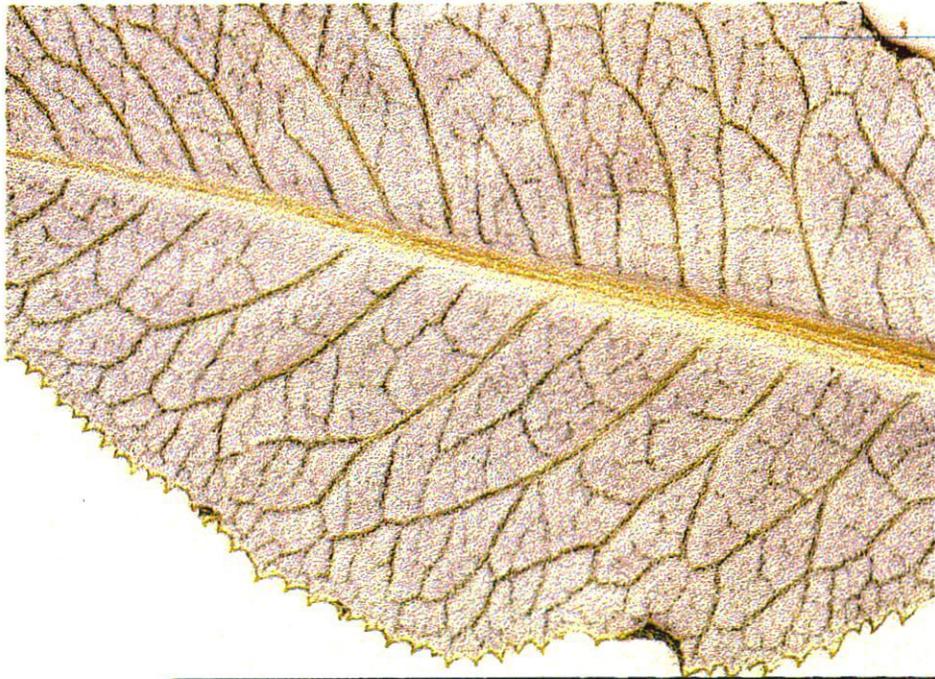

DEVELOPMENT OF A BIODIVERSITY DATABASE FOR ASSESSING CONSERVATION VALUES KANGAROO ISLAND CASE STUDY



By
A.C.Robinson, P.K.Gullan, K.D.Casperson and S.J.Pillman

Natural Resources Group
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DEVELOPMENT OF A BIODIVERSITY DATABASE
FOR ASSESSING CONSERVATION VALUES
KANGAROO ISLAND CASE STUDY



by
A.C.Robinson, P.K. Gullan*, K.D.Casperson and S.J.Pillman

Biological Survey and Research
Natural Resources Group
Department of Environment and Natural Resources, South Australia

*Director
Viridans Pty Ltd

1995

The views and opinions expressed in this report are those of the authors and do not reflect those of the Commonwealth Government, the Minister for the Environment, Sport and Territories, or the Director of the Australian Nature Conservation Agency

AUTHORS

**A. C. Robinson, K.D.Casperson and S.J.Pillman, Biological Survey and Research, Natural Resources Group, Department of Environment and Natural Resources, South Australia
GPO Box 1047 ADELAIDE 5001**

P.K.Gullan, Viridans Pty Ltd, Suite 4 614 Hawthorn Road, Brighton East, Victoria 3187

CARTOGRAPHY AND DESIGN

**Biological Survey and Research Group, Resource Management Branch
©Director, Australian Nature Conservation Agency
1995**

Cover Design

Compiled from the title screen graphics of the South Australian Biodiversity Database using COREL DRAW. The upper image is the underside of a leaf of the pale groundsel (*Senecio hypoleucus*) and the lower image is a tail feather of the Glossy Black Cockatoo (*Calyptorhynchus lathamii*)



Development of a Biodiversity Database

Abstract

In South Australia, databases which contain records of species of vascular plants and terrestrial vertebrate animals where the records are associated with an accurate geocode, are dispersed between a number of Government agencies including the Department of Environment and Natural Resources and the Department of Housing and Urban Development as well as the long term custodians of such data at the South Australian Museum and the State Herbarium. These databases have been developed for specialist uses tailored to the particular institution and they reside on a variety of hardware and software types. Common to all these databases is a basic core of information, namely a species name, date of collection or observation, a geocode and some type of record identifier.

This project set up a derived database based on this core data using a specialist biological databasing software package produced by Viridans Pty Ltd of Victoria. This software allows the development of such a derived database by using already established South Australian taxonomic databases for vascular plants and vertebrate fauna as the link that ties all these derived databases together.

In addition the Viridans package allows map coverages derived from the South Australian Geographic Information System in ARC/INFO format to be modified to an extent that allows them to run effectively on this PC-based system and then use them to produce distribution maps from the derived databases onto a variety of map bases.

The final aspect of the Viridans package provides the ability to link the database to scanned photographic images of both individual species of flora and fauna and to sample site photographs which are a part of the biological survey and pastoral management components of the derived database.

The project produced a complete pilot database for Kangaroo Island which included both Museum and Herbarium data while the total State coverage is at present confined to those databases derived from the Biological Survey of South Australia, the RAOU Bird Atlas, the Pastoral Assessment sites and a list of vertebrates from areas on the Register of the National Estate.

It is the first time that this range of databases have been brought together in South Australia.

Some preliminary biodiversity analysis has also been carried out on the Kangaroo Island sub-set of data using some of the standard analytical tools available in the Viridans software package.

Development of a Biodiversity Database

Contents

	Page
ABSTRACT	V
LIST OF FIGURES	IX
LIST OF TABLES	XI
LIST OF APPENDICES	XII
ACKNOWLEDGMENTS	XV
INTRODUCTION	1
METHODS	3
DATABASES	3
KANGAROO ISLAND DATABASE	5
MAP COVERAGE	9
PHOTOGRAPHIC IMAGES	9
DESCRIPTIVE TEXT	12
RESULTS	15
FUTURE DEVELOPMENTS	21
REFERENCES	23
APPENDICES	25

Development of a Biodiversity Database

Figures

		Page
Fig. 1	The location of site-based flora data in the database in October 1995.	6
Fig. 2	The location of site-based fauna data in the database in October 1995	7
Fig. 3	The location of site-based flora data for Kangaroo island	8
Fig. 4	The location of site-based fauna data for Kangaroo Island	9
Fig. 5	The vegetation coverage of South Australia in the database	10
Fig. 6	The high resolution map of Kangaroo Island showing conservation land types.	11
Fig. 7	A standard printout of an animal image and associated information	13
Fig. 8	A standard printout of site location data	14
Fig. 9	The source of site data used in the Kangaroo Island biodiversity analysis	15
Fig. 10	The number of species from each source included in the Kangaroo Island biodiversity analysis.	16
Fig. 11	The Kangaroo island biodiversity grid for flora.	17
Fig. 12	The Kangaroo Island biodiversity grid for fauna.	17
Fig. 13	The relative contribution of the various data sources for the different conservation land uses on Kangaroo Island.	18
Fig. 14	The percent occurrence of the total vertebrate fauna in the database in the different conservation land uses on Kangaroo island.	19

Development of a Biodiversity Database

Tables

		Page
Table 1	Composition of the Flora databases at October 1995.	3
Table 2	Composition of the Fauna databases at October 1995.	4
Table 3	A comparison of site and species data from survey-based and specimen-based databases for South Australia and for Kangaroo Island.	6
Table 4	Number of quadrats and the total area of the four mapped types of conservation land on Kangaroo Island.	18
Table 5	Number of fauna species recorded for each different conservation land use on Kangaroo Island.	19
Table 6	The numbers of species recorded only for a particular range of conservation land uses.	19

Development of a Biodiversity Database

Appendices

	Page
Appendix I	Total Flora List for Kangaroo Island from a grid search of the database. 25-
Appendix II	Total Fauna List for Kangaroo Island from a grid search of the database. 31
Appendix III	Frequency list of terrestrial vertebrates recorded in Conservation Parks on Kangaroo Island. 35
Appendix IV	Taxonomic list of terrestrial vertebrates recorded in Conservation Parks on Kangaroo Island. 41

Development of a Biodiversity Database

Acknowledgments

This project was made possible by a grant of \$48 000 from the Australian Nature Conservation Agency National Reserves System Cooperative Program and we thank them for their invaluable support and to Dr Ian Cresswell for his helpful suggestions as the project progressed.

The data that comprises this database was collected by thousands of dedicated field biologists who, for over 100 years have been working, often in very difficult conditions, to collect, catalogue and describe the vascular plants and vertebrate fauna of South Australia.

We thank members of the State Herbarium who have supported this project, in particular, Dr Bill Barker, Dr John Jessop and Dr Laurie Haegi.

We thank members of the South Australian Museum who also supported the project, in particular, Dr Mark Hutchinson, Ms Lynette Queale and Dr Chris Watts.

We thank members of the Geographic Analysis and Research Group of the Department of Housing and Urban Development who are responsible for the South Australian Geographic Information System for their cooperation in providing ARC/INFO map layers in the correct formats to be incorporated into the Viridans software, in particular Mr Iain Malcolm and Mr David Goodwins.

The Pastoral Management group in the Department of Environment and Natural Resources helped with the development of the project, provided data from their pastoral lease assessments and greatly assisted with computing problems, we particularly thank Mr Ashleigh Coombs.

The Nature Conservation Society of South Australia, as recipients of a grant which enabled the development of the database of lists of vertebrate species from areas on the Register of the National Estate which provided another important source of data for this work. Thanks for the efforts of Ms Helen Owens, their project officer for this program.

The many photographers who over the years have contributed to the Biological Survey and Research Section photographic collection and also to Victorian photographers who have provided photographs to Viridans all contributed to the high quality of the images included in the final database.

DENR field staff on Kangaroo Island particularly Mr Fraser Vickery, Mr Robert Ellis and Mr Jodie Gates for their early enthusiastic support for the system to be trialed on the island, we consider that they will find the results a useful aid in conservation management.

Mr Brenton Grear, and consultant Mr Chris Prescott who are responsible for the development of the Protected Areas Management System being developed for the Natural Resources Group of DENR discussed ways of linking the Viridans database into the PAMS structure, avoiding duplication of data and began consideration of responsibilities for maintenance of particular components of these two databases.

Finally, thanks to the members of the Biological Survey Coordinating Committee for their support over the years of systematic biological survey of this State which has allowed this database to be as extensive and accurate as it is.

Introduction

BACKGROUND AND AIMS

For some years now the Biological Survey and Research Section, Resource Management Branch, Department of Environment and Natural Resources and the South Australian Museum have been carrying out a series of systematic surveys of the vegetation and vertebrate fauna of large regions of South Australia. Previous surveys have been conducted or are currently in progress for the States Offshore Islands (excluding Kangaroo Island) (1971 - 1982), the South-East Coast (1982 - 1983), Cooper Creek (1983, 1991), the Nullarbor Plain (1984), the Gawler Ranges (1985), the Yellabinna area (1987), Kangaroo Island (1989 - 1990), Strezelecki Dunefields (1988 - 1992), Murray Mallee (1990 - 1991) Anangu Pitjantjatjara Lands (1991 -), the South Olary Plains (1991 - 1992), Diamantina River Area (1994), the Stony Deserts (1994 -) the North Olary Plains (1995-), the Grassy Woodlands of the South East (1995-) and the Grasslands of the Mount Lofty Block (1995-). With the exception of the Offshore Island surveys and the recent more specialised habitat oriented surveys, the regional boundaries of these surveys have been based on the Environmental Regions and the Environmental Associations described and mapped for South Australia (Laut, Heyligers, Keig, Loffler, Margules, Scott and Sullivan, 1977). In addition to these vegetation and vertebrate surveys, vegetation sampling, analysis and mapping only has been completed or is in progress for the following areas:- South Mount Lofty Ranges (1986), Tallaringa Area (1988), Murray Mallee (1990), South-East (1991), Western Murray Flats (1991), Mid-North (1992), Burra Hills (1994), Yorke Peninsula (1994), Southern Eyre Peninsula (1995-) and the South Australian Coast (1995-).

A relatively recent development in the biological survey programme differs somewhat from those listed above in that they have been carried out in response to a need for biological information relating to a particular

development proposal. The first of these development oriented biological surveys was carried out in 1994 at Messent Conservation Park in order to adequately assess the possible impacts of a surface water drain proposed to be cut across the south east corner of the park as part of the Upper South East Dryland Salinity and Flood Management Plan. In 1995 a survey of Yumbarra Conservation Park was completed in response to a mineral exploration proposal for the park. Although these surveys were related to particular developments with more intensive sampling than the regional surveys conducted previously, they utilised the standard sampling, analysis and presentation techniques developed as part of the Biological Survey of South Australia.

These surveys are planned by the South Australian Biological Survey Coordinating Committee which currently consists of the following representatives: Dr Tony Robinson, Chair, (Manager, Biological Survey and Research, Resource Management Branch, DENR), Mr Keith Casperson, (Scientific Officer, Biological Survey and Research Section, Resource Management Branch, DENR), Mr Peter Copley, (Scientific Officer, Biological Survey and Research Section, Resource Management Branch, DENR), Dr Karen Edyvane, (Leader, Environment and Conservation Program, South Australian Research and Development Institute), Mr Doug Fotheringham, (Senior Scientific Officer, Coastal Management, Resource Management Branch, DENR), Dr Laurie Haegi, (Assistant Director, Botanic Garden, DENR), Ms Leonie Heard, (Scientific Officer, Geographic Analysis and Research, Department of Housing and Urban Development), Dr Mark Hutchinson, (Curator of Reptiles and Amphibians, South Australian Museum), Dr Bob Inns, (Manager, Wildlife Management, Resource Management Branch, DENR), Mr David Maschmedt, (Land Evaluation Officer, Primary Industries South Australia), Mr Rodger Tynan, (Senior Rangelands Officer, Outback Management,

Resource Management Branch, DENR), Dr Chris Watts, (Chief Scientist, South Australian Museum).

