatemelon herberti</i>	17	1	5.88	SCI	RH	1300	NL
<i>Camaenidae</i> eu 14	16	1	6.25	NE		1000	NL
<i>Carinotrachia carsoniana</i>	16	1	6.25	NW	RH	700	NL
<i>Neveritis aridorum</i>	78	5	6.41	EC	For	6600	NL
<i>Helicarionidae</i> cy 8	87	6	6.90	NE		5100	NL
<i>Bothriembryon bradshawi</i>	14	1	7.14	SW	RH	1500	NL
<i>Rhagada sutra</i>	14	1	7.14	NW	RH	500	NL
<i>Rhytididae</i> ne 5	14	1	7.14	EC		900	NL
<i>Camaenidae</i> bl 47	28	2	7.14	ECI		3600	NL
<i>Galadistes</i> ne 15	97	7	7.22	EC		7600	NL
<i>Camaenidae</i> wt 13	40	3	7.50	NE		2500	NL
<i>Austrochloritis</i> sn 10	13	1	7.69	EC	For	500	NL
<i>Austrochloritis</i> sn 3	13	1	7.69	EC	For	800	NL
<i>*Strepsitaurus</i> location 141	13	1	7.69	WC	RH	500	NL

<i>Westraltrachia tropida</i>	13	1	7.69	NW	RH	700	NL
<i>Camaenidae</i> bl 1	26	2	7.69	ECI		2700	NL
<i>Quistrachia legendrei</i>	51	4	7.84	NW		900	NL
<i>Camaenidae</i> bl 55	38	3	7.89	ECI		4200	NL
<i>Camaenidae</i> ne 15	12	1	8.33	EC		1200	NL
<i>Parglogenia pelodes</i>	46	4	8.70	NC	WL, SL	3400	NL
<i>Xanthomelon jannellei</i>	69	6	8.70	NE	WL	6600	NL
<i>Meridolum corneovirens</i>	620	55	8.87	SC	For, WL	3700	NL
<i>Sphaerospira incei curtisiana</i>	67	6	8.96	NE-EC	For	5600	NL
<i>Camaenidae</i> bl 21	11	1	9.09	ECI		900	NL
<i>Elsothera hewittorum</i>	11	1	9.09	ECI	For, WL	500	NL
<i>Quistrachia turneri</i>	11	1	9.09	NW		400	NL
<i>*Bothriembryon</i> location 139	22	2	9.09	SW	RH?	2200	NL
<i>Ramogenia lanuginosa</i>	22	2	9.09	NE	WL	2300	NL
<i>Sphaerospira challisi</i>	366	34	9.29	EC	For, WL	25800	NL
<i>Gyliotrachela australis australis</i>	43	4	9.30	NE	RH	1700	NL
<i>Galadistes alleni</i>	32	3	9.38	ECI	WL	2800	NL
<i>Helicarion rubicundus</i>	32	3	9.38	Tas	For	300	NL
<i>Pedinogyra minor</i>	21	2	9.52	NE	For	2100	NL
<i>Prymnbriareus nimberlinus</i>	21	2	9.52	NE	RH	800	NL
<i>Quistrachia lefroyi</i>	42	4	9.52	NW		1400	NL
<i>Dendronitor inscensa</i>	31	3	9.68	NE	For	2300	NL
<i>Sinumelon kalgum</i>	61	6	9.84	SWI	RH	3900	NL
<i>Helicarionidae</i> sq 11	20	2	10.00	EC		1800	NL

No land snail species had records in more than 100 separate reserves. This is indicative of the very limited number of records available for snails and also the relatively smaller geographic areas species of this group tend to inhabit. Hence, it is unlikely that most species could ever inhabit more than a few dozen reserves at best.

A total of 402 species had records in five or fewer PAs, including one critically endangered species and two endangered species. The majority of species in this list had fewer than 100 individual record sites, and no species had more than 170 records sites. Four hundred and twenty-three species of land snail had records in five or fewer PAs greater than 1000 hectares.

Table 60 Land snail species recorded from five or fewer PAs and from five or fewer PAs >1000 ha.

Species	No. Records	No. reserves	No. Reserves >1000ha	EPBC status
<i>Elsothera hewittorum</i>	11	1	0	NL
<i>Thersites mitchellae</i>	125	1	0	CE
<i>Rhytididae</i> ne 5	14	1	0	NL
<i>Hadra semicastanea</i>	14	1	0	NL
<i>Camaenidae</i> bl 21	11	1	1	NL
<i>Marilyniropa jenolanensis</i>	11	1	1	NL
<i>Retroterra solituda</i>	11	1	1	NL
<i>Quistrachia herberti</i>	11	1	1	NL
<i>Caperantrum polygyrum</i>	11	1	1	NL
<i>Pleuroxia hinsbyi</i>	11	1	1	NL
<i>Quistrachia turneri</i>	11	1	1	NL
<i>Torresitrachia</i> aff. <i>regula</i>	11	1	1	NL
<i>Kimboraga exanimus</i>	11	1	1	NL
<i>Semotrachia jessieana</i>	12	1	1	NL
<i>Semotrachia bagoti</i>	12	1	1	NL
<i>Mouldingia occidentalis</i>	12	1	1	NL
<i>Camaenidae</i> ne 15	12	1	1	NL
<i>Galadistes expeditionis</i>	12	1	1	NL
<i>Camaenidae</i> sq 16	13	1	1	NL
<i>Westraltrachia tropida</i>	13	1	1	NL
* <i>Strepsitaurus</i> location 141	13	1	1	NL
<i>Austrochloritis</i> sn 10	13	1	1	NL
<i>Austrochloritis</i> sn 3	13	1	1	NL
<i>Amplirhagada drysdaleana</i>	13	1	1	NL
<i>Rhophodon minutissimus</i>	14	1	1	NL
<i>Camaenidae</i> ne 18	14	1	1	NL
<i>Rhagada sutra</i>	14	1	1	NL
<i>Rhagada harti</i>	14	1	1	NL
<i>Charopidae</i> mv 6	14	1	1	NL
<i>Strepsitaurus williami</i>	14	1	1	NL
<i>Bothriembryon bradshawi</i>	14	1	1	NL
4 novae	14	1	1	NL
<i>Semotrachia elleryi</i>	15	1	1	NL
<i>Meridolum</i> sn 16	15	1	1	NL
<i>Camaenidae</i> bl 13	16	1	1	NL
<i>Carinotrachia carsoniana</i>	16	1	1	NL
<i>Malandena</i> wt 9	16	1	1	NL
<i>Pseudcupedora trezonana</i>	16	1	1	NL
<i>Rhagada pilbarana</i>	16	1	1	NL
<i>Bothriembryon meanarra</i>	16	1	1	NL
<i>Camaenidae</i> eu 14	16	1	1	NL
<i>Sphaerospira macleayi</i>	16	1	1	NL
<i>Steorra rawnsleyi</i>	16	1	1	NL

<i>Mussonena campbelli</i>	17	1	1	NL
<i>Rhytididae</i> sq 2	17	1	1	NL
<i>Cupedora broughami</i>	17	1	1	NL
<i>Sinumelon gillensis</i>	17	1	1	NL
<i>Ordtrachia grandis</i>	17	1	1	NL
<i>Tatemelon herberti</i>	17	1	1	NL
<i>Amplirhagada pusilla</i>	17	1	1	NL
<i>Charopidae</i> sq 4	18	1	1	NL
<i>Amplirhagada carinata</i>	18	1	1	NL
<i>Glyptorhagada kooringsensis</i>	18	1	1	NL
<i>Sphaerospira rawnesleyi</i>	18	1	1	NL
<i>Camaenidae</i> cy 3	19	1	1	NL
<i>Camaenidae</i> cy 9	19	1	1	NL
<i>Camaenidae</i> 2	19	1	1	NL
<i>Meridolum exocarpi</i>	19	1	1	NL
<i>Setobaudinia doongana</i>	19	1	1	NL
<i>Camaenidae</i> ne 19	19	1	1	NL
<i>Promonturconchum superbum</i>	19	1	1	NL
<i>Ordtrachia intermedia</i>	19	1	1	NL
<i>Rhagada richardsonii</i>	19	1	1	NL
<i>Galadistes intervenens</i>	19	1	1	NL
<i>Helicarionidae</i> eu 2	19	1	1	NL
<i>Sphaerospira incei</i>	19	1	1	NL
<i>Minimelon colmani</i>	21	1	1	NL
<i>Prymnbriareus nimmerlinus</i>	21	1	1	NL
<i>Damochlora rectilabrum</i>	21	1	1	NL
<i>Setobaudinia</i> 5	22	1	1	NL
<i>Setobaudinia hirsuta</i>	22	1	1	NL
<i>Camaenidae</i> sq 14	22	1	1	NL
<i>Westraltrachia oscarensis</i>	22	1	1	NL
<i>Quistrachia barrowensis</i>	23	1	1	NL
<i>Prototrachia sedula</i>	23	1	1	NL
<i>Ellobium aurisjudae</i>	23	1	1	NL
<i>Westraltrachia froggatti</i>			1	
<i>froggatti</i>	23	1		NL
<i>Amplirhagada castra</i>	23	1	1	NL
<i>Basedowena vulgata</i>	23	1	1	NL
<i>Baccalena squamulosa</i>	23	1	1	NL
<i>Quistrachia leptogramma</i>	25	1	1	NL
<i>Contramelon howardi</i>	26	1	1	NL
<i>Bothriembryon leeuwinensis</i>	26	1	1	NL
<i>Amplirhagada varia varia</i>	26	1	1	NL
<i>Lacustrelax minor</i>	26	1	1	NL
<i>Mesodontrachia fitzroyana</i>	27	1	1	EN
<i>Helicarionidae</i> sq 5	28	1	1	NL
<i>Strepsitaurus rugus</i>	32	1	1	NL
<i>Helicarion rubicundus</i>	32	1	1	NL
<i>Sinumelon tarcoolanum</i>	33	1	1	NL
<i>Kimboraga micromphala</i>	33	1	1	NL
<i>Rhagada radleyi</i>	34	1	1	NL

<i>Amplirhagada burneriensis</i>			1	
<i>umbilicata</i>	34	1		NL
<i>Granulomelon acerbum</i>	34	1	1	NL
<i>Rhagada capensis</i>	35	1	1	NL
<i>Exiligada negriensis</i>	35	1	1	NL
<i>Sinumelon godfreyi</i>	36	1	1	NL
<i>Rhagada torulus</i>	36	1	1	NL
<i>Ningbingia laurina</i>	37	1	1	NL
<i>Ventopelita mansueta</i>	39	1	1	NL
<i>Bothriembryon naturalistarum</i>	40	1	1	NL
<i>Sinumelon hawkerana</i>	40	1	1	NL
<i>Camaenidae wt 13</i>	40	1	1	NL
<i>Semotrachia esau</i>	44	1	1	NL
<i>Plectorhagada carcharias</i>	44	1	1	NL
<i>Torresitrachia bathurstensis</i>	44	1	1	NL
<i>Cupedora sublorioliana</i>	48	1	1	NL
<i>Bothriembryon glauerti</i>	48	1	1	NL
<i>Cooperconcha bunyerooana</i>	49	1	1	NL
<i>Sinumelon wilpenensis</i>	54	1	1	NL
<i>Westraltrachia turbinata</i>	61	1	1	NL
<i>Gyliotrachela australis</i>	62	1	1	NL
<i>Westraltrachia commoda</i>	71	1	1	NL
<i>Lacustrelax eyrei</i>	86	1	1	NL
<i>Amplirhagada percita</i>	98	1	1	NL
<i>Meridolum corneovirens</i>	620	15	2	NL
<i>Sphaerospira incei incei</i>	31	2	0	NL
<i>Parmavitrina megastoma</i>	11	2	1	NL
<i>Ramogenia mucida</i>	12	2	1	NL
<i>Cralopa st 25</i>	12	2	1	NL
<i>Pravonitor krefftii</i>	13	2	1	NL
<i>Austrochloritis nn 2</i>	14	2	1	NL
<i>Charopidae sq 47</i>	14	2	1	NL
<i>Westraltrachia cunicula</i>	16	2	1	NL
<i>Helicarionidae mv 2</i>	16	2	1	NL
<i>Charopidae nn 6</i>	18	2	1	NL
<i>Helicarionidae ne 4</i>	18	2	1	NL
<i>Peloparion helenae</i>	19	2	1	NL
<i>Rhophodon kempseyensis</i>	24	2	1	NL
<i>Camaenidae bl 47</i>	28	2	1	NL
<i>Cupedora cassandra</i>	37	2	1	NL
<i>Meridolum marshalli</i>	37	2	1	NL
<i>Bothriembryon balteolus</i>	55	2	1	NL
<i>Victaphanta compacta</i>	87	2	1	NL
<i>Amplirhagada burneriensis</i>	100	2	2	NL
<i>Sinumelon pedasum</i>	109	2	2	NL
<i>Parmavitrina sn 5</i>	11	2	2	NL
<i>Coenocharopa macromphala</i>	11	2	2	NL
<i>Helicarionidae cy 10</i>	11	2	2	NL
<i>Helicarionidae bl 10</i>	11	2	2	NL
<i>Austrochloritis ne 7</i>	11	2	2	NL

<i>Austrochloritis bellengerensis</i>	11	2	2	NL
<i>Austrochloritis disjuncta</i>	11	2	2	NL
<i>Camaenidae</i> eu 3	11	2	2	NL
<i>Galadistes liverpoolensis</i>	113	2	2	NL
<i>Ophicardelus ornata</i>	12	2	2	NL
<i>Charopidae</i> mq 11	12	2	2	NL
<i>Setomedeia janae</i>	12	2	2	NL
<i>Succinea strigillata</i>	12	2	2	NL
<i>Torresitrachia deflecta</i>	12	2	2	NL
<i>Succinea scalarina</i>	13	2	2	NL
<i>Camaenidae</i> wt 7	13	2	2	NL
<i>Allocharopa tarravillensis</i>	13	2	2	NL
<i>Charopidae</i> br 35	14	2	2	NL
<i>Charopidae</i> sq 25	14	2	2	NL
<i>Mussonena spinei</i>	14	2	2	NL
<i>Rhytididae</i> ne 2	14	2	2	NL
<i>Strangesta</i> sq 6	15	2	2	NL
<i>Bothriembryon fuscus</i>	15	2	2	NL
80 novae	15	2	2	NL
<i>Pedinogyra</i> sq 4	16	2	2	NL
<i>Helicarionidae</i> ne 1	16	2	2	NL
<i>Setobaudinia interrex</i>	16	2	2	NL
<i>Damochlora spina</i>	17	2	2	NL
<i>Retroterra costa</i>	17	2	2	NL
<i>Bothriembryon hamersley</i>			2	
<i>gorges</i>	17	2		NL
<i>Camaenidae</i> cy 4	17	2	2	NL
<i>Ngairia canaliculata</i>	18	2	2	NL
<i>Cassidula angulifera</i>	18	2	2	NL
<i>Pillomena meraca</i>	18	2	2	NL
<i>Camaenidae</i> sq 9	18	2	2	NL
<i>Pedinogyra</i> sq 2	19	2	2	NL
<i>Rhytididae</i> bl 3	19	2	2	NL
<i>Rhytididae</i> br 2	19	2	2	NL
<i>Helicarionidae</i> sq 11	20	2	2	NL
<i>Pedinogyra minor</i>	21	2	2	NL
<i>Amplirhagada burnierensis</i>			2	
<i>burnierensis</i>	21	2		NL
* <i>Bothriembryon</i> location 139	22	2	2	NL
<i>Amplirhagada wilsoni</i>	22	2	2	NL
<i>Ramogenia lanuginosa</i>	22	2	2	NL
<i>Amplirhagada kalumburuana</i>	25	2	2	NL
<i>Camaenidae</i> bl 1	26	2	2	NL
<i>Baudinella regia</i>	26	2	2	NL
<i>Westraltrachia alterna</i>	27	2	2	NL
<i>Rhagada angulata</i>	27	2	2	NL
<i>Paralaoma</i> st 1	28	2	2	NL
<i>Periclocystis ardeni</i>	29	2	2	NL
<i>Cupedora luteofusca</i>	29	2	2	NL
<i>Fastosarion superba</i>	29	2	2	NL

<i>Sinumelon bitaeniata</i>	29	2	2	NL
<i>Plectorhagada scolythra</i>	29	2	2	NL
<i>Helicarionidae</i> bl 11	30	2	2	NL
<i>Galadistes alleni</i>	32	2	2	NL
<i>Trachiopsis strangulata</i>	34	2	2	NL
<i>Amplirhagada elevata</i>	36	2	2	NL
<i>Melostrachia glomerans</i>	39	2	2	NL
<i>Quistrachia lefroyi</i>	42	2	2	NL
<i>Gyliotrachela australis</i>			2	
<i>australis</i>	43	2		NL
<i>Parglogenia pelodes</i>	46	2	2	NL
<i>Rhagada gatta</i>	48	2	2	NL
<i>Sinumelon serlense</i>	49	2	2	NL
<i>Quistrachia legendrei</i>	51	2	2	NL
<i>Stenacapha c</i>	56	2	2	NL
<i>Sinumelon petum</i>	59	2	2	NL
<i>Hadra barneyi</i>	61	2	2	NL
<i>Cupedora meridionalis</i>	67	2	2	NL
<i>Bothriembryon sayi</i>	75	2	2	NL
<i>Charopidae</i> br 33	14	3	1	NL
<i>Sphaerospira oconnellensis</i>	37	3	1	NL
<i>Cralopa carlessi</i>	12	3	2	NL
<i>Camaenidae</i> mv 8	12	3	2	NL
<i>Geminoropa hookeriana</i>	13	3	2	NL
<i>Tornatellinops mastersi</i>	14	3	2	NL
<i>Torresitrachia stipata</i>	15	3	2	NL
<i>Austrochloritis</i> sn 7	15	3	2	NL
<i>Cupedora ki</i>	15	3	2	NL
<i>Sphaerospira</i>			2	
<i>rockhamptonensis</i>	18	3		NL
<i>Charopidae</i> mv 30	18	3	2	NL
<i>Charopidae</i> mv 25	18	3	2	NL
<i>Pedinogyra effosa</i>	24	3	2	NL
<i>Elasmias manilense</i>	25	3	2	NL
<i>Pedinogyra allani</i>	26	3	2	NL
<i>Dendronitor inscensa</i>	31	3	2	NL
<i>Camaenidae</i> mv 2	32	3	2	NL
<i>Camaenidae</i> bl 55	38	3	2	NL
<i>Meridolum bowdenae</i>	42	3	2	NL
<i>Quistrachia monogramma</i>	49	3	2	NL
<i>Helicarionidae</i> cy 8	87	3	2	NL
<i>Gloreugenia blackalli</i>	11	3	3	NL
<i>Camaenidae</i> wt 5	11	3	3	NL
<i>Bothriembryon rhodostomus</i>	11	3	3	NL
<i>Camaenidae</i> nn 3	12	3	3	NL
<i>Camaenidae</i> sq 5	12	3	3	NL
<i>Punctidae</i> st 3	12	3	3	NL
<i>Pernagera a</i>	12	3	3	NL
<i>Bothriembryon jacksoni</i> cf.	13	3	3	NL
<i>Bothriembryon notatus</i>	13	3	3	NL

<i>Elasmias terrestris</i>	14	3	3	NL
<i>Helicarion leopardina</i>	14	3	3	NL
<i>Amplirhagada varia</i>	15	3	3	NL
<i>Pedinogyra sq 1</i>	15	3	3	NL
<i>Bothriembryon revectus</i>	17	3	3	NL
<i>Charopidae br 15</i>	18	3	3	NL
<i>Austrorhytida glaciamans</i>	18	3	3	NL
<i>Charopidae nn 15</i>	18	3	3	NL
<i>Helicarionidae ne 2</i>	18	3	3	NL
<i>Helicarionidae wt 15</i>	19	3	3	NL
<i>Oreomava cannfluviatilus</i>	19	3	3	NL
<i>Montidelos orcadis</i>	20	3	3	NL
<i>Gyrocochlea curtisiana</i>	20	3	3	NL
<i>Gloreugenia praecursoris</i>	21	3	3	NL
<i>Amplirhagada osmondi</i>	22	3	3	NL
<i>Camaenidae bl 28</i>	22	3	3	NL
<i>Pygmipanda kershawi</i>	22	3	3	NL
<i>Westracystis fredaslini</i>	22	3	3	NL
<i>Charopidae br 28</i>	23	3	3	NL
<i>Omphaloropa varicosa</i>	23	3	3	NL
<i>Sinumelon vagente</i>	23	3	3	NL
<i>Victaphanta atramentaria</i>	24	3	3	NL
<i>Westraltrachia limbana</i>	24	3	3	NL
<i>Gloreugenia cognata</i>	25	3	3	NL
<i>Pupisoma sn 1</i>	25	3	3	NL
<i>Meridolum depressa</i>	25	3	3	NL
<i>Helicarion dispositus</i>	26	3	3	NL
<i>Torresitrachia crawfordi</i>	26	3	3	NL
<i>Rotacharopa densilamellata</i>	27	3	3	NL
<i>Sinumelon gawleri</i>	28	3	3	NL
<i>Amplirhagada confusa</i>	29	3	3	NL
<i>Helicarionidae bl 9</i>	29	3	3	NL
<i>Austrochloritis ascensa</i>	31	3	3	NL
<i>Westraltrachia rotunda</i>	31	3	3	NL
<i>Setobaudinia calvitia</i>	33	3	3	NL
<i>Xanthomelon sphaeroidea</i>	36	3	3	NL
<i>Torresitrachia umbonis</i>	36	3	3	NL
<i>Bothriembryon perobesus</i>	37	3	3	NL
<i>Cupedora rufofasciata</i>	41	3	3	NL
<i>Thularion semoni</i>	42	3	3	NL
<i>Sinumelon flindersi</i>	45	3	3	NL
<i>Torresitrachia monticola</i>	45	3	3	NL
<i>Torresitrachia amaxensis</i>	45	3	3	NL
<i>Xanthomelon ruberpumilio</i>	48	3	3	NL
<i>Westraltrachia derbyi</i>	53	3	3	NL
<i>Tarocystis antiqua</i>	54	3	3	NL
<i>Melostrachia acuticostata</i>	55	3	3	NL
<i>Cupedora lorioliana</i>	60	3	3	NL
<i>Trozena morata</i>	60	3	3	NL
<i>Amplirhagada mitchelliana</i>	62	3	3	NL

<i>Bothriembryon indutus</i>	64	3	3	NL
<i>Xanthomelon prudhoensis</i>	64	3	3	NL
<i>Sinumelon dulcensis</i>	77	3	3	NL
<i>Pleuroxia oligopleura</i>	82	3	3	NL
<i>Gastrocopta queenslandica</i>	18	4	1	NL
<i>Rhytididae</i> br 3	26	4	1	NL
<i>Sphaerospira incei lessoni</i>	83	4	1	NL
<i>Cylindrovertilla kingi</i>	16	4	2	NL
<i>Charopidae</i> mv 23	21	4	2	NL
<i>Camaenidae</i> bl 17	43	4	2	NL
<i>Discocharopa vigens</i>	12	4	3	NL
<i>Strangesta alpica</i>	13	4	3	NL
<i>Posorites fucata</i>	14	4	3	NL
<i>Charopidae</i> mv 33	15	4	3	NL
<i>Sinumelon aversum</i>	152	4	3	NL
<i>Pleuroxia adcockiana</i>	164	4	3	NL
<i>Helicarionidae</i> ne 5	21	4	3	NL
<i>Queridomus grenvillei</i>	23	4	3	NL
<i>Hedleyella maconelli</i>	23	4	3	NL
<i>Austrochloritis</i> sn 8	28	4	3	NL
<i>Camaenidae</i> st 10	29	4	3	NL
<i>Helicarionidae</i> mq 7	31	4	3	NL
<i>Torresitrachia weaberana</i>	33	4	3	NL
<i>Meridolum</i> nn 6	35	4	3	NL
<i>Bothriembryon esperantia</i>	37	4	3	NL
<i>Meridolum duralensis</i>	48	4	3	NL
<i>Neveritis aridorum</i>	78	4	3	NL
<i>Egilomen globosa</i>	11	4	4	NL
<i>Charopidae</i> sn 23	11	4	4	NL
<i>Coneuplecta pampini</i>	11	4	4	NL
<i>Semotrachia setigera</i>	114	4	4	NL
<i>Helicarionidae</i> nn 9	12	4	4	NL
<i>Mussonula verax</i>	12	4	4	NL
<i>Meridolum</i> ne 16	132	4	4	NL
<i>Charopidae</i> br 1	14	4	4	NL
<i>Charopidae</i> br 12	14	4	4	NL
<i>Charopidae</i> br 3	14	4	4	NL
<i>Noctepuna cerea</i>	14	4	4	NL
<i>Camaenidae</i> mv 1	15	4	4	NL
<i>Sphaerospira sardalabiata</i>	15	4	4	NL
<i>Helicarionidae</i> nn 8	16	4	4	NL
<i>Pupoides myoporinae</i>	17	4	4	NL
<i>Charopidae</i> nn 8	17	4	4	NL
<i>Biomphalopa concinna</i>	18	4	4	NL
<i>Charopidae</i> mv 4	18	4	4	NL
<i>Helicarionidae</i> sq 7	19	4	4	NL
<i>Gyrocochlea iuloidea</i>	19	4	4	NL
<i>Nitor</i> br 7	19	4	4	NL
<i>Charopidae</i> sp d	21	4	4	NL
<i>Camaenidae</i> cy 10	24	4	4	NL

<i>Rotacharopa kessneri</i>	25	4	4	NL
<i>Ventopelita bellengerensis</i>	26	4	4	NL
<i>Helicarionidae</i> nn 4	27	4	4	NL
<i>Subulina octona</i>	27	4	4	NL
<i>Charopidae</i> sn 14	29	4	4	NL
<i>Somniopupa scotti</i>	30	4	4	NL
<i>Helicarionidae</i> nn 5	32	4	4	NL
<i>Charopidae</i> sn 26	35	4	4	NL
<i>Rhytididae</i> sq 9	40	4	4	NL
<i>Camaenidae</i> sq 15	42	4	4	NL
<i>Helicarionidae</i> sn 3	43	4	4	NL
<i>Sphaerospira zebina</i>	71	4	4	NL
<i>Sinumelon perinflata</i>	77	4	4	NL
<i>Galadistes</i> ne 15	97	4	4	NL
<i>Elsothera limula</i>	46	5	1	NL
<i>Bothriembryon sedgwicki</i>	19	5	2	NL
<i>Cupedora patruelis</i>	37	5	2	NL
<i>Saladelos strangeoides</i>	16	5	3	NL
<i>Elsothera brazieri</i>	24	5	3	NL
<i>Torresirope spaldingi</i>	27	5	3	NL
<i>Helicarionidae</i> mq 9	30	5	3	NL
<i>Sphaerospira informis</i>	81	5	3	NL
<i>Charopidae</i> br 2	12	5	4	NL
<i>Rhophodon consobrinus</i>	13	5	4	NL
<i>Charopidae</i> sq 28	14	5	4	NL
<i>Setomedea aculeata</i>	16	5	4	NL
<i>Pupoides ischnus</i>	17	5	4	NL
<i>Discocharopa mimosa</i>	19	5	4	NL
<i>Coenocharopa sordidus</i>	31	5	4	NL
<i>Sphaerospira etheridgei</i>	43	5	4	NL
<i>Ventopelita leucocheilus</i>	45	5	4	NL
<i>Bothriembryon onslowi</i>	46	5	4	NL
<i>Austrochloritis layardi</i>	47	5	4	NL
<i>Tasmaphena lamproides</i>	52	5	4	NL
<i>Sphaerospira incei curtisiana</i>	67	5	4	NL
<i>Meridolum</i> sn 18	76	5	4	NL
<i>Sinumelon expositum</i>	91	5	4	NL
<i>Bothriembryon distinctus</i>	106	5	5	NL
<i>Saladelos</i> nn 3	11	5	5	NL
<i>Rhagada convicta</i>	110	5	5	NL
<i>Cystopeltidae</i> br 1	13	5	5	NL
<i>Pillomena nivea</i>	14	5	5	NL
<i>Helicarionidae</i> mq 3	14	5	5	NL
<i>Gyrocochlea vinitincta</i>	17	5	5	NL
<i>Cystopelta</i> st 1	19	5	5	NL
<i>Camaenidae</i> sn 20	19	5	5	NL
<i>Austrochloritis</i> st 2	23	5	5	NL
<i>Charopidae</i> ne 8	24	5	5	NL
<i>Gyrocochlea impressa</i>	24	5	5	NL
<i>Sinumelon bednalli</i>	24	5	5	EN