Under the Australian Nature Conservation Agency (ANCA) National Reserves System Cooperative Program 1994/95 a grant of \$48 000 was made to the Biological Survey and Research Section, DENR for the 'Development of methodology applicable to ARC/INFO and biological databases to illustrate nature conservation values of designated areas. In March 1995 this project was re-negotiated with ANCA under the title 'Development of a biodiversity database for assessing conservation values - Kangaroo Island case study'. The project was to:

- 1 Establish a derived database and information retrieval system using commercially available software and taking into account SA Government computing standards
- 2 Incorporate into this software package a series of statewide biogeographic, topographic and selected land tenure coverage currently held in digital ARC/INFO format in the South Australian GIS.
- 3 Incorporate some more detailed coverage for Kangaroo Island ie:- floristic vegetation and NPWS reserve fire boundaries from the GIS.
- 4 Derive a read-only database on the vegetation and vertebrate fauna of Kangaroo Island from the following sources:
 - a) The South Australian Biological Survey Database
 - b) The South Australian Museum specimen databases for mammals, some birds, reptiles and amphibians
 - c) The State Herbarium specimen databases for some plants
 - d) The Vertebrate lists for areas of the National Estate developed by the Nature Conservation Society of S.A.
 - e) The Protected Area Management System of DENR
- 5 Develop simple data transfer procedures from all these databases into the read-only software package to allow regular updating of the database and potential expansion to cover the whole State.

6 Establish this software at a series of selected locations, including the two NPWS District offices on Kangaroo Island the South Australian Museum, the State Herbarium and the Kensington offices of DENR and train selected staff in software use.

7 Use this integrated Kangaroo Island data set to develop and map indices of biodiversity and examine the existing conservation reserve and heritage agreement network to determine its representation of the island's biodiversity.

8 Comment on applicability of the method for broader use in the development of a National Reserve System.

Negotiations were begun through the Biological Survey Coordinating Committee to obtain access to appropriate data from Kangaroo Island held by the South Australian Museum, the State Herbarium, and the Pastoral Management Branch to add to biological survey and related data already held by the Biological Survey and Research Section. In addition appropriate maps were sourced from the South Australian Geographic Information System.

In June 1995 a specialist biological databasing company, Viridans Pty Ltd was contracted to establish a statewide biological database for vascular plants and terrestrial vertebrates of South Australia.

The specific aim of the consultancy was to use this statewide database as a framework for more intensive biodiversity study of Kangaroo Island.

In addition to items 1- 8 above the consultancy was required:

To derive read-only files on the vegetation and / or vertebrate fauna of the whole State from the following sources:

- a) The South Australian Biological Survey Databases
- b) The Royal Australian Ornithological Association Bird Atlas database
- c) The property assessment files of the Pastoral Management Branch at DENR
- d) The rare plant database at DENR.

Development of a Biodiversity Database

Methods

DATABASES

Databases on the distribution of South Australian vascular plants and vertebrates were supplied by DENR in June 1995. In addition databases - for Kangaroo Island only - were provided by the South Australian Museum (reptiles, amphibians and terrestrial mammals), and the State Herbarium (vascular plants)

The databases were transported to Melbourne on large-capacity, removable disk drives and were converted to Viridans database format (VDF) during June and July.

Twelve distribution databases were established in all and each was assigned a letter code. In addition the twelve were broken into two database sets - one for flora, one for fauna. These databases are as follows:

Table 1
Composition of the Flora databases at October 1995

DATABASE	NO. OF SITES	NO. OF SPECIES RECORDS
DENR survey data (letter code S)	11 458	275 583
DENR opportune data (letter code O)	245	2 177
DENR rare plant records (letter code R)	794	1 284
DENR non-rare plant species associated with rare plants (letter code A)	776	4 916
DENR pastoral lease assessment plots (letter code L)	2 064	35 266
Herbarium specimen records (letter code H)	5 591	5 591

Summary ten-minute grid data (incorporates all data from other databases into a grid system - letter code G)

Table 2
Composition of the Fauna databases at October 1995

DATABASE	NO. OF SITES	NO. OF SPECIES RECORDS
DENR survey data (letter code S)	1 592	99 684
DENR opportune data (letter code O)	6 015	10 362
NCSSA National Estate lists (letter code P)	291	14 622
RAOU Bird Atlas data (letter code A)	1 609	75 965
Museum specimen records (letter code M)	1 981	1 981

Summary ten-minute grid data (incorporates all data from other databases into a grid system - letter code G)

Each of the database sets use a lookup table of scientific and common names which are referenced to the databases via a unique species code.

The flora lookup table consists of 6 098 taxa
The fauna lookup table consists of 2 381 taxa

Further details of the main databases that the Viridans databases were derived from are given below:

Biological Survey of South Australia

The standard database for all these surveys are held as part of the South Australian Geographic Information System (GIS) which is managed by the Geographic Analysis and Research Group (GAR) in the Department of Housing and Urban Development. They are held on a Hewlett Packard 900/847S with an HP-UNIX 9.04 operating system. Applications are currently written in POWERHOUSE but they are in the process of conversion to ORACLE.

South Australian Museum

The South Australian Museum has a large collection of mammals, birds, reptiles and amphibians from South Australia with collections dating back to the late 1800's. At present only the mammal, reptile and

amphibian collections are computerised and they are stored on a PC-based system using TITAN software. All voucher specimens collected as part of the Biological Survey of South Australia are lodged in the Museum collections. The Vertebrate Taxonomic database which is included in the SURVEY database has been developed by the appropriate curators and collection managers at the museum and this list is published periodically, the most recent edition being Watts (1990). The taxonomic list SAVERT which forms part of the present databasing project is an updated version of Watts (1990). It is closely similar to but not identical with the taxonomic list in the Museum's TITAN database.

State Herbarium

The State Herbarium of South Australia, like the museum, has a very large collection of South Australian vascular plant specimens numbering in the order of 400 000. All voucher specimens collected as part of the Biological Survey of South Australia are lodged in the Herbarium collections. They currently have almost 60 000 specimens databased on a PC-based TITAN system. Groups on the database include, *Eucalyptus*, Casuarinaceae, Selected Grass Genera, Solanaceae (most), Malvaceae (most), Scrophulariaceae and *Spyridium* (part). The Vascular Plant Taxonomic database which is included in the SURVEY database has been developed by the appropriate taxonomists at the State Herbarium and this list is published

periodically, the most recent edition being Jessop (1993). The taxonomic list SAFLORA which forms part of the present databasing project is an updated version of Jessop (1993). It is closely similar to but not identical with the taxonomic list in the Herbarium's TITAN database.

Pastoral Management DENR

Since the early 1980's management advice to pastoral lessees in the rangeland cattle and sheep grazing areas of South Australia has been based on a land systems-based Rangeland Assessment process. Part of this approach involves setting up rangeland assessment sites at selected locations in each paddock of each property and collecting a standard set of data from each site. These sites are part of an ongoing monitoring programme to determine the affects of pastoral land management practices on natural vegetation. Plant species lists (sometimes for the perennial species only, sometimes including ephemeral species) are available for each of these sites. They are stored in an Microsoft ACCESS database. The taxonomic list in this database is similar to but not identical with SAFLORA. In the current project pastoral assessment site species list data was down-loaded from sites from pastoral, leases in the Kingoonya and Gawler Ranges Soil Conservation Districts

Royal Australian Ornithological Union Bird Atlas

From 1977 to 1981 the RAOU coordinated a large group of volunteer ornithologists from throughout Australia to visit and compile lists of bird species from every 1 degree latitude/longitude grid over Australia. In a large number of cases these records were recorded and stored in 10 minute latitude/longitude grid form. DENR has a set of RAOU Bird Atlas data available on the mainframe computer which is now part of the South Australian GIS in the Department of Housing and Urban Development. The present Viridans database utilises this RAOU Bird Atlas species records located by the centroids of the 10 minute grid

KANGAROO ISLAND DATABASE

As part of this project a separate flora and fauna database was established for Kangaroo Island. This is a model of the type of databases

that could in future be supplied to all regional offices of DENR. Table 3 shows the current status of the Kangaroo Island database.

Note that the Kangaroo Island offices were only supplied with the ten minute grid databases and not the site databases for the whole State.

In Table 3, the number of species registered for South Australia is determined from the standard species lists (SAFLORA and SAVERT), not the number recorded from sites in the total database, whereas the number recorded for Kangaroo Island is based on the survey data.

It should also be noted that since the Museum and Herbarium data was only from Kangaroo Island so the number of records for SA as a whole is not indicative of the Museum and Herbarium databases as a whole.

In addition, there is data from both of these institutions that have not been databased yet. For example, the museum records do not include any information on birds and there are still about 4 000 plant records from Kangaroo Island in the Herbarium which have not yet been added to their database.

Within these constraints then, the purpose of this table therefore is to demonstrate the relative contributions to the database so far from survey-based data compared with specimen-based data and how the Kangaroo Island database compares with that of the State as a whole.

Table 3

A comparison of site and species data from survey-based and specimen-based databases for South Australia and for Kangaroo Island

INFORMATION TYPE	SOUTH AUSTRALIA	KANGAROO ISLAND
Total Number of Flora species	6 098	1 063
Total Number of Fauna species	2 318	317
Total Number of Flora sample sites	20 016	5 086
Total Number of Fauna sample sites	11 448	2 448
Number of Flora survey sites	15 478	548
Number of species from Flora surveys	3 616	844
Number of Herbarium specimen sites	5 086	5 086
Number of species from Herbarium specimens	862	862
Number of Fauna survey sites	9 984	944
Number of species from fauna survey	707	290
Number of Museum specimen sites	1 504	1 504
Number of species from Museum specimens	67	67

The distribution of these sample sites across South Australia and on Kangaroo Island are shown in Figures 1-4

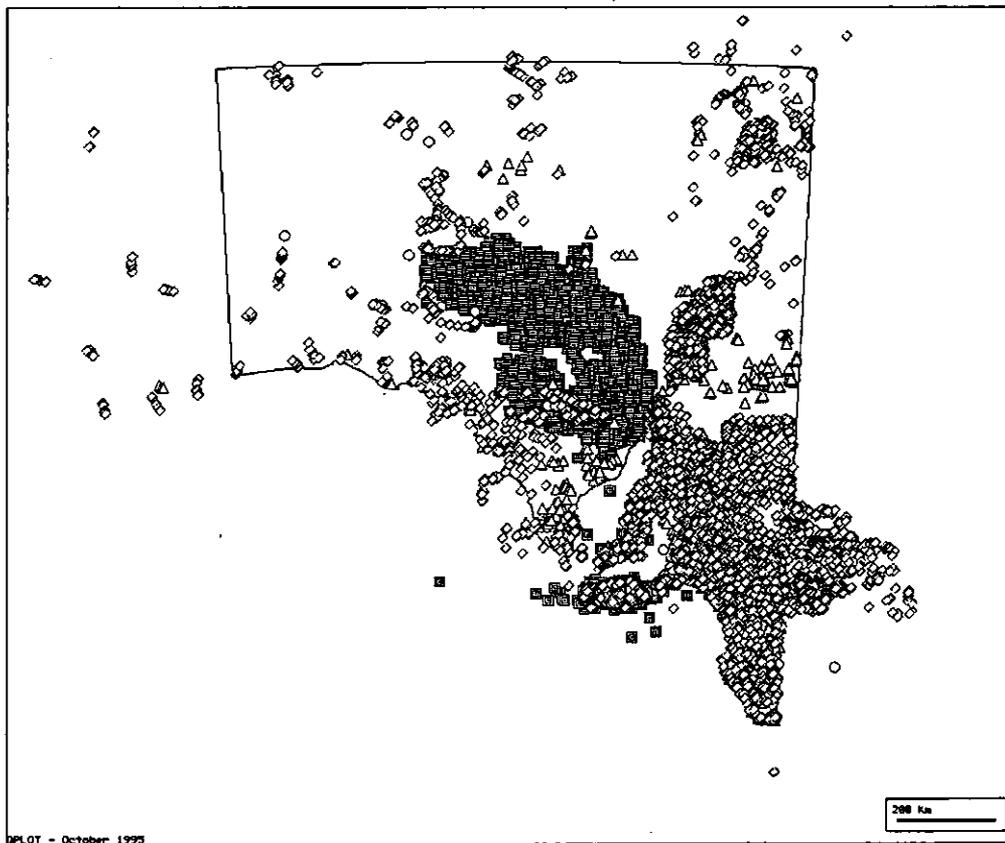


Figure 1
The location of site-based flora data in the database in October 1995. Databases H, L, O, R, A and S are represented and each is indicated with a different symbol

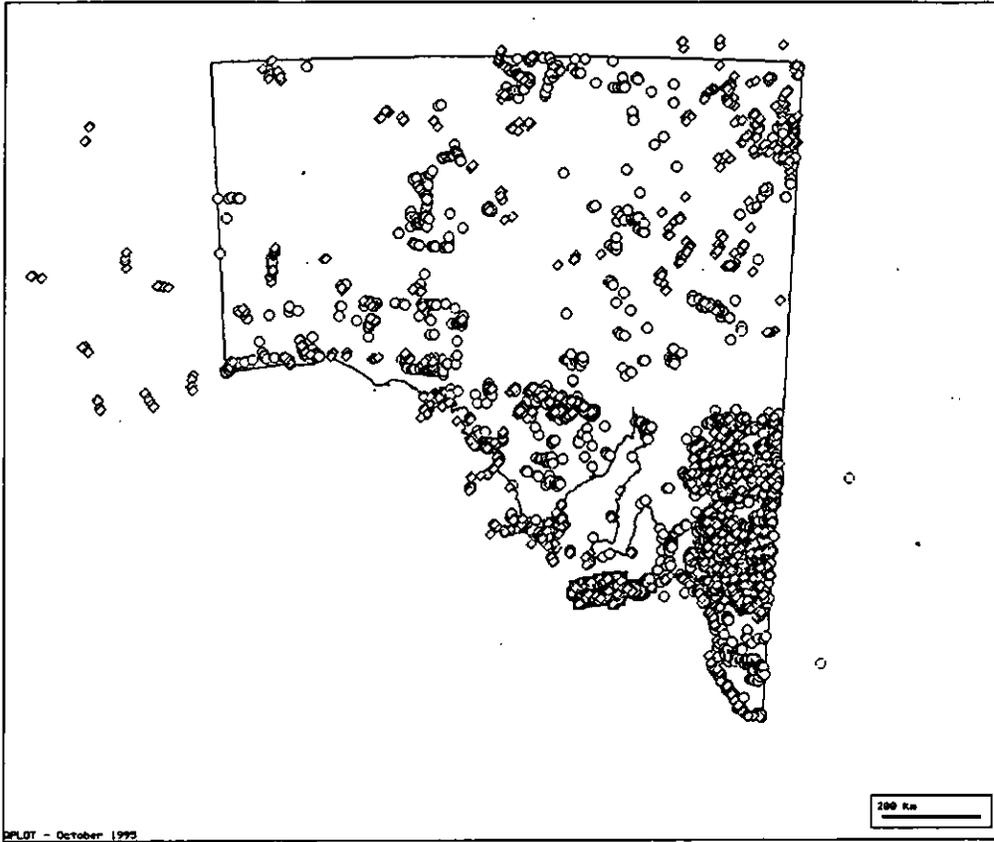


Figure 2
The location of site-based fauna data in the database on October 1995. Databases M, O and S are represented and each is indicated with a different symbol

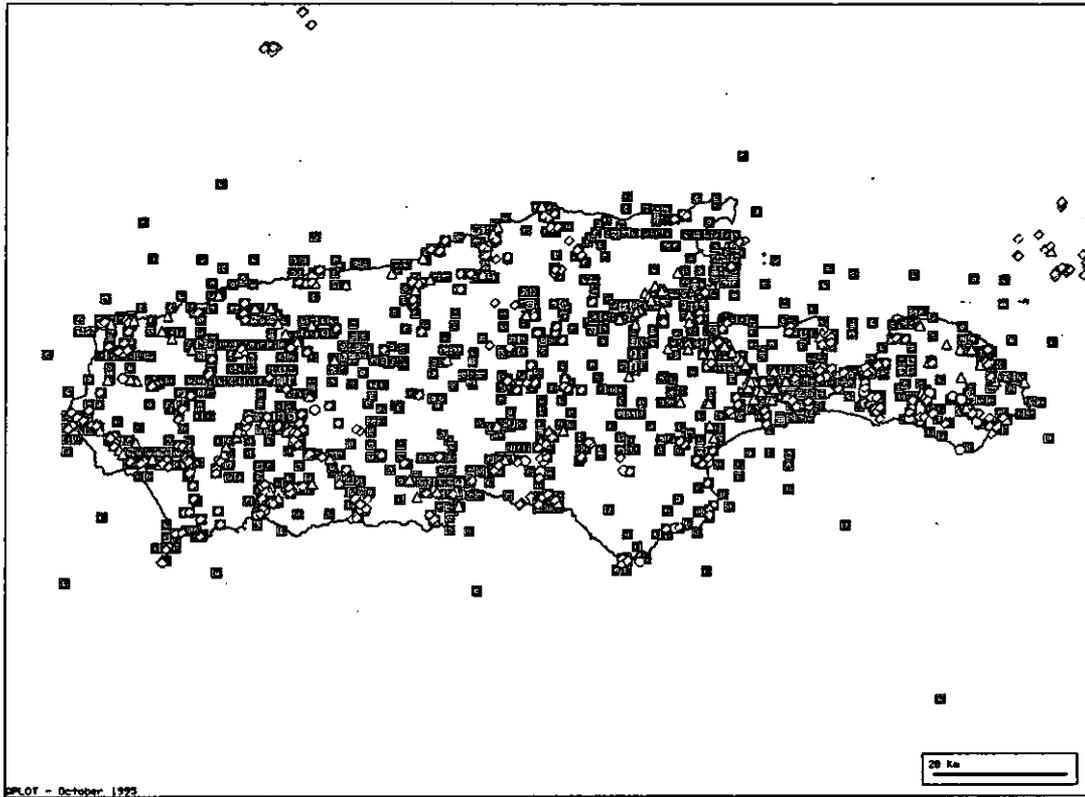


Figure 3
The location of site-based flora data for Kangaroo Island in the database on October 1995. Databases H, O and R are represented and each is indicated with a different symbol

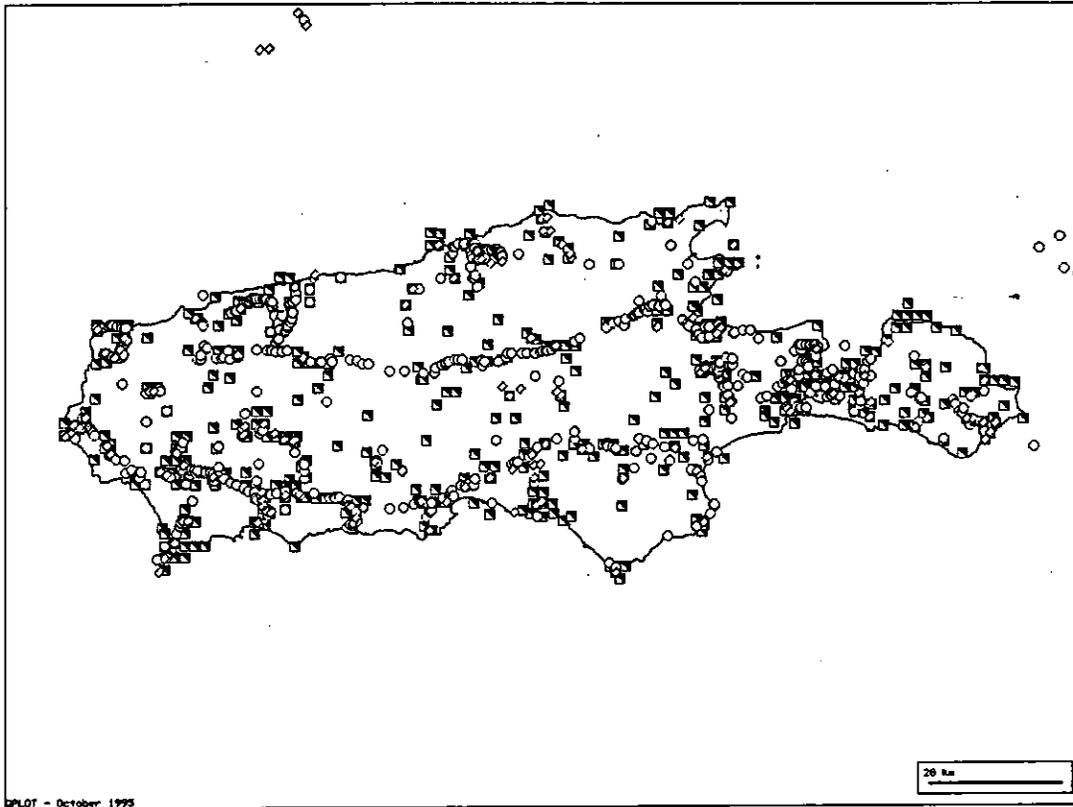


Figure 4
The location of site-based fauna data for Kangaroo Island in the database on October 1995. Databases M, O and S are represented and each is indicated with a different symbol

MAP COVERAGE

Digital vegetation maps produced as part of the Biological Survey of South Australia are also part of the South Australian GIS and are held on ESRI ARC-INFO software.

Viridans provided a 1:1 000 000 map base for South Australia in digital form which has been set up to work in the Viridans system. This map includes coastline, state boundaries, rivers, lakes, roads, built-up areas, town names and topography. A printout of the high resolution version of this map with the topographic background is shown in Figure 5.

Viridans also digitised and provided 1: 1 000 000 cover of original vegetation and soil for South Australia. The vegetation map is shown in Figure 6.

The DHUD supplied Viridans with 1:50 000 scale digital data for Kangaroo Island in ARC/INFO format from the South Australian

GIS. Coverage included coastline, roads, rivers, lakes, park boundaries and heritage agreement area boundaries. Some editing was done on the detailed coverage such as rivers and contours to produce the final coverage. This was necessary as the Viridans package is PC-based and some large coverage's which work well on a mini-computer will be too slow on a PC.

PHOTOGRAPHIC IMAGES

Flora and Fauna

Part of the Viridans software is the facility to display descriptive illustrations of the flora and fauna in the database. Viridans has captured images of a number of South Australian species and these were incorporated into the database provided. In addition a large number of images of the flora and fauna of Kangaroo Island were provided by DENR for the project.

All Biological Survey of South Australia sample sites are photographed in a standard manner as are all Pastoral Management rangeland assessment sites. All vertebrate sampling sites and all rangeland assessment sites are also permanently marked in the field and located as accurately as possible with current technology. The set of these site photopoints for all sites on Kangaroo Island were digitised and included in the Viridans database using the same conventions as for the plant and animal images.

Selected slides were scanned by Kodak Australia Pty Ltd and transferred to Photo CD as a standard "16 Base" product. Using proprietary image processing software the 512x768 pixel, 24 Bit colour, PCD image was colour optimised and sharpened as required and converted to 24 Bit colour PCX format.

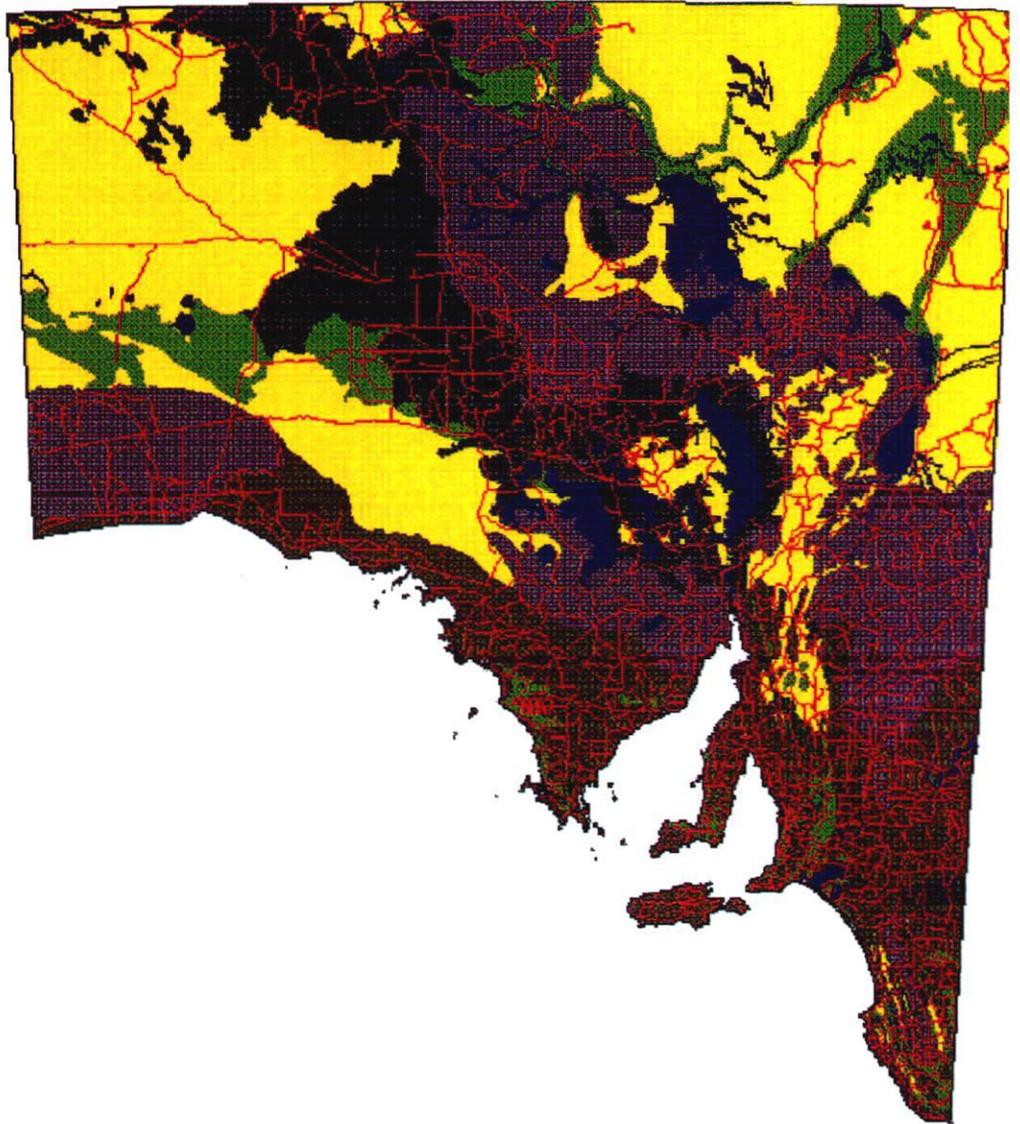
For photopoint images and full screen images for individual species, standard cut and paste techniques were used on the above images to produce a collage on a standard grey background. The final image was saved as a 800x600 pixel, 256 colour, PCX image. The images are stored for the Viridans database in this format to allow them to load quickly, look good on the computer screen and give acceptable quality when printed

For smaller pictures used to illustrate species on species lists an appropriate portion of the images were cut and saved as 160x120 pixel, 256 colour BMP images.