<i>Gloreugenia coxeni</i>	25	5	5	NL
<i>Helicarionidae</i> br 1	27	5	5	NL
<i>Sphaerospira mazee</i>	28	5	5	NL
<i>Charopidae</i> nn 16	30	5	5	NL
<i>Succinea interioris</i>	30	5	5	NL
<i>Calvigenia blackmani</i>	47	5	5	NL
<i>Helicarionidae</i> bl 12	55	5	5	NL
<i>Rhagada tescorum</i>	56	5	5	NL
<i>Pupoides eremicolus</i>	59	5	5	NL
<i>Sinumelon kalgum</i>	61	5	5	NL
<i>Meridolum gulosa</i>	63	5	5	NL
<i>Camaenidae</i> bl 53	64	5	5	NL
<i>Xanthomelon jannellei</i>	69	5	5	NL
<i>Pleuroxia polypleura</i>	73	5	5	NL
<i>Bothriembryon kendricki</i>	76	5	5	NL
<i>Pleuroxia elfina</i>	77	5	5	NL
<i>Camaenidae</i> sq 4	40	6	3	NL
<i>Gyrocochlea</i> sp.	14	6	4	NL
<i>Roblinella curacoae</i>	19	6	4	NL
<i>Bothriembryon costulata</i>	57	6	4	NL
<i>Tornatellinops pressus</i>	68	6	4	NL
<i>Rhytididae</i> sq 4	21	6	5	NL
<i>Charopidae</i> sn 13	29	6	5	NL
<i>Succinea</i> st 1	32	6	5	NL
<i>Pillomena dandenongensis</i>	32	6	5	NL
<i>Gyrocochlea cinnamomea</i>	34	6	5	NL
<i>Allocharopa kershawi</i>	34	6	5	NL
<i>Gastrocopta deserti</i>	40	6	5	NL
<i>Amimopina macleayi</i>	84	6	5	NL
<i>Oreomava johnstoni</i>	25	7	4	NL
<i>Pernagera tamarensis</i>	19	7	5	NL
<i>Papuexul bidwilli</i>	21	7	5	NL
<i>Cupedora suttilosa</i>	30	7	5	NL
<i>Euconulus fulvus</i>	42	7	5	NL
<i>Gastrocopta hedleyi</i>	47	7	5	NL
<i>Rhytididae</i> bl 2	62	7	5	NL
<i>Sphaerospira yulei</i>	83	7	5	NL
<i>Elasmias wakefieldiae</i>	39	8	4	NL
<i>Strangesta gawleri</i>	27	8	5	NL
<i>Rhytididae</i> sq 7	59	8	5	NL
<i>Pernagera tasmaniae</i>	37	9	4	NL

Trap-door Spiders (Mygalomorphae)

This is a broad group of spiders that includes not only the typical trap-door-type spiders, but also the funnel web spiders. Hence, they are a relatively known group of spiders. The ANHAT database has 9009 records for 609 species and subspecies of trap-door spiders. Twenty-one species account for approximately 50% of the total species records in ANHAT. These species had over 70 records each (**Table 61**).

Table 61 Trap-door spider species that account for approximately 50% of the total species records in ANHAT.

Species	No. Records	% total records
<i>Atrax su</i>	70	0.78
<i>Australothele jamiesoni</i>	73	0.81
<i>Hadronyche or</i>	74	0.82
<i>Missulena insignis</i>	75	0.83
<i>Hadronyche mar</i>	78	0.87
<i>Aganippe subtristis</i>	78	0.87
<i>Misgolas gracilis</i>	81	0.90
<i>Hadronyche formidabilis</i>	110	1.22
<i>Hadronyche maq</i>	121	1.34
<i>Gaius villosus</i>	125	1.39
<i>Hadronyche venenata</i>	135	1.50
<i>Idiosoma sigillatum</i>	164	1.82
<i>Seqocrypta jakara</i>	185	2.05
<i>Hadronyche versuta</i>	201	2.23
<i>Misgolas rapax</i>	222	2.46
<i>Chenistonia tepperi</i>	229	2.54
<i>Missulena bradleyi</i>	351	3.90
<i>Missulena granulosa</i>	383	4.25
<i>Aname mainae</i>	442	4.91
<i>Missulena occatoria</i>	666	7.39
<i>Atrax robustus</i>	666	7.39
Total	4529	50.27

There are relatively few or very few records available for the majority of the trap-door spiders recorded in the ANHAT database. Four hundred and eighty-one species had 10 or fewer individual site records in the ANHAT database and 215 of these had just one record and a further 83 just two records (**Table 62**). Specific habitat associations are not available for a number of the listed species, nor can many of those with listed information be considered to be highly accurate given there are so few records available. However, the vast majority of species with a recorded habitat type come from forests, which reflects the general habitat preference for this group of spiders. There are very few species in this list that are known from inland, more arid areas, indicating this group does not inhabit such environments with any frequency. The listed species are widespread through the states in more mesic environments and there are no significant trends evident in regions of Australia where trap-doors are more likely to be poorly recorded. However, only 13 species on the list

come from southeastern Australia, which appears to be a relatively small number. The survey levels are likely to be greatest in this most populated area of Australia, which would explain species in this area tending to have greater numbers of records. No species of trap-door spider has been assessed for listing under the EPBC Act as yet.

Table 62 Trap-door spider species with 10 or fewer individual site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Aganippe</i> 1	1	0.00	?		100	NL
<i>Aganippe</i> 7	1	0.00	?		100	NL
<i>Aganippe ballidu</i>	1	0.00	SW?		100	NL
<i>Aganippe charlesi</i>	1	100.00	?		100	NL
<i>Aganippe cupulifex</i> spp grp	1	0.00	SW	For, WL	100	NL
* <i>Aganippe</i> location 43	1	0.00	SW	For, WL	100	NL
<i>Aganippe dorre</i>	1	100.00	Dorre Is.		100	NL
* <i>Aganippe</i> location 44	1	0.00	SW		100	NL
* <i>Aganippe</i> location 45	1	100.00	SW		100	NL
* <i>Aganippe</i> location 46	1	100.00	SW		100	NL
<i>Aganippe longbottomi</i>	1	0.00			100	NL
* <i>Aganippe</i> location 48	1	0.00			100	NL
* <i>Aganippe</i> location 49	1	0.00			100	NL
<i>Aganippe mileura</i>	1	0.00			100	NL
<i>Aganippe nannup</i>	1	0.00	SW		100	NL
<i>Aganippe nugadong</i>	1	0.00			100	NL
<i>Aganippe proto-idiosoma</i>	1	0.00	SW	SL	100	NL
<i>Aganippe proto-idiosoma</i> sp3	1	0.00	SW	SL	100	NL
* <i>Aganippe</i> location 63	1	0.00	SC		100	NL
<i>Aganippe simpsoni</i> sp grp	1	100.00	SCI	GrL	100	NL
* <i>Aganippe</i> location 65	1	0.00	SWI		100	NL
<i>Aganippe wa_occ_gp</i>	1	0.00	SW		100	NL
<i>Aganippe winsori</i>	1	0.00	SE	For?	100	NL
<i>Aname</i>	1	100.00	NE?		100	NL

<i>blackdownensis</i>					
<i>Aname camara</i>	1	0.00	NE		100 NL
<i>Aname false black</i>					
<i>wish-bone</i>	1	0.00			100 NL
* <i>Aname</i> location 68	1	100.00	NC		100 NL
* <i>Aname</i> location 72	1	0.00			100 NL
<i>Aname mainae</i> sp					
grp	1	100.00	SC		200 NL
<i>Aname metropolitan</i>	1	0.00			100 NL
<i>Aname nov near</i>					
<i>armigera</i>	1	0.00			100 NL
<i>Aname nov?</i>	1	0.00			100 NL
<i>Aname nw aust</i>	1	0.00	NW		100 NL
* <i>Aname</i> location 73	1	0.00	WC		100 NL
* <i>Aname</i> location 75	1	0.00	EC?		100 NL
<i>Aname river wish-</i>					
<i>bone</i>	1	0.00			100 NL
<i>Aname robertsi</i>	1	100.00			100 NL
<i>Aname robertsorum</i>	1	100.00	EC		100 NL
<i>Aname robusta</i>	1	100.00	SC	?	200 NL
<i>Aname tigrina</i>	1	100.00	NE		100 NL
<i>Aname tropica</i>	1	100.00	NE		100 NL
<i>Aname villosa?</i>	1	0.00	SW	For	100 NL
<i>Aname wa</i>	1	0.00	SW		100 NL
* <i>Aname</i> location					
105	1	0.00	SW		100 NL
<i>Aname</i>					
<i>wa_paraemb2</i>	1	0.00	W		100 NL
<i>Aname</i>					
<i>wa_paraemb3</i>	1	0.00	W		100 NL
<i>Aname</i>					
<i>wa_rastellum</i>	1	0.00	W		100 NL
<i>Aname</i>					
<i>wa_squarebulb</i>	1	0.00	W		100 NL
<i>Aname wheatbelt</i>	1	100.00	WCI		100 NL
<i>Aname wish-bone</i>					
spp grp	1	0.00			100 NL
<i>Anidiops a</i>	1	100.00			100 NL
<i>Anidiops</i>					
<i>manstridgei</i> spp grp	1	0.00	SC	WL, SL	100 NL
<i>Anidiops sa_2</i>	1	0.00	SC		100 NL
<i>Anidiops villosus</i>	1	0.00	SW	SL	200 NL
<i>Anidiops wa_1216</i>	1	0.00	SW		100 NL
<i>Arbanitis ballidu</i>	1	0.00	EC		100 NL
<i>Arbanitis</i>					
<i>idio_newspecies_</i>	1	0.00	?	?	100 NL
* <i>Arbanitis</i> location					
50	1	0.00	EC		100 NL
* <i>Arbanitis</i> location					
52	1	0.00	EC?		200 NL

<i>Arbanitis ornatus</i>	1	0.00	EC		100	NL
<i>Arbanitis q_e</i>	1	100.00	EC		100	NL
* <i>Arbanitis</i> location 53	1	0.00	SW		100	NL
<i>Arbanitis woolleyae</i>	1	0.00	EC		100	NL
<i>Atrax</i> src 0253	1	100.00	E?	For	100	NL
<i>Atrax</i> src 0254	1	100.00	E?	For	100	NL
<i>Aureococrypta katersi</i>	1	0.00	SW	For, WL	100	NL
<i>Aureococrypta lugubris</i>	1	0.00			200	NL
<i>Australothele bicuspidata</i>	1	100.00	EC	For	100	NL
<i>C_Migas</i> v_cobon	1	0.00			400	NL
<i>Cataxia dietrichae</i>	1	0.00	EC	For	200	NL
<i>Cataxia victoriae</i>	1	100.00	SE	For	100	NL
<i>Cethegus daemeli</i>	1	100.00	NE	For	100	NL
<i>Cethegus elegans</i>	1	0.00	NE	For	100	NL
<i>Cethegus hanni</i>	1	0.00	NE	For	100	NL
<i>Cethegus nov</i>	1	100.00			100	NL
* <i>Chenistonia</i> location 77	1	100.00			100	NL
<i>Chenistonia logs</i> sp	1	100.00			100	NL
<i>Chenistonia maculata</i> spp grp	1	100.00	SE	For	100	NL
<i>Chenistonia spinigera</i>	1	100.00			100	NL
* <i>Chenistonia</i> location 79	1	100.00	SW?		100	NL
* <i>Chenistonia</i> Location 80	1	0.00	SW?		100	NL
* <i>Chenistonia</i> location 81	1	0.00	SW?		100	NL
<i>Conothele</i> 1	1	0.00	NE		100	NL
<i>Conothele</i> 2	1	0.00	NE		100	NL
<i>Conothele</i> 3	1	100.00	NE		100	NL
* <i>Conothele</i> location 82	1	100.00	NE		100	NL
* <i>Conothele</i> location 84	1	0.00	NE		100	NL
* <i>Conothele</i> location 116	1	0.00	NE		100	NL
<i>Coremiocnemis q_tropix</i>	1	100.00	NE	Univoltine	100	NL
<i>Det</i> sp	1	100.00	?		100	NL
<i>Eucyrtops corrigin/kondiuim</i> sp	1	0.00	SW		100	NL
<i>Eucyrtops eremaea</i>	1	0.00	SW	SL	100	NL
<i>Eucyrtops nov</i>	1	100.00	SW		100	NL

<i>Eucyrtops</i>						
<i>torbayensis</i>	1	0.00	SW	WL	200	NL
* <i>Eucyrtops</i> location						
123	1	0.00	SW	WL	100	NL
* <i>Eucyrtops</i> location						
124	1	0.00	SW	WL	300	NL
<i>Euoplos</i> sp	1	0.00	?	?	100	NL
<i>Euoplos spinipes</i>	1	0.00	EC	For, WL	200	NL
<i>Euoplos variabilis</i>	1	0.00	EC	For	600	NL
<i>Gaius</i> nov	1	100.00			100	NL
<i>Gen Nov</i> sp	1	0.00	?	?	100	NL
* <i>Gen Nov</i> location						
126	1	0.00	W		100	NL
<i>Hadronyche</i> an	1	0.00			100	NL
<i>Hadronyche</i> ba	1	0.00			100	NL
<i>Hadronyche</i> da	1	0.00			100	NL
<i>Hadronyche</i> ly	1	0.00			100	NL
<i>Hadronyche</i> ra	1	100.00			100	NL
<i>Hadronyche</i> src						
0246	1	100.00			100	NL
<i>Hadronyche</i> src						
0247	1	100.00			100	NL
<i>Heteromigas</i> dovei	1	0.00	Tas	?	100	NL
<i>Heteromigas</i>						
<i>terraereginae</i>	1	0.00	NE, Mon		100	NL
* <i>Homogona</i>						
location 53b	1	100.00	SW		100	NL
<i>Idiommatata</i> indet	1	0.00	?	?	100	NL
* <i>Idiommatata</i>						
location 55	1	0.00	SC?		100	NL
* <i>Idiommatata</i>						
location 56	1	0.00	?		100	NL
<i>Idiosoma</i> nov	1	0.00	SW	For?	100	NL
* <i>Idiosoma</i> location						
60	1	0.00	SW	For	100	NL
<i>Ixamatus</i> lornensis	1	100.00	EC	For	100	NL
<i>Ixamatus</i> rozefeldsi	1	0.00	EC	For	100	NL
<i>Kwonkan</i> anatolion	1	100.00	SC	SL	100	NL
<i>Kwonkan</i> moriartii	1	100.00	SWI		100	NL
<i>Kwonkan</i> src 0240	1	0.00	SW		100	NL
<i>Kwonkan</i> wa_1	1	0.00	SW		100	NL
* <i>Kwonkan</i> location						
85	1	0.00	SW		100	NL
<i>Kwonkan</i>						
<i>wa_zuytdorp</i>	1	0.00	SW		100	NL
<i>Mandjelia</i>						
<i>exasperans</i>	1	100.00	NE		100	NL
<i>Mandjelia</i> fleckeri	1	100.00	NE		100	NL
<i>Mandjelia</i> galmarra	1	100.00	NE		100	NL
<i>Mandjelia</i>	1	100.00	NE		100	NL

<i>iwupataka</i>						
<i>Mandjelia</i>						
<i>macgregori</i>	1	0.00	NE		100	NL
<i>Mandjelia madura</i>	1	0.00	NE		100	NL
<i>Mandjelia</i>						
<i>mccrackeni</i>	1	100.00	NE		100	NL
<i>Mandjelia rejae</i>	1	100.00	NE		100	NL
<i>Mandjelia wa_salt1</i>	1	0.00	NE		100	NL
<i>*Mandjelia</i> location						
90	1	0.00	NE		100	NL
<i>Masteria</i> sp	1	100.00	NE?	For	100	NL
<i>*Merredinia</i>						
location 92	1	100.00	SW	WL, SL	100	NL
<i>*Merredinia</i>						
location 93	1	0.00	SW	WL, SL	100	NL
<i>Misgolas</i> 12	1	100.00	SE		100	NL
<i>Misgolas elegans</i>	1	0.00	SE	For	200	NL
<i>Missulena</i> location						
128	1	0.00	SW		100	NL
<i>Missulena</i>						
<i>occ_1025</i>	1	0.00	SW?		100	NL
<i>Missulena</i>						
<i>occ_1026</i>	1	0.00	SW?		100	NL
<i>Missulena</i>						
<i>occwheat913</i>	1	0.00	SEI	WL?	100	NL
<i>*Missulena</i> location						
129	1	0.00	S		100	NL
<i>*Missulena</i> location						
130	1	0.00	S		100	NL
<i>Missulena small</i>						
<i>black</i> sp.	1	0.00			100	NL
<i>Missulena</i>						
<i>wa_bassendean</i>	1	0.00	SW?		100	NL
<i>Missulena</i>						
<i>wa_gran_387</i>	1	0.00	SW?		100	NL
<i>Missulena</i>						
<i>wa_gran_tiny</i>	1	0.00	SW?		100	NL
<i>Moggridgea</i>						
<i>australis</i>	1	0.00	SC		200	NL
<i>Moruga doddi</i>	1	100.00	NC-NE		100	NL
<i>Moruga fuliginea</i>	1	0.00	NC-NE		100	NL
<i>Moruga insularis</i>	1	100.00	NC-NE		100	NL
<i>Moruga kimberleyi</i>	1	100.00	NC-NE		100	NL
<i>Moruga</i>						
<i>thorsborneorum</i>	1	100.00	NC-NE		100	NL
<i>Moruga wallaceae</i>	1	0.00	NC-NE		100	NL
<i>Namea callemonda</i>	1	0.00	EC	For	100	NL
<i>*Namea</i> location						
130a	1	0.00	NE	For	100	NL
<i>Namirea fallax</i>	1	0.00	EC	For	100	NL

<i>Namirea johnlyonsi</i>	1	100.00		For	100	NL
<i>Nemesiidae d</i>	1	0.00			100	NL
<i>Ozicrypta clarki</i>	1	0.00	NC-NE		100	NL
<i>Ozicrypta combeni</i>	1	0.00	NC-NE		100	NL
<i>Ozicrypta digglesii</i>	1	0.00	NC-NE		200	NL
<i>Ozicrypta mcarthurae</i>	1	0.00	NC-NE		100	NL
<i>Ozicrypta reticulata</i>	1	100.00	EC		300	NL
<i>Ozicrypta tuckeri</i>	1	100.00	NC-NE		100	NL
<i>Ozicrypta walkeri</i>	1	0.00	NC-NE		100	NL
<i>Porthedland sp nov</i>	1	0.00	WC	WL?	100	NL
<i>*Selenocosmia</i> location 94	1	100.00	SW		100	NL
<i>Selenocosmia wallacei ms name</i>	1	0.00	SW?		100	NL
<i>Seqocrypta bancrofti</i>	1	0.00	NE		100	NL
<i>Seqocrypta sp</i>	1	0.00	NE		100	NL
<i>*Stanwellia</i> location 96	1	0.00	SE		100	NL
<i>Stanwellia v_gow</i>	1	0.00	SE		100	NL
<i>*Stanwellia</i> location 97	1	100.00	SW		100	NL
<i>Striamea gertschi</i>	1	100.00			100	NL
<i>Synothele boongaree</i>	1	0.00	W?		100	NL
<i>Synothele goongarrie</i>	1	0.00	W?		100	NL
<i>Synothele harveyi</i>	1	100.00	W?		100	NL
<i>Synothele indet</i>	1	0.00	W?		100	NL
<i>Synothele karara</i>	1	0.00	W?		100	NL
<i>Synothele koonalda</i>	1	100.00	W?		100	NL
<i>Synothele longbottomi</i>	1	100.00	W?		100	NL
<i>Synothele lowei</i>	1	0.00	W?		100	NL
<i>Synothele moonabie</i>	1	0.00	W?		100	NL
<i>Synothele nov</i>	1	100.00	W?		100	NL
<i>Synothele pectinata</i>	1	0.00	W?		100	NL
<i>Synothele rastelloides</i>	1	0.00	W?		100	NL
<i>Synothele rubripes</i>	1	0.00	W?		100	NL
<i>Teyl antelipoides</i>	1	0.00	SW		100	NL
<i>Teyl goldfields sp</i>	1	0.00	SWI		100	NL
<i>Teyl luculentus sp</i> grp	1	0.00	SW	WL, SL	100	NL
<i>Teyl mandgedal sp</i> grp	1	0.00	SW		100	NL
<i>*Teyl</i> location 131	1	0.00	SW		100	NL
<i>*Teyl</i> locaiton 132	1	0.00	SW		100	NL
<i>*Teyl</i> locaiton 133	1	0.00	SW		100	NL

*Teyl locaiton 134	1	0.00	SW		100	NL
*Teyl location 135	1	100.00	SW		100	NL
*Teyl location 136	1	100.00	SW		100	NL
*Teyl location 137	1	100.00	SW		100	NL
<i>Teyl waldockae</i>	1	100.00	SW		100	NL
<i>Teyl wheat2</i>	1	0.00	SWI		100	NL
<i>Theraphosidae</i> sp.	1	0.00			700	NL
<i>Trittame</i>						
<i>berniesmythi</i>	1	0.00	NE	RF	100	NL
<i>Trittame mccolli</i>	1	0.00	NE	RF	100	NL
<i>Trittame thorelli</i>	1	100.00	NE	RF	100	NL
<i>Tungari monteithi</i>	1	0.00			100	NL
<i>Yilgarnia a</i>	1	0.00	SW		100	NL
<i>Yilgarnia</i>						
<i>bougainville</i>	1	0.00	SW		100	NL
<i>Yilgarnia minuta</i>	1	100.00	SW		100	NL
* <i>Yilgarnia</i> location 137a	1	0.00	SW		100	NL
<i>Zophorame</i>						
<i>covacevichae</i>	1	0.00	NE	RF	100	NL
<i>Zophorame hirsti</i>	1	0.00	?		100	NL
<i>Aganippe castellum</i>	2	0.00	WC		200	NL
<i>Aganippe coastal</i>						
<i>plain</i> sp	2	0.00	SW		100	NL
<i>Aganippe indet</i>	2	50.00			200	NL
<i>Aganippe proto-idiosoma</i> sp1	2	0.00	SW	SL	200	NL
<i>Aganippe simpsoni</i>	2	50.00	SCI	GrL	300	NL
* <i>Aganippe</i> location 64	2	0.00	SWI		100	NL
<i>Aname atra</i>	2	50.00	SCI?		200	NL
* <i>Aname</i> location 66	2	100.00	Barrow Is.		200	NL
<i>Aname brown wish-bone</i>	2	50.00			200	NL
<i>Aname</i> location 67	2	0.00	NE?		200	NL
<i>Aname houtmani</i>	2	0.00	Houtman Is?		300	NL
* <i>Aname</i> location 70	2	0.00	NW		200	NL
<i>Aname nt</i> sp	2	100.00	CN		100	NL
* <i>Aname</i> location 74	2	0.00	WC		200	NL
* <i>Aname</i> location 99	2	0.00	SW		200	NL
* <i>Aname</i> location 101	2	0.00	SW?		200	NL
* <i>Aname</i> location 104	2	0.00	W		200	NL
<i>Aname</i>						
<i>wa_m_rast_qry</i>	2	0.00	W		200	NL
* <i>Aname</i> location 110	2	50.00	W		200	NL
* <i>Aname</i> location 111	2	0.00	WC		200	NL

*Aname location						
112	2	0.00	WC		100	NL
<i>Aname wa_streich</i>	2	0.00	W		200	NL
<i>Anidiops sa_baird</i>	2	50.00	SC		200	NL
<i>Anidiops whitei</i>	2	0.00	SC		300	NL
<i>Arbanitis echo ms</i>						
name	2	100.00	EC		100	NL
<i>Arbanitis inornatus</i>	2	0.00	EC		200	NL
<i>Arbanitis</i>						
<i>macmillani</i>	2	50.00	SW		200	NL
<i>Caledothele</i>						
<i>australiensis</i>	2	0.00			600	NL
<i>Cethegus barraba</i>	2	50.00	EC	For	200	NL
<i>Cethegus colemani</i>	2	0.00	NE	For	200	NL
<i>Cethegus</i>						
<i>multispinosus</i>	2	0.00	NE	For	200	NL
*Cethegus location						
76	2	50.00	SW	For, WL?	200	NL
<i>Chenistonia b</i>	2	50.00			200	NL
*Chenistonia						
location 76a	2	100.00	SW		100	NL
*Chenistonia						
location 78	2	50.00			200	NL
<i>Chenistonia</i>						
<i>wa_v_long_emb</i>	2	50.00	SW		200	NL
*Conothele location						
119	2	0.00	NE		200	NL
<i>Coremiocnemis</i>						
<i>q_lizard</i>	2	100.00	Lizard Is.?		100	NL
<i>Eucyrtops latior spp</i>						
grp	2	100.00	SW	For	100	NL
<i>Eucyrtops latior spp</i>						
grp sp nov	2	0.00	SW	For	200	NL
*Eucyrtops location						
125	2	50.00	SW	WL	200	NL
<i>Gaius goldfields sp</i>	2	0.00	SW		200	NL
<i>Hadronyche src</i>						
0248	2	50.00			200	NL
<i>Homogona nov</i>	2	100.00			200	NL
<i>Idiommata</i>						
<i>blackwalli</i>	2	0.00	W	For, WL, SL	200	NL
<i>Idiommata fusca</i>	2	50.00	NE	For, WL?	300	NL
<i>Kwonkan 2</i>	2	0.00	SW		200	NL
<i>Kwonkan eboracum</i>	2	0.00	SW	SL	200	NL
*Kwonkan location						
61	2	0.00	SC		100	NL
<i>Kwonkan silvestre</i>	2	0.00	SW		200	NL
*Kwonkan location						
87	2	50.00	SW		200	NL
*Kwonkan location	2	50.00	SW		200	NL

88						
<i>Kwonkan wa_sp1</i>	2	0.00	SW		200	NL
<i>Kwonkan</i>						
<i>wonganensis</i>	2	0.00	SW	SL	200	NL
<i>Mandjelia colemani</i>	2	0.00	NE		200	NL
<i>Mandjelia thorelli</i>	2	0.00	NE		200	NL
* <i>Mandjelia</i> location						
91	2	50.00	NE		200	NL
<i>Migas plomleyi</i>	2	0.00	Tas		200	NL
<i>Migas variapalpus</i>	2	100.00	NE		200	NL
<i>Misgolas 11</i>	2	50.00	SE		200	NL
* <i>Missulena</i> location						
127	2	50.00	SW	For, WL	200	NL
<i>Moggridgea p</i>	2	100.00	SW?		100	NL
<i>Moggridgea tingle</i>	2	50.00	SW		300	NL
<i>Moruga heatherae</i>	2	100.00	NC-NE		100	NL
<i>Nemesiidae e</i>	2	0.00			200	NL
<i>Ozicrypta clyneae</i>	2	50.00	NC-NE		200	NL
<i>Ozicrypta</i>						
<i>mcdonaldi</i>	2	100.00	NC-NE		100	NL
<i>Ozicrypta</i>						
<i>palmarum</i>	2	0.00	NC-NE		300	NL
<i>Ozicrypta pearni</i>	2	100.00	NC-NE		100	NL
<i>Ozicrypta sinclairi</i>	2	0.00	NC-NE		100	NL
<i>Paraembolides</i>						
<i>cannoni</i>	2	50.00	EC, Mon	For	200	NL
<i>Stanwellia</i>						
<i>occidentalis</i>	2	0.00	SC	SL	200	NL
<i>Synothele</i>						
<i>goongarrie sp 1</i>	2	0.00	W?		200	NL
<i>Synothele houstoni</i>	2	50.00	W?		200	NL
<i>Synothele</i>						
<i>meadhunteri</i>	2	50.00	W?		200	NL
<i>Synothele taurus</i>	2	50.00	W?		200	NL
<i>Synothele</i>						
<i>yundamindra</i>	2	0.00	W?		200	NL
<i>Teyl 6</i>	2	50.00	SW		200	NL
<i>Teyl door building</i>						
<i>sp</i>	2	100.00	SW		200	NL
<i>Trittame augusteyni</i>	2	50.00	NE	RF	200	NL
<i>Trittame ingrami</i>	2	100.00	EC	RF	100	NL
<i>Trittame stonieri</i>	2	0.00	NE	RF	100	NL
<i>Xamiatus ilara</i>	2	100.00	NE	For	200	NL
* <i>Aganippe</i> location						
47	3	0.00	SWI		200	NL
<i>Aname tasmanica</i>	3	100.00	Tas		100	NL
<i>Aname turrigera</i>	3	33.33	SW-SC		300	NL
* <i>Aname</i> location						
100	3	0.00	SW		400	NL
<i>Aname wa_edel</i>	3	33.33	SW		400	NL

*Aname location						
108	3	0.00	W		400	NL
<i>Aname</i>						
<i>wa_qvic_commbul</i>						
<i>b</i>	3	33.33	W		300	NL
<i>Aname</i>						
<i>wa_qvic_paraemb</i>	3	33.33	W		300	NL
*Aname location						
113	3	0.00	W		300	NL
<i>Aname</i>						
<i>wa_woodstock3</i>	3	0.00	NW		100	NL
<i>Anidiops</i>						
<i>manstridgei</i>	3	33.33	SC	WL, SL	300	NL
<i>Anidiops nov</i>	3	0.00	?	?	300	NL
<i>Arbanitis</i>						
<i>binnaburra ms</i>						
<i>name</i>	3	0.00	EC, Mon	For	200	NL
*Arbanitis location						
51	3	0.00	SW		200	NL
<i>Australothele</i>						
<i>montana</i>	3	66.67	SE	For	200	NL
*Australothele						
location 53a	3	0.00	EC	For	300	NL
<i>Blakiston</i> 2	3	66.67	SC	For?	300	NL
<i>Carrai afoveolata</i>	3	33.33	EC	For	200	NL
<i>Cataxia maculata</i>	3	0.00	EC	For	400	NL
<i>Chenistonia</i>						
<i>caeruleomontana</i>	3	0.00	EC		100	NL
<i>Chenistonia</i>						
<i>maculata</i>	3	0.00	SE	For	300	NL
<i>Chenistonia</i>						
<i>montana</i>	3	33.33	EC		300	NL
<i>Chenistonia</i>						
<i>tepperi?</i>	3	66.67	SC		300	NL
*Conothele location						
115	3	0.00	NE		100	NL
*Conothele location						
118	3	33.33	NE		300	NL
<i>Gaius jonesae</i>	3	0.00			100	NL
<i>Gaius wa2</i>	3	0.00	SW		300	NL
<i>Hadronyche</i>						
<i>flindersi</i>	3	0.00	SC		200	NL
<i>Hadronyche la</i>	3	66.67			300	NL
<i>Hadronyche walkeri</i>	3	0.00			200	NL
<i>Homogona stirlingi</i>	3	100.00	SW		100	NL
*Idiommat						
location 57	3	0.00	W		300	NL
<i>Kwonkan</i>						
<i>goongarriensis</i>	3	33.33	SW	SL	300	NL
<i>Kwonkan wa_salt1</i>	3	0.00	SW		300	NL

<i>Mandjelia anzses</i>	3	100.00	NE?		500	NL
<i>Mandjelia qantas</i>	3	0.00	NE		100	NL
<i>Misgolas maculosus</i>	3	0.00	SE	For	300	NL
<i>Misgolas mascordi</i>	3	33.33	E		300	NL
<i>Missulena 8</i>	3	33.33	?		300	NL
<i>Missulena</i>						
<i>occ_1028</i>	3	0.00	SW?		300	NL
<i>Missulena rugosa</i>	3	33.33			400	NL
<i>Namea cucurbita</i>	3	0.00	EC	For	300	NL
<i>Namea excavans</i>	3	33.33	EC	For	200	NL
<i>Namea olympus</i>	3	100.00	NE, Mon	For	100	NL
<i>Namea saundersi</i>	3	100.00	NE	For	200	NL
<i>Nemesiidae c</i>	3	0.00			200	NL
<i>Ozicrypta eungella</i>	3	33.33	NC-NE		300	NL
<i>Ozicrypta hollinsae</i>	3	0.00	NC-NE		200	NL
<i>Ozicrypta kroombit</i>	3	100.00	NC-NE		100	NL
<i>Pseudoteyl</i>						
<i>vancouveri</i>	3	100.00	W		200	NL
<i>Synothele arrakis</i>	3	0.00	W?		100	NL
<i>Synothele mullaloo</i>	3	0.00	W?		200	NL
<i>Teranodes src 0255</i>	3	66.67	SE?	For	200	NL
<i>Teyl minimus</i>	3	66.67	SW		200	NL
<i>Trittame rainbowi</i>	3	100.00	NE	RF	200	NL
<i>Yilgarnia</i>						
<i>currycomboides</i>	3	33.33	SW		300	NL
<i>Zophorame</i>						
<i>galloniae</i>	3	0.00	Torres St.	For	200	NL
<i>Zophorame simoni</i>	3	66.67	NE	RF	400	NL
<i>Aganippe cupulifex</i>	4	50.00	SW	For, WL	300	NL
<i>Aganippe nov (twig-</i>						
<i>lining spp grp)</i>	4	25.00			400	NL
<i>Aganippe</i>						
<i>occidentalis sp grp</i>	4	0.00	WC	For	400	NL
<i>Aname armigera</i>	4	0.00	SWI	WL	500	NL
<i>Aname collinsorum</i>	4	25.00	NE		400	NL
<i>*Aname location</i>						
<i>103</i>	4	0.00	NW		300	NL
<i>Chenistonia tepperi</i>						
<i>sp grp</i>	4	75.00	SC		400	NL
<i>*Conothele location</i>						
<i>83</i>	4	0.00	NE		100	NL
<i>*Conothele location</i>						
<i>117</i>	4	0.00	NE		500	NL
<i>Eucyrtops riparia</i>	4	0.00	SW	WL	400	NL
<i>*Eucyrtops location</i>						
<i>120</i>	4	50.00	SW	WL	300	NL
<i>*Eucyrtops location</i>						
<i>122</i>	4	75.00	SW	WL	100	NL
<i>Idioctis yerlata</i>	4	75.00	NE	Intertidal	200	NL
<i>Kwonkan wa_salt2</i>	4	25.00	SW		400	NL

<i>Mandjelia banksi</i>	4	25.00	NE		400	NL
* <i>Mandjelia</i> location 89	4	100.00	NE		400	NL
<i>Migas nitens</i>	4	0.00	Tas	Littoral	200	NL
<i>Missulena torbayensis</i>	4	50.00	SW		400	NL
<i>Namirea montislewisi</i>	4	100.00	NE	For	300	NL
<i>Ozicrypta wrightae</i>	4	75.00	NC-NE		400	NL
<i>Paraembolides boycei</i>	4	50.00	EC	For	400	NL
* <i>Stanwellia</i> location 95	4	100.00	SE		300	NL
<i>Synothele butleri</i>	4	50.00	W?		400	NL
<i>Synothele durokoppin</i>	4	0.00	W?		300	NL
<i>Trittame xerophila</i>	4	50.00	NE-EC	For	400	NL
<i>Troglodiplura lowryi</i>	4	0.00	SC	Caves	100	NL
<i>Troglodiplura lowryii</i>	4	50.00			300	NL
<i>Tungari kenwayae</i>	4	50.00			300	NL
<i>Aganippe jessupi</i>	5	20.00			400	NL
<i>Aganippe robusta</i>	5	20.00	SC		600	NL
<i>Aganippe smeatoni</i>	5	0.00	SC	For	900	NL
* <i>Aname</i> location 69	5	100.00	NC		200	NL
<i>Aname kwonkoides</i>						
<i>spp grp</i>	5	0.00			200	NL
<i>Arbanitis nov</i>	5	0.00			500	NL
<i>Bymainiella</i> src 0249	5	100.00	EC	For	300	NL
<i>Cataxia babindaensis</i>	5	20.00	EC	For	400	NL
<i>Cethegus broomi</i>	5	0.00	EC	For	200	NL
<i>Cethegus pallipes</i>	5	20.00	NE	For	300	NL
<i>Eucanippe nov</i>	5	40.00	?		400	NL
<i>Hadronyche eyrei</i>	5	0.00	SC		300	NL
<i>Hadronyche mot</i>	5	100.00			400	NL
<i>Homogona bolganupensis</i>	5	20.00			100	NL
<i>Idiommata iridescens</i>	5	0.00	NE	For	500	NL
* <i>Idiommata</i> location 54	5	0.00	NE		500	NL
* <i>Idiommata</i> location 56a	5	20.00	W		500	NL
* <i>Idiommata</i> location 59	5	20.00	W		500	NL
<i>Idiosoma hirsutum</i>	5	0.00	SW	For, SL	200	NL
<i>Kwonkan</i> 1	5	0.00	SW		400	NL

<i>Namea dahmsi</i>	5	40.00	EC	For	500	NL
<i>Namirea</i>						
<i>dougwallacei</i>	5	100.00	EC?	For	100	NL
<i>Ozicrypta etna</i>	5	20.00	NC-NE		300	NL
<i>Ozicrypta littleorum</i>	5	60.00	NC-NE		600	NL
<i>Ozicrypta wallacei</i>	5	0.00	NC-NE		300	NL
<i>Plesiothele fentoni</i>	5	100.00	Tas	For	300	NL
<i>Sason colemani</i>	5	60.00	NE		200	NL
<i>Stanwellia grisea</i>	5	20.00	SE	For	800	NL
<i>Synothele howi</i>	5	20.00	W?		500	NL
<i>Teyl 2</i>	5	40.00	SW		500	NL
<i>Teyl wheat4</i>	5	40.00	SWI		500	NL
<i>Trittame kochi</i>	5	60.00	NE	RF	300	NL
<i>Aname coastal plain</i>	6	0.00			300	NL
<i>Aname sp</i>	6	0.00			700	NL
<i>Aname wa_m_rast</i>	6	0.00	W		500	NL
<i>*Aname location</i>						
106	6	0.00	W		600	NL
<i>*Aname location</i>						
109	6	33.33	SW		600	NL
<i>Cethegus</i>						
<i>ischnotheloides</i>	6	0.00	SC		600	NL
<i>*Eucyrtops location</i>						
121	6	33.33	SW	WL	400	NL
<i>Hadronyche ke</i>	6	16.67			100	NL
<i>Idiommata location</i>						
58	6	0.00	W		600	NL
<i>*Kwonkan location</i>						
86	6	0.00	SW		300	NL
<i>Mandjelia</i>						
<i>humphreysi</i>	6	16.67	NE		600	NL
<i>Merredinia</i>						
<i>damsonoides</i>	6	0.00	SW	WL, SL	500	NL
<i>Misgolas crispus</i>	6	50.00	Tas	For	500	NL
<i>Namea nebulosa</i>	6	66.67	NE, Mon	For	500	NL
<i>Namirea eungella</i>	6	50.00	NE	For	600	NL
<i>Namirea insularis</i>	6	0.00	EC	For	300	NL
<i>Nemesiidae b</i>	6	0.00			200	NL
<i>Paraembolides</i>						
<i>variabilis</i>	6	0.00	EC	For	300	NL
<i>Seqocrypta</i>						
<i>hamlynharrisi</i>	6	33.33	NE		600	NL
<i>Seqocrypta</i>						
<i>mckeowni</i>	6	50.00	NE		600	NL
<i>*Stanwellia location</i>						
98	6	100.00	SW		400	NL
<i>Teranodes</i>						
<i>otwayensis</i>	6	66.67	SE	For	1200	NL
<i>Xamiatus</i>						
<i>magnificus</i>	6	33.33	NE	For	500	NL

<i>Aganippe</i>						
<i>occidentalis</i>	7	14.29	WC	For	700	NL
<i>Aname distincta?</i>	7	0.00	CE		500	NL
* <i>Aname</i> location 71	7	71.43	NE	For	500	NL
* <i>Aname</i> location 114	7	0.00	W		700	NL
<i>Bymainiella</i>						
<i>monteithi</i>	7	28.57	EC, Mon	RF	500	NL
<i>Cataxia</i>						
<i>spinipectoris</i>	7	0.00	EC	For	500	NL
<i>Cethegus lugubris</i>	7	0.00	NE	RF, For	200	NL
<i>Chenistonia</i>						
<i>trevallynia</i>	7	28.57	Tas	For	500	NL
<i>Hadronyche ca</i>	7	28.57			500	NL
<i>Hadronyche mon</i>	7	14.29			600	NL
<i>Ixamatus candidus</i>	7	28.57	EC	For	500	NL
<i>Missulena</i>						
<i>rutraspina</i>	7	28.57	S		900	NL
<i>Namea calcaria</i>	7	42.86	EC	For	600	NL
<i>Namea capricornia</i>	7	28.57	EC	For	700	NL
<i>Ozicrypta</i>						
<i>microcauda</i>	7	71.43	NC-NE		500	NL
<i>Stanwellia oraria</i>	7	57.14	SE		300	NL
<i>Teyl 1</i>	7	42.86	SW		700	NL
<i>Trittame forsteri</i>	7	42.86	NE	RF	600	NL
<i>Aganippe modesta</i>	8	12.50	SC	WL	800	NL
* <i>Aname</i> location 102	8	37.50	SW		600	NL
<i>Cataxia</i>						
<i>eungellaensis</i>	8	37.50	EC	For	600	NL
<i>Cethegus robustus</i>	8	0.00	NE	For	800	NL
<i>Ixamatus musgravei</i>	8	87.50	EC	For	400	NL
<i>Missulena 7</i>	8	25.00	?		900	NL
<i>Nemesiidae a</i>	8	0.00	??		200	NL
<i>Xamiatus bulburin</i>	8	25.00	NE	For	500	NL
<i>Aname wa_dianella</i>	9	0.00	SW		800	NL
<i>Australothele</i>						
<i>nothofagi</i>	9	77.78	EC	For	700	NL
<i>Eucyrtops latior</i>	9	0.00	SW	For	700	NL
<i>Hadronyche ka</i>	9	22.22	SC		600	NL
<i>Hadronyche ta</i>	9	0.00			400	NL
<i>Ixamatus fischeri</i>	9	33.33	EC	For	600	NL
<i>Moggridgea s</i>	9	100.00	SW?		300	NL
* <i>Paraembolides</i>						
location 62	9	22.22	EC, Mon	For	1000	NL
<i>Selenocosmia</i>						
<i>rugosa ms name</i>	9	11.11			900	NL
* <i>Aname</i> location 107	10	30.00	W		900	NL
<i>Atrax src 0252</i>	10	60.00	E?	For	700	NL

<i>Bymainiella polesoni</i>	10	50.00	EC, Mon	For	800	NL
<i>Chenistonia paludigena</i>	10	40.00			1000	NL
<i>Ozicrypta filmeri</i>	10	0.00	NC-NE		800	NL
<i>Paraembolides boydi</i>	10	80.00	EC	For	700	NL
<i>Teyl 3</i>	10	30.00	SW		1000	NL

Removal of extinct and poorly recorded species leaves 7703 records in ANHAT for 128 species (and subspecies). The mean number of records per species for species with greater than 10 records was 60.2, with a mean of 23 for the percent of records in the NRS. Only 22 species of trap-door spiders had 45% or greater of individual site records located within the NRS (**Table 63**). This is most likely because spiders are collected more incidentally than in any other way and incidental records are most likely to come from private residences, which are not found in reserves. None of these species had 100% of their records within the NRS, however, three species had a reservation level above 80%. Most species with recorded habitat preferences come from forested environments, which are relatively well reserved environments. Forty-nine species had less than 10% of ANHAT records located within PAs (**Table 64**), with 11 species not known to have any records within the NRS. Six of these 11 species are from eastern Australia. The majority of species in this list are from the southern Australia, with the next largest group found in the central regions. The two main habitat associations of poorly reserved species are forests and woodlands, with 17 and 14 respectively out of the 49 species with known preferences for these habitats. Twenty-six of the 49 species had no habitat information available.

Table 63 Trap-door spiders species with >45% of site records within the NRS.

Species	No. Records	Records in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Stanwellia hoggi</i>	31	14 (45.2%)	SE	For	1800	NL
<i>Mandjelia brassi</i>	11	5 (45.4%)	NE		700	NL
<i>Namea bunya</i>	11	5 (45.4%)	EC	For	900	NL
<i>Missulena</i> sp.	49	23 (46.9%)			4500	NL
<i>Teyl nov</i>	12	6 (50.0%)	SW		1100	NL
<i>Xamiatus rubrifrons</i>	20	10 (50.0%)	EC	For	1400	NL
<i>Bymainiella terraereginae</i>	53	29 (54.7%)	EC	For	1900	NL
<i>Arbanitis q_bb</i>	18	10 (55.6%)	ECI		400	NL
<i>Teyl sp</i>	65	38 (58.6%)	SW		4600	NL
<i>Namea salanitri</i>	17	10 (58.8%)	EC, Mon	For	1100	NL
<i>Bymainiella lugubris</i>	16	10 (62.5%)	EC, Mon	WL	400	NL
<i>Chenistonia hickmani</i>	12	8 (66.7%)	EC		600	NL
<i>Mandjelia comuni</i>	18	12 (66.7%)	NE		1600	NL
<i>Namea dicalcaria</i>	30	20 (66.7%)	EC	For	2000	NL

<i>Ixamatus barina</i>	52	35 (67.3%)	NE	For	2600	NL
<i>Masteria toddae</i>	44	30 (68.2%)	NE	For	2800	NL
<i>Teranodes montana</i>	23	16 (69.6%)	SE, Tas	For	2000	NL
<i>Homogona cunicularia</i>	28	21 (75.0%)	NE, Mon	For	1700	NL
<i>Trittame loki</i>	19	15 (78.9%)	NE	RF	1300	NL
<i>Ozicrypta cooloola</i>	15	12 (80.0%)	NC-NE		900	NL
<i>Chenistonia earthwatchorum</i>	31	25 (80.6%)	EC		2400	NL
<i>Hadronyche al</i>	18	16 (88.9%)			1300	NL

Table 64 Trap-door spider species with <10% of ANHAT records located within the NRS.

Species	No. Records	In NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Aganippe pelochroa</i>	11	0 (0.0%)	SC	Gen	700	NL
*Aname location 144	12	0 (0.0%)	NW		300	NL
<i>Misgolas kirstiae</i>	12	0 (0.0%)	E		100	NL
<i>Aganippe berlandi</i>	14	0 (0.0%)	ECI	WL	1200	NL
<i>Kiama lachrymoides</i>	18	0 (0.0%)	EC	For	1000	NL
<i>Aname villosa</i>	25	0 (0.0%)	SW	For	500	NL
<i>Hadronyche il</i>	27	0 (0.0%)			1200	NL
<i>Xamiatus kia</i>	28	0 (0.0%)	EC	For	1000	NL
<i>Hadronyche mas</i>	37	0 (0.0%)			700	NL
<i>Aganippe planites</i>	40	0 (0.0%)	EC	For	3200	NL
<i>Aganippe montana</i>	46	0 (0.0%)	SE		2700	NL
<i>Idiosoma sigillatum</i>	164	1 (0.6%)	SW	For	3700	NL
<i>Hadronyche venenata</i>	135	3 (2.2%)	Tas	For	2500	NL
<i>Aganippe subtristis</i>	78	2 (2.6%)	SC	For, WL	3200	NL
<i>Selenocosmia stirlingi</i>	38	1 (2.6%)	I	WL, SL, GrL	3400	NL
<i>Arbanitis tasmanica</i>	33	1 (3.0%)	Tas?		1100	NL
<i>Hadronyche le</i>	33	1 (3.0%)			1400	NL
<i>Misgolas rapax</i>	222	8 (3.6%)	SE	For	5800	NL
<i>Missulena granulosa</i>	383	14 (3.7%)	SW	For	12800	NL
<i>Hadronyche mar</i>	78	3 (3.8%)			4600	NL
<i>Gaius villosus</i>	125	5 (4.0%)	SW		8400	NL
<i>Misgolas hubbardi</i>	49	2 (4.1%)	E		1700	NL
<i>Misgolas robertsi</i>	24	1 (4.2%)	EC	For	400	NL
<i>Missulena occatoria</i>	666	28 (4.2%)	SE	For, WL	50700	NL
<i>Hadronyche adalaidensis</i>	23	1 (4.3%)	CS		1000	NL

<i>Idiommata wa_goldenhair</i>	45	2 (4.4%)	W		2800	NL
<i>Hadronyche modesta</i>	43	2 (4.6%)	SE		4200	NL
<i>Selenocosmia</i> sp.	42	2 (4.8%)			3600	NL
<i>Misgolas dereki</i>	61	3 (4.9%)	SE		1700	NL
<i>Misgolas gracilis</i>	81	4 (4.9%)	SE	For	3800	NL
<i>Aname mainae</i>	442	22 (5.0%)	SC		18000	NL
* <i>Aname</i> location 142	19	1 (5.3%)	SWI		1000	NL
<i>Misgolas melancholicus</i>	52	3 (5.8%)	SE		2200	NL
<i>Hadronyche wa</i>	68	4 (5.9%)	W		4500	NL
<i>Idiommata scintillans</i>	33	2 (6.1%)	SC	WL, SL	3600	NL
* <i>Aname</i> location 143	16	1 (6.2%)	NW		1100	NL
<i>Synothele michaelsoni</i>	16	1 (6.2%)	SW	For	700	NL
<i>Aganippe raphiduca</i> sp grp	15	1 (6.7%)	SW	For	1600	NL
<i>Idiommata wa_flaretip</i>	15	1 (6.7%)	W		1600	NL
<i>Hadronyche formidabilis</i>	110	8 (7.3%)	EC	For	9500	NL
<i>Hadronyche cerberea</i>	67	5 (7.5%)	EC		4200	NL
<i>Missulena bradleyi</i>	351	27 (7.7%)	SE	?	17100	NL
<i>Aname inimica</i>	51	4 (7.8%)	EC		2000	NL
<i>Atrax su</i>	70	6 (8.6%)	E?	For	3400	NL
<i>Idiosoma nigrum</i>	23	2 (8.7%)	SW	WL	1800	NL
<i>Aname distincta</i>	34	3 (8.8%)	CE		3100	NL
<i>Selenocosmia crassipes</i>	45	4 (8.9%)	NC- NE	For, SL	2600	NL
* <i>Aname</i> location 145	11	1 (9.1%)	EC		1100	NL
<i>Missulena</i> 6	33	3 (9.1%)	?		3100	NL

In keeping with the very limited number of records available for this group of spiders, no species had been recorded from more than 100 separate PAs. A total of 61 species had records in five or fewer PAs (**Table 65**). The majority of species in this list had fewer than 100 individual record sites, and no species had more than 164 record sites. Sixty-five species of trap-door spider had records in five or fewer PAs greater than 1000 hectares (**Table 65**).

Table 65 Trap-door spider species recorded from five or fewer PAs and five or fewer PAs greater than 1000 ha.

Species	No. Records	No. reserves	No. Reserves EPBC >1000ha status
* <i>Aname</i> location 145	11	1	1 NL
<i>Idiommata wa_flaretip</i>	15	1	1 NL

<i>Aganippe raphiduca</i> sp grp	15	1	1 NL
* <i>Aname</i> location 143	16	1	1 NL
<i>Synothele michaelsoni</i>	16	1	1 NL
* <i>Aname</i> location 142	19	1	1 NL
<i>Hadronyche adelaidensis</i>	23	1	1 NL
<i>Misgolas robertsi</i>	24	1	1 NL
<i>Hadronyche le</i>	33	1	1 NL
<i>Arbanitis tasmanica</i>	33	1	1 NL
<i>Selenocosmia stirlingi</i>	38	1	1 NL
<i>Idiosoma sigillatum</i>	164	1	1 NL
<i>Idiosoma nigrum</i>	23	2	1 NL
<i>Aganippe subtristis</i>	78	2	1 NL
<i>Aname wa_geraldton_acute</i>	11	2	2 NL
<i>Australothele magna</i>	11	2	2 NL
<i>Aname wa_uwa</i>	12	2	2 NL
<i>Aname mainae?</i>	14	2	2 NL
<i>Aganippe nov</i>	14	2	2 NL
<i>Arbanitis annulipes</i>	14	2	2 NL
<i>Idiommatata scintillans</i>	33	2	2 NL
<i>Selenocosmia</i> sp.	42	2	2 NL
<i>Hadronyche modesta</i>	43	2	2 NL
<i>Idiommatata wa_goldenhair</i>	45	2	2 NL
<i>Misgolas hubbardi</i>	49	2	2 NL
<i>Stanwellia nebulosa</i>	22	3	1 NL
<i>Hadronyche venenata</i>	135	3	1 NL
<i>Missulena 6</i>	33	3	2 NL
<i>Misgolas melancholicus</i>	52	3	2 NL
<i>Misgolas dereki</i>	61	3	2 NL
<i>Aname nov</i>	11	3	3 NL
<i>Selenocosmia wacarina</i> ms name	17	3	3 NL
<i>Hadronyche meridiana</i>	23	3	3 NL
<i>Idiosoma hills</i>	26	3	3 NL
<i>Aname distincta</i>	34	3	3 NL
<i>Hadronyche mar</i>	78	3	3 NL
<i>Misgolas gracilis</i>	81	4	1 NL
<i>Australothele maculata</i>	13	4	3 NL
<i>Namea brisbanensis</i>	20	4	3 NL
<i>Ixamatus varius</i>	11	4	4 NL
<i>Eucyrtops</i> wa_2_jarrahdale_latior	13	4	4 NL
<i>Trittame gracilis</i>	15	4	4 NL
<i>Namea jimna</i>	21	4	4 NL
<i>Kwonkan wa_gelorum</i>	22	4	4 NL
<i>Hadronyche hu</i>	26	4	4 NL
<i>Selenocosmia crassipes</i>	45	4	4 NL
<i>Aname inimica</i>	51	4	4 NL
<i>Hadronyche wa</i>	68	4	4 NL
<i>Arbanitis longipes</i>	39	5	1 NL
<i>Cethegus fugax</i>	18	5	2 NL

<i>Aganippe raphiduca</i>	34	5	3 NL
<i>Namea bunya</i>	11	5	4 NL
<i>Misgolas</i> 10	17	5	4 NL
<i>Gaius villosus</i>	125	5	4 NL
<i>Mandjelia brassi</i>	11	5	5 NL
<i>Paraembolides grayi</i>	12	5	5 NL
<i>Misgolas mestoni</i>	14	5	5 NL
<i>Aname barrema</i>	16	5	5 NL
<i>Missulena dipsaca</i>	45	5	5 NL
<i>Missulena</i> 0	46	5	5 NL
<i>Hadronyche cerborea</i>	67	5	5 NL
<i>Teyl nov</i>	12	6	5 NL
<i>Blakistonia aurea</i>	49	7	5 NL
<i>Missulena insignis</i>	75	10	2 NL
<i>Misgolas andrewsi</i>	33	11	4 NL

Huntsman Spiders (Sparassidae)

The ANHAT database has 1162 records for 116 species and subspecies of huntsman spiders. Eleven of these species account for approximately 50% of the total species records in ANHAT. Each of these species had over 20 records in the ANHAT database.