An example of an animal image using one of the Viridans standard retrievals is shown in Figure 7. A site photo, again using a standard Viridans retrieval is shown in Figure 8.

DESCRIPTIVE TEXT

In addition to the illustrations the Viridans software can incorporate descriptive text on the flora and fauna into the database. Those texts that have been completed for South Australian species are incorporated into the database (see Figure 7).



LEGEND	
	Forest
	Woodland
	Tall Shrubland
	Shrubland
	Grassland
	Coastal Succession

Figure 5. The vegetation coverage of South Australia in the database

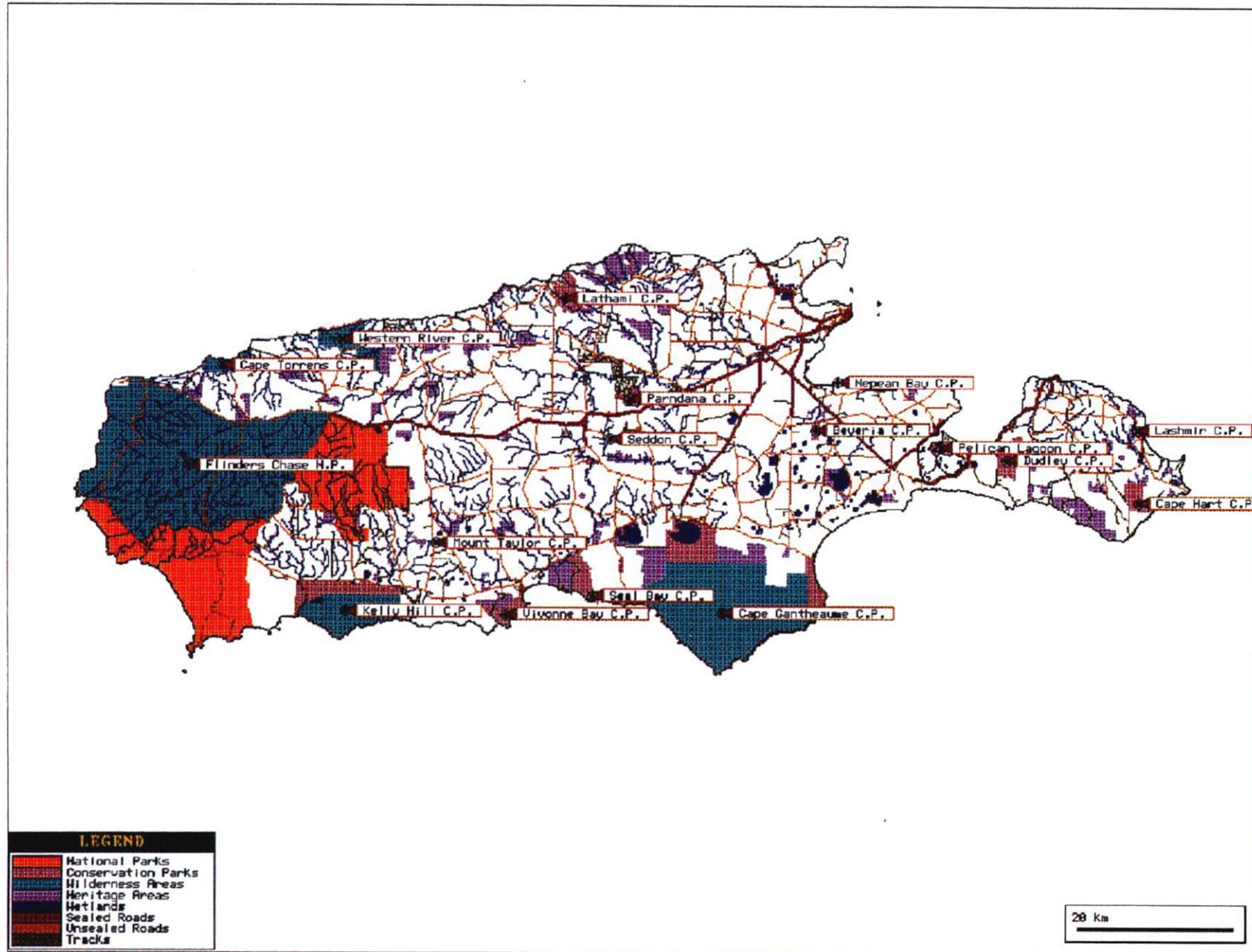


Figure 6. The high resolution map of Kangaroo Island showing conservation land types

Cape Barren Goose

Cereopsis novaehollandiae novaehollandiae

GENERAL APPEARANCE: A large, pale-grey goose with a short black and yellow bill.

CALL: A loud honk, usually uttered in flight or when disturbed.

DIET: Grasses, sedges and herbs found in the open grassy areas in which they graze.

NEST: A mat of grassy or sedgey material often arranged in a slight depression in the ground.

NOTES: This is one of the rarest species of goose whose population has decreased dramatically since European settlement of the native grasslands which formed its natural habitat. It is found most often in near-coastal grasslands (both native and non-native) in summer. It grazes in these areas but breeds only on offshore islands.

PHOTO CREDIT: Mirdans Biological Databases

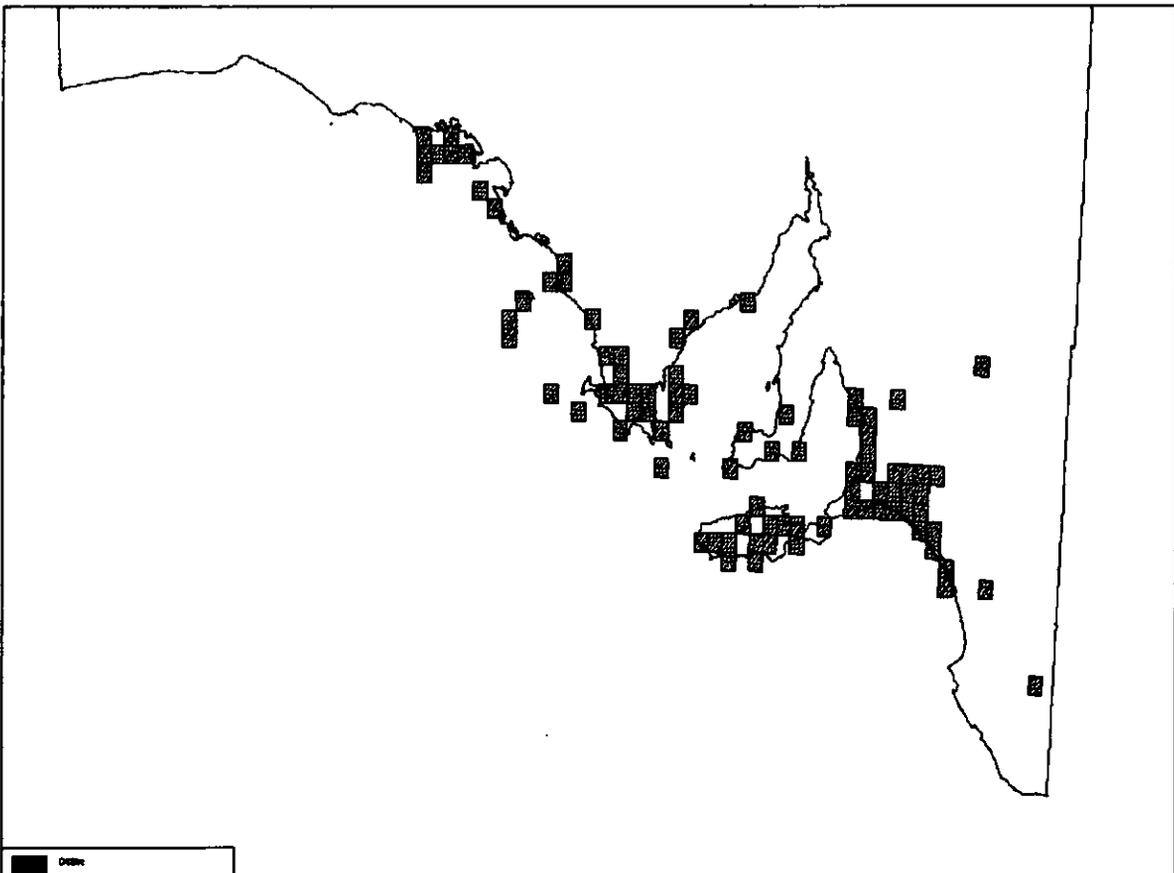


Figure 7. A standard printout of an animal image and associated information

S04446

Number of Spp: 17 Longitude: +136°34'02" Latitude: -35°52'32" Date: 08 Nov 1990
Vegetation: Altitude: 86 Collector: 015WB0130001

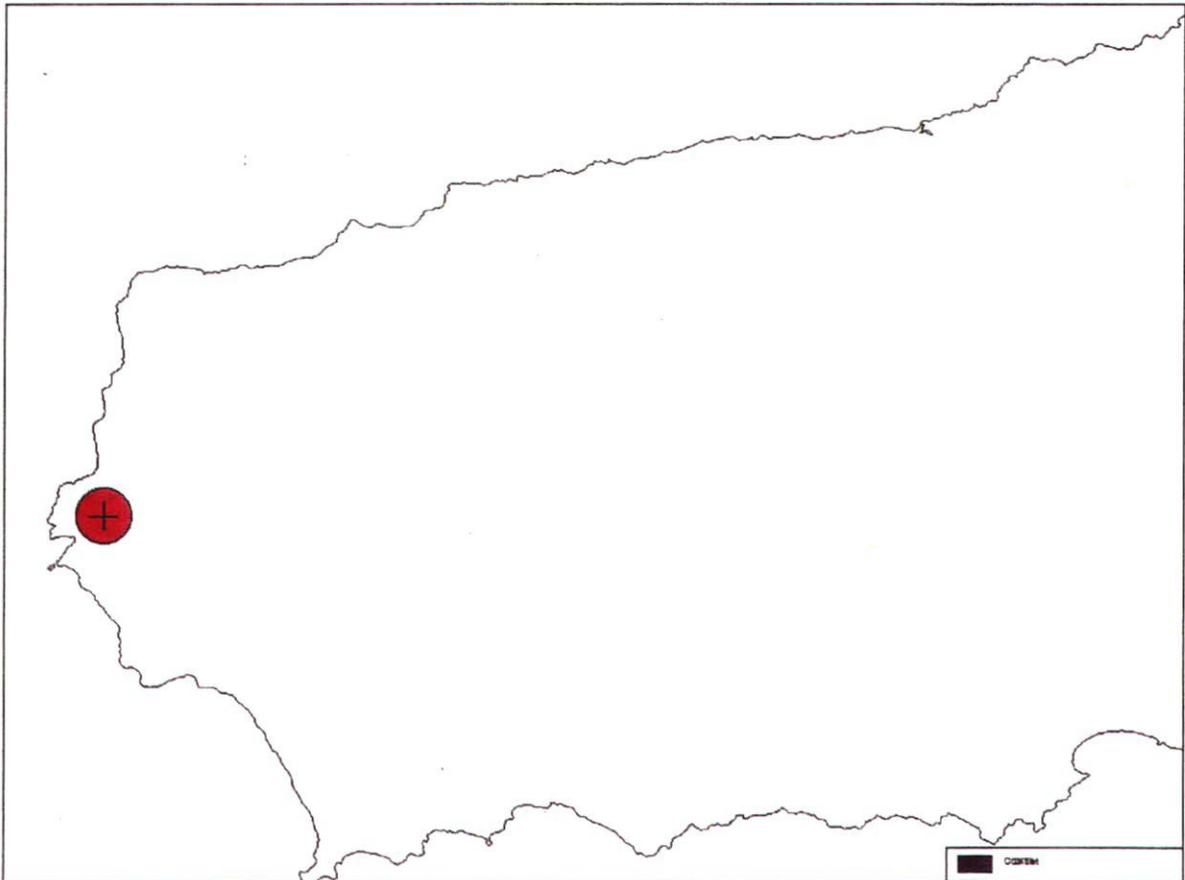


Figure 8. A standard printout of site location data

Development of a Biodiversity Database

Results

BIODIVERSITY OF KANGAROO ISLAND

The Viridans software allows a number of analytical procedures to be run which produce standard outputs in the form of maps and text which can be readily transported and manipulated using MICROSOFT OFFICE software which is the current DENR standard. All illustrative material in this section has been produced in this way.

The biodiversity database for Kangaroo Island at present consists of 'sites' in four separate databases, DENR Flora Survey, DENR Fauna Survey, State Herbarium Records and SA Museum Records. Note that a single 'site' in the first two contains multiple species records while herbarium and museum 'sites' are a locality record for a single species. The sources of data in this analysis are shown in Figure 9

SOURCE OF SITE DATA IN KANGAROO ISLAND BIODIVERSITY ANALYSIS

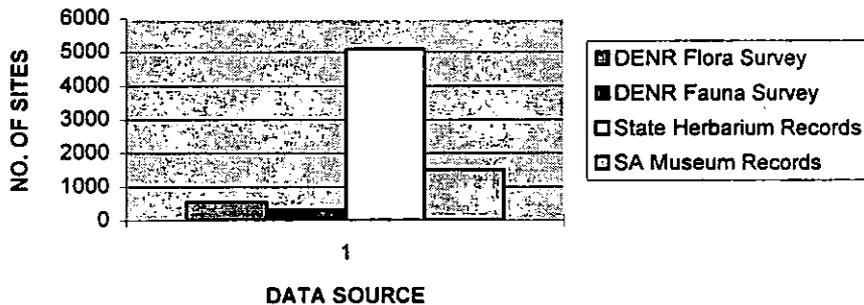


Figure 9.
The sources of site data used in the Kangaroo Island Biodiversity analysis

Representation on the basis of number of species from each source is shown in Figure 10

SOURCE OF SPECIES DATA IN KANGAROO ISLAND BIODIVERSITY ANALYSIS

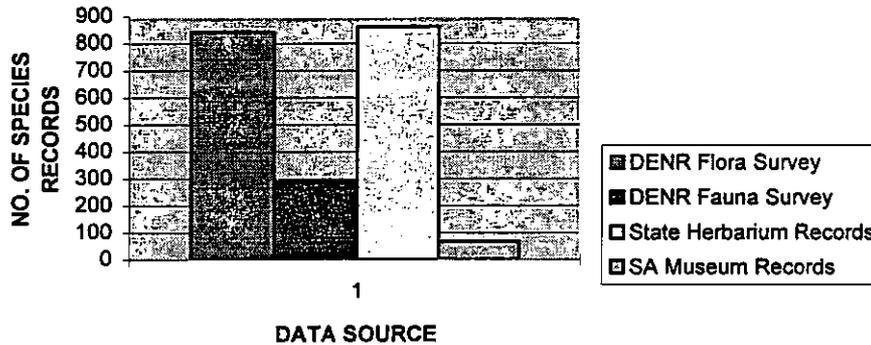


Figure 10.
The number of species from each source included in the Kangaroo Island biodiversity analysis.