Table 66 Sparassidae species that account for approximately 50% of the total species records in ANHAT.

Species	No. Records	% total records
<i>Isopeda villosa</i>	24	2.07
<i>Isopeda magna</i>	24	2.07
<i>Holconia flindersi</i>	25	2.15
<i>Neosparassus diana</i>	27	2.32
<i>Isopedella saundersi</i>	34	2.93
<i>Isopedella inola</i>	36	3.10
<i>Holconia nigrigularis</i>	45	3.87
<i>Isopedella cerussata</i>	68	5.85
<i>Isopeda leishmanni</i>	82	7.06
<i>Isopedella leai</i>	107	9.21
<i>Delena cancerides</i>	119	10.24
Total	591	50.87

The majority of species of huntsman spiders present in the ANHAT database have been rarely recorded, with 86 of the 116 species being represented by 10 or fewer individual record sites (**Table 67**). Again, such a large number of species leaves little opportunity to recognise trends in the database, especially as the habitat types of the majority are not easily identified. The very few records for most species leave it essentially impossible to state clearly what their habitat preferences are, even if there is any published information available to provide an indication. The limited information does not even allow broad regional distributions, with only state listings generally being available. This means that in most instances the distribution of a species is very difficult to assess with any confidence. However, some species with location data occur in more than one state, and the majority of species occur in eastern Australia. The lack of records for clearly often widespread species reflects the general lack of collecting and identification of the invertebrates within Australia. As is common for the invertebrates in general, no huntsman spider species have been assessed for listing under the EPBC Act.

Table 67 Huntsman spider species with 10 or fewer individual site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Australosparsus a3</i>	1	0.00			100	NL
<i>Beregama aurea</i>	1	0.00	QLD, NSW	For	100	NL
<i>Eodelena kosciuskoensis</i>	1	100.00	NSW		100	NL
<i>Eodelena tasmaniensis</i>	1	100.00	TAS		100	NL
<i>Heteropoda alta</i>	1	0.00	QLD		100	NL
<i>Heteropoda cervina</i>	1	0.00	QLD		100	NL
<i>Heteropoda crediton</i>	1	0.00	QLD		100	NL
<i>Heteropoda marillana</i>	1	100.00	WA		100	NL
<i>Heteropoda procera</i>	1	100.00	QLD, NSW		100	NL
* <i>Heteropoda</i> location 138	1	0.00	NSW		100	NL
<i>Holconia 2</i>	1	0.00			100	NL
<i>Isopeda brachyseta</i>	1	0.00	NSW		100	NL
<i>Isopeda parnabyi</i>	1	0.00	QLD, NSW		100	NL
<i>Isopeda subalpina</i>	1	100.00	VIC		100	NL
<i>Isopeda vasta</i>	1	0.00	QLD		100	NL
<i>Isopedella 1</i>	1	0.00			100	NL
<i>Isopedella ambathala</i>	1	100.00	QLD, SA		100	NL
<i>Isopedella cerina</i>	1	0.00	QLD		100	NL
<i>Isopedella gibsandi</i>	1	0.00	WA		100	NL
<i>Isopedella maculosa</i>	1	100.00	WA		100	NL
<i>Neosparassus a8</i>	1	0.00			100	NL
<i>Neosparassus a9</i>	1	0.00			200	NL
<i>Neosparassus n16</i>	1	0.00			100	NL
<i>Neosparassus n26</i>	1	0.00			100	NL
<i>Neosparassus n3</i>	1	100.00			100	NL
<i>Neosparassus n31</i>	1	100.00			100	NL
<i>Neosparassus n32</i>	1	0.00			100	NL
<i>Neosparassus n44</i>	1	100.00			100	NL
<i>Neosparassus n54</i>	1	0.00			100	NL
<i>Neosparassus n55</i>	1	100.00			100	NL
<i>Neosparassus n6</i>	1	0.00			100	NL
<i>Pediana paradoxa</i>	1	0.00	SA	Ar	100	NL
<i>Typostola barbata</i>	1	0.00	QLD		100	NL
<i>Typostola pilbara</i>	1	0.00	WA		100	NL
<i>Heteropoda cf cervina</i>	2	50.00			200	NL
			PANTROPIC			NL
<i>Heteropoda venatoria</i>	2	0.00	AL		200	
<i>Isopeda canberrana</i>	2	0.00	NSW, VIC		200	NL
<i>Isopeda queenslandensis</i>	2	0.00	QLD, NSW		200	NL
<i>Neosparassus n25</i>	2	0.00			200	NL

<i>Neosparassus</i> n27	2	0.00			200	NL
<i>Neosparassus</i> n4	2	50.00			200	NL
<i>Neosparassus</i> n40	2	0.00			200	NL
<i>Neosparassus</i> n47	2	100.00			300	NL
<i>Neosparassus rutilus</i>	2	50.00	QLD		400	NL
<i>Pediana</i> 1	2	0.00			200	NL
			WA, QLD,			
<i>Pediana regina</i>	2	0.00	NSW		200	NL
<i>Delena</i> 2	3	66.67			200	NL
<i>Delena</i> 3	3	0.00			300	NL
<i>Eodelena loftiensis</i>	3	100.00			100	NL
<i>Heteropoda longipes</i>	3	0.00	NSW		200	NL
<i>Holconia</i> 1	3	0.00			300	NL
<i>Holconia colberti</i>	3	0.00	VIC		200	NL
<i>Holconia hirsuta</i>	3	0.00	QLD		300	NL
<i>Isopeda echuca</i>	3	33.33	NSW, VIC		300	NL
<i>Neosparassus</i> n30	3	0.00			300	NL
<i>Neosparassus</i> n35	3	66.67			200	NL
<i>Neosparassus</i> n49	3	0.00			400	NL
<i>Neosparassus</i> n7	3	33.33			300	NL
<i>Neosparassus</i>						
<i>salacius</i>	3	33.33	QLD, NSW		700	NL
<i>Neosparassus</i> a3	4	0.00			400	NL
<i>Neosparassus</i> n41	4	25.00			400	NL
<i>Neosparassus</i> n43	4	50.00			400	NL
<i>Pediana temmei</i>	4	0.00	SA	Ar	300	NL
<i>Australosparsus</i>						
<i>punctatus</i>	5	60.00			600	NL
<i>Heteropoda</i>						
<i>binnaburra</i>	5	20.00	QLD NSW		300	NL
<i>Holconia westralia</i>	5	0.00	WA		500	NL
<i>Isopedella conspersa</i>	5	0.00	QLD, NT		500	NL
<i>Neosparassus</i> n61	5	40.00			500	NL
<i>Eodelena</i>						
<i>melanocheilis</i>	6	16.67	QLD		500	NL
<i>Holconia immanis</i>	6	0.00	AUST		700	NL
<i>Isopedella flavida</i>	6	0.00	QLD, NSW		700	NL
<i>Pediana occidentalis</i>	6	50.00	WA, SA		600	NL
<i>Heteropoda</i>			WA, NT,			
<i>renibulbis</i>	7	42.86	QLD		800	NL
<i>Neosparassus</i> n22	7	71.43			700	NL
<i>Neosparassus</i> n39	7	14.29			600	NL
<i>Neosparassus</i> n46	7	28.57			700	NL
<i>Neosparassus</i>						NL
<i>praecinctus</i>	7	0.00			600	
<i>Eodelena spenceri</i>	8	0.00	TAS		800	NL
<i>Heteropoda jugulans</i>	8	0.00	QLD	For	700	NL
<i>Holconia neglecta</i>	8	37.50	WA, NT		900	NL
<i>Neosparassus</i>						
<i>inframaculatus</i>	8	25.00	SA		700	NL

<i>Neosparassus</i> n29	8	37.50		900	NL
<i>Neosparassus patellatus</i>	8	0.00	TAS	600	NL
<i>Delena gloriosa</i>	9	33.33	SA	800	NL
<i>Isopedella frenchi</i>	9	22.22	VIC, SA	800	NL
<i>Neosparassus</i> n28	10	50.00		600	NL

Removal of extinct and poorly recorded species leaves 889 records in ANHAT for 30 species (and subspecies). The mean number of records per species for species with greater than 10 records was 30, with a mean of 28% of records in the NRS. Only six species of huntsman spider had 45% or greater of individual site records located within PAs (**Table 68**) and only seven species were recorded with less than 10% of records located within PAs (**Table 69**).

Table 68 Huntsman spider species with >45% of site records within the NRS.

Species	No. Records	No. Records in NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Keilira sparsomaculata</i>	13	6	46.15	SA		1200	NL
<i>Isopedella cana</i>	21	10	47.62	WA, SA		1800	NL
<i>Isopedella saundersi</i>	34	22	64.71	AUST		3100	NL
<i>Isopeda magna</i>	24	16	66.67	WA, SA QLD,		2000	NL NL
<i>Holconia insignis</i>	12	8	66.67	NSW		1000	
<i>Neosparassus</i> n59	12	11	91.67			1000	NL

Table 69 Huntsman spider species with <10% of ANHAT records located within The NRS

Species	No. Records	Inside NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Isopedella pessleri</i>	11	0	0.00	NSW, VIC		700	NL
<i>Isopedella tindalei</i>	12	0	0.00	AUST		1100	NL
<i>Isopedella victorialis</i>	12	0	0.00	VIC		900	NL
<i>Isopeda villosa</i>	24	1	4.17	NSW		2000	NL
<i>Neosparassus</i> n51	22	1	4.55			1700	NL
<i>Isopedella leai</i>	107	8	7.48	SA SA, VIC,		3000	NL NL
<i>Holconia murrayensis</i>	22	2	9.09	NSW		2000	

The overall lack of records resulted in no species of huntsman spider being found to have records in more than 100 separate PAs. Thirteen species were found in five or fewer PAs and 14 in five or fewer PAs of greater than 1000 ha (Table 70).

Table 70 Huntsman spider species recorded from five or fewer PAs and recorded in five or fewer PAs of greater than 1000 hectares.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Neosparassus n51</i>	22	1	0	NL
<i>Isopeda villosa</i>	24	1	1	NL
<i>Holconia murrayensis</i>	22	2	2	NL
<i>Heteropoda 1</i>	16	3	3	NL
<i>Pediana horni</i>	17	3	3	NL
<i>Isopeda woodwardi</i>	16	4	1	NL
<i>Neosparassus magareyi</i>	11	4	3	NL
<i>Neosparassus diana</i>	27	4	3	NL
<i>Australosparsus a4</i>	19	4	4	NL
<i>Holconia flindersi</i>	25	4	4	NL
<i>Neosparassus calligaster</i>	12	5	5	NL
<i>Pediana tenuis</i>	18	5	5	NL
<i>Neosparassus a4</i>	20	5	5	NL
<i>Neosparassus punctatus</i>	16	6	5	NL
<i>Isopeda montana</i>	16	6	5	NL

Ground beetles (Carabidae)

The ANHAT database has 9569 records for 1203 species and subspecies of Carabidae. No species of Carabidae are considered extinct.

Eighty-eight species account for approximately 50% of the total species records in ANHAT. These species have over 20 records each, and, in the case of the *Pamborus alternans*, over 300 records (see **Table 68**).

Table 71 Terrestrial beetle species that account for approximately 50% of the total species records in ANHAT.

Species	No. Records	% Total Records
<i>Amblytelus brevis</i>	23	0.24
<i>Catadromus lacordairei</i>	23	0.24
<i>Geoscaptus cacus</i>	23	0.24
<i>Trichosternus angulosus</i>	23	0.24
<i>Coptocarpus australis</i>	23	0.24
<i>Arthropterus westwoodii</i>	23	0.24
<i>Sphallomorpha suturalis</i>	24	0.25
<i>Philipis thompsoni</i>	24	0.25
<i>Demetrída vittata</i>	24	0.25
<i>Megacephala australis</i>	25	0.26
<i>Eurylychnus dyschirioides</i>	25	0.26
<i>Chlaenius darlingensis</i>	25	0.26
<i>Scaraphites rotundipennis</i>	25	0.26
<i>Rhytisternus miser</i>	25	0.26
<i>Notonomus flos</i>	27	0.28
<i>Carenum tinctilatum</i>	27	0.28
<i>Cratoferonia regalis</i>	27	0.28
<i>Notonomus marginatus</i>	27	0.28
<i>Adelotopus dytiscides</i>	27	0.28
<i>Platycoelus prolixus</i>	27	0.28
<i>Mecyclothorax lewisensis</i>	29	0.30
<i>Notonomus politulus</i>	29	0.30
<i>Agonocheila perplexa</i>	29	0.30
<i>Zeodera atra</i>	30	0.31
<i>Notonomus transitus</i>	30	0.31
<i>Laccopterum deauratum</i>	31	0.32
<i>Carenum bonellii</i>	32	0.33
<i>Chlaenius flaviguttatus</i>	32	0.33
<i>Loxogenius opacipennis</i>	33	0.34
<i>Trichosternus frater</i>	33	0.34
<i>Notagonum submetallicum</i>	33	0.34
<i>Trichosternus nudipes</i>	33	0.34
<i>Leiradira opacistriatis</i>	34	0.36
<i>Carenum interruptum</i>	36	0.38
<i>Philoscaphus tuberculatus</i>	36	0.38
<i>Cratogaster melas</i>	37	0.39

<i>Trigonothops flavofasciata</i>	37	0.39
<i>Eurylychnus blagrovei</i>	38	0.40
<i>Notonomus montorum</i>	38	0.40
<i>Notonomus variicollis</i>	39	0.41
<i>Nurus latipennis</i>	39	0.41
<i>Notonomus rainbowi</i>	40	0.42
<i>Pamborus brisbanensis</i>	40	0.42
<i>Agonocheila curtula</i>	40	0.42
<i>Leiradira alternans</i>	41	0.43
<i>Castelnaudia setosiceps</i>	41	0.43
<i>Notonomus masculinus</i>	41	0.43
<i>Chlaenius australis</i>	42	0.44
<i>Amblytelus curtus</i>	44	0.46
<i>Castelnaudia septemcostata</i>	44	0.46
<i>Pamborus transitus</i>	45	0.47
<i>Trichosternus perater</i>	45	0.47
<i>Pamborus pradierii</i>	46	0.48
<i>Leiradira auricollis</i>	46	0.48
<i>Castelnaudia speciosa</i>	46	0.48
<i>Notonomus resplendens</i>	47	0.49
<i>Lecanomerus niger</i>	48	0.50
<i>Geoscaptus laevissimus</i>	48	0.50
<i>Notonomus doddi</i>	49	0.51
<i>Demetrida grandis</i>	50	0.52
<i>Castelnaudia wilsoni</i>	51	0.53
<i>Sarticus cyaneocinctus</i>	51	0.53
<i>Cicindela semicincta</i>	53	0.55
<i>Trichosternus subvirens</i>	53	0.55
<i>Notolestus sulcipennis</i>	54	0.56
<i>Trichosternus renardi</i>	59	0.62
<i>Notonomus spurgeoni</i>	61	0.64
<i>Gnathaphanus pulcher</i>	63	0.66
<i>Notonomus angustibasis</i>	64	0.67
<i>Pheropsophus verticalis</i>	65	0.68
<i>Pamborus macleayi</i>	68	0.71
<i>Setalis niger</i>	70	0.73
<i>Helluo costatus</i>	72	0.75
<i>Sitaphe rotundata</i>	74	0.77
<i>Castelnaudia cordata</i>	79	0.83
<i>Pamborus viridis</i>	84	0.88
<i>Calosoma schayeri</i>	86	0.90
<i>Castelnaudia marginifera</i>	87	0.91
<i>Mystropomus regularis</i>	88	0.92
<i>Pamborus opacus</i>	98	1.02
<i>Carenum brisbanense</i>	106	1.11
<i>Pamborus tropicus</i>	121	1.26
<i>Castelnaudia obscuripennis</i>	125	1.31
<i>Cratoferonia phylarchus</i>	125	1.31
<i>Mystropomus subcostatus</i>	148	1.55
<i>Trichosternus vigorsi</i>	194	2.03

<i>Pamborus guerinii</i>	210	2.19
<i>Pamborus alternans</i>	325	3.40
Total	4782	49.93

Nine hundred and ninety-nine ground beetles had 10 or fewer individual site records in the ANHAT database (**Table 72**). No species are listed as threatened. Most of these species have no location information. Of those that do, 74 percent are found in eastern Australia. These species have been excluded from analysis but are included here for reference. Exclusion of these poorly recorded species eliminates 1780 records.

Table 72. Carabidae species with 10 or fewer individual site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Adelotopus nemosomoides</i>	1	100.0			100	NL
<i>Agonocheila bimaculata</i>	1	100.0			100	NL
<i>Agonocheila subfasciata</i>	1	100.0	SA	Euc	200	NL
<i>Agonocheila vittula</i>	1	100.0	SA, VIC	Euc	100	NL
<i>Anomotarus nq2</i>	1	100.0			100	NL
<i>Austrotrechus kosciuskoanus</i>	1	100.0			100	NL
<i>Carenum episcopale</i>	1	100.0			100	NL
<i>Carenum morosum</i>	1	100.0			100	NL
<i>Carenum planipenne</i>	1	100.0			100	NL
<i>Carenum pusillum</i>	1	100.0			100	NL
<i>Cicindela cardinalba</i>	1	100.0	SA	Rip	100	NL
<i>Cicindela darwini</i>	1	100.0			200	NL
<i>Clivina lobipes</i>	1	100.0			100	NL
<i>Clivina monilicornis</i>	1	100.0			100	NL
<i>Clivina nyctosyloides</i>	1	100.0			100	NL
<i>Colasidia monteithi</i>	1	100.0	QLD	For	100	NL
<i>Conopterum chaudiirii</i>	1	100.0			100	NL
<i>Demetrida setosa</i>	1	100.0	TAS	Euc	100	NL
<i>Dicrochile punctulata</i>	1	100.0			100	NL
<i>Distipsidera papuana</i>	1	100.0			200	NL
<i>Eurylychnus femoralis</i>	1	100.0	TAS	For	100	NL
<i>Eurylychnus kershawi</i>	1	100.0			100	NL
<i>Euryscaphus angulatus</i>	1	100.0			100	NL
<i>Eutrechopsis ovalis</i>	1	100.0			100	NL
<i>Gnathaphanus multipunctatus</i>	1	100.0			100	NL
<i>Hormacrus latus</i>	1	100.0			100	NL
<i>Lacordairia cq1</i>	1	100.0			100	NL
<i>Mimotrechus obscuroguttatus</i>	1	100.0			100	NL
<i>Mimotrechus scitulus</i>	1	100.0			100	NL
<i>Monocentrum megacephalum</i>	1	100.0			100	NL
<i>Mystropomus regularis laevis</i>	1	100.0			100	NL
<i>Notonomus 2</i>	1	100.0			100	NL
<i>Notonomus bakewelli</i>	1	100.0	SE	For	100	NL

<i>Notonomus cbr3 6</i>	1	100.0			100	NL
<i>Notonomus dehiscens</i>	1	100.0	SE	For	100	NL
<i>Notonomus prominens</i>	1	100.0	E		100	NL
<i>Percodermus niger</i>	1	100.0	TAS	For	100	NL
<i>Percolestus blackburni</i>	1	100.0	SE	Al	100	NL
<i>Philipis heatherae</i>	1	100.0	QLD	For	100	NL
<i>Philipis minor</i>	1	100.0	QLD	For	100	NL
<i>Philipis nq1</i>	1	100.0			100	NL
<i>Philipis nq2</i>	1	100.0			100	NL
<i>Philipis perstriata</i>	1	100.0	QLD	For	100	NL
<i>Philipis picea</i>	1	100.0	QLD	For	100	NL
<i>Philipis reticulata</i>	1	100.0	QLD	For	100	NL
<i>Philipis spurgeoni</i>	1	100.0	QLD	For	100	NL
<i>Philipis vicina</i>	1	100.0	QLD	For	100	NL
<i>Promecoderus pacificus</i>	1	100.0			100	NL
<i>Promecoderus plebius</i>	1	100.0			100	NL
<i>Promecoderus tasmanicus</i>	1	100.0	SE,TAS	For	200	NL
			NSW,QLD,S			
<i>Pseudaptinus fulvus</i>	1	100.0	A,VIC	Wet	100	NL
<i>Pterocyrtus cavicola</i>	1	100.0	TAS	Cave	100	NL
<i>Pterocyrtus rubescens</i>	1	100.0			100	NL
<i>Sarothrocrepis setulosa</i>	1	100.0	NSW	Euc	100	NL
<i>Scopodes simplex</i>	1	100.0			100	NL
<i>Tasmanitachoides hobarti</i>	1	100.0	TAS	Rip	100	NL
<i>Tasmanitachoides wattsense</i>	1	100.0			100	NL
<i>Tasmanorites nitens</i>	1	100.0	TAS	Al,Lit	100	NL
<i>Tasmanorites tasmaniae</i>	1	100.0	TAS	Lit	200	NL
<i>Tasmanotrechus elongatus</i>	1	100.0	TAS	Cave	100	NL
<i>Teraphis crenulata</i>	1	100.0			100	NL
<i>Tricondyla aptera</i>	1	100.0	QLD	For	100	NL
<i>Abacetus ater</i>	1	0.0			100	NL
<i>Abacetus haemorrhous</i>	1	0.0			100	NL
<i>Acupalpus tachiodes</i>	1	0.0			100	NL
<i>Adelotopus affinis</i>	1	0.0			100	NL
<i>Adelotopus analis</i>	1	0.0			100	NL
<i>Adelotopus bimaculatus</i>						
<i>angustior</i>	1	0.0			100	NL
<i>Adelotopus dubius glaber</i>	1	0.0		Euc	100	NL
<i>Adelotopus laticollis</i>	1	0.0			100	NL
			NT, QLD,			
<i>Adelotopus linearis</i>	1	0.0	WA	Euc	100	NL
<i>Adelotopus maculipennis</i>	1	0.0	QLD	Euc	100	NL
<i>Adelotopus minor</i>	1	0.0			100	NL
			ACT, NSW,			
<i>Adelotopus similis</i>	1	0.0	VIC	Euc	100	NL
<i>Adelotopus ulrichi</i>	1	0.0			200	NL
<i>Adotela carenoides</i>	1	0.0			100	NL
<i>Adotela esmeralda</i>	1	0.0			100	NL
<i>Adotela frenchi</i>	1	0.0			100	NL
<i>Adotela viridis</i>	1	0.0			100	NL

<i>Agonocheila fasciata</i>	1	0.0			200	NL
<i>Agonocheila ovalis</i>	1	0.0			100	NL
<i>Agonocheila stictica</i>	1	0.0			100	NL
<i>Amblystomus gagatinus</i>	1	0.0			100	NL
<i>Amblystomus laetus</i>	1	0.0			100	NL
<i>Amblystomus montanus</i>	1	0.0			100	NL
<i>Amblystomus parvus</i>	1	0.0			100	NL
<i>Amblytelus bicolor</i>	1	0.0			100	NL
<i>Amblytelus minutus</i>	1	0.0			100	NL
<i>Amblytelus sinuatus</i>	1	0.0			100	NL
<i>Amblytelus sloanei</i>	1	0.0			100	NL
<i>Anatrichis pusilla</i>	1	0.0			100	NL
<i>Anatrichis sexstriata</i>	1	0.0			100	NL
<i>Anomotarus ambs1</i>	1	0.0			100	NL
<i>Anomotarus crassiceps</i>	1	0.0			100	NL
<i>Arthropterus articularis</i>	1	0.0			100	NL
<i>Arthropterus foveicollis</i>	1	0.0			100	NL
<i>Arthropterus foveipennis</i>	1	0.0			100	NL
<i>Arthropterus humeralis</i>	1	0.0			100	NL
<i>Arthropterus kingii</i>	1	0.0			100	NL
<i>Arthropterus macleayi</i>	1	0.0			100	NL
<i>Arthropterus melbournei</i>	1	0.0			100	NL
<i>Arthropterus punctatissimus</i>	1	0.0			100	NL
<i>Bembidion blackburni</i>	1	0.0	NSW, SA, TAS, VIC	He	200	NL
<i>Bembidion brullei</i>	1	0.0	ACT, NSW, SA, VIC	Rip	100	NL
<i>Bembidion mastersi</i>	1	0.0			100	NL
<i>Bothynotrechus castelnaui</i>	1	0.0	VIC		100	NL
<i>Cainogenion tropicum</i>	1	0.0			100	NL
<i>Carenum 2</i>	1	0.0			100	NL
<i>Carenum ambs1 2</i>	1	0.0			100	NL
<i>Carenum angustipenne</i>	1	0.0			100	NL
<i>Carenum batesi</i>	1	0.0			100	NL
<i>Carenum browni</i>	1	0.0			100	NL
<i>Carenum carbonarium</i>	1	0.0			100	NL
<i>Carenum coruscum</i>	1	0.0			100	NL
<i>Carenum cupripenne</i>	1	0.0			100	NL
<i>Carenum digglesii</i>	1	0.0			100	NL
<i>Carenum distinctum</i>	1	0.0			100	NL
<i>Carenum ducale</i>	1	0.0			100	NL
<i>Carenum felix</i>	1	0.0			100	NL
<i>Carenum formosum</i>	1	0.0			100	NL
<i>Carenum frenchi</i>	1	0.0			100	NL
<i>Carenum froggatti</i>	1	0.0			100	NL
<i>Carenum habitans</i>	1	0.0			100	NL
<i>Carenum ineditum</i>	1	0.0			100	NL
<i>Carenum iridescent</i>	1	0.0			100	NL
<i>Carenum kingii</i>	1	0.0			100	NL
<i>Carenum laterale</i>	1	0.0	NSW		100	NL

<i>Carenum lepidum</i>	1	0.0			100	NL
<i>Carenum macleayi</i>	1	0.0			100	NL
<i>Carenum odewahnii</i>	1	0.0			100	NL
<i>Carenum perplexum</i>	1	0.0			100	NL
<i>Carenum puncticolle</i>	1	0.0			100	NL
<i>Carenum smaragdulum</i>	1	0.0			200	NL
<i>Carenum submetallicum</i>	1	0.0			100	NL
<i>Carenum tibiale</i>	1	0.0			100	NL
<i>Catascopus chalydicus</i>	1	0.0			100	NL
<i>Cenogmus ambs1 2</i>	1	0.0			100	NL
<i>Cenogmus opacipennis</i>	1	0.0	SA		100	NL
<i>Cerotalis versicolor</i>	1	0.0	VIC		100	NL
<i>Chlaenius subcostatus</i>	1	0.0			100	NL
<i>Cicindela blackburni</i>	1	0.0			100	NL
<i>Cicindela frenchi</i>	1	0.0			200	NL
<i>Cicindela gilesi</i>	1	0.0			100	NL
<i>Cicindela salicursoria</i>	1	0.0	WA	Rip	100	NL
<i>Cicindela tetragramma</i>	1	0.0			100	NL
<i>Cicindela upsilon</i>	1	0.0			200	NL
<i>Clivina atridorsis</i>	1	0.0			100	NL
<i>Clivina brevisterna</i>	1	0.0			200	NL
<i>Clivina carpentaria</i>	1	0.0	NT, QLD	Rip	100	NL
<i>Clivina cava</i>	1	0.0			100	NL
<i>Clivina coronata</i>	1	0.0			100	NL
<i>Clivina debilis</i>	1	0.0			100	NL
<i>Clivina dimidiata</i>	1	0.0			100	NL
<i>Clivina frenchi</i>	1	0.0			100	NL
<i>Clivina gracilipes</i>	1	0.0			100	NL
<i>Clivina leai</i>	1	0.0			200	NL
<i>Clivina obliquata</i>	1	0.0			100	NL
<i>Clivina odontomera</i>	1	0.0			100	NL
<i>Clivina pallidiceps</i>	1	0.0			100	NL
<i>Clivina planifrons</i>	1	0.0			100	NL
			ACT, NSW, QLD, VIC,			
<i>Clivina sellata</i>	1	0.0	WA	Rip	200	NL
<i>Clivina simulans</i>	1	0.0			100	NL
<i>Clivina tuberculifrons</i>	1	0.0			100	NL
<i>Clivina vagans</i>	1	0.0			200	NL
<i>Conopterum damelii</i>	1	0.0			100	NL
<i>Conopterum gagatinum</i>	1	0.0			100	NL
<i>Conopterum sapphirinum</i>	1	0.0			100	NL
<i>Cosmodiscus rubripictus</i>	1	0.0			100	NL
<i>Craspedophorus angusticeps</i>	1	0.0	QLD	SL	100	NL
<i>Craspedophorus comptus</i>	1	0.0			100	NL
<i>Craspedophorus elongatus</i>	1	0.0			100	NL
<i>Cratogaster cq1</i>	1	0.0			100	NL
<i>Cratogaster robusta</i>	1	0.0			100	NL
<i>Darodilia liopleura</i>	1	0.0			100	NL
<i>Darodilia ovicollis</i>	1	0.0			100	NL

<i>Demetrida angusticollis</i>	1	0.0			100	NL
<i>Demetrida doddi</i>	1	0.0			100	NL
<i>Demetrida fasciata</i>	1	0.0			100	NL
<i>Demetrida opicalis</i>	1	0.0			100	NL
<i>Dicraspeda brunneipennis</i>	1	0.0			100	NL
<i>Distipsidera mastersii</i>	1	0.0			200	NL
<i>Egadroma suturalis</i>	1	0.0	QLD, WA		100	NL
<i>Elaphropus nervosus</i>	1	0.0			100	NL
<i>Elaphropus ovensensis</i>	1	0.0			100	NL
<i>Epilectus mastersi</i>	1	0.0			100	NL
<i>Epimicodema mastersii</i>	1	0.0			100	NL
<i>Euryscaphus obesus ebeninus</i>	1	0.0			100	NL
<i>Euryscaphus obesus obesus</i>	1	0.0			100	NL
				HG, WL, SL, GrL, Ar, Sc		
<i>Euryscaphus obesus sulcicollis</i>	1	0.0	SA		100	NL
<i>Euthenarus morganensis</i>	1	0.0			100	NL
<i>Euthenarus promptus</i>	1	0.0			200	NL
<i>Eutrechus coxi</i>	1	0.0			100	NL
<i>Eutrechus otwayensis</i>	1	0.0			100	NL
<i>Feronista cq1</i>	1	0.0			100	NL
<i>Geoscaptus ambs1 1</i>	1	0.0			100	NL
<i>Gigadema dux</i>	1	0.0			100	NL
<i>Gigadema mandibulare</i>	1	0.0			100	NL
<i>Gigadema rugaticolle</i>	1	0.0			100	NL
<i>Gnathaphanus herbaceus</i>	1	0.0			100	NL
<i>Gnathoxys cicatricosus</i>	1	0.0			200	NL
<i>Gnathoxys crassipes</i>	1	0.0			100	NL
<i>Gnathoxys foveatus</i>	1	0.0			100	NL
<i>Gnathoxys tessellatus</i>	1	0.0			100	NL
<i>Helluarchus robustus</i>	1	0.0			100	NL
<i>Holcoderus caeruleipennis</i>	1	0.0			100	NL
<i>Hololeius ceylanicus</i>	1	0.0			100	NL
<i>Homethes rotundatus</i>	1	0.0			100	NL
<i>Homethes velutinus</i>	1	0.0			100	NL
<i>Hypharpax aereus</i>	1	0.0			100	NL
<i>Hypharpax convexiusculus</i>	1	0.0			100	NL
<i>Hypharpax flindersii</i>	1	0.0			100	NL
<i>Hypharpax kingii</i>	1	0.0			100	NL
<i>Hypharpax moestus</i>	1	0.0			100	NL
<i>Hypharpax obsoletus</i>	1	0.0			100	NL
<i>Hypharpax puncticollis</i>	1	0.0	NE		100	NL
<i>Hypharpax sloanei</i>	1	0.0			100	NL
<i>Laccocenus ambiguus</i>	1	0.0	SE		100	NL
<i>Laccopterum doddi</i>	1	0.0			100	NL
<i>Laccopterum foveipenne</i>	1	0.0			100	NL
<i>Laccopterum foveolatum</i>	1	0.0			100	NL
<i>Laccopterum humerale</i>	1	0.0			100	NL

<i>Laccopterum quadriseriatum</i>	1	0.0			100	NL
<i>Lacordairia anchomenoides</i>	1	0.0			100	NL
<i>Lacordairia cbc3</i>	1	0.0			100	NL
<i>Lebia bicolor</i>	1	0.0			100	NL
<i>Lebia melanonota</i>	1	0.0			100	NL
<i>Lecanomerus concolor</i>	1	0.0			100	NL
<i>Lecanomerus ruficeps</i>	1	0.0			100	NL
<i>Leiradira latreillei</i>	1	0.0			100	NL
<i>Leiradira puella</i>	1	0.0			100	NL
<i>Lesticus chloronotus</i>	1	0.0			200	NL
<i>Loxandrus amplicollis</i>	1	0.0			100	NL
<i>Loxandrus subgagatinus</i>	1	0.0			100	NL
<i>Loxandrus subiridescens</i>	1	0.0			100	NL
<i>Mecyclothorax ambs1</i>	1	0.0			100	NL
<i>Mecynognathus damelii</i>	1	0.0			100	NL
<i>Megacephala hopei</i>	1	0.0			100	NL
<i>Megacephala howittii</i>	1	0.0			100	NL
<i>Megacephala intermedia</i>	1	0.0			200	NL
<i>Megacephala marginicollis</i>	1	0.0			100	NL
<i>Megacephala murchisona</i>	1	0.0			100	NL
<i>Megacephala scapularis</i>	1	0.0			100	NL
<i>Megacephala spenceri</i>	1	0.0			100	NL
<i>Microferonia adelaidae</i>	1	0.0			100	NL
<i>Microferonia anchomenoides</i>	1	0.0			100	NL
<i>Microferonia cinctipennis</i>	1	0.0			100	NL
<i>Mimotrechus carteri</i>	1	0.0			100	NL
<i>Monocentrum convexum</i>	1	0.0			100	NL
<i>Monocentrum laticeps</i>	1	0.0			100	NL
<i>Monocentrum longiceps</i>	1	0.0			100	NL
<i>Morion crassipes</i>	1	0.0			100	NL
<i>Morion longipennis</i>	1	0.0			100	NL
<i>Neocarenum retusum</i>	1	0.0			100	NL
<i>Neoscaphus simplex</i>	1	0.0			100	NL
<i>Nickerlea sloanei</i>	1	0.0			100	NL
<i>Notagonum dentellum</i>	1	0.0	NE		100	NL
<i>Notiobia planiuscula</i>	1	0.0			100	NL
<i>Notiobia planoimpressa</i>	1	0.0			100	NL
<i>Notiobia quadricollis</i>	1	0.0			100	NL
<i>Notonomus curvicollis</i>	1	0.0	SE	Al	100	NL
<i>Notonomus dives</i>	1	0.0			100	NL
<i>Notonomus metallicus</i>	1	0.0			100	NL
<i>Notonomus spenceri</i>	1	0.0			100	NL
<i>Notonomus subiridescens</i>	1	0.0			100	NL
<i>Notonomus tenuistriatus</i>	1	0.0			100	NL
<i>Notonomus tessellatus</i>	1	0.0	E	For	100	NL
<i>Notonomus tillyardi</i>	1	0.0			100	NL
<i>Notonomus wentworthi</i>	1	0.0			100	NL
<i>Notospeophonus pallidus</i>	1	0.0	SW	Cave	100	NL
<i>Nurus cq1</i>	1	0.0			100	NL
<i>Oodes denisonensis</i>	1	0.0			100	NL

<i>Oodes froggatti</i>	1	0.0	CN		200	NL
<i>Parroa grandis</i>	1	0.0			100	NL
<i>Pediomorphus planiusculus</i>	1	0.0			200	NL
<i>Pentagonica ruficollis</i>	1	0.0			100	NL
<i>Pericompsus olliffi</i>	1	0.0			100	NL
<i>Pericompsus semistriatus</i>	1	0.0			100	NL
<i>Pericompsus yarrensensis</i>	1	0.0			100	NL
<i>Perigona nigriceps</i>	1	0.0			100	NL
<i>Perileptus minimus</i>	1	0.0			100	NL
<i>Philophloeus brunnipennis</i>	1	0.0			100	NL
<i>Philophloeus cbc3 1</i>	1	0.0			100	NL
<i>Philophloeus cbc3 2</i>	1	0.0			100	NL
<i>Philophloeus confertus</i>	1	0.0			100	NL
<i>Philophloeus maculatus</i>	1	0.0			100	NL
<i>Philophloeus myrmecophilus</i>	1	0.0			100	NL
<i>Philophloeus obtusus</i>	1	0.0			100	NL
<i>Philophloeus opaciceps</i>	1	0.0			100	NL
<i>Philophloeus ornatus</i>	1	0.0	SE,SW	Euc	100	NL
<i>Philophloeus rectangulus</i>	1	0.0	SE	Euc	100	NL
<i>Philophloeus vittatus</i>	1	0.0			100	NL
<i>Philoscaphus barnardi</i>	1	0.0			100	NL
<i>Phorticosomus grandis</i>	1	0.0			100	NL
<i>Phorticosomus macleayi</i>	1	0.0			100	NL
<i>Phorticosomus mucronatus</i>	1	0.0			100	NL
<i>Phorticosomus piceus</i>	1	0.0			100	NL
<i>Phorticosomus randalli</i>	1	0.0			100	NL
<i>Platycoelus interstitialis</i>	1	0.0			100	NL
<i>Pogonoglossus inflaticeps</i>	1	0.0			100	NL
<i>Pogonoschema robustum</i>	1	0.0	TAS	Lit	100	NL
<i>Pogonoschema sloanei</i>	1	0.0			100	NL
<i>Pogonus hypharpagioides</i>	1	0.0	SA,VIC	SaL	100	NL
<i>Pogonus variabilis</i>	1	0.0			100	NL
<i>Porocara punctata</i>						
<i>arnhemensis</i>	1	0.0			100	NL
<i>Promecoderus albanensis</i>	1	0.0			100	NL
<i>Promecoderus anguliceps</i>	1	0.0			100	NL
<i>Promecoderus bassii</i>	1	0.0			100	NL
<i>Promecoderus cordicollis</i>	1	0.0	TAS		200	NL
<i>Promecoderus hunteriensis</i>	1	0.0			100	NL
<i>Promecoderus insignis</i>	1	0.0			100	NL
<i>Promecoderus mastersii</i>	1	0.0			100	NL
<i>Promecoderus neglectus</i>	1	0.0			100	NL
<i>Promecoderus pygmaeus</i>	1	0.0			100	NL
<i>Promecoderus subdepressus</i>	1	0.0			100	NL
<i>Prosopogmus foveipennis</i>	1	0.0			100	NL
<i>Prosopogmus punctifer</i>	1	0.0	TAS	For	200	NL
<i>Prosopogmus suspectus</i>	1	0.0			200	NL
<i>Pseudagonica nitida</i>	1	0.0			100	NL
<i>Pseudomorpha insignis</i>	1	0.0	NSW,VIC		100	NL
<i>Rhaebolestes walkeri</i>	1	0.0			100	NL

<i>Rhytisternus ambs1</i>	1	0.0			100	NL
<i>Rhytisternus cardwellensis</i>	1	0.0			100	NL
<i>Rhytisternus mastersii</i>	1	0.0			100	NL
<i>Rhytisternus nigellus</i>	1	0.0			100	NL
<i>Rhytisternus solidus</i>	1	0.0	QLD		100	NL
<i>Sarothrocrepis cbcr3</i>	1	0.0			100	NL
<i>Sarothrocrepis humerata</i>	1	0.0			100	NL
<i>Sarothrocrepis inquinata</i>	1	0.0			100	NL
<i>Sarothrocrepis parvicollis</i>	1	0.0			200	NL
<i>Sarticus macleayi</i>	1	0.0			100	NL
<i>Sarticus obscurus</i>	1	0.0			100	NL
<i>Scaraphites humeralis</i>	1	0.0			100	NL
<i>Scaraphites lenaeus pacificus</i>	1	0.0			100	NL
<i>Scopodes ambs1</i>	1	0.0			100	NL
<i>Scopodes griffithi</i>	1	0.0			100	NL
<i>Scopodes laevis</i>	1	0.0			100	NL
<i>Setodyschirius wilsoni</i>	1	0.0			100	NL
<i>Setodyschirius zonatus</i>	1	0.0			100	NL
<i>Siagonyx</i>	1	0.0			100	NL
<i>Speotarus lucifugus</i>	1	0.0	NSW, SA, WA NT, QLD, WA		100	NL
<i>Sphallomorpha amabilis</i>	1	0.0			100	NL
<i>Sphallomorpha ambs1</i>	1	0.0			100	NL
<i>Sphallomorpha atrata</i>	1	0.0			100	NL
<i>Sphallomorpha bicolor</i>	1	0.0	NSW, QLD	Euc	100	NL
<i>Sphallomorpha biplagiata</i>	1	0.0			100	NL
<i>Sphallomorpha boops</i>	1	0.0			100	NL
<i>Sphallomorpha carnavona</i>	1	0.0			100	NL
<i>Sphallomorpha eungellae</i>	1	0.0			100	NL
<i>Sphallomorpha incerta</i>	1	0.0			100	NL
<i>Sphallomorpha laevigata</i>	1	0.0			100	NL
<i>Sphallomorpha longiplagiata</i>	1	0.0			100	NL
<i>Sphallomorpha marginata</i>	1	0.0			100	NL
<i>Sphallomorpha metallica</i>	1	0.0			100	NL
<i>Sphallomorpha minor</i>	1	0.0			100	NL
<i>Sphallomorpha multiseta</i>	1	0.0			100	NL
<i>Sphallomorpha picta</i>	1	0.0	NSW, QLD	Euc	100	NL
<i>Sphallomorpha rockhamptonensis</i>	1	0.0			100	NL
<i>Sphallomorpha speciosa</i>	1	0.0			100	NL
<i>Sphallomorpha striata</i>	1	0.0			100	NL
<i>Sphallomorpha striatopunctata</i>	1	0.0			100	NL
<i>Sphallomorpha torresia</i>	1	0.0			100	NL
<i>Sphallomorpha tropicalis</i>	1	0.0			100	NL
<i>Tachys ectromioides</i>	1	0.0			100	NL
<i>Tachys impressipennis</i>	1	0.0			200	NL
<i>Tachys infuscatus</i>	1	0.0			100	NL
<i>Tachys lividus</i>	1	0.0			100	NL

<i>Tachys mastersi</i>	1	0.0			100	NL
<i>Tachys mitchelli</i>	1	0.0			100	NL
<i>Tachys queenslandicus</i>	1	0.0			100	NL
<i>Tachyta brunnipennis</i>	1	0.0			100	NL
<i>Tasmanitachoides murrumbidgeensis</i>	1	0.0			300	NL
<i>Tasmanitachoides obliquiceps</i>	1	0.0			100	NL
<i>Teraphis helmsi</i>	1	0.0			100	NL
<i>Trechobembix baldiensis queenslandica</i>	1	0.0	QLD	Rip	100	NL
<i>Trichocarenum castelnaui</i>	1	0.0			100	NL
<i>Trigonothops humeralis</i>	1	0.0	WA	Euc	100	NL
<i>Trigonothops mastersii</i>	1	0.0			100	NL
<i>Tropidotrechus victoriae</i>	1	0.0	VIC	Lit	100	NL
<i>Zuphium castelnaui</i>	1	0.0			100	NL
<i>Zuphium pindan</i>	1	0.0			100	NL
<i>Zuphium thouzeti</i>	1	0.0			100	NL
<i>Adelotopus apicalis</i>	2	50.0			200	NL
<i>Adelotopus murrayanus</i>	2	100.0			200	NL
<i>Agonocheila mollis</i>	2	50.0			200	NL
<i>Agonocheila sublaevis</i>	2	50.0	NSW	Euc	200	NL
<i>Carenum laevipenne</i>	2	50.0			200	NL
<i>Carenum punctipenne</i>	2	50.0			100	NL
<i>Carenum purpureum</i>	2	50.0			200	NL
<i>Castelnaudia kirrama</i>	2	100.0	QLD	For	100	NL
<i>Clivina dingo</i>	2	50.0	QLD	Rip	200	NL
<i>Conopterum tropicale</i>	2	50.0	QLD		200	NL
<i>Demetrida loweri</i>	2	50.0			200	NL
<i>Demetrida parallela</i>	2	50.0			200	NL
<i>Demetrida quadricollis</i>	2	50.0			200	NL
<i>Dicrochile gigas</i>	2	50.0			200	NL
<i>Dilonchus pictus</i>	2	50.0			200	NL
<i>Distipsidera eungellae</i>	2	50.0	QLD	For	200	NL
<i>Distipsidera hackeri</i>	2	50.0			200	NL
<i>Eurylychnus victoriae</i>	2	50.0			200	NL
<i>Gnathoxys humeralis</i>	2	100.0	CS		200	NL
<i>Haplaner velox</i>	2	50.0	SE		200	NL
<i>Leiradira nq1</i>	2	100.0			100	NL
<i>Loxoncus marginatus</i>	2	50.0			200	NL
<i>Mecyclothorax punctatus</i>	2	50.0	E,SE		200	NL
<i>Notagonum macleayi</i>	2	100.0	NE		200	NL
<i>Notonomus apicalis</i>	2	50.0			200	NL
<i>Notonomus cbcr3 3</i>	2	100.0			200	NL
<i>Notonomus cbcr3 5</i>	2	50.0			200	NL
<i>Notonomus fergusonii</i>	2	50.0			200	NL
<i>Notonomus hedleyi</i>	2	50.0			200	NL
<i>Notonomus kosciuskianus</i>	2	100.0			200	NL
<i>Notonomus lateralis</i>	2	50.0			100	NL
<i>Notonomus minimus</i>	2	50.0			200	NL
<i>Notonomus muelleri</i>	2	100.0			200	NL

<i>Parophonus opacus</i>	2	50.0			100	NL
<i>Pausotropus cylindricum</i>	2	50.0	SE		200	NL
<i>Philipis alticola</i>	2	100.0	QLD	For	200	NL
<i>Philipis geoffreyi</i>	2	100.0	QLD	For	100	NL
<i>Philipis inermis</i>	2	100.0	QLD	For	100	NL
<i>Philipis laevigata</i>	2	100.0	QLD	For	200	NL
<i>Philipis laevis</i>	2	100.0	QLD	For	100	NL
<i>Philipis quadraticollis</i>	2	100.0	QLD		200	NL
<i>Philipis striata</i>	2	50.0	QLD	For	200	NL
<i>Plagiotelum opalescens</i>	2	50.0			200	NL
<i>Rhytisternus callabonnensis</i>	2	100.0	SA		200	NL
<i>Sarothrocrepis posticalis</i>	2	50.0			200	NL
<i>Sarticus cooki</i>	2	100.0			200	NL
<i>Simodontus clermonti</i>	2	100.0	TAS, VIC		200	NL
<i>Simodontus rotundipennnis</i>	2	50.0			200	NL
<i>Teropha sturtii</i>	2	50.0			200	NL
<i>Theprisa australis</i>	2	50.0	VIC		200	NL
<i>Trichosternus nq1</i>	2	100.0	NE?		200	NL
<i>Trigonothops parviceps</i>	2	50.0	NSW	Euc	200	NL
			NSW, NT, QLD, SA, VIC, WA			
<i>Zuphium australe</i>	2	50.0			200	NL
<i>Abacetus angustior</i>	2	0.0			200	NL
<i>Adelotopus fasciatus</i>	2	0.0			200	NL
<i>Adelotopus puncticollis</i>	2	0.0			200	NL
<i>Adelotopus seriepunctatus</i>	2	0.0	VIC		200	NL
<i>Adotela concolor</i>	2	0.0			200	NL
<i>Agonocheila guttata</i>	2	0.0	VIC	Euc	200	NL
<i>Amblystomus quadriguttatus</i>	2	0.0			200	NL
<i>Amblytelus leai</i>	2	0.0			200	NL
<i>Anomotarus caerulescens</i>	2	0.0			200	NL
<i>Apotomus ambs1</i>	2	0.0			200	NL
<i>Arthropterus angulicornis</i>	2	0.0			200	NL
<i>Arthropterus hirtus</i>	2	0.0			200	NL
<i>Arthropterus howittii</i>	2	0.0			200	NL
			SA, TAS, VIC, WA	estuarine		
<i>Bembidion errans</i>	2	0.0			300	NL
<i>Cainogenion ambs1 1</i>	2	0.0			200	NL
<i>Carenum acutipes</i>	2	0.0			200	NL
<i>Carenum ambs1</i>	2	0.0			200	NL
<i>Carenum concinnum</i>	2	0.0			200	NL
<i>Carenum coracinum</i>	2	0.0			300	NL
<i>Carenum imitator</i>	2	0.0			200	NL
<i>Carenum speciosum</i>	2	0.0			200	NL
<i>Carenum striatopunctatum</i>	2	0.0			200	NL
<i>Carenum subcyaneum</i>	2	0.0			200	NL
<i>Carenum venustum</i>	2	0.0			200	NL
<i>Carenum virescens</i>	2	0.0			200	NL
<i>Cenogmus ambs1 1</i>	2	0.0			200	NL
<i>Cicindela albolineata</i>	2	0.0	NT, QLD,	Rip	200	NL

			WA			
<i>Cicindela aurita</i>	2	0.0		200	NL	
<i>Cicindela browni</i>	2	0.0		200	NL	
<i>Clivina boops</i>	2	0.0		200	NL	
<i>Clivina bovillae</i>	2	0.0		200	NL	
<i>Clivina obliquicollis</i>	2	0.0		200	NL	
<i>Clivina oodnadattae</i>	2	0.0		200	NL	
<i>Clivina pectoralis</i>	2	0.0		200	NL	
<i>Clivina robusta</i>	2	0.0		200	NL	
<i>Colpodes truncatellus</i>	2	0.0		200	NL	
<i>Conopterum atrum</i>	2	0.0		200	NL	
<i>Conopterum mucronatum</i>	2	0.0		200	NL	
<i>Conopterum pyripenne</i>	2	0.0		200	NL	
<i>Conopterum spaldingii</i>	2	0.0	NT	200	NL	
<i>Coptoglossus carteri</i>	2	0.0		200	NL	
<i>Darodilia curta</i>	2	0.0	QLD	For	200	NL
<i>Demetrida cylindricollis</i>	2	0.0		200	NL	
<i>Demetrida marginipennis</i>	2	0.0		200	NL	
<i>Demetrida nigricincta</i>	2	0.0		200	NL	
<i>Demetrida tweedensis</i>	2	0.0		200	NL	
<i>Dicrochile brevicollis</i>	2	0.0		200	NL	
<i>Distipsidera flavicans</i>	2	0.0		200	NL	
<i>Drypta mastersii</i>	2	0.0		200	NL	
<i>Elaphropus flavicornis</i>	2	0.0		200	NL	
<i>Eudalia castelnaui</i>	2	0.0		200	NL	
<i>Euthenarus comes</i>	2	0.0		200	NL	
<i>Geoscaptus crassus</i>	2	0.0	QLD		300	NL
<i>Gnathaphanus latus</i>	2	0.0		200	NL	
<i>Gnathaphanus licinoides</i>	2	0.0		200	NL	
<i>Gnathoxys granularis</i>	2	0.0		300	NL	
<i>Helluapterus niger</i>	2	0.0		300	NL	
<i>Hypharpax interioris</i>	2	0.0		200	NL	
<i>Hypharpax ranula</i>	2	0.0		200	NL	
<i>Laccopterum salebrosum</i>	2	0.0		200	NL	
<i>Lacordairia argutoroides</i>	2	0.0		200	NL	
<i>Lecanomerus atriceps</i>	2	0.0		200	NL	
<i>Lecanomerus bicolor</i>	2	0.0		100	NL	
<i>Lecanomerus major</i>	2	0.0		200	NL	
<i>Lecanomerus speluncarius</i>	2	0.0	CS	Cave	100	NL
<i>Lecanomerus victoriensis</i>	2	0.0		200	NL	
<i>Loxandrus australicus</i>	2	0.0		200	NL	
<i>Loxandrus longiformis</i>	2	0.0	W,CN,E,SE		200	NL
<i>Lymnastis pilosus</i>	2	0.0		200	NL	
<i>Mecyclothorax lateralis</i>	2	0.0	SE,CS		200	NL
<i>Megacephala castelnaui</i>	2	0.0	SW	SaL	200	NL
<i>Megacephala helmsi</i>	2	0.0		200	NL	
<i>Megalopaussus amplipennis</i>	2	0.0		200	NL	
<i>Microferonia marginata</i>	2	0.0		300	NL	
<i>Microlestodes australiensis</i>	2	0.0		200	NL	
<i>Microlestodes yarrae</i>	2	0.0		200	NL	