In initial planning for this project it was proposed to use a biodiversity analysis for Kangaroo Island following procedures developed for East Gippsland in Cummings (1994). Unfortunately, this type of analysis required a digitised vegetation map and such a map was not available for Kangaroo Island before the deadline for completion of this project. An alternative approach was therefore used.

A 5 km grid was established over Kangaroo Island and the databases were searched for flora and fauna species richness for each grid cell. The results, divided into a series of eight classes are presented in Figures 11 and 12.

Any map layer coverage on Viridans can be isolated and used as a search polygon to derive species lists. An example of this type of search of the fauna part of the database is given below. Unfortunately, the floristic vegetation map ARC/INFO cover was not complete by the deadline for this project so the only Viridans digital map cover that could be included in this analysis was that of the various categories of conservation land use on Kangaroo Island. Viridans uses pixel counts on scaled maps to calculate the various colour coded polygon areas and these statistics for Kangaroo Island are shown in Table 4.

Flora Species Richness on 5 km Grid

LEGEND	
[White box]	No Records
[Lightest shading]	1-18 Sp. / 25km ²
[Light shading]	19-25 Sp. / 25km ²
[Medium-light shading]	26-38 Sp. / 25km ²
[Medium shading]	39-108 Sp. / 25km ²
[Medium-dark shading]	109-158 Sp. / 25km ²
[Dark shading]	159-258 Sp. / 25km ²
[Darkest shading]	259 Sp. / 25km ²
[Dotted pattern]	Quadrat Sites

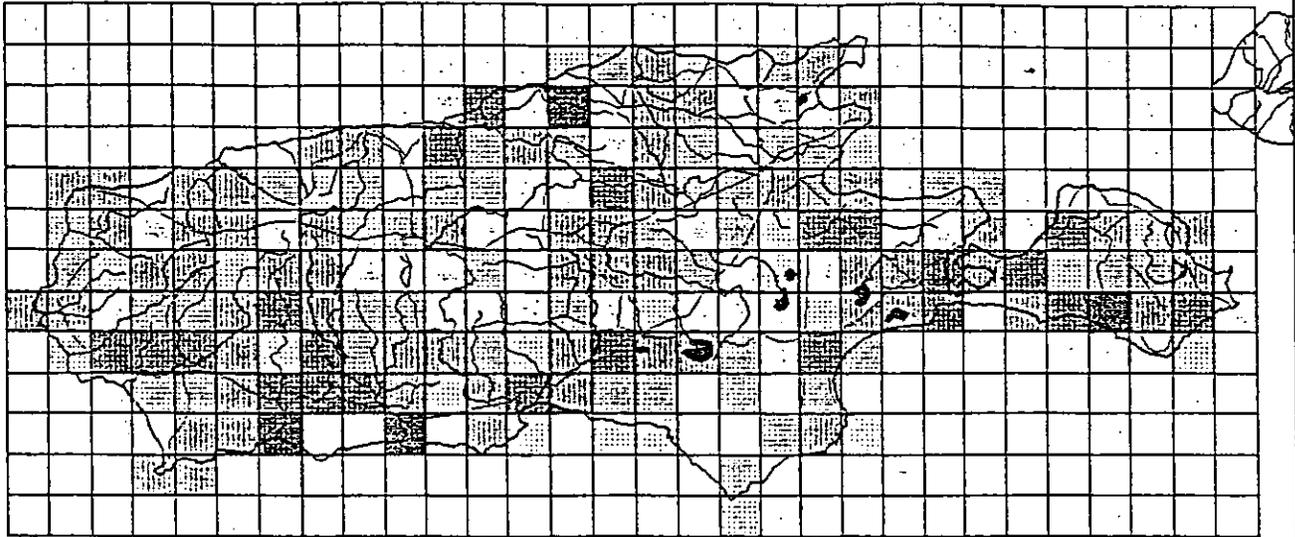


Figure 11
The kangaroo Island Biodiversity grid for flora.

Fauna Species Richness on 5 km Grid

LEGEND	
[White box]	No Records
[Lightest shading]	1-18 Sp. / 25km ²
[Light shading]	19-25 Sp. / 25km ²
[Medium-light shading]	26-38 Sp. / 25km ²
[Medium shading]	39-108 Sp. / 25km ²
[Medium-dark shading]	109-158 Sp. / 25km ²
[Dark shading]	159-258 Sp. / 25km ²
[Darkest shading]	259 Sp. / 25km ²
[Dotted pattern]	Quadrat Sites

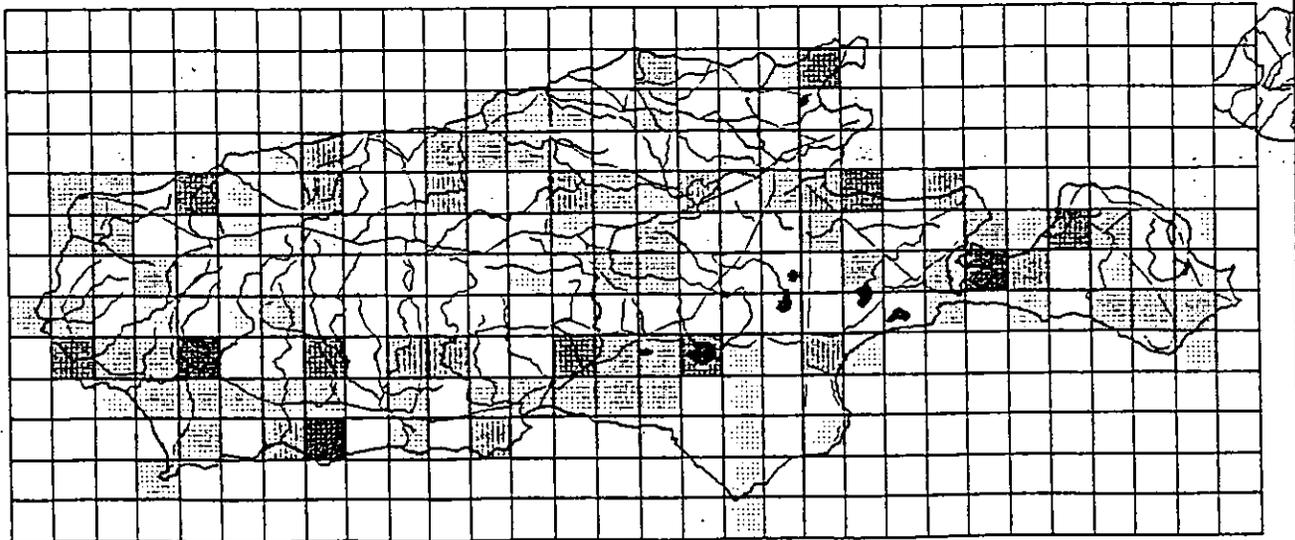


Figure 12
The Kangaroo Island Biodiversity grid for fauna

Table 4

Number of quadrats and the total area of the four mapped types of conservation land-use on Kangaroo Island

• COLOUR	• QUADRATS	• %	• AREA (km ²)	• %	• FEATURE
118	350	11.9	707.5322	3.6	Wilderness Areas
179	104	3.5	242.5053	1.2	Heritage Areas
210	321	10.9	163.9223	0.8	Conservation Parks
241	288	9.8	331.413	1.7	National Parks
255	1871	63.8	18207.76	92.1	Other Land Use
TOTALS	2934		19762.95		

It is then possible to retrieve a file of all sites enclosed by each of these polygons representing different land uses. From this retrieval a graph was drawn showing the relative contribution of the three main databases to this analysis and this is shown in Figure 13.

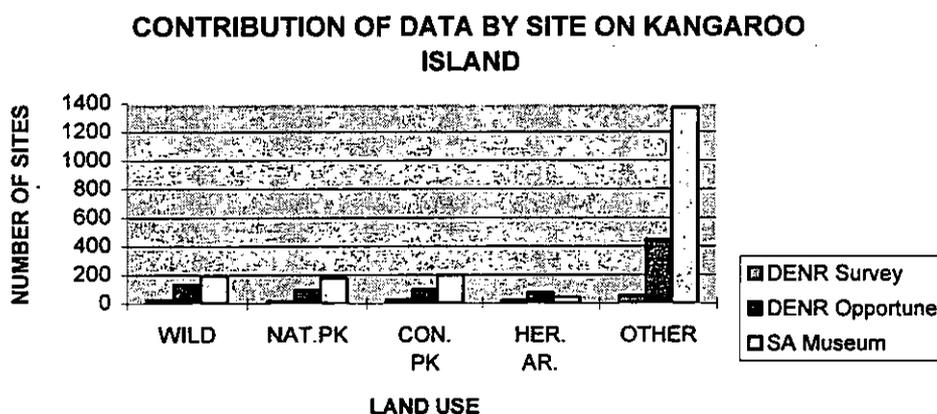


Figure 13.

The relative contributions of the various data sources for the different conservation land uses on Kangaroo Island.

Total species lists for Kangaroo Island from all the appropriate databases are provided in Appendix I (Flora) and Appendix II (Fauna).

The conservation land management polygon search described above can also be used to generate standard output species lists for the sites within that particular land management type. These lists can be presented in two ways, as a species frequency or as a taxonomically sorted species list. Examples for each of these types of lists, from the Conservation Parks of Kangaroo Island, are provided in Appendices III and IV.

Closer examination of the species lists produced by this analysis gives the results shown in Table 5

LAND USE	NUMBER OF SPECIES
WILDERNESS	124
NATIONAL. PK	103
CONS. PK	119
HERITAGE. AR.	98
OTHER	107
TOTAL SPECIES	169

Table 5
Number of fauna species recorded from each different conservation land use on Kangaroo Island

The relative contribution of each land use to the conservation of the 169 species of vertebrate fauna in the biodiversity database is shown in graph form in Figure 14.

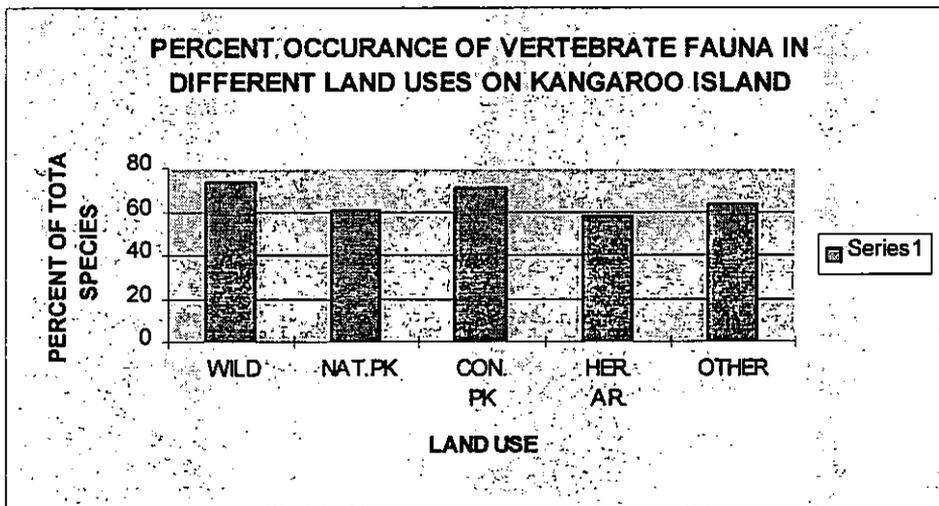


Figure 14.
The percent occurrence of the total vertebrate fauna recorded in the database on the different conservation land uses on Kangaroo Island

It is clear that all land uses individually are effective in the conservation of between 60 and 80 percent of the vertebrate fauna of Kangaroo Island. Another way of looking at this type of data is to examine the number of landuses that each species is conserved in and this is shown in Table 6 below:

LAND USE	SPECIES REPRESENTATION IN RANGE OF LAND USE					TOTAL
	ALL 5	4	3	2	1	
SPECIES COUNT	74	60	11	11	13	169

Table 6.
The numbers of species recorded only for a particular range of conservation land uses.