<i>Moriodesma mcoyei</i>	2	0.0			200	NL
<i>Morion novaehollandiae</i>	2	0.0			200	NL
<i>Mystropomus subcostatus</i>						
<i>chaudoiri</i>	2	0.0			200	NL
<i>Neocarenum spenceri</i>	2	0.0			200	NL
<i>Notiobia sculptipennis</i>	2	0.0			200	NL
<i>Notonomus aequus</i>	2	0.0			200	NL
<i>Notonomus atrodermis</i>						
<i>atrodermis</i>	2	0.0	E,SE	For	200	NL
<i>Notonomus atrodermis smithi</i>	2	0.0	SE	For	200	NL
<i>Notonomus gravis</i>	2	0.0			200	NL
<i>Notonomus lesueurii</i>	2	0.0			200	NL
<i>Notonomus polli</i>	2	0.0	E	For	100	NL
<i>Oodes fitzroyensis</i>	2	0.0			200	NL
<i>Parazuphium mastersii</i>	2	0.0	SE	Wet	200	NL
<i>Parroa noctis</i>	2	0.0			200	NL
<i>Pericompsus punctipennis</i>	2	0.0	E		200	NL
<i>Perigona dorsata</i>	2	0.0			200	NL
<i>Pheropsophus ambs1 1</i>	2	0.0			200	NL
<i>Philoscaphus carinatus</i>	2	0.0			200	NL
<i>Physoloesthus suturalis</i>	2	0.0	E,SE		200	NL
<i>Pogonus cardiotrachelus</i>	2	0.0	SE,I,W	SaL	300	NL
<i>Promecoderus ambs1</i>	2	0.0			100	NL
<i>Promecoderus blackburni</i>	2	0.0			200	NL
<i>Promecoderus nigellus</i>	2	0.0			200	NL
<i>Prosopogmus boisduvalii</i>	2	0.0			200	NL
<i>Prosopogmus harpaloides</i>	2	0.0			200	NL
<i>Rhysopleura orbicollis</i>	2	0.0			200	NL
<i>Sarothrocrepis gravis</i>	2	0.0			200	NL
<i>Sarticus ambs1 1</i>	2	0.0			200	NL
<i>Sarticus ischnus</i>	2	0.0			200	NL
<i>Scaraphites laticollis gigas</i>	2	0.0			200	NL
			NSW, TAS,			
<i>Scopodes aterrimus</i>	2	0.0	WA		400	NL
<i>Simodontus ambs1 1</i>	2	0.0	QLD?		100	NL
<i>Simodontus convexus</i>	2	0.0			200	NL
<i>Sphallomorpha difficilis</i>	2	0.0			200	NL
			NT, QLD,			
<i>Sphallomorpha flavicollis</i>	2	0.0	WA	WL	200	NL
<i>Sphallomorpha thouzeti</i>	2	0.0			200	NL
<i>Sphallomorpha uniformis</i>	2	0.0			200	NL
<i>Stichonotus leai</i>	2	0.0	TAS	For	200	NL
<i>Tachys uniformis</i>	2	0.0			200	NL
				Lit,Cav		
<i>Tasmanotrechus leai</i>	2	0.0	TAS	e	400	NL
<i>Trechodes secalioides</i>	2	0.0	NSW, VIC	Rip	200	NL
<i>Trichocarenum cylindricum</i>	2	0.0			200	NL
<i>Trichosternus relictus</i>	2	0.0	WA	For	100	NL
<i>Trigonothops australis</i>	2	0.0	TAS, VIC	Euc	200	NL
<i>Trigonothops pauper</i>	2	0.0			200	NL

<i>Violagonum violaceum</i>	2	0.0	QLD	For	200	NL
<i>Adelotopus vicinus</i>	3	100.0			300	NL
<i>Agonocheila punctulata</i>	3	33.3			300	NL
<i>Arthropterus waterhousei</i>	3	33.3			300	NL
<i>Bembidion albowirens</i>	3	33.3			300	NL
<i>Carenum dispar</i>	3	33.3			300	NL
<i>Cicindela ioscelis</i>	3	33.3			200	NL
<i>Cicindela nigrina</i>	3	33.3			300	NL
<i>Clarencia quadridens</i>	3	33.3	QLD	Wet	300	NL
<i>Clivina obscuripes</i>	3	33.3			300	NL
<i>Clivina queenslandica</i>	3	33.3			300	NL
<i>Conopterum superbum</i>	3	66.7			300	NL
<i>Cratogaster unicolor</i>	3	33.3			300	NL
<i>Delinius essingtoni</i>	3	66.7			300	NL
<i>Demetrida elongata</i>	3	33.3			300	NL
<i>Demetrida infusata</i>	3	33.3	TAS	Euc	300	NL
<i>Dicrochile minuta</i>	3	33.3			300	NL
			NSW, TAS,			
<i>Dicrochile quadricollis</i>	3	33.3	VIC		300	NL
<i>Distipsidera sericea</i>	3	33.3	QLD	For	300	NL
<i>Eurylychnus ovipennis</i>	3	66.7	NSW	For	300	NL
				HG, WL, SL, GrL,		
<i>Euryscaphus waterhousei</i>	3	33.3	NT, WA	Ar, Sc	300	NL
<i>Helluosoma atrum</i>	3	33.3			300	NL
<i>Hypharpax queenslandicus</i>	3	33.3			300	NL
<i>Idacarabus longicollis</i>	3	100.0	TAS	Cave	400	NL
<i>Laccopterum darwiniense</i>	3	33.3			400	NL
<i>Lacordairia proxima</i>	3	33.3	SE	For	300	NL
<i>Leiradira latreillei latreillei</i>	3	66.7			200	NL
<i>Loxandrus gagatinus</i>	3	33.3	TAS		300	NL
<i>Loxandrus nq1</i>	3	66.7			300	NL
<i>Megadromus eborensis</i>	3	100.0			100	NL
<i>Morion longicollis</i>	3	33.3			400	NL
<i>Notiobia flavipalpis</i>	3	33.3			200	NL
<i>Notonomus carteri</i>	3	66.7			300	NL
<i>Notonomus froggatti</i>	3	33.3			300	NL
<i>Notonomus queenslandicus</i>	3	66.7	E	For	200	NL
<i>Notonomus strzeleckianus</i>	3	66.7			300	NL
<i>Notonomus truncatus</i>	3	66.7			200	NL
<i>Pamborus pradieri darlingtoni</i>	3	66.7	E	For	200	NL
<i>Paranurus macleayi</i>	3	33.3	NE	For	300	NL
<i>Percosoma substriatum</i>	3	66.7	SE	For	200	NL
<i>Perigona picta</i>	3	33.3			300	NL
<i>Phaenaulax nanus</i>	3	33.3			300	NL
<i>Philipis bicolor</i>	3	100.0	QLD	For	200	NL
<i>Philipis distinguenda</i>	3	100.0	QLD	For	200	NL
<i>Philipis ellioti</i>	3	100.0	QLD	For	100	NL

<i>Philipis picta</i>	3	100.0	QLD	For	200	NL
<i>Philipis trunci</i>	3	100.0	QLD	For	200	NL
<i>Philophloeus moestus</i>	3	100.0	SE	Euc	300	NL
<i>Philophloeus quadripenis</i>	3	66.7	E,SE	Euc	200	NL
<i>Platycoelus poeciloides</i>	3	33.3			400	NL
<i>Platylytron amplipenne</i>	3	33.3	SW,W		300	NL
<i>Promecoderus olivaceus</i>	3	33.3			300	NL
<i>Sarothrocrepis tridens</i>	3	66.7	SA	Euc	300	NL
<i>Sarticus civilis</i>	3	33.3			300	NL
<i>Sarticus dixonii</i>	3	33.3	NSW, VIC	SL	300	NL
<i>Sarticus impar</i>	3	33.3			300	NL
<i>Sarticus sulcatus</i>	3	33.3			500	NL
<i>Scopodes aeneus</i>	3	33.3			300	NL
<i>Scopodes intricatus</i>	3	66.7			300	NL
<i>Simodontus rufipalpis</i>	3	33.3			300	NL
<i>Sphallomorpha discoidalis</i>	3	33.3			300	NL
			ACT, NSW,			
<i>Sphallomorpha dubia</i>	3	33.3	NT, QLD	For	300	NL
<i>Stichonotus piceus</i>	3	66.7	TAS	For	500	NL
<i>Tachys transversicollis</i>	3	33.3			300	NL
<i>Trechodes lustrans</i>	3	33.3	QLD	Rip	300	NL
<i>Trichosternus nq2</i>	3	100.0	NE?		200	NL
<i>Adelotopus zonatus</i>	3	0.0			300	NL
<i>Aephnidius adelioides</i>	3	0.0	QLD, WA		300	NL
<i>Agonocheila macleayi</i>	3	0.0	NSW	Euc	300	NL
<i>Amblystomus gracilis</i>	3	0.0			300	NL
<i>Amblystomus ovalis</i>	3	0.0			300	NL
<i>Amblytelus amplipennis</i>	3	0.0			300	NL
<i>Arthropterus ambs1</i>	3	0.0			200	NL
<i>Arthropterus ambs1 2</i>	3	0.0			300	NL
<i>Arthropterus cribrus</i>	3	0.0			200	NL
<i>Arthropterus elongatulus</i>	3	0.0			300	NL
<i>Arthropterus mastersii</i>	3	0.0			300	NL
<i>Arthropterus piceus</i>	3	0.0			300	NL
<i>Brithysternum calcaratum</i>	3	0.0	QLD		300	NL
<i>Cainogenion subopacum</i>	3	0.0	NSW, QLD	Euc	300	NL
<i>Carenum ampicolle</i>	3	0.0			300	NL
<i>Carenum breviforme</i>	3	0.0			300	NL
<i>Carenum cupreomarginatum</i>	3	0.0			400	NL
<i>Carenum occidentale</i>	3	0.0			300	NL
<i>Carenum optimum</i>	3	0.0			300	NL
<i>Carenum rectangulare</i>	3	0.0			300	NL
<i>Carenum simile</i>	3	0.0			300	NL
<i>Carenum subcostatum</i>	3	0.0			300	NL
<i>Cerotalis brachypleura</i>	3	0.0			400	NL
			NSW, NT,			
<i>Cicindela mastersi catoptriola</i>	3	0.0	QLD, WA	Rip	400	NL
<i>Cicindela mastersi mastersi</i>	3	0.0			300	NL
<i>Cicindela oblongicollis</i>	3	0.0			300	NL
<i>Clivina ferruginea</i>	3	0.0			300	NL

<i>Clivina pectonoda</i>	3	0.0			300	NL
<i>Clivina vittata</i>	3	0.0			300	NL
<i>Darodilia mandibularis</i>	3	0.0			300	NL
<i>Darodilia robusta</i>	3	0.0	QLD	For	300	NL
<i>Egadroma ambs1 1</i>	3	0.0			300	NL
<i>Elaphropus amplipennis</i>	3	0.0	QLD, WA		300	NL
<i>Elaphropus convexus</i>	3	0.0	NSW, QLD	Rip	500	NL
			NSW, NT,			
<i>Elaphropus curticolis</i>	3	0.0	QLD, WA	Rip	300	NL
<i>Eudalia nigra</i>	3	0.0			300	NL
<i>Gigadema gulare</i>	3	0.0			300	NL
<i>Gigadema maxillare</i>	3	0.0			400	NL
<i>Homethes sericeus</i>	3	0.0			300	NL
<i>Hypharpax deyrollei</i>	3	0.0			300	NL
<i>Lecanomerus verticalis</i>	3	0.0			400	NL
<i>Megacephala corpulenta</i>	3	0.0			300	NL
<i>Meonis angusticollis</i>	3	0.0			300	NL
<i>Myrmecodemus riverinae</i>	3	0.0			300	NL
<i>Notiobia rugosipennis</i>	3	0.0			400	NL
<i>Notonomus cbcr3 1</i>	3	0.0			300	NL
<i>Notonomus cbcr3 2</i>	3	0.0			200	NL
<i>Notonomus excisipennis</i>	3	0.0			300	NL
<i>Notonomus miles</i>	3	0.0			300	NL
<i>Notonomus nitidicollis</i>	3	0.0			400	NL
<i>Notonomus phillipsii</i>	3	0.0	SE	For	300	NL
<i>Notospeophonus castaneus</i>	3	0.0	SE		300	NL
<i>Oodes impressus</i>	3	0.0			300	NL
<i>Oodes trisulcatus</i>	3	0.0			400	NL
<i>Parroa violacea</i>	3	0.0	E	Sc	300	NL
<i>Philophloeus sydneyensis</i>	3	0.0			300	NL
			E,SE,QLD,S			
<i>Philophloeus unicolor</i>	3	0.0	A,WA	Euc	300	NL
<i>Phorticosomus nuytsii</i>	3	0.0	NE,CN		300	NL
<i>Promecoderus distinctus</i>	3	0.0			300	NL
<i>Promecoderus elegans</i>	3	0.0	SE	For	300	NL
<i>Prosopogmus nq1</i>	3	0.0			100	NL
<i>Rhytisternus bovilli</i>	3	0.0	NT		300	NL
<i>Sarothrocrepis pallida</i>	3	0.0	QLD	Euc	300	NL
<i>Sarticus cycloderus</i>	3	0.0			300	NL
<i>Sarticus esmeraldipennis</i>	3	0.0	SA, VIC	WL	300	NL
<i>Scaraphites laticollis</i>	3	0.0			300	NL
<i>Scaraphites laticollis laticollis</i>	3	0.0			300	NL
<i>Scaraphites lenaeus</i>	3	0.0			300	NL
<i>Scaraphites lucidus</i>	3	0.0			300	NL
<i>Scopodes angulicollis</i>	3	0.0			300	NL
<i>Secatophus australis</i>	3	0.0			300	NL
<i>Simodontus aeneipennis</i>	3	0.0			300	NL
<i>Simodontus holomelanus</i>	3	0.0			300	NL
<i>Sphallomorpha communis</i>	3	0.0			300	NL
<i>Sphallomorpha similata</i>	3	0.0			300	NL

<i>Trechodes bipartitus</i>	3	0.0	ACT, NSW, QLD	Rip	300	NL
<i>Abacetus thouzeti</i>	4	50.0	NSW, QLD, WA	Rip	400	NL
<i>Amblytelus vittipennis</i>	4	25.0			500	NL
<i>Anomotarus nq3</i>	4	100.0			300	NL
<i>Carenum splendens</i>	4	50.0	QLD		300	NL
<i>Carenum sumptuosum</i>	4	25.0			400	NL
<i>Casnoidea thouzeti</i>	4	50.0			600	NL
<i>Catascopus laticollis</i>	4	25.0	QLD	For	400	NL
<i>Chlaenius greyanus</i>	4	25.0	WA		400	NL
<i>Coleolissus papua</i>	4	25.0			400	NL
<i>Craspedophorus 1</i>	4	50.0			300	NL
<i>Delinius castelnaui</i>	4	50.0			500	NL
<i>Dicranoglossus resplendens</i>	4	25.0	NT, QLD, WA		400	NL
<i>Distipsidera obscura</i>	4	50.0	QLD	For	200	NL
<i>Gigadema grande</i>	4	25.0			400	NL
<i>Hypharpax rotundipennis</i>	4	25.0			500	NL
<i>Laccopterum cyaneum</i>	4	25.0	QLD	WL,SL	300	NL
<i>Lachnoderma foveolatum</i>	4	50.0			400	NL
<i>Leiradira nq4</i>	4	100.0			100	NL
<i>Liopasa crepera</i>	4	25.0	NSW,QLD		300	NL
<i>Meonis 1</i>	4	75.0			400	NL
<i>Minuthodes queenslandica</i>	4	50.0			400	NL
<i>Morion germanus</i>	4	75.0	NE,E	For	400	NL
<i>Notonomus 1</i>	4	75.0			200	NL
<i>Notonomus cbcr3 4</i>	4	25.0			400	NL
<i>Notonomus frontevirens</i>	4	75.0	E	For	200	NL
<i>Philipis agnicapitis</i>	4	100.0	QLD	For	100	NL
<i>Philipis planicola</i>	4	100.0	QLD	For	200	NL
<i>Philipis ruficollis</i>	4	100.0	QLD	For	100	NL
<i>Philophloeus eucalypti</i>	4	50.0	E,SE,TAS,CS	Euc	400	NL
<i>Promecoderus inornatus</i>	4	25.0			400	NL
<i>Promecoderus longus</i>	4	100.0	TAS	For	200	NL
<i>Promecoderus viridiaeneus</i>	4	25.0	SE,TAS		500	NL
<i>Rhytisternus limbatus</i>	4	25.0			400	NL
<i>Sphallomorpha grandis</i>	4	25.0			400	NL
<i>Stichonotus limbatus</i>	4	50.0	VIC	For	300	NL
<i>Tachys lindi</i>	4	25.0	NSW, QLD, SA, WA		500	NL
<i>Teropha besti</i>	4	50.0	VIC	For,WL	300	NL
<i>Theprisa montana</i>	4	50.0	VIC		400	NL
<i>Trigonothops pallidicollis</i>	4	25.0			400	NL
<i>Anomotarus variegatus</i>	4	0.0			400	NL
<i>Arthropterus hopei</i>	4	0.0	NSW, SA, VIC		400	NL
<i>Basistichus micans</i>	4	0.0	NT, QLD		400	NL
<i>Cainogenion ehippiatum</i>	4	0.0			400	NL
<i>Catascopus chaudoiri</i>	4	0.0	NSW, QLD	For	400	NL

<i>Chlaenius hamifer</i>	4	0.0			400	NL
			ACT, NSW,			
<i>Cicindela mastersi</i>	4	0.0	QLD	Rip	400	NL
<i>Cicindela rafflesia</i>	4	0.0			600	NL
<i>Clivina atrata</i>	4	0.0			400	NL
<i>Clivina elegans</i>	4	0.0			400	NL
<i>Conopterum leai</i>	4	0.0			600	NL
<i>Craspedophorus banksi</i>	4	0.0			400	NL
<i>Craspedophorus macleayi</i>	4	0.0	WA	SL	400	NL
<i>Deipyrus palustris</i>	4	0.0			300	NL
<i>Demetrida angustula</i>	4	0.0			400	NL
<i>Elaphropus bipustulatus</i>	4	0.0			400	NL
			NT, QLD,			
<i>Eudalia latipennis</i>	4	0.0	WA	Rip	400	NL
<i>Gnathaphanus riverinae</i>	4	0.0	E,SE		400	NL
<i>Gnathoxys insignitus</i>	4	0.0	SW		400	NL
<i>Haplaner australis</i>	4	0.0			400	NL
<i>Hypharpax vilis</i>	4	0.0			400	NL
<i>Lacordairia cychroides</i>	4	0.0	E	For	400	NL
<i>Lecanomerus ambs1 1</i>	4	0.0			400	NL
<i>Lecanomerus tasmanicus</i>	4	0.0	E,SE		400	NL
<i>Megacephala greyanus</i>	4	0.0	NW,W	Rip	500	NL
<i>Megacephala pulchra</i>	4	0.0	W		400	NL
<i>Notiobia dampierii</i>	4	0.0	SA,WA		400	NL
<i>Notiobia inaequalipennis</i>	4	0.0			400	NL
<i>Notonomus mediosulcatus</i>	4	0.0			400	NL
<i>Notonomus satrapa</i>	4	0.0	SE	For	400	NL
<i>Oodes inornatus</i>	4	0.0			400	NL
<i>Oodes waterhousei</i>	4	0.0			500	NL
<i>Perigona rufilabris</i>	4	0.0			400	NL
<i>Promecoderus ovicollis</i>	4	0.0			400	NL
<i>Promecoderus semistriatus</i>	4	0.0			500	NL
<i>Prosopogmus cbcr3 1</i>	4	0.0			400	NL
<i>Prosopogmus oodiformis</i>	4	0.0	E,SE	For,WL	400	NL
<i>Scaraphites hirtipes</i>	4	0.0	SA, VIC	WL,SL	500	NL
<i>Scaraphites silenus</i>	4	0.0			400	NL
			ACT, NSW,			
			QLD, SA,			
<i>Scopodes boops</i>	4	0.0	VIC, WA		500	NL
<i>Sphallomorpha ruficollis</i>	4	0.0			400	NL
<i>Steganomma porcatum</i>	4	0.0	QLD	For	300	NL
<i>Tachys fasciatus</i>	4	0.0			400	NL
<i>Tachys latissimus</i>	4	0.0			400	NL
<i>Tachys mulwalensis</i>	4	0.0	NSW, SA		400	NL
			ACT, NSW,			
			QLD, TAS,			
<i>Adelotopus haemorrhoidalis</i>	5	40.0	VIC	Euc	500	NL
<i>Carenum cordipenne</i>	5	40.0	SA, VIC	Sc	500	NL
<i>Celanida montana</i>	5	60.0	VIC	For	500	NL
<i>Eurylychnus cbcr3</i>	5	60.0			500	NL

<i>Lacordairia nq1</i>	5	100.0			500	NL
<i>Meonis semistriatus</i>	5	60.0	E		400	NL
<i>Notonomus opulentus gippslandicus</i>	5	60.0	SE	For	600	NL
<i>Pentagonica vittipennis</i>	5	100.0			500	NL
<i>Percosoma concolor</i>	5	80.0	SE	For	300	NL
<i>Percosoma montanum</i>	5	40.0	SE	For	400	NL
<i>Philipis alutacea</i>	5	100.0	QLD	For	200	NL
<i>Philipis frerei</i>	5	100.0	QLD	For	100	NL
<i>Philipis unicolor</i>	5	100.0	QLD	For	300	NL
<i>Philophloeus angulatus</i>	5	40.0	SE	Euc	300	NL
<i>Prosopogmus cbcr3 2</i>	5	60.0			500	NL
<i>Adelotopus rufoguttatus</i>	5	0.0	NSW, QLD	Euc	500	NL
<i>Agonocheila suturalis</i>	5	0.0			500	NL
<i>Carenum subporcatulum</i>	5	0.0	QLD	WL	500	NL
<i>Carenum transversicolle</i>	5	0.0	NT		600	NL
<i>Cerotalis semiviolacea</i>	5	0.0			500	NL
<i>Cicindela leai</i>	5	0.0	QLD	Rip	400	NL
<i>Cicindela mastersi plebeia</i>	5	0.0			400	NL
<i>Clivina lepida</i>	5	0.0			600	NL
<i>Clivina suturalis</i>	5	0.0			600	NL
<i>Conopterum riverinae</i>	5	0.0	NSW, VIC	WL, Sc,	500	NL
<i>Craspedophorus rockhamptonensis</i>	5	0.0			500	NL
<i>Demetrida picipennis</i>	5	0.0	NSW	Euc	600	NL
<i>Elaphropus striolatus</i>	5	0.0			500	NL
<i>Eudalia macleayi</i>	5	0.0			500	NL
<i>Homethes gracilis</i>	5	0.0	E,SE		500	NL
<i>Hypharpax kreftii</i>	5	0.0			600	NL
<i>Laccopterum spencei</i>	5	0.0			500	NL
<i>Lorostema bothriophora</i>	5	0.0	E,NE		400	NL
<i>Mecyclothorax punctipennis</i>	5	0.0	E,SE,CS	RF	600	NL
<i>Melisodera picipennis</i>	5	0.0	E,SE		600	NL
<i>Notonomus macoyi</i>	5	0.0	SE		500	NL
<i>Notonomus striatocollis</i>	5	0.0			600	NL
<i>Parena picea</i>	5	0.0			600	NL
<i>Promecoderus gibbosus</i>	5	0.0			500	NL
<i>Sarothrocrepis fasciata</i>	5	0.0			500	NL
<i>Sarothrocrepis mastersii</i>	5	0.0			400	NL
<i>Sphallomorpha decipiens</i>	5	0.0			500	NL
<i>Sphallomorpha polita</i>	5	0.0			500	NL
<i>Stricklandia nigra</i>	5	0.0	QLD		400	NL
<i>Trechobembix baldiensis</i>	5	0.0	NSW, QLD, SA, TAS, VIC, WA		500	NL
<i>Trichisia azurea</i>	5	0.0			600	NL
<i>Agonocheila biguttata</i>	5	20.0	ACT, NSW, TAS, WA		500	NL
<i>Agonocheila plagiata</i>	5	20.0	NSW, TAS	Euc	300	NL
<i>Agonocheila ruficollis</i>	5	20.0			500	NL

<i>Amblytelus discoidalis</i>	5	20.0			500	NL
<i>Carenum quadripunctatum</i>	5	20.0	QLD		400	NL
<i>Carenum versicolor</i>	5	20.0	VIC	Sc	500	NL
			NSW, NT,			
<i>Clarencia aliena</i>	5	20.0	QLD	Wet	500	NL
<i>Coptodera australis</i>	5	20.0			500	NL
<i>Notiobia denisonensis</i>	5	20.0			600	NL
<i>Notonomus auricollis</i>	5	20.0	E,SE	For	500	NL
<i>Philoscaphus mastersii</i>	5	20.0	NE,E,W	WL	500	NL
<i>Promecoderus dorsalis</i>	5	20.0			500	NL
<i>Acrogenys hirsuta</i>	6	0.0			600	NL
			NSW, QLD,			
<i>Adelotopus paroensis</i>	6	0.0	SA, VIC	Euc	600	NL
				Euc,		
<i>Amblytelus marginicollis</i>	6	16.7	ACT, NSW,	For,		
			VIC	WL	500	NL
<i>Arthropterus 1</i>	6	33.3			600	NL
			NSW, SA,			
<i>Carenum anthracinum</i>	6	0.0	VIC	Sc	500	NL
<i>Carenum interiore</i>	6	0.0			600	NL
<i>Carenum opacicolle</i>	6	16.7	QLD		400	NL
				WL,		
<i>Castelnaudia cyaneotincta</i>	6	0.0	NSW, QLD	For	600	NL
<i>Cerotalis substriata</i>	6	16.7	WA		600	NL
			NT, QLD,	Rip,		
<i>Cicindela discreta</i>	6	16.7	WA	Beaches	500	NL
<i>Cicindela doddi</i>	6	16.7	QLD	Rip	500	NL
<i>Craspedophorus insignis</i>	6	33.3	QLD	SL	400	NL
			ACT, NSW,			
<i>Demetrída brachinodera</i>	6	16.7	SA, VIC	Euc	600	NL
			ACT, NSW,			
<i>Demetrída lineata</i>	6	66.7	SA, VIC, WA	Euc	600	NL
<i>Distipsidera parva</i>	6	33.3	QLD	For	500	NL
<i>Helluonidius cyanipennis</i>	6	16.7	E,NE,NW		700	NL
<i>Homethes guttifer</i>	6	16.7	SE,CS,SW		600	NL
<i>Hypharpax peronii</i>	6	16.7	SE,CS		600	NL
<i>Laccopterum nq1</i>	6	83.3			600	NL
<i>Leiradira tenuis</i>	6	50.0			400	NL
<i>Notonomus besti</i>	6	33.3			600	NL
<i>Notonomus colossus</i>	6	66.7	E	WL	500	NL
<i>Notonomus hopsoni</i>	6	16.7	E	For	600	NL
<i>Notonomus kingi</i>	6	33.3			400	NL
<i>Notonomus molestus</i>	6	33.3	SE	For,Sc	600	NL
<i>Notonomus planipectus</i>	6	50.0	E	For	500	NL
<i>Notonomus triplogenioides</i>	6	16.7			500	NL
<i>Oodes oblongus</i>	6	0.0			600	NL
<i>Paranurus dilaticeps</i>	6	16.7	NE		400	NL
<i>Percosoma carenoides</i>	6	50.0	TAS	For	600	NL
<i>Philipis castanea</i>	6	100.0	QLD	For	200	NL
<i>Philipis sulcata</i>	6	83.3	QLD	For	400	NL

<i>Promecoderus lucidicollis</i>	6	0.0			600	NL
<i>Rhytisternus carpentarius</i>	6	0.0			600	NL
<i>Rhytisternus laevidorsis</i>	6	16.7			500	NL
<i>Rhytisternus laevilaterus</i>	6	33.3			600	NL
<i>Simodontus australis</i>	6	16.7			600	NL
<i>Sphallomorpha ovalis</i>	6	33.3			600	NL
<i>Trichosternus nq3</i>	6	100.0	NE?		100	NL
<i>Trigonothops meyeri</i>	6	16.7	VIC	Euc	700	NL
			NSW, QLD,			
<i>Adelotopus politus</i>	7	0.0	VIC	Euc	800	NL
			ACT, NSW,			
<i>Agonocheila antipodum</i>	7	28.6	TAS	Euc	700	NL
			ACT, SA,			
			TAS, VIC,			
<i>Agonocheila fenestrata</i>	7	14.3	WA	Euc	700	NL
<i>Cerotalis amabilis</i>	7	0.0	QLD, SA	WL	700	NL
<i>Cicindela upsilon upsilon</i>	7	0.0			700	NL
			NSW, NT,			
			SA, TAS,			
<i>Clivina heterogena</i>	7	14.3	VIC, WA	Rip	800	NL
<i>Clivina planiceps</i>	7	0.0	NSW, VIC	Rip	600	NL
<i>Coptodera mastersii</i>	7	14.3	QLD	For	600	NL
<i>Desera smaragdina</i>	7	0.0	QLD	Wet	700	NL
			NT, QLD,			
<i>Elaphropus spenceri</i>	7	0.0	SA, WA	Rip	800	NL
<i>Helluodema unicolor</i>	7	14.3	E,NE,CN		700	NL
<i>Helluonidius latipennis</i>	7	14.3	NE,SE		600	NL
<i>Homethes elegans</i>	7	0.0	SE,TAS		700	NL
<i>Lacopterus foveigerum</i>	7	0.0	NW,W,E	WL,SL	700	NL
<i>Lacordairia nq2</i>	7	100.0			500	NL
<i>Mecyclothorax nq1</i>	7	71.4			400	NL
<i>Megacephala crucigera</i>	7	0.0			700	NL
<i>Notagonum lafertei</i>	7	14.3	NE,E		700	NL
			ACT,NSW,Q			
<i>Notiobia germari</i>	7	14.3	LD,VIC		700	NL
<i>Notonomus bodeae</i>	7	0.0	E,SE	For	600	NL
<i>Notonomus chalybaeus</i>	7	42.9	E,SE	For	700	NL
<i>Notonomus nitescens</i>	7	14.3	E	For	600	NL
<i>Notonomus nq2</i>	7	57.1			300	NL
<i>Parroa apicalis</i>	7	42.9			700	NL
<i>Philipis cooki</i>	7	100.0	QLD	For	400	NL
<i>Philipis tribulationis</i>	7	100.0	QLD	For	300	NL
<i>Philophloeus fuscipennis</i>	7	0.0			700	NL
<i>Philoscaphus costalis</i>	7	0.0			700	NL
<i>Pseudoceneus sollicitus</i>	7	28.6	ACT,TAS		800	NL
<i>Rhabdotus reflexus</i>	7	57.1	TAS	For	700	NL
<i>Sarticus blackburni</i>	7	57.1	VIC	Al	400	NL
			ACT, NSW,			
			QLD, SA,			
<i>Scopodes sigillatus</i>	7	14.3	TAS, VIC,		800	NL

			WA			
<i>Sphallomorpha maculigera</i>	7	0.0			700	NL
<i>Agonocheila sinuosa</i>	8	25.0	QLD, TAS NT, QLD,	Euc	800	NL
<i>Calosoma oceanicum</i>	8	0.0	WA		800	NL
<i>Cratogaster sulcata</i>	8	12.5			900	NL
<i>Distipsidera flavipes</i>	8	25.0	QLD	For	600	NL
<i>Distipsidera undulata</i>	8	12.5	NSW, QLD ACT, NSW, QLD, SA,	For	800	NL
<i>Drypta australis</i>	8	0.0	VIC	WL	800	NL
<i>Euryscaphus carbonarius</i>	8	0.0			800	NL
<i>Lecanomerus vestigialis</i>	8	0.0			800	NL
<i>Loxandrus quadricollis</i>	8	12.5	E,SE,CS		800	NL
<i>Megacephala blackburni</i>	8	0.0	W,SW	Wet	800	NL
<i>Megacephala bostockii</i>	8	0.0	NW,CN,NE		700	NL
<i>Morion australis</i>	8	37.5	E,SE	For	800	NL
<i>Notagonum marginellum</i>	8	62.5	SE,TAS		800	NL
<i>Notonomus crenulatus</i>	8	37.5	E	For	700	NL
<i>Notonomus dyscoloides</i>	8	25.0	E,SE		600	NL
<i>Notonomus kershawi</i>	8	25.0	SE	For	700	NL
<i>Nurus atlas</i>	8	0.0	E	For	300	NL
<i>Nurus grandis</i>	8	100.0	QLD	For	100	NL
<i>Nurus imperialis</i>	8	50.0	E	For	300	NL
<i>Nurus rex</i>	8	100.0	NE	For	200	NL
<i>Philipis rufescens</i>	8	100.0	QLD	For	100	NL
<i>Philophloeus puberulus</i>	8	12.5	SE	Euc	700	NL
<i>Sarothrocrepis luctuosa</i>	8	37.5	ACT, NSW, TAS, VIC	Euc	800	NL
<i>Sarothrocrepis suavis</i>	8	25.0	ACT, NSW, SA, VIC	Euc	800	NL
<i>Sarticus obesulus</i>	8	12.5			800	NL
<i>Tachys captus</i>	8	12.5			900	NL
<i>Teraphis melbournensis</i>	8	25.0	NSW, VIC	For	700	NL
<i>Trichosternus fisheri</i>	8	75.0	QLD	For	200	NL
<i>Trichosternus simplicipes</i>	8	50.0	QLD	For	200	NL
<i>Aenigma iris</i>	9	0.0	NSW, QLD		900	NL
<i>Arthropterus brevis</i>	9	22.2	NSW		1000	NL
<i>Arthropterus denudatus</i>	9	0.0			900	NL
<i>Cainogenion ipsoides</i>	9	0.0	ACT, NSW, QLD, SA, VIC, WA		900	NL
<i>Carenum nq1</i>	9	55.6	QLD		800	NL
<i>Castelnaudia eungella</i>	9	66.7	QLD	For	400	NL
<i>Castelnaudia spec</i>	9	66.7	QLD	For	300	NL
<i>Catadromus tenebrioides</i>	9	33.3	NT, QLD, SA, VIC	For, Rip	900	NL
<i>Clivina dilutipes</i>	9	0.0			800	NL
<i>Coptocarpus nq1</i>	9	100.0			600	NL
<i>Craspedophorus alternans</i>	9	0.0	QLD	SL	900	NL

<i>Dicraspeda nitida</i>	9	66.7	QLD	RF	900	NL
<i>Euthenarus bicolor</i>	9	33.3			900	NL
<i>Helluonidius cyaneus</i>	9	11.1	NE,E,SW		900	NL
<i>Laemostenus complanatus</i>	9	11.1	SW,CS,SE		900	NL
<i>Leiradira soror</i>	9	77.8			500	NL
			NE,SE,I,CS.			
<i>Neocarenum elongatum</i>	9	44.4	W,SW	Sc	900	NL
<i>Notonomus australasiae</i>	9	0.0			800	NL
<i>Notonomus croesus</i>	9	22.2	SE	For	800	NL
<i>Notonomus ellioti</i>	9	100.0	NE	For	200	NL
<i>Notonomus gippsiensis</i>	9	33.3	SE	For	800	NL
<i>Notonomus nq1</i>	9	100.0			200	NL
<i>Notonomus taylora</i>	9	22.2	E,SE	For	800	NL
<i>Philipis lustrans</i>	9	100.0	QLD	For	600	NL
<i>Philophloeus luculentus</i>	9	22.2	E,SE	Euc	1000	NL
<i>Phorticosomus horni</i>	9	0.0	E,I,W,CN		800	NL
<i>Prosopogmus monochrous</i>	9	0.0			900	NL
<i>Sarticus coradgeri</i>	9	0.0	NSW	Sc	900	NL
<i>Siagonyx amplipennis</i>	9	33.3	NSW, QLD	For	900	NL
			ACT, NSW,			
<i>Sloaneana tasmaniae</i>	9	33.3	TAS, VIC	For	1300	NL
			ACT, NSW,			
			NT, QLD,			
			SA, TAS,			
<i>Sphallomorpha hydroporoides</i>	9	0.0	VIC, WA	Euc	900	NL
<i>Agonocheila lutosa</i>	10	10.0	SA	Euc	1000	NL
<i>Arthropterus angulatus</i>	10	0.0			1000	NL
			NSW, QLD,			
<i>Cainogenion obscurum</i>	10	10.0	SA, VIC	Euc	1000	NL
<i>Carenum 1</i>	10	70.0			900	NL
<i>Carenum marginatum</i>	10	10.0			1000	NL
<i>Carenum scaritoides</i>	10	30.0			1100	NL
<i>Castelnaudia 2</i>	10	60.0			1000	NL
<i>Castelnaudia cyanea</i>	10	60.0	NSW, QLD	For	800	NL
			ACT, NSW,			
			QLD, SA,			
			TAS, VIC,			
<i>Cenogmus castelnaui</i>	10	10.0	WA		1100	NL
<i>Craspedophorus australasiae</i>	10	10.0			1200	NL
<i>Craspedophorus australis</i>	10	10.0			1000	NL
			W,NW,CN,N			
<i>Gnathaphanus philippensis</i>	10	10.0	E,E		900	NL
<i>Laccopterum loculosum</i>	10	10.0	VIC,NSW	WL,SL	1000	NL
<i>Lecanomerus discoidalis</i>	10	20.0	SE,E		1000	NL
<i>Megacephala australasiae</i>	10	10.0			1300	NL
			NE,CN,W,S			
<i>Megacephala basalis</i>	10	0.0	W	Rip	1000	NL
<i>Notiobia melanaria</i>	10	0.0	NSW,QLD		1000	NL
<i>Nurus brevis</i>	10	60.0	E	For	300	NL
<i>Nurus niger</i>	10	50.0	QLD	For	400	NL

<i>Pamborus elegans</i>	10	70.0	E	For	600	NL
<i>Philophloeus planus</i>	10	10.0	E,SE,I	Euc	1000	NL
<i>Promecoderus gracilis</i>	10	0.0			1000	NL
			NT, QLD, SA, TAS, VIC, WA	Euc	1100	NL
<i>Sarothrocrepis benefica</i>	10	10.0			1000	NL
<i>Sarticus aubei</i>	10	0.0			1000	NL
<i>Siagonyx blackburni</i>	10	30.0	NSW, VIC ACT, NSW, QLD, SA, VIC	For	1000	NL
<i>Sphallomorpha guttigera</i>	10	0.0		Euc	1000	NL
<i>Trigonothops longiplaga</i>	10	20.0	SA, VIC, WA	Euc	1000	NL

Removal of extinct and poorly recorded species leaves 6537 records in ANHAT for 204 species (and subspecies). The mean number of records per species for species with greater than 10 records was 32.0, with a mean of 37.2 for the percent of records in the NRS.

Seventy-four species of ground beetles had 45% or greater of individual site records located within the NRS (**Table 73**). None of the 74 species are listed as threatened. Of the 74 species, 58 have location information and all these species are found in eastern Australia, including two species from Tasmania. The majority of species (47) are found in forested habitats.

Table 73. Ground beetles species with >45% of site records within the NRS.

Species	No. Records	Records in NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Laccopterus deauratum</i>	31	14	45.2	NE,E	WL,SL	1000	NL
<i>Eurylychnus regularis</i>	11	5	45.4	NSW	For	800	NL
<i>Castelnaudia speciosa</i>	46	21	45.6	NSW	For	2800	NL
<i>Notonomus sphondroides</i>	13	6	46.1	SE	For	1200	NL
<i>Percosoma sulcipenne</i>	21	10	47.6	TAS	For	1000	NL
<i>Leiradira alternans</i>	41	20	48.8	NE	For	1400	NL
<i>Castelnaudia porphyriaca</i>	12	6	50.0	QLD	For	600	NL
<i>Notonomus 3</i>	14	7	50.0			1200	NL
<i>Notonomus rainbowi</i>	40	20	50.0	SE NSW,	For	2400	NL
<i>Setalis niger</i>	70	35	50.0	QLD	For	4700 1050	NL
<i>Trichosternus vigorsi</i>	194	97	50.0	NSW	For	0	NL
<i>Castelnaudia wilsoni</i>	51	26	51.0	QLD	For	2300	NL
<i>Trichosternus perater</i>	45	23	51.1	NSW	For	700	NL
<i>Castelnaudia setosiceps</i>	41	21	51.2	QLD	For	1900	NL
<i>Notonomus variicollis</i>	39	20	51.3	E,SE	For	2700	NL

<i>Pamborus macleayi</i>	68	35	51.5	E	For	2900	NL
<i>Mystropomus subcostatus</i>	148	79	53.4	E		8700	NL
<i>Leiradira auricollis</i>	46	25	54.3	E	For	3000	NL
<i>Nurus medius</i>	22	12	54.5	NE	For	700	NL
<i>Pamborus pradieri</i>	46	26	56.5	E		2000	NL
						1250	
<i>Pamborus alternans</i>	325	188	57.8	E	For	0	NL
<i>Nurus nsw1</i>	19	11	57.9			400	NL
<i>Notonomus masculinus</i>	41	24	58.5	E,NE	For	1300	NL
<i>Notolestus sulcipennis</i>	54	32	59.3	E	For	2700	NL
<i>Pamborus brisbanensis</i>	40	24	60.0	E		2400	NL
<i>Trichosternus nudipes</i>	33	20	60.6	QLD	For	500	NL
				NSW,			
<i>Trichosternus angulosus</i>	23	14	60.9	QLD		500	NL
<i>Pamborus guerinii</i>	210	130	61.9	E	For	8300	NL
				NSW,			
<i>Castelnaudia marginifera</i>	87	54	62.1	QLD	For	4700	NL
<i>Notonomus doddi</i>	49	31	63.3	NE	For	1700	NL
				NSW,			
<i>Zeodera atra</i>	30	19	63.3	QLD	For	1300	NL
<i>Castelnaudia</i>				NSW,			
<i>septemcostata</i>	44	28	63.6	QLD	For	1600	NL
<i>Coptocarpus philipi</i>	14	9	64.3	QLD		800	NL
<i>Notonomus tubercicauda</i>	14	9	64.3	E,SE,TAS	For	1300	NL
				NSW,			
<i>Cratoferonia phylarchus</i>	125	81	64.8	QLD	For	5900	NL
<i>Eurylychnus cylindricus</i>	12	8	66.7	NSW	For	800	NL
<i>Setalis rubripes</i>	12	8	66.7	QLD	For	900	NL
<i>Pamborus punctatus</i>	11	8	72.7		For	600	NL
<i>Promecoderus cbr3 1</i>	11	8	72.7			900	NL
<i>Trichosternus nsw1</i>	12	9	75.0	NSW		600	NL
<i>Philipis thompsoni</i>	24	18	75.0	QLD	For,RF	1800	NL
<i>Lecanomerus niger</i>	48	36	75.0		For,Lit	1800	NL
<i>Pamborus tropicus</i>	121	93	76.9	NE	For	4100	NL
<i>Mystropomus regularis</i>	88	68	77.3	NE		3300	NL
<i>Trichosternus mutatus</i>	15	12	80.0	QLD	For	800	NL
<i>Trichosternus soror</i>	22	18	81.8	QLD	For	900	NL
<i>Loxogenius opacipennis</i>	33	27	81.8	NE		1400	NL
<i>Illaphanus nq1</i>	13	11	84.6			1100	NL
<i>Nurus nox</i>	14	12	85.7	E		700	NL
<i>Castelnaudia cq1</i>	21	18	85.7			600	NL
<i>Nurus latipennis</i>	39	34	87.2	E	For	1200	NL
<i>Sitaphe rotundata</i>	74	65	87.8	QLD	RF	2500	NL

<i>Pamborus subtropicus</i>	19	17	89.5	E	For	800	NL
<i>Trichosternus fax</i>	20	18	90.0	QLD	For	300	NL
<i>Anomotarus nq1</i>	11	10	90.9			700	NL
<i>Notonomus spurgeoni</i>	61	56	91.8	NE	For	1000	NL
<i>Leiradira nq2</i>	15	14	93.3			700	NL
<i>Raphetis gracilis</i>	15	14	93.3	QLD		1000	NL
<i>Trichosternus frater</i>	33	31	93.9	QLD	For	1400	NL
<i>Leiradira opacistriatis</i>	34	32	94.1			1700	NL
<i>Castelnaudia obscuripennis</i>	125	118	94.4	QLD	For	2200	NL
<i>Mecyclothorax storeyi</i>	18	17	94.4		Lit	400	NL
<i>Pamborus opacus</i>	98	93	94.9	E,NE	For	1600	NL
<i>Leiradira nq3</i>	11	11	100.0			100	NL
<i>Notonomus dimorphicus</i>	11	11	100.0	NE	For	400	NL
<i>Leiradira alticola</i>	13	13	100.0			200	NL
<i>Philipis sinuata</i>	14	14	100.0	QLD	For	300	NL
<i>Castelnaudia cq2</i>	15	15	100.0			300	NL
<i>Leiradira aurifer</i>	15	15	100.0			300	NL
<i>Notonomus montellus</i>	20	20	100.0	NE	For	400	NL
<i>Trichosternus montorum</i>	22	22	100.0	QLD	For	300	NL
<i>Notonomus flos</i>	27	27	100.0	NE	For	400	NL
<i>Mecyclothorax lewisensis</i>	29	29	100.0		Lit	900	NL
<i>Notonomus montorum</i>	38	38	100.0	NE		700	NL

Forty-nine species had less than 10% of ANHAT records located within PAs (**Table 74**). All of the ground beetles species are classified as not listed. These species are widespread throughout Australia, with most occurring in either forested/woodland or riparian habitats.

Table 74. Ground beetles species with <10% of ANHAT records located within the NRS.

Species	No. Records	Inside NRS	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Gigadema bostocki</i>	11	0	0.0			1000	NL
<i>Helluo insignis</i>	11	0	0.0			1100	NL
<i>Phorticosomus felix</i>	11	0	0.0	E,SE,CS		1000	NL
<i>Promecoderus concolor</i>	11	0	0.0			1100	NL
<i>Parroa howittii</i>	12	0	0.0	E,SW,W,NW	Sc	1200	NL
<i>Sphallomorpha albopicta</i>	12	0	0.0			1200	NL
<i>Castelnaudia superba</i>	13	0	0.0	NSW	WL, Sc	1200	NL

<i>Cenogmus interioris</i>	13	0	0.0			1300	NL
<i>Euryscaphus dilatatus</i>	13	0	0.0			1200	NL
<i>Sarticus habitans</i>	13	0	0.0	ACT, NSW	WL	1200	NL
<i>Gigadema nocte</i>	14	0	0.0	NSW, QLD, SA		1400	NL
<i>Gigadema sulcatum</i>	15	0	0.0	NSW, NT, QLD, SA, WA		1400	NL
<i>Pericompsus australis</i>	15	0	0.0	NSW, QLD, SA, T AS, VIC, WA		1400	NL
<i>Chlaenius ophonoides</i>	20	0	0.0	NSW, NT, QLD		2000	NL
<i>Notonomus scotti</i>	20	0	0.0	E	For	1900	NL
<i>Chlaenius darlingensis</i>	25	0	0.0	ACT, NSW, NT, QLD, SA, VIC, WA	Rip	2500	NL
<i>Carenum tinctilatum</i>	27	0	0.0	ACT, NSW, QLD, VIC	WL, Sc	2600	NL
<i>Chlaenius flaviguttatus</i>	32	0	0.0	NSW, NT, QLD		3100	NL
<i>Geoscaptus laevisissimus</i>	48	2	4.2	NSW, NT, SA, VIC, WA		4900	NL
<i>Arthropterus westwoodii</i>	23	1	4.3			2400	NL
<i>Catadromus lacordairei</i>	23	1	4.3	ACT, NSW, NT, QLD, SA, TAS, VIC, WA	He, WL, For, Rip	2300	NL
<i>Geoscaptus cacus</i>	23	1	4.3	NT, QLD, SA		2500	NL
<i>Rhytisternus cyathoderus</i>	22	1	4.5	NSW, SA, TAS, VIC	WL, SL	2200	NL
<i>Clivina procera</i>	20	1	5.0	NSW, SA, VIC	Rip	2000	NL
<i>Hyperion schroetteri</i>	20	1	5.0	E, SE, CS		2000	NL
<i>Egadroma piceus</i>	19	1	5.3			2000	NL
<i>Rhytisternus liopleurus</i>	16	1	6.2			1700	NL
<i>Sarticus discopunctatus</i>	16	1	6.2			1500	NL
<i>Gnathaphanus pulcher</i>	63	4	6.3	W, NW, CN, NE, E, SE		6100	NL
<i>Apotomus australis</i>	15	1	6.7	NSW, NT, QLD, SA, VIC, WA		1400	NL
<i>Clivina australasiae</i>	14	1	7.1			1300	NL
<i>Philophloeus immaculatus</i>	14	1	7.1	E, SE, NE	Euc	1400	NL
<i>Adelotopus rubiginosus</i>	13	1	7.7			1300	NL
<i>Arthropterus wilsoni</i>	13	1	7.7	NSW, SA		1200	NL
<i>Sarticus cyaneocinctus</i>	51	4	7.8	ACT, NSW, VIC	WL, O p	4800	NL

<i>Megacephala australis</i>	25	2	8.0	NE,SE,CS,I	Rip	2400	NL
<i>Catadromus australis</i>	12	1	8.3	ACT, NSW, QLD, SA, VIC, WA	SL, Rip	1200	NL
<i>Philophloeus australis</i>	12	1	8.3	E,SE,TAS	Euc	1200	NL
<i>Sphallomorpha suturalis</i>	24	2	8.3	NSW, NT, QLD, SA, VIC, WA	Euc	2400	NL
<i>Philoscaphus tuberculatus</i>	36	3	8.3	E,SE,CS,I,SW	Sc	3600	NL
<i>Gnathaphanus melbournensis</i>	11	1	9.1	TAS,SE,E,NE,C N		1200	NL
<i>Notonomus philippi</i>	22	2	9.1		For,Sc	1800	NL
<i>Pheropsophus verticalis</i>	65	6	9.2	NE,E,SE,CS,I	Rip	6300	NL
<i>Calosoma schayeri</i>	86	8	9.3	NSW, NT, QLD, SA, TAS, VIC, WA		8200	NL
<i>Carenum bonellii</i>	32	3	9.4	ACT, NSW, QLD, VIC	For	3300	NL
<i>Bembidion jacksoniense</i>	21	2	9.5	ACT, NSW, NT, QLD, SA, VIC, WA	Rip	2400	NL
<i>Clivina basalis</i>	21	2	9.5			2000	NL
<i>Platycoelus melliei</i>	21	2	9.5	E,CS,IW,NW,CN ,SE		2100	NL
<i>Megacephala cylindrica</i>	20	2	10.0	CN,I.CS,E,NE	Rip	2100	NL

No ground beetles species had records in more than 100 separate reserves.

A total of 130 species had records in five or fewer PAs (

Table 75). No species were listed as threatened. All of the species in this list had fewer than 100 individual record sites, and no species had more than 63 record sites. One hundred and thirty-two species of ground beetles had records in five or fewer PAs greater than 1000 hectares, with none of these species being listed as threatened (

Table 75).