Note that no species were found only on areas of the island in the non-conservation land use category of 'OTHER'. The eleven species represented in only two of the conservation land use categories included:

<i>Cygnus atratus</i>	Black Swan
<i>Oxyura australis</i>	Blue-billed Duck
<i>Rallus pectoralis pectoralis</i>	Lewin's Rail
* <i>Alectura lathami lathami</i>	Australian Brush-turkey
<i>Puffinus tenuirostris</i>	Short-tailed Shearwater
* <i>Pavo cristatus</i>	Indian (Blue) Peafowl
<i>Neophema elegans</i>	Elegant Parrot
<i>Porzana fluminea</i>	Australian Crake
<i>Threskiornis aethiopicus</i>	Sacred (White) Ibis
<i>Isodon obesulus</i>	Short-nosed Bandicoot
<i>Sminthopsis aitkeni</i>	Sooty Dunnart

The 13 species represented in only one of the conservation land use categories included:

<i>Lerista dorsalis</i>	Southern Four-toed Slider
<i>Dacelo gigas</i>	Kookaburra
<i>Anas castanea</i>	Chestnut Teal
<i>Anas gracilis gracilis</i>	Australasian Grey Teal
<i>Pelecanus conspicillatus</i>	Australian Pelican
<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe
<i>Pelagodroma marina</i>	White-faced Storm-Petrel
* <i>Streptopelia chinensis</i>	Spotted Turtle-dove
* <i>Turdus merula merula</i>	Blackbird
<i>Glossopsitta concinna</i>	Musk Lorikeet
<i>Porzana pusilla</i>	Baillon's (Marsh) Crake
<i>Threskiornis spinicollis</i>	Straw-necked Ibis

These low frequency species in the database can also be detected in the total species list from examination of the frequency table in Appendix III. They are a mixture of species that appear to be genuinely rare or difficult to observe such as *Sminthopsis aitkeni*, species that are poorly sampled through the survey techniques used as well as being poorly represented in Museum collections such as

water-birds and sea-birds, and recent arrivals on the island such as Blackbirds and Spotted Turtle-doves which are at present restricted to small discrete areas.

Identical analyses can be carried out on the vascular plants using the same retrievals in the Flora section of the Biodiversity database

Development of a Biodiversity Database

Future Developments

Like all these types of databases in Australia at present, the South Australian Biodiversity Database has many gaps. The programme of systematic site-based biological surveys in this State over the last ten years has however begun to fill in many of these gaps in our knowledge of the State's biodiversity. Where a systematic biological survey has been completed, such as for Kangaroo Island, the Viridans biodiversity database has allowed us, for the first time, to carry out the preliminary analysis of the vertebrate fauna biodiversity described above. The inclusion of specimen data from the SA Museum and the State Herbarium in this combined derived database is a first for South Australia, and probably for Australia as a whole. Even the Kangaroo Island coverage however is still incomplete since at the time of establishment of the present database there were still approximately 4000 Herbarium specimens from Kangaroo Island not in their TITAN database and hence unable to be included in the derived Viridans Biodiversity Database. Likewise, none of the bird collections from the South Australian Museum could be included as the task of setting up a TITAN database for their bird collections has just begun.

The Viridans software has provided an inexpensive, user-friendly, PC-based system which not only allows the data holding institutions to carry out plotting and data analysis functions that were not possible for them to do in-house before, but it has brought together a consistent basic derived database of all the significant collections of geo-coded information on the vascular plants and terrestrial vertebrate fauna of South Australia.

It is theoretically possible to network all these collections, in spite of the wide range of different software and database types that they are established on, but, given the range of variation even in the four basic fields derived from these institutional databases revealed by

the present project, such networking would, in reality pose considerable practical difficulties.

In addition the Viridans software provides a combination of databases, map and image files that to our knowledge is not available anywhere else in a single software package. It does not, and does not pretend to be a competitor with or substitute for the large and expensive packages such as ARC/INFO, but it does provide easy access to this large body of biological data.

This project has established that both databases stored on a variety of software can be converted to Viridans format and future downloads from the range of databases included in the present project will be carried out in-house by the Biological Survey and Research Section of DENR.

Specific map files in Viridans, although derived from ARC/INFO PCX files will still need to be set up, and in some cases edited by Viridans to run quickly and efficiently on this PC-based software.

All subsequent species and site photographs will be added to and maintained in the South Australian Viridans system in-house without any further involvement of Viridans Pty Ltd.

The system is established on three computers in DENR offices on Kangaroo Island and links will be developed to the PAMS software when it is set up on Kangaroo Island. These two complimentary systems will be trialed for a period to determine how field staff are using them but there is clearly a good possibility that the systems will be ultimately expanded to all DENR regional sites. In the case of the Biodiversity Database component this will require the development of ten or eleven regional sub-sets similar to the Kangaroo Island part of this project, to enable

appropriate region specific map bases to be developed.

There is clearly a considerable amount of extra work to obtain, digitise and add to the database high quality photos of a majority of species of vascular plants and terrestrial vertebrate fauna but a solid start has been made with the Kangaroo Island regional section of the database.

There is also an equally large task to incorporate all the site photos that exist for every Biological Survey site and each Pastoral Management Rangeland Assessment site in the State. A proportion of these photos are time sequences at a particular site. An exciting future prospect however, once this is complete will be to investigate innovative ways of incorporating the digital data comprising this extensive collection of photos of South Australian natural landscapes with their associated flora and fauna data, into a new sort of biogeographic analysis. There is no doubt that this systematic site-based photographic record with associated flora and fauna data is unique in the world and making use of this resource in the systematic understanding of variation and, ultimately, change through time at tens of thousands of sites spread across the State is an exciting prospect indeed.

The Viridans Biodiversity Database project for South Australia has already successfully demonstrated that it is a cost-effective way of making modern biological survey and more traditional taxonomic collection data available to answer ecological and management questions on an attractive, PC-based system that can be widely dispersed to interested biologists and wildlife managers without in any way compromising the integrity of the larger and much more complex main databases which will still continue to be the responsibility of the individual data custodians.

Development of a Biodiversity Database

References

- Cummings, B. (ed.). (1994). *Assessing Diversity in Natural Heritage: Report of the Diversity Workshop held at the Australian Heritage Commission, 20 October 1993. 1993 Technical Workshop Series No. 2.*
- Laut, P., Heyligers, P.C., Keig, G., Loffler, E., Margules, C., Scott, R.M. and Sullivan, M.E. (1977). *Environments of South Australia..* Canberra: CSIRO Division of Land Use Research.
- Jessop, J.P. (ed.). (1993). *A List of the Vascular Plants of South Australia. Edition IV.* The Botanic Gardens of Adelaide and State Herbarium.
- Watts, C. H. S. (ed.). (1990). *A List of the Vertebrates of South Australia.* Biological Survey Coordinating Committee and the Department of Environment and Planning

Development of a Biodiversity Database

Appendices

Appendix I

TOTAL FLORA LIST FOR KANGAROO ISLAND FROM A GRID SEARCH OF THE DATABASE.

The details and map below show the grids searched for this retrieval.

South Australian Flora

Scientific Name

Acacia acinacea
Acacia brachybotrya
Acacia calamifolia
Acacia continua
Acacia cyclops
Acacia dodonaeifolia
Acacia leiophylla
Acacia ligulata
Acacia longifolia var. *sophorae*
Acacia myrtifolia
Acacia myrtifolia var.
Acacia myrtifolia var. *angustifolia*
Acacia paradoxa
Acacia pycnantha
Acacia retinodes var. *retinodes*
Acacia retinodes var. *retinodes* (hill form)
Acacia retinodes var. *uncifolia*
Acacia rupicola
Acacia sp.
Acacia spinescens
Acacia triquetra
Acacia verticillata
Acacia novae-zelandiae
Acacia xmaseroviana
Achnophora tatei
Acianthus caudatus var.
Acianthus caudatus var. *caudatus*
Acianthus sp.
Acrotiche affinis
Acrotiche cordata
Acrotiche depressa
Acrotiche fasciculiflora
Acrotiche halmaturina
Acrotiche patula
Acrotiche serrulata
Adenanthos macropodiana
Adenanthos terminalis
Adiantum aethiopicum
Adriana klotzschii
Agrostis avenacea var. *avenacea*
Agrostis billardieri var. *billardieri*
Aira caryophylla
Aira cupaniana
Aira elegantissima ssp. *elegantissima*
Allocasuarina muelleriana ssp.
Allocasuarina muelleriana ssp. *notocolpica*
Allocasuarina sp.
Allocasuarina striata
Allocasuarina verticillata
Alyxia buxifolia
Ammophila arenaria
Amphibromus nervosus
Anagallis arvensis
Angianthus preissianus
Apalochlamys spectabilis
Aphelia gracilis
Aphelia pumilio
Aphelia sp.
Apium annuum
Apium prostratum ssp. *prostratum* var. *filiforme*
Apium prostratum ssp. *prostratum* var. *prostratum*
Arctotheca calendula
Arenaria serpyllifolia
Argentipallium obtusifolium
Arthropodium strictum
Asperula conferta
Asperula euryphylla var. *tetraphylla*
Asterolasia muricata
Astroloma conostephioides
Astroloma humifusum
Atriplex cinerea
Atriplex paludosa ssp. *cordata*
Avellinia michellii
Avena barbata
Avena sp.
Baeckea crassifolia
Baeckea ericaea
Baeckea ramosissima ssp. *ramosissima*
Baeckea sp.
Banksia marginata
Banksia ornata
Bauera rubioides
Baumea arthropophylla
Baumea juncea
Bertya rotundifolia
Beyeria lechenaultii
Beyeria subsecta
Billardiera bignoniacea
Billardiera cymosa
Billardiera procumbens
Billardiera sp.
Billardiera uniflora
Billardiera versicolor
Blechnum nudum
Blechnum wattsi
Boronia coerulescens ssp. *coerulescens*
Boronia edwardsii
Boronia filifolia
Brachycome cuneifolia
Brachycome exilis
Brachycome oliginosa
Brachyloma ericoides ssp.
Brachyloma ericoides ssp. *bicolor*
Brachyloma sp.
Brachypodium distachyon
Bracteantha bracteata
Briza maxima
Briza minor

Common Name

gold-bust wattle
grey mulga-bush
wallawa
thorn wattle
western coastal wattle
black wattle
coast golden wattle
thine wattle
coast sallow wattle
Myrtle wattle
myrtle wattle
narrow-leaf myrtle wattle
hedge wattle
golden wattle
silver wattle

coast silver wattle
balm wattle
wattle
spiny wattle
mallee weath wattle
prickly Moses
bikky-bikky

Kangaroo Island daisy

mayfly orchid
mosquito orchid
prickly honeysuckle
blunt-leaf ground-herry
native currant
Mount Lofty ground-herry
Kangaroo Island ground-herry
prickly ground-herry
cushion ground-herry
Kangaroo Island gland-flower
yellow gland-flower
common maiden-hair
coast bitterbush
annual blown-grass
coast blown-grass
silvery hair-grass
hair-grass
delicate hair-grass
angled oak-bush
Kangaroo Island oak-bush
sheoak/oak-bush
small bull oak
drooping sheoak
dysentery bush
marram grass

blue pimpernel
common cup-flower
false tobacco
slender aphelia
dwarf aphelia

annual celery

Cape dandelion
thyme-leaved sandwort
blunt everlasting
common chocolate-lily
common woodruff
broad-leaved woodruff

flame heath
cranberry heath
coast saltbush

avellinia
bearded oat

desert baeckea
mat baeckea
rasy baeckea

dwarf honeysuckle
desert banksia
wiry bauera

bare twig-rush
Kangaroo Island berya
felted wallaby-bush
Kangaroo Island turpentine bus
orange bell-climber
sweet apple-berry
white marianth
apple-berry
single-flower apple-berry
pale apple-berry
fishbone water-fern
hard water-fern
blue boronia
Edwards' boronia
slender boronia

slender daisy
daisy

brush heath

false brome
golden everlasting
blowfly grass
lesser quaking-grass

Scientific Name

Bromus diandrus
Bromus hordeaceus ssp. *hordeaceus*
Bromus madritensis
Bromus rigidus
Bulbine semibarbata
Burchardia umbellata
Burnettia nigricans
Bursaria spinosa
Cakile maritima ssp. *maritima*
Caladenia carnea var. *carnea*
Caladenia dilatata complex
Caladenia filamentosa var. *filamentosa*
Caladenia filamentosa var. *tentaculata*
Caladenia latifolia
Caladenia minor
Caladenia ovata
Caladenia prolata
Caladenia sp.
Caladenia valida
Calandrinia brevipedata
Calandrinia calyptata
Calandrinia corrigioloides
Calandrinia sp.
Callistemon rugulosus var.
Callistemon rugulosus var. *rugulosus*
Callitris
Callitris preissii
Callitris rhomboidea
Calochilus robertsonii
Calytrix glaberrima
Calytrix smeatoniana
Calytrix tetragona
Cardamine paucijuga
Carduus tenuiflorus
Carex appressa
Carex breviculmis
Carex fascicularis
Carex sp.
Carpobrotus rossii
Carthamus lanatus
Cassinia uncata
Cassytha glabella forma *dispar*
Cassytha melantha
Cassytha peninsularis var. *peninsularis*
Cassytha pubescens
Cassytha sp.
Caustis pentandra
Centaurium spicatum
Centrolepis aristata
Centrolepis cephaloformis ssp.
Centrolepis cephaloformis ssp. *murrayi*
Centrolepis fascicularis
Centrolepis polygyna
Centrolepis sp.
Centrolepis strigosa
Cerastium glomeratum
Cerastium semidecandrum
Chamaescilla corymbosa var. *corymbosa*
Cheilanthes austrotenuifolia
Cheiranthra volubilis
Chenopodium glaucum
Chenopodium sp.
Choretum glomeratum var.
Choretum glomeratum var. *glomeratum*
Choretum sp.
Choretum spicatum
Chorizanthe enodis
Chrysocephalum apiculatum
Cirsium sp.
Clematis microphylla
Comesperma calymega
Comesperma volubile
Conospermum patens
Convolvulus sp.
Correa nemula
Correa decumbens
Correa pulchella
Correa reflexa
Correa reflexa var. *coriacea*
Correa reflexa var. *nummulariifolia*
Correa reflexa var. *reflexa*
Correa sp.
Correa sp. aff. *calycina*
Corybas sp.
Cotula australis
Cotula coronopifolia
Craspedia glauca
Crassula closiana
Crassula decumbens var. *decumbens*
Crassula natans var. *minus*
Crassula peduncularis
Crassula sieberiana ssp. *tetramera*
Criteseion hystrix
Criteseion marium
Criteseion murinum ssp. *glaucum*
Criteseion murinum ssp. *leporinum*
Criteseion sp.
Cruciferae sp.
Cryptandra hispidula
Cryptandra leucophracta
Cryptandra sp.
Cryptandra waterhousii
Cyanicula deformis
Cynosurus echinatus
Cyperaceae sp.
Cyperus sp.
Cyperus tenellus
Cyperus vaginatus

Common Name

Kingston grass
soft brome
Madrid brome
rigid brome
annual bulbine-lily
milkmaids
fire orchid
South Australian Christmas bus
sea rocket
pink fingers
fringed spider-orchid
clucky-long-legs
wispy spider-orchid
broad-leaf caladenia
pigmy caladenia
Kangaroo Island spider-orchid

spider-orchid

short-stalked purslane
pink purslane
strap purslane

scarlet bottlebrush
scarlet bottlebrush
limestone cypress pine
Murray pine
Oyster Bay pine
brown-beard
smooth fringe-myrtle
Kangaroo Island fringe-myrtle
common fringe-myrtle

slender thistle
tall sedge

tassel sedge

Russ's noon-flower
saffron thistle
sticky cassinia
slender dodder-laurel
course dodder-laurel
peninsula dodder-laurel
downy dodder-laurel
dodder laurel
thick twist-rush
spike centuary
pointed centrolepis

cushion centrolepis
tufted centrolepis
wiry centrolepis

hairy centrolepis
broad-leaved mouse-ear chickwee
small mouse-ear chickweed
blue squill
rock fern
twining finger-flower
glaucous goosefoot
goosefoot
sour-bush
herry broombush

herry broombush
black bristle-rush
common everlasting

small-leaf clematis
blue milkwort
love creeper
slender conospermum

hairy correa
spreading correa
salmon correa

thick-leaf correa
Kangaroo Island correa
common correa
correa

helmet-orchid
common cotula
button weed
hatchelor buttons
stalked crassula
spreading crassula
floating crassula
purple crassula
Australian crassula
Mediterranean barley-grass
sea barley
northern barley-grass
barley-grass

rough cryptandra
rusty poison

long-leaf cryptandra
blue fairies
rough dog's-tail grass

tiny flat-sedge
flat-sedge

South Australian Flora

Scientific Name

Cyphanthera myosotides
 Cyrtostylis reniformis
 Cyrtostylis robusta
 Dactylis glomerata
 Dampiera lanceolata var. insularis
 Danthonia caespitosa
 Danthonia geniculata
 Danthonia racemosa var. racemosa
 Danthonia setacea var. setacea
 Danthonia sp.
 Darwinia micropetala
 Darwinia micropetala
 Daucus glochidiatus
 Daviesia asperula ssp.
 Daviesia asperula ssp. asperula
 Daviesia benthamii ssp. humilis
 Daviesia brevifolia
 Daviesia genistifolia
 Daviesia leptophylla
 Daviesia ulcifolia
 Derwentia derwentiana
 Desmazeria rigida
 Dianella revoluta
 Dianella revoluta var. brevicaulis
 Dianella revoluta var. revoluta
 Dianella sp.
 Dichelachne crinita
 Dichondra repens
 Dillwynia glaberrima
 Dillwynia hispida
 Dillwynia sericea
 Diplotaxis tenuifolia
 Disphyma crassifolium ssp. clavellatum
 Diuris aff. corymbosa
 Diuris brevifolia
 Dodonaea buerri
 Dodonaea hexandra
 Dodonaea humilis
 Dodonaea sp.
 Dodonaea viscosa ssp.
 Dodonaea viscosa ssp. angustissima
 Dodonaea viscosa ssp. spatulata
 Drosera auriculata
 Drosera binata
 Drosera glanduligera
 Drosera macrantha ssp. planchonii
 Drosera peltata
 Drosera pygmaea
 Drosera sp.
 Drosera whittakeri
 Ehrharta calycina
 Ehrharta longiflora
 Eleocharis acuta
 Eleocharis sphaclata
 Empodisma minus
 Enchyliana tomentosa var. tomentosa
 Epacris impressa
 Epilobium billardierianum ssp. cinereum
 Eremophila glabra ssp.
 Eriostemon angustifolius ssp. angustifolius
 Erodium botrys
 Erodium cicutarium
 Erodium sp.
 Eucalyptus arenacea
 Eucalyptus baxteri
 Eucalyptus camaldulensis var.
 Eucalyptus camaldulensis var. camaldulensis
 Eucalyptus cladocalyx
 Eucalyptus cneorifolia
 Eucalyptus conglobata
 Eucalyptus cosmophylla
 Eucalyptus diversifolia
 Eucalyptus dumosa
 Eucalyptus fasciculosa
 Eucalyptus lansdowneana ssp.
 Eucalyptus lansdowneana ssp. alborpurpurea
 Eucalyptus leptophylla
 Eucalyptus leucoxylon
 Eucalyptus leucoxylon ssp.
 Eucalyptus leucoxylon ssp. leucoxylon
 Eucalyptus leucoxylon ssp. leucoxylon
 Eucalyptus leucoxylon ssp. megalocarpa
 Eucalyptus obliqua
 Eucalyptus obliqua var. obliqua
 Eucalyptus odorata
 Eucalyptus oleosa
 Eucalyptus ovata
 Eucalyptus remota
 Eucalyptus rugosa
 Eucalyptus socialis
 Eucalyptus sp.
 Eucalyptus viminalis ssp. cygnetensis
 Euciton ensifer
 Euciton sphaericus
 Euphorbia paralias
 Euphorbia pepiis
 Euphrasia collina ssp. tetragona
 Eutaxia microphylla var.
 Eutaxia microphylla var. microphylla
 Exocarpos appyllus
 Exocarpos cupressiformis
 Fimbristylis sp.
 Frankenia foliosa
 Frankenia pauciflora var. fruticulosa
 Frankenia sessilis
 Gahnia clarkii
 Gahnia densa
 Gahnia filum

Common Name

cocks-foot
 common wallaby-grass
 kneed wallaby-grass
 slender wallaby-grass
 bristly wallaby-grass
 wallaby grass
 small darwinia
 small darwinia
 Australian carrot
 Kangaroo Island bitter-pea
 mallee bitter-pea
 leafless bitter-pea
 broom bitter-pea
 narrow-leaf bitter-pea
 gorse bitter-pea
 fern grass
 short-stem flax-lily
 black-anther flax-lily
 flax lily
 long-hair plume-grass
 Tom Thumb
 smooth parrot-pea
 downy parrot-pea
 showy parrot-pea
 Lincoln weed
 round-leaf pigface
 bulldogs
 late donkey-orchid
 crinkled hop-bush
 horned hop-bush
 dwarf hop-bush
 narrow-leaved hop-bush
 akeake
 erriewellam
 forked smilax
 scarlet smilax
 climbing smilax
 pale smilax
 tiny smilax
 smilax
 Whittaker's smilax
 perennial veldt grass
 annual veldt grass
 common spike-rush
 tall spike-rush
 barrier saltbush
 common heath
 variable willow-herb
 big herons bill
 common crowfoot
 brown stringybark
 Baxter's stringybark
 river red gum
 Murray red gum
 sugar gum
 Kangaroo Island narrow-leaf ma
 Port Lincoln mallee
 bog gum
 South Australian coast mallee
 congoo mallee
 hill gum
 Port Lincoln gum
 narrow-leaf red mallee
 South Australian blue gum
 large-fruit blue gum
 messmate
 messmate
 mallee box
 acorn mallee
 swamp gum
 Kangaroo Island mallee ash
 Kingscote mallee
 heaked red mallee
 rough-bark manna gum
 Japanese cudweed
 sea spurge
 petty spurge
 coast eyebright
 eggs-and-bacon
 common cutanea
 leafless ballart
 cherry ballart
 leafy sea-heath
 common sea-heath
 small-leaf sea-heath
 tall saw-sedge
 limestone saw-sedge
 chuffy saw-sedge

Scientific Name

Gahnia hystrix
 Gahnia lanigera
 Gahnia sieberiana
 Gahnia sp.
 Gahnia trifida
 Galium australe
 Galium compactum
 Galium binifolium
 Galium compactum
 Galium divaricatum
 Galium gaudichaudii
 Galium migrans
 Galium murale
 Galium sp.
 Gastrodia sesamoides
 Geijera linearifolia
 Genoplesium nigricans
 Geranium molle var. molle
 Geranium potentilloides var. potentilloides
 Geranium retrorsum
 Geranium solanderi var. solanderi
 Gladiolus undulatus
 Gleichenia microphylla
 Gilschrocaryon behrii
 Glycine latrobeana
 Gnaphalium indutum
 Gompholobium ecostatum
 Gonocarpus meianus
 Gonocarpus tetragynus
 Goodenia amplexans
 Goodenia blackiana
 Goodenia geniculata
 Goodenia ovata
 Goodenia sp.
 Goodenia varia
 Goodia lotifolia var.
 Goodia lotifolia var. lotifolia
 Gramineae sp.
 Gratiola sp.
 Grevillea ilicifolia var.
 Grevillea ilicifolia var. ilicifolia
 Grevillea linearifolia
 Grevillea muricata
 Grevillea pauciflora ssp.
 Grevillea pauciflora ssp. pauciflora
 Grevillea quinquenervis
 Grevillea rogersii
 Gyrostemon thesioides
 Hainardia cylindrica
 Hakea aenigma
 Hakea carinata
 Hakea muelleriana
 Hakea rostrata
 Hakea rugosa
 Hakea sp.
 Hakea vittata
 Haloragis acutangula forma acutangula
 Haloragis brownii
 Haloragis sp.
 Halosarcia halocnemoides ssp.
 Halosarcia halocnemoides ssp. halocnemoides
 Halosarcia pergranulata ssp. pergranulata
 Halosarcia sp.
 Hardenbergia violacea
 Hedypnois rhagadioloides
 Helichrysum leucopsideum
 Hemichroa pentandra
 Herb sp.
 Hibbertia acicularis
 Hibbertia aspera
 Hibbertia exultans
 Hibbertia paeninsularis
 Hibbertia prostrata
 Hibbertia riparia
 Hibbertia riparia glabriuscula
 Hibbertia sericea var.
 Hibbertia sericea var. major
 Hibbertia sericea var. scabrifolia
 Hibbertia sericea var. sericea
 Hibbertia sp.
 Hibbertia sp. A
 Hibbertia sp. B
 Hibbertia sp. C
 Hibbertia stricta
 Hibbertia stricta var.
 Hibbertia virgata
 Holcus lanatus
 Holcus setosus
 Hydrocotyle callicarpa
 Hydrocotyle comocarpa
 Hydrocotyle crassiuscula
 Hydrocotyle foveolata
 Hydrocotyle hirta
 Hydrocotyle laxiflora
 Hydrocotyle muscosa
 Hydrocotyle sp.
 Hypochaeris glabra
 Hypochaeris radicata
 Hypochaeris sp.
 Hypolaena fastigiata
 Hypolepis rugosula
 Isotepis australiensis
 Isotepis cernua
 Isotepis fluitans
 Isotepis hookeriana
 Isotepis marginata
 Isotepis nodosa
 Isotepis platycarpa
 Isotepis producta

Common Name

Kangaroo Island saw-sedge
 black grass saw-sedge
 red-fruit cutting-grass
 cutting grass
 cutting grass
 tangled bedstraw
 slender bedstraw
 rough bedstraw
 small bedstraw
 cinnamon bells
 oil bush
 black midge-orchid
 cranes bill
 cranes-bill
 common cranes-bill
 Australian cranes-bill
 wild gladiolus
 coral fern
 golden pennants
 clover glycine
 tiny cudweed
 dwarf wedge-pea
 broad-leaf raspwort
 common raspwort
 clasping goodenia
 native primrose
 bent goodenia
 hop goodenia
 sticky goodenia
 clover-tree
 holly-leaf grevillea
 holly bush
 small-flower grevillea
 Kangaroo Island spider-flower
 few-flower grevillea
 Port Lincoln grevillea
 five-wined grevillea
 Roger's grevillea
 brown wheel-fruit
 common barb-grass
 enigma hakea
 erect hakea
 desert hakea
 beaked hakea
 dwarf hakea
 limestone needlebush
 smooth raspwort
 swamp raspwort
 raspwort
 grey glasswort
 grey glasswort
 glasswort
 false sarsaparilla
 coast everlasting
 trailing hemichroa
 prickly guinea-flower
 prickly guinea-flower
 peninsula guinea-flower
 bundled guinea-flower
 guinea-flower
 guinea-flower
 Part Lincoln guinea-flower
 scrambling guinea-flower
 round-leaf guinea-flower
 stalked guinea-flower
 twiggy guinea-flower
 Yorkshire fog
 tiny pennywort
 spreading pennywort
 yellow pennywort
 hairy pennywort
 stinking pennywort
 mossy pennywort
 smooth causear
 flatweed
 causear
 tassel rape-rush
 ruddy ground-fern
 floating club-rush
 coarse club-rush
 knobby club-rush