Table 75. Ground beetles species recorded from five or fewer PAs and five or fewer PAs greater than 1000 hectares.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Egadroma piceus</i>	19	1	0	NL
<i>Gnathaphanus melbournensis</i>	11	1	1	NL
<i>Leiradira nq3</i>	11	1	1	NL

<i>Catadromus australis</i>	12	1	1	NL
<i>Philophloeus australis</i>	12	1	1	NL
<i>Arthropterus wilsoni</i>	13	1	1	NL
<i>Adelotopus rubiginosus</i>	13	1	1	NL
<i>Leiradira alticola</i>	13	1	1	NL
<i>Loxodactylus carinulatus carinulatus</i>	14	1	1	NL
<i>Clivina australasiae</i>	14	1	1	NL
<i>Philophloeus immaculatus</i>	14	1	1	NL
<i>Castelnaudia cq2</i>	15	1	1	NL
<i>Apotomus australis</i>	15	1	1	NL
<i>Chylnus ater</i>	15	1	1	NL
<i>Rhytisternus liopleurus</i>	16	1	1	NL
<i>Sarticus discopunctatus</i>	16	1	1	NL
<i>Dicrochile goryi</i>	16	1	1	NL
<i>Hyperion schroetteri</i>	20	1	1	NL
<i>Notonomus montellus</i>	20	1	1	NL
<i>Trichosternus fax</i>	20	1	1	NL
<i>Castelnaudia mixta</i>	20	1	1	NL
<i>Clivina procera</i>	20	1	1	NL
<i>Megacephala cylindrica</i>	20	1	1	NL
<i>Trichosternus montorum</i>	22	1	1	NL
<i>Notonomus philippi</i>	22	1	1	NL
<i>Rhytisternus cyathoderus</i>	22	1	1	NL
<i>Sphallomorpha castelnaui</i>	22	1	1	NL
<i>Nurus medius</i>	22	1	1	NL
<i>Catadromus lacordairei</i>	23	1	1	NL
<i>Arthropterus westwoodii</i>	23	1	1	NL
<i>Geoscaptus cacus</i>	23	1	1	NL
<i>Laccopterum deauratum</i>	31	1	1	NL
<i>Pamborus transitus</i>	45	1	1	NL
<i>Trigonothops nigricollis</i>	13	2	1	NL
<i>Microlestodes macleayi</i>	13	2	1	NL
<i>Sphallomorpha suturalis</i>	24	2	1	NL
<i>Notonomus transitus</i>	30	2	1	NL
<i>Clivina biplagiata</i>	11	2	2	NL
<i>Coptodera aurata</i>	11	2	2	NL
<i>Acrogenys longicollis</i>	11	2	2	NL
<i>Notonomus leai</i>	11	2	2	NL
<i>Eurylychnus cylindricus</i>	12	2	2	NL
<i>Hypharpax australis</i>	12	2	2	NL
<i>Notonomus violaceus</i>	12	2	2	NL
<i>Notonomus arthuri</i>	13	2	2	NL
<i>Sarothrocrepis civica</i>	13	2	2	NL
<i>Euryscaphus obesus</i>	13	2	2	NL
<i>Minuthodes minima</i>	13	2	2	NL
<i>Dicraspeda obscura</i>	14	2	2	NL
<i>Laccopterum lacunosum</i>	14	2	2	NL
<i>Nurus nox</i>	14	2	2	NL
<i>Notonomus opulentus</i>	14	2	2	NL
<i>Philipis sinuata</i>	14	2	2	NL

<i>Sphallomorpha nitiduloides</i>	14	2	2	NL
<i>Gigadema longipenne</i>	15	2	2	NL
<i>Clivina quadratifrons</i>	15	2	2	NL
<i>Sarticus monarensis</i>	16	2	2	NL
<i>Anomotarus crudelis</i>	16	2	2	NL
<i>Carenum laevigatum</i>	17	2	2	NL
<i>Sarothrocrepis corticalis</i>	18	2	2	NL
<i>Mecyclothorax storeyi</i>	18	2	2	NL
<i>Nurus nsw1</i>	19	2	2	NL
<i>Nurus curtus</i>	19	2	2	NL
<i>Castelnaudia cq1</i>	21	2	2	NL
<i>Bembidion jacksoniense</i>	21	2	2	NL
<i>Clivina basalis</i>	21	2	2	NL
<i>Platycoelus melliei</i>	21	2	2	NL
<i>Megacephala australis</i>	25	2	2	NL
<i>Adelotopus dytiscides</i>	27	2	2	NL
<i>Carenum bonellii</i>	32	2	2	NL
<i>Geoscaptus laevissimus</i>	48	2	2	NL
<i>Lestignathus cursor</i>	11	3	2	NL
<i>Cicindela upsilon albicans</i>	13	3	2	NL
<i>Distipsidera grutii</i>	14	3	2	NL
<i>Notonomus saepistriatus</i>	14	3	2	NL
<i>Trichosternus mutatus</i>	15	3	2	NL
<i>Coptocarpus australis</i>	23	3	2	NL
<i>Notonomus peronii</i>	11	3	3	NL
<i>Notonomus dimorphicus</i>	11	3	3	NL
<i>Promecoderus cbc3 1</i>	11	3	3	NL
<i>Trechimorphus diemenensis</i>	11	3	3	NL
<i>Notonomus johnstoni</i>	12	3	3	NL
<i>Castelnaudia porphyriaca</i>	12	3	3	NL
<i>Leiradira nq2</i>	15	3	3	NL
<i>Prosopogmus chalybeipennis</i>	15	3	3	NL
<i>Sphallomorpha fallax</i>	15	3	3	NL
<i>Philophloeus intermedius</i>	16	3	3	NL
<i>Mecyclothorax ambiguus</i>	17	3	3	NL
<i>Pamborus subtropicus</i>	19	3	3	NL
<i>Trigonothops pacifica</i>	20	3	3	NL
<i>Philophloeus distinguendus</i>	21	3	3	NL
<i>Rhytisternus miser</i>	25	3	3	NL
<i>Notonomus flos</i>	27	3	3	NL
<i>Trichosternus nudipes</i>	33	3	3	NL
<i>Philoscaphus tuberculatus</i>	36	3	3	NL
<i>Trichosternus perater</i>	45	3	3	NL
<i>Percosoma sulcipenne</i>	21	4	1	NL
<i>Notonomus tubericauda</i>	14	4	2	NL
<i>Trigonothops flavofasciata</i>	37	4	2	NL
<i>Leiradira aurifer</i>	15	4	3	NL
<i>Demetrida suturata</i>	18	4	3	NL
<i>Notonomus marginatus</i>	27	4	3	NL
<i>Distipsidera volitans</i>	11	4	4	NL

<i>Trichosternus nsw1</i>	12	4	4	NL
<i>Promecoderus brunnicornis</i>	13	4	4	NL
<i>Notonomus sphodroides</i>	13	4	4	NL
<i>Raphetis gracilis</i>	15	4	4	NL
<i>Notonomus australis</i>	16	4	4	NL
<i>Notonomus opacicollis</i>	17	4	4	NL
<i>Trichosternus angulosus</i>	23	4	4	NL
<i>Agonocheila perplexa</i>	29	4	4	NL
<i>Cratogaster melas</i>	37	4	4	NL
<i>Notonomus montorum</i>	38	4	4	NL
<i>Chlaenius australis</i>	42	4	4	NL
<i>Sarticus cyaneocinctus</i>	51	4	4	NL
<i>Gnathaphanus pulcher</i>	63	4	4	NL
<i>Pamborus punctatus</i>	11	5	3	NL
<i>Agonocheila cribripennis</i>	16	5	3	NL
<i>Demetrida vittata</i>	24	5	3	NL
<i>Trichosternus soror</i>	22	5	4	NL
<i>Amblytelus brevis</i>	23	5	4	NL
<i>Scaraphites rotundipennis</i>	25	5	4	NL
<i>Notonomus politulus</i>	29	5	4	NL
<i>Eurylychnus regularis</i>	11	5	5	NL
<i>Anomotarus nq1</i>	11	5	5	NL
<i>Notonomus amabilis</i>	19	5	5	NL
<i>Cratoferonia regalis</i>	27	5	5	NL
<i>Mecyclothorax lewisensis</i>	29	5	5	NL
<i>Notonomus rainbowi</i>	40	5	5	NL
<i>Agonocheila curtula</i>	40	5	5	NL
<i>Notonomus spurgeoni</i>	61	6	5	NL
<i>Coptocarpus philipi</i>	14	7	4	NL
<i>Setalis rubripes</i>	12	7	5	NL

Water beetles (Dytiscidae)

The ANHAT database has 1888 records for 123 species and subspecies of Dytiscidae. No species of Dytiscidae are considered extinct.

There are 17 Dytiscidae species that account for approximately 50% of the total Dytiscid species records in ANHAT. These species have over 30 records each.

Table 76. Dytiscidae species that account for approximately 50% of the Dytiscid records in ANHAT.

Species	No. Records	% total records
<i>Hydaticus consanguineus</i>	38	2.00
<i>Hydrovatus fasciatus</i>	38	2.00
<i>Platynectes decempunctatus</i>	38	2.00
<i>Copelatus clarki</i>	39	2.06
<i>Copelatus irregularis</i>	46	2.43
<i>Copelatus nigrolineatus</i>	46	2.43
<i>Laccophilus clarki</i>	47	2.48
<i>Bidessodes mjobergi</i>	49	2.58
<i>Hydrovatus opacus</i>	55	2.90
<i>Hydroglyphus basalis</i>	61	3.22
<i>Hydroglyphus daemeli</i>	62	3.27
<i>Laccophilus cingulatus</i>	69	3.64
<i>Hydrovatus rufoniger</i>	82	4.32
<i>Hyphydrus lyratus</i>	84	4.43
<i>Hydroglyphus godeffroyi</i>	87	4.59
<i>Hydrovatus ovalis</i>	91	4.80
<i>Allodessus bistrigatus</i>	92	4.85
Total	1024	54

Seventy-three species had 10 or fewer individual record sites in the ANHAT database (**Table 77**). Of those species, none are listed as threatened. These species have been excluded from analysis but are included here for reference. Exclusion of these poorly recorded species eliminates 220 records. These species occur across all of Australia, with 25 species occurring in only one State or Territory and the remaining species occurring in at least one other State or Territory. Only one species had habitat details available. However, all species are aquatic and so are associated with water bodies of some type.

Table 77. Dytiscidae species with 10 or fewer individual site records in the ANHAT database.

Species	No. Records	% in NRS	Location	Veg type	Area (km ²)	EPBC status
<i>Antiporus interrogationis</i>	1	100.0	ACT, NSW, SA, VIC			NL
<i>Chostonectes gigas</i>	1	100.0	ACT, NSW, NT, QLD,			NL

			SA, TAS, VIC	
<i>Clypeodytes darlingtoni</i>	1	100.0	QLD	NL
<i>Copelatus rasilis</i>	1	100.0	NSW, QLD	NL
<i>Limbodessus dispar</i>	1	100.0	WA	NL
			ACT, NSW, QLD, SA,	
<i>Megaporus hamatus</i>	1	100.0	TAS, VIC	NL
<i>Megaporus solidus</i>	1	100.0	WA	NL
<i>Necterosoma aphrodite</i>	1	100.0	VIC	NL
<i>Paroster niger</i>	1	100.0	WA	NL
<i>Sternopriscus marginatus</i>	1	100.0	WA	NL
<i>Antiporus bakewellii</i>	1	0.0	QLD, VIC, WA	NL
<i>Antiporus simplex</i>	1	0.0	QLD	NL
<i>Australphilus saltus</i>	1	0.0	QLD	NL
<i>Barretthydrus tibialis</i>	1	0.0	NSW	NL
<i>Carabhydrus plicatus</i>	1	0.0	QLD	NL
<i>Copelatus australis</i>	1	0.0	NSW, QLD, VIC	NL
<i>Cybister loxidiscus</i>	1	0.0	QLD	NL
<i>Gibbidessus chipi</i>	1	0.0	NSW, VIC	NL
<i>Laccophilus</i>				
<i>quadrimaculatus</i>	1	0.0	NT, QLD	NL
<i>Limbodessus praelargus</i>	1	0.0	ACT, NSW, VIC	NL
<i>Necterosoma dispar</i>	1	0.0	SA	NL
<i>Necterosoma schmelzi</i>	1	0.0	NSW, QLD	NL
<i>Paroster sharpi</i>	1	0.0	WA	NL
<i>Platynectes</i>				
<i>octodecimmaculatus</i>	1	0.0	NT, QLD, WA	NL
<i>Sternopriscus minimus</i>	1	0.0	WA	NL
<i>Sternopriscus tarsalis</i>	1	0.0	NSW, QLD, SA, TAS	NL
<i>Tiporus centralis</i>	1	0.0	NT, WA	NL
<i>Tiporus collaris</i>	1	0.0	NT, WA	NL
<i>Batrachomatus wingii</i>	2	50.0	NT, QLD	NL
			NSW, NT, QLD, SA,	
<i>Hydrovatus rufoniger politus</i>	2	50.0	WA	NL
<i>Sternopriscus cervus</i>	2	50.0	NSW	NL
				For,
<i>Terradessus caecus</i>	2	100.0	QLD	Mon
<i>Limbodessus gemellus</i>	2	0.0	NSW, SA, TAS, VIC	NL
<i>Platynectes monostigma</i>	2	0.0	NT, WA	NL
<i>Sternopriscus mundanus</i>	2	0.0	ACT, NSW, VIC	NL
<i>Tiporus alastairi</i>	2	0.0	WA	NL
<i>Tiporus denticulatus</i>	2	0.0	NT, QLD	NL
<i>Hydaticus fabricii</i>	3	66.7	NT	NL
<i>Laccophilus religatus</i>	3	33.3	NSW, NT, QLD, SA	NL
<i>Limbodessus amabilis</i>	3	33.3	SA, TAS, VIC	NL
<i>Limbodessus occidentalis</i>	3	33.3	WA	NL
<i>Onychohydrus atratus</i>	3	33.3	NT, QLD	NL
<i>Sandraccottus bakewellii</i>	3	33.3	NT, QLD, SA, WA	NL
<i>Sternopriscus pilbarensis</i>	3	66.7	WA	NL
			ACT, NSW, SA, TAS,	
<i>Antiporus blakei</i>	3	0.0	VIC	NL
<i>Barretthydrus geminatus</i>	3	0.0	NSW	NL

<i>Copelatus tenebrosus</i>	3	0.0	NT, QLD	NL
<i>Hydaticus microdaemeli</i>	3	0.0	NT, QLD	NL
<i>Rhantus suturalis</i>	3	0.0	ACT, NSW, NT, QLD, SA, TAS, VIC, WA	NL
<i>Tiporus undecimmaculatus</i>	3	0.0	NT, QLD, WA	NL
<i>Austrodytes plateni</i>	4	75.0	WA	NL
<i>Chostonectes nebulosus</i>	4	50.0	ACT, NSW, QLD, SA	NL
<i>Hydroglyphus orthogrammus</i>	4	50.0	WA	NL
<i>Hydroglyphus signatus</i>	4	75.0	NSW, QLD	NL
<i>Hydrovatus weiri</i>	4	75.0	QLD, WA	NL
<i>Tiporus lachlani</i>	4	25.0	WA	NL
<i>Bidessodes bilita</i>	4	0.0	NSW, QLD	NL
<i>Cybister godeffroyi</i>	5	40.0	NT, QLD	NL
<i>Laccophilus seminiger</i>	5	40.0	NT, QLD	NL
<i>Hydaticus wattsi</i>	5	20.0	QLD	NL
<i>Hyphydrus decemmaculatus</i>	5	20.0	NT, QLD	NL
<i>Bidessodes grossus</i>	6	0.0	QLD	NL
<i>Chostonectes sharpi</i>	6	33.3	NSW, QLD	NL
<i>Copelatus melanarius</i>	6	0.0	NSW, QLD	NL
<i>Laccophilus univittatus</i>	6	33.3	QLD	NL
<i>Sternopriscus browni</i>	7	14.3	WA	NL
<i>Tiporus josepheni</i>	7	14.3	NT, QLD, WA	NL
<i>Tiporus tambreyi</i>	7	71.4	WA	NL
<i>Hydrovatus parallelus</i>	8	50.0	QLD, WA	NL
<i>Necterosoma darwini</i>	8	62.5	WA	NL
<i>Rhantaticus congestus</i>	8	50.0	NSW, NT, QLD, WA	NL
<i>Limbodessus inornatus</i>	9	77.8	WA	NL
<i>Necterosoma regulare</i>	9	33.3	NSW, NT, QLD, WA	NL

Removal of extinct and poorly recorded species leaves 1668 records in ANHAT for 50 species (and subspecies). The mean number of records per species for species with greater than five records was 33.4, with a mean of 33.2 for the percent of records in the NRS.

Six species of Dytiscidae had 45% or greater of individual site records located within PAs (**Table 78**).

Table 78. Dytiscidae species with >45% of site records within the NRS.

Species	No. Records	Records in NRS	% in NRS	Location	Veg type	EPBC status
<i>Antiporus femoralis</i>	15	7	46.7	ACT, NSW, SA, TAS, VIC, WA		NL
<i>Laccophilus sharpi</i>	29	14	48.3	NT, QLD, WA		NL
<i>Hydrovatus nigrita</i>	12	6	50.0	NSW, NT, QLD		NL
<i>Copelatus irregularis</i>	46	23	50.0	NT, QLD, WA		NL
<i>Cybister tripunctatus</i>	17	9	52.9	NSW, NT, QLD, SA,		NL

				WA	
<i>Copelatus divisus</i>	22	15	68.2	QLD	NL

No Dytiscidae species had less than 10% of ANHAT records located within PAs.

No Dytiscidae species had records in more than 100 separate reserves.

A total of 31 species had records in five or fewer PAs (**Table 79**). No species were listed as threatened. All species in this list had fewer than 100 individual site records, and no species had more than 49 site records. The same 31 species of Dytiscidae had records in five or fewer PAs greater than 1000 hectares (**Table 79**).

Table 79. Dytiscidae species recorded from five or fewer PAs and in five or fewer PAs greater than 1000 hectares.

Species	No. Records	No. PAs	No. PAs >1000ha	EPBC status
<i>Copelatus bakewelli</i>	11	1	1	NL
<i>Limbodessus shuckardii</i>	12	2	1	NL
<i>Megaporus nativigi</i>	11	2	2	NL
<i>Hydaticus daemeli</i>	12	2	2	NL
<i>Sternopriscus hansardii</i>	12	2	2	NL
<i>Hyphydrus contiguus</i>	16	2	2	NL
<i>Hydroglyphus trifasciatus</i>	20	2	2	NL
<i>Antiporus gilbertii</i>	18	3	2	NL
<i>Hydrovatus nigrita</i>	12	3	3	NL
<i>Sternopriscus multimaculatus</i>	12	3	3	NL
<i>Copelatus marginatus</i>	13	3	3	NL
<i>Megaporus howittii</i>	14	3	3	NL
<i>Hydroglyphus leai</i>	16	3	3	NL
<i>Laccophilus walkeri</i>	16	3	3	NL
<i>Eretes australis</i>	22	3	3	NL
<i>Antiporus femoralis</i>	15	4	3	NL
<i>Necterosoma undecimlineatum</i>	23	4	3	NL
<i>Hyphydrus effeminatus</i>	11	4	4	NL
<i>Hydroglyphus mastersii</i>	15	4	4	NL
<i>Copelatus divisus</i>	22	4	4	NL
<i>Hydaticus bihamatus</i>	22	4	4	NL
<i>Clypeodytes bifasciatus</i>	24	4	4	NL
<i>Hydaticus vittatus</i>	33	4	4	NL
<i>Copelatus nigrolineatus</i>	46	4	4	NL
<i>Hyphydrus elegans</i>	19	5	4	NL
<i>Hydrovatus fasciatus</i>	38	5	4	NL
<i>Platynectes decempunctatus</i>	38	5	4	NL
<i>Copelatus clarki</i>	39	5	4	NL
<i>Hydroglyphus grammopterus</i>	20	5	5	NL
<i>Laccophilus clarki</i>	47	5	5	NL
<i>Bidessodes mjobergi</i>	49	5	5	NL

Final Discussion

The results obtained for vertebrates provide somewhat mixed results in regards to their reservation status. Many species in each vertebrate group remain with relatively few (<30) records in the ANHAT database. These species are difficult to assess in regards to their status or their habitat associations, especially with many species having fewer than 15 records. These species should be targeted with surveys to increase our understanding of their distributions within the National Reserve System.

Interestingly, those vertebrate species with more than 30 records tend to have relatively higher proportions of records falling into reserves, based on chance, being well above 11.6% and there are relatively few from any of the four groups that have poor representation in the reserve system. In fact, only nine species of vertebrate have no records in the NRS. Why is this so? The most obvious explanation is that vertebrates are relatively well surveyed for and efforts in data collection may have been biased towards protected lands, leading to an overabundance of records in protected lands. This is likely to be the case in regards to the major regional surveys undertaken to develop the regional forest agreements of the late 1990s. These relatively intensive surveys covered already reserved lands and, in particular, concentrated most effort in forest areas that were considered to be of high conservation value and were subsequently generally added to the reserve system. So, there is likely to be a bias for this reason, but this itself provides an indication that the NRS is providing an important element in the protection of most species. Most species do have many records in the NRS and so have many individuals being protected by it. If the reserve system covers an adequate and representative selection of all Australian vegetation types and is connected sufficiently to allow species to migrate across it, then it should provide very good protection for most vertebrate species into the long-term.

The invertebrates provide a more difficult picture to interpret. There are many species with very few records available and, in fact, it is a rarity for an invertebrate to have more than 100 records in the ANHAT database. Hence, most invertebrates are not able to be considered in regards to their reservation status. Furthermore, their true ranges in Australia and habitat requirements cannot be simply judged and so their conservation very difficult to undertake. It is very difficult to protect something when it is unknown where it occurs or what it requires to survive when it is actually known to be present. Of those species with greater than 10 records, very few spiders have higher percentages of records in reserves. This is likely because they are secretive in nature and records would often come from individuals collected by members of the public and handed to museums and so come from residential areas. Dragonflies and damselflies have somewhat more species with higher reservation rates, probably because they are easily identified in a normal survey and can be recorded relatively opportunistically. There are a number of land snails also with relatively greater levels of reservation. This is explained by the very narrow ranges of many land species. If a species has large parts of its range restricted to reserve areas, it is almost certain to lead to higher percentages of records within reserves. Nevertheless, the overall poor documentation and recording of invertebrates strongly suggests that surveys of the invertebrates within the NRS are urgently required in order to develop a much clearer picture of their relative representation within this system and so the relative conservation value of this system for these taxa.

The findings of the studies of species being found in large or small numbers of reserves provide simple results. Species present in larger numbers of reserves in the NRS are those that are mobile and/or have large ranges. Hence, they are present in or able to easily move through large areas of land and be present in many reserves. Birds and bats are very good examples, having larger numbers of species in many reserves because they move over large areas. On the other hand, the invertebrates provide the major numbers of species present in very few reserves. Many species have very small ranges and the non-flying terrestrial species are relatively immobile. Hence, they are not likely to cover large areas and so can not be present within larger numbers of reserves. Many land snails have very small distributional ranges, having evolved in specific rocky ranges and so will never be represented in many reserves. However, they can be highly reserved if their limited area of habitat is protected.

One of the encouraging results of this study was that nearly all species of all 11 studied groups are found in more than one protected area and that, where a species is found in only a very few protected areas, these are generally areas greater than 1000 ha in size. Larger areas are less prone to edge effects and will usually contain a greater diversity of sites and larger populations, making these populations more robust to stochastic events and have larger genetic pools for evolutionary development. One thousand hectares was chosen as the cut-off size for a larger reserve based on its use for the same purpose by Rodrigues et al 2004. They used this as a minimum effective size for a reserve for a number of taxa. It is not specifically clear that 1000 ha is a suitable size to maintain any specific population over the long-term, but such an area seems likely to provide a significant area of habitat for smaller, relatively immobile species, allowing them to maintain relatively large numbers of individuals. Smaller areas have been found to maintain populations within fragmented landscapes with Drinnan (2005) finding 3.5 ha to be a useful reserve size threshold and, more importantly, patches greater than 50 ha were able to maintain forest interior species and species that were sensitive to human disturbances. Tocher et al (1997) also found no obvious loss of frogs in fragments much smaller than 1000 ha. This suggests that 1000 ha is likely to provide a substantial area of habitat in which to conserve populations of any of the terrestrial invertebrates and the smaller terrestrial vertebrates. They are not necessarily sufficiently large for species that fly or the more mobile vertebrates. Furthermore, we point out that fragmentation of the remaining native vegetation through land clearing remains a serious threat as it will isolate even larger areas of retained land and can render 1000 ha or larger reserves of little value for all but the smallest species over the very long term.

Authors' acknowledgements

We thank Cameron Slatyer and Amy Jarrott for their interest in pursuing this project. We also thank Brooke Glasser for assistance in getting the project up and running and Karl Newport for providing the data and assistance in untangling it. We thank our various departments and organisations for allowing us the time and resources to undertake this work.

Data acknowledgements

The ANHAT data used for this report comes from authoritative sources, but these sources are not perfect. All species names have been confirmed as valid species names, but it is not possible to confirm all species locations. The summary summarises the input data, so errors found in the original data would also be reflected in this report.

The scientific names and taxonomic concepts used in this report reflect an ANHAT view of the data and not necessarily that found in government censuses, databases or other authoritative lists.

Thank you to the following organisations and individuals for providing species location data used in the Australian Natural Heritage Assessment Tool (ANHAT) to generate Parts A and B of this biodiversity summary:

Council of Heads of Australian Faunal Collections (CHAFC)

ANHAT acknowledges the Council of Heads of Australian Fauna Collections (CHAFC) for supply of data from the following CHAFC member institutions:

- Australian Museum
- CSIRO Australian National Insect Collection
- Museum and Art Gallery of the Northern Territory
- Museum Victoria
- Queen Victoria Museum and Art Gallery (Launceston)
- Queensland Museum
- South Australian Museum
- Tasmanian Museum and Art Gallery (Hobart)
- Western Australian Museum

The taxonomic concepts used in this report reflect an ANHAT view of the data and not necessarily that of the CHAFC parent fauna collections.

Council of Heads of Australasian Herbaria (CHAH)

ANHAT acknowledges the Council of Heads of Australasian Herbaria Inc. (CHAH Inc.) and partners in Australia's Virtual Herbarium (AVH) for the supply of data from the AVH. The AVH is a collaborative project of Australian State, Territory and Commonwealth herbaria through CHAH Inc. and includes:

- Australian National Herbarium (CANB)
- National Herbarium of New South Wales (NSW) Botanic Gardens Trust
- Herbarium of the Northern Territory (DNA, NT)

- Queensland Herbarium (BRI)
- State Herbarium of South Australia (AD)
- Tasmanian Herbarium (HO)
- National Herbarium of Victoria (MEL) Royal Botanic Gardens Melbourne
- Western Australian Herbarium (PERTH).

The taxonomic concepts used in this report reflect an ANHAT view of the data and not necessarily that of the AVH parent herbaria.

Other Government Organisations

- Commonwealth Department of Defence
- Commonwealth Department of the Environment, Water, Heritage and the Arts
- New South Wales - Department of Environment, Climate Change and Water
- New South Wales - Department of Industry and Investment (Forests NSW)
- Northern Territory - Department of Natural Resources, Environment, the Arts and Sport
- Queensland – Department of Environment and Resource Management (WildNet)
- South Australia - Department for Environment and Heritage (Biological Survey of South Australia Database)
- Tasmania - Department of Primary Industries, Parks, Water and Environment (Natural Values Atlas)
- Victoria - Department of Sustainability and Environment
- Western Australia - Department of Environment and Conservation

Non-government

- Birds Australia
- Mr David Crosby - Lepidoptera of Victoria

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Appendix 1 Vertebrate summary

Taxa	%Species >45% records in reserves	% Species in >100 PAs	% Species in >100 large PAs	%Species <10% records in reserves	% Species in <5 PAs	% Species in <5 large PAs
Anurans	36.09	11.24	7.69	10.65	14.20	13.02
Mammals	25.21	23.55	19.83	3.31	15.29	16.12
Reptiles	21.24	10.36	7.60	7.94	19.52	20.55
Non-passerines	4.82	68.67	58.63	5.22	2.81	2.81
Passerines	15.11	53.70	49.20	4.18	4.50	5.79

Taxa	No. Species >30 records	Total No. Records >30 records	Total No. Records in NRS >30 records	Mean No. records/specie s	No. Species <30 records	Average % in NRS	No. species less than 10%	No. Species more than 45%	No. species more than 100 reserves	No. species more than 100 Large reserves	No. Species in 5 reserves	No. of species in 5 or less large reserves
Anurans	169	95967	25501	567.85	41	37.86	18	36	19	16	24	22
Mammals	242	412781	130928	1705.71	36	35.84	8	61	57	48	37	39
Reptiles	579	325282	104611	561.8	212	32.43	46	123	60	44	113	119
Non-Passerines	282	3564629	616902	14315.78	3	22.61	13	12	171	146	7	7
Passerines	311	4970597	1032509	15982.63	10	28.93	13	47	167	153	14	18

Appendix 2 Invertebrate summary

Taxa	No. Species	No. Records	No. species >10 records	No records >10	Mean Records per species(>10)	No. species <=10 records	No records <=10	%of species <=10r	No. Records in NRS	% total in NRS	Mean % in NRS	No. Species >45% in NRS	% spp. >45% in NRS	No. Species <10% in NRS	% sp <10%
Odonata	283	9751	168	9227	55	115	524	18.91	2440	26.44	28.9	38	22.62	30	17.86
Lepidoptera	442	53246	362	52914	146.17	80	332	18.14	12178	23.01	24.4	46	12.71	49	13.54
Pulmonata	1914	43124	727	38702	53.2	1187	4422	62.02	11105	28.69	30.6	178	24.48	159	21.87
Mygalomorphae	609	9009	128	7703	60.2	481	1306	78.98	1134	14.72	23	22	17.19	49	38.28
Sparassidae	116	1162	30	889	29.6	86	273	74.14	216	24.30	28	6	20.00	7	23.33
Carabidae	1203	5582	204	6537	32	999	3032	83.04	2877	44.01	37.2	74	36.27	49	24.02
Dytiscidae	123	1888	50	1668	33.4	73	220	57.94	545	32.67	33.2	6	12.00	0	0.00

Taxa	No. Sp >100 Reserves	No species more than 100 Large reserves	No Species in 5 reserves	No of species in 5 or less large reserves	Well Reserved	Well Represented	Represented Large reserves	Poorly Reserved	Poorly Represented	Poorly represented in large reserves
Odonata	0	0	90	89	22.62	0.00	0.00	17.86	53.57	52.98
Lepidoptera	3	1	130	136	12.71	0.83	0.28	13.54	35.91	37.57
Pulmonata	0	0	402	423	24.48	0.00	0.00	21.87	55.30	58.18
Mygalomorphae	0	0	61	65	17.19	0.00	0.00	38.28	47.66	50.78
Sparassidae	0	0	13	14	20.00	0.00	0.00	23.33	43.33	46.67
Carabidae	0	0	130	132	36.27	0.00	0.00	24.02	63.73	64.71
Dytiscidae	0	0	31	31	12.00	0.00	0.00	0.00	62.00	62.00