South Australian Flora

Scientific Name

Isolepis sp.
Isolepis stellata
Isopogon ceratophyllus
Ixiolaena supina
Ixodia achillaeoides ssp.
Ixodia achillaeoides ssp. *achillaeoides*
Ixodia achillaeoides ssp. *alata*
Juncus bufonius
Juncus capitatus
Juncus effusus
Juncus kraussii
Juncus pallidus
Juncus pauciflorus
Juncus planifolius
Juncus procerus
Juncus sp.
Kennedia prostrata
Kunzea pomifera
Lagenifera stipitata var. *stipitata*
Lagurus ovatus
Lasiopetalum baueri
Lasiopetalum behrii
Lasiopetalum discolor
Lasiopetalum schalzenii
Lasiopetalum sp. 'Cordate-leaved'(R.P. Vonow 810)
Lasiopetalum x *tepperi*
Lavatera plebeia
Lawrenca spicata
Laxmannia orientalis
Lepidium foliosum
Lepidobolus drapetocoleus
Lepidosperma canescens
Lepidosperma carphoides
Lepidosperma concavum
Lepidosperma congestum
Lepidosperma gladiatum
Lepidosperma laterale
Lepidosperma semiteres
Lepidosperma sp.
Lepidosperma viscidum
Leporella fimbriata
Leptocarpus tenax
Leptomeria aphylla
Leptorhynchus squamatus
Leptospermum continentale
Leptospermum lanigerum
Leptospermum myrsinoides
Lepyrodia valliculae
Leucophyta brownii
Leucopogon concurrens
Leucopogon costatus
Leucopogon hirsutus
Leucopogon lanceolatus
Leucopogon parviflorus
Leucopogon rufus
Leucopogon sp.
Leucopogon woodsii
Lichen sp.
Liliaceae sp.
Lindsaea linearis
Lissanthe strigosa
Lobelia alata
Lobelia gibbosa
Lobelia pratioides
Logania crassifolia
Logania insularis
Logania linifolia
Logania ovata
Logania sp.
Logania sp. C
Lolium loliaecum
Lolium rigidum
Lolium sp.
Lomandra collina
Lomandra micrantha ssp.
Lomandra micrantha ssp. *tuberculata*
Lophochlon sp.
Lotus australis
Lotus cruentus
Luzula flaccida
Lycium ferocissimum
Lycopodiella lateralis
Lythrum hyssopifolia
Maireana oppositifolia
Marrubium vulgare
Medicago minima var. *minima*
Medicago polymorpha var. *polymorpha*
Medicago truncatula
Melaleuca acuminata
Melaleuca brevifolia
Melaleuca decussata
Melaleuca gibbosa
Melaleuca halmaturorum
Melaleuca lanceolata
Melaleuca squamea
Melaleuca uncinata
Melilotus indica
Micranthemum demissum
Microcybe pauciflora
Microloaena stipoides var. *stipoides*
Microseris lanceolata
Microtis frutescens
Microtis orbicularis
Millotia myosotidifolia
Millotia tenuifolia var. *tenuifolia*
Mimulus repens
Minuartia mediterranea
Mitrasacme distylis

Common Name

star club-rush
cune-bush
stalked ixiolaena
coast ixodia
fireweed
foad rush
capitate rush
soft rush
sea rush
pale rush
loose-flower rush
broad-leaf rush
running postman
muntries
blue bottle-daisy
hares tail grass
slender velvet-bush
pink velvet-bush
coast velvet-bush
drooping velvet-bush
Australian hollyhock
salt lawrenca
dwarf wire-lily
leafy peppergrass
scale shucker
hoary rapier-sedge
black rapier-sedge
sand-hill sword-sedge
clustered sword-sedge
sandhill sword-sedge
sharp sword-sedge
wire rapier-sedge
sword-sedge
sticky sword-sedge
fringed hare-orchid
slender wine-rush
leafless currant-bush
scaly button
prickly tea-tree
silky tea-tree
heath tea-tree
Kangaroo Island scale-rush
cushion-bush
scrambling beard-heath
twiggy beard-heath
hairy beard-heath
lance beard-heath
coast beard-heath
rudely beard-heath
beard-heath
hruum beard-heath
necklace fern
peach heath
angled lobelia
false orchid
poison lobelia
coast logania
Kangaroo Island logania
flax-leaf logania
oval-leaf logania
Wimmera ryegrass
Wimmera ryegrass
sandhill mat-rush
small-flower mat-rush
small-flower mat-rush
Australian trefoil
red birds-foot trefoil
pale woodrush
African boxthorn
slender clubmoss
hyssop luxestribe
heathy bluebush
hurehound
little medic
hurr-medic
barrel medic
mallee honey-myrtle
short-leaf honey-myrtle
cross-leaved honey-myrtle
slender honey-myrtle
South Australian swamp paper-h
black tea-tree
heath honey-myrtle
black broom
Hexham scent
dwarf micranthemum
yellow microcybe
meadow rice-grass
murioning
swamp onion-orchid
broad-leaf millotia
soft millotia
creeping monkey-flower
fine-leaved sandwort
tiny mitrewort

Scientific Name

Mitrasacme paradoxa
Montia australasica
Moss sp.
Muehlenbeckia adpressa
Muehlenbeckia gunnii
Myoporum brevipes
Myoporum insulare
Myoporum viscosum
Myosotis australis
Myriophyllum integrifolium
Myriophyllum muelleri
Myriophyllum simulans
Myriophyllum sp.
Myrsiphyllum asparagoides
Nitraria billardieri
Olea europaea ssp. *europaea*
Olearia axillaris
Olearia ciliata var. *ciliata*
Olearia ciliata var. *squamifolia*
Olearia microdisca
Olearia ramulosa
Olearia rudis
Olearia teretifolia
Opercularia scabrida
Opercularia turpis
Opercularia varia
Orchidaceae sp.
Orthoceras strictum
Orthrosanthus multiflorus
Osteospermum sp.
Ottelia ovalifolia
Oxalis corniculata ssp. *corniculata*
Oxalis perennans
Oxalis pes-caprae
Ozothamnus retusus
Papaver aculeatum
Parasche derwentiana
Parapholis incurva
Parentocollia latifolia
Parietaria debilis
Paterosmia fragilis
Pelargonium australe
Pelargonium littorale
Petrophile multisepta
Petrophagia velutina
Phebalium equestre
Phyllanthus australis
Phyllanthus sp.
Phylloglossum drummondii
Phyllota pleurandroides
Phyllota remota
Pimelea flava ssp.
Pimelea flava ssp. *dichotoma*
Pimelea flava ssp. *flava*
Pimelea glauca
Pimelea macrostegia
Pimelea micrantha
Pimelea octophylla
Pimelea octophylla ssp.
Pimelea phylloides
Pimelea serpyllifolia ssp. *serpyllifolia*
Pimelea sp.
Pimelea stricta
Pinus halepensis
Pinus radiata
Plantago hispida
Plantago lanceolata var. *lanceolata*
Platylobium obtusangulum
Platyace heterophylla var.
Platyace heterophylla var. *heterophylla*
Platyace heterophylla var. *tepperi*
Poa crassicaudex
Poa fax
Poa halmaturina
Poa poiformis
Poa sp.
Poa tenera
Podolepis canescens
Podolepis jaceoides
Podolepis rugata var. *littoralis*
Podothea angustifolia
Polycarpon tetraphyllum
Polygomon maritimum
Polygomon monspeliensis
Pomaderris aspera
Pomaderris halmaturina ssp.
Pomaderris halmaturina ssp. *halmaturina*
Pomaderris obovata
Pomaderris oraria
Pomaderris paniculosa ssp. *paralia*
Pomaderris sp.
Poranthera ericoides
Poranthera microphylla
Potamogeton tricarlinatus
Prasophyllum elatum
Prostanthera aspalathoides
Prostanthera chlorantha
Prostanthera serpyllifolia ssp. *microphylla*
Prostanthera serpyllifolia ssp. *serpyllifolia*
Prostanthera spinosa
Pseudognaphalium luteoalbum
Pteridium esculentum
Pterostylis alata
Pterostylis furcata
Pterostylis longifolia
Pterostylis nana
Pterostylis pedunculata
Pterostylis plumosa

Common Name

wiry mitrewort
montia
climbing lignum
coastal climbing lignum
warty boobialla
common boobialla
sticky boobialla
austral forget-me-not
hooded water-milfoil
water-milfoil
bridal creeper
Dillon bush
olive
coast daisy-bush
fringed daisy-bush
Kangaroo Island fringed daisy-
small-flower daisy-bush
twiggy daisy-bush
casare daisy-bush
cyprus daisy-bush
stalked stinkweed
twiggy stinkweed
variable stinkweed
horned orchid
Kangaroo Island iris
swamp lily
creeping oxalis
native sorrel
Bermuda buttercup
notched hawk-everlasting
bristle poppy
Derwent speedwell
coast barb-grass
common hartia
shade pellitory
short purple-flag
austral snorks-bill
kopata
Kangaroo Island comesticks
hairy pink
Kangaroo Island phebalium
pointed spurge
pigmy clubmoss
heathy phyllota
slender phyllota
diosma daisyflower
diosma riceflower
yellow riceflower
smooth riceflower
Kangaroo Island riceflower
curved riceflower
downy riceflower
heath riceflower
thyme riceflower
riceflower
erect riceflower
Aleppo pine
Monterey pine
hairy plantain
ribgrass
common flat-pea
corn parsley
Kangaroo Island platysace
thick-stem poa
scaly meadow-grass
Kangaroo Island poa
coast poa
meadow-grass
slender tussock grass
bright podolepis
showy copper-wire daisy
pleated podolepis
sticky longheads
allweed
coast beard-grass
annual beard-grass
hazel pomaderris
Kangaroo Island pomaderris
wedge-leaf pomaderris
coast pomaderris
coast pomaderris
heath poranthera
small poranthera
floating pondweed
tall loek-orchid
minthush
green minthush
small-leaf minthush
thyme minthush
spiny minthush
Japanese cudweed
austral bracken
striped green-hood
forked green-hood
tall green-hood
dwarf green-hood
maroon-hood
bearded green-hood

South Australian Flora

Scientific Name

Pterostylis sanguinea
Pterostylis vittata
Ptilotes beckerianus
Puccinellia stricta var. *stricta*
Pultenaea acerosa
Pultenaea canaliculata var.
Pultenaea canaliculata var. *canaliculata*
Pultenaea daphnoides
Pultenaea densifolia
Pultenaea largiflorens
Pultenaea rigida var.
Pultenaea rigida var. *rigida*
Pultenaea sp.
Pultenaea tenuifolia
Pultenaea teretifolia var.
Pultenaea trifida
Pultenaea trinervis
Pultenaea vestita
Pultenaea villifera var. *glabrescens*
Pultenaea viscidula
Ranunculus papulentus
Ranunculus pentandrus var. *platycarpus*
Ranunculus sessiliflorus var. *pilulifer*
Ranunculus sessiliflorus var. *sessiliflorus*
Ranunculus sp.
Reichardia tingitana
Rhagodia candolleana ssp.
Rhagodia candolleana ssp. *candolleana*
Rhagodia crassifolia
Rhamnus alaternus
Romulea rosea var. *australis*
Rostraria cristata
Rumex sp.
Ruppia sp.
Rutidosia multiflora
Sagina maritima
Samolus repens
Sarcocornia blackiana
Sarcocornia quinqueflora
Scaevola aemula
Scaevola angustata
Scaevola crassifolia
Scaevola linearis ssp.
Scaevola linearis ssp. *confertifolia*
Schoenus apogon
Schoenus breviculmis
Schoenus deformis
Schoenus discifer
Schoenus nanus
Schoenus nitens
Schoenus sp.
Scirpus sp.
Sclerostegia arbuscula
Sebaea ovata
Selaginella gracillima
Selliera radicans
Senecio biserratus
Senecio glossanthus
Senecio hispidulus
Senecio lautus
Senecio odoratus var.
Senecio odoratus var. *longifolius*
Senecio odoratus var. *odoratus*
Senecio picridioides
Senecio quadridentatus
Senecio sp.
Sherardia arvensis
Silene nocturna
Sisymbrium orientale
Solanum simile
Sonchus asper ssp. *glaucescens*
Sonchus hydrophilus
Sonchus megalocarpus
Sonchus oleraceus
Sonchus sp.
Sparaxis sp.
Spergula arvensis
Spergularia marina
Spergularia media
Spinifex sericeus
Sporobolus virginicus
Sprengelia incarnata
Spyridium 'tricolor' (P.G. Wilson 5940)
Spyridium bifidum var. *integrifolium*
Spyridium eriocephalum
Spyridium halmaturinum var.
Spyridium halmaturinum var. *halmaturinum*
Spyridium halmaturinum var. *integrifolium*
Spyridium halmaturinum var. *scabridum*
Spyridium nitidum
Spyridium phyticoides
Spyridium sp.
Spyridium spathulatum
Spyridium thymifolium
Spyridium vexilliferum var. *latifolium*
Spyridium vexilliferum var. *vexilliferum*
Stackhousia aspericoeca
Stackhousia aspericoeca ssp.
Stackhousia aspericoeca ssp. 'Cylindrical inflores'
Stackhousia aspericoeca ssp. 'One-sided inflorescence'
Stackhousia sp.
Stackhousia spathulata
Stellaria media
Stellaria palustris var. *palustris*
Stipa densiflora
Stipa elegantissima
Stipa exilis
Stipa flavescens

Common Name

blood green-hood
banded green-hood
ironstone mulla mulla
Australian saltmarsh-grass
bristly bush-pea
soft bush-pea
coast bush-pea
large-leaf bush-pea
dense-leaved bush-pea
twiggy bush-pea
puigent bush-pea
island bush-pea
bush-pea
narrow-leaf bush-pea
Kangaroo Island bush-pea
three-nerve bush-pea
feather bush-pea
yellow bush-pea
dark bush-pea
large river buttercup
inland buttercup
Australian small-flower butter
Australian small-flower butter
false sow-thistle
sea-berry saltbush
seaberry saltbush
fleshy saltbush
Italian buckthorn
Guildford grass
annual cat's-tail
dock
small wrinklewort
sea pearlwort
creeping brookweed
samphire
beaded glasswort
common fanflower
coast fanflower
cushion fanflower
huddled fanflower
common hog-rush
matted bog-rush
tufted bog-rush
tiny bog-rush
little bog-rush
shiny bog-rush
bog-rush
shrubby glasswort
yellow centary
tiny selaginella
selliera
jagged fireweed
annual groundsel
elegant yellow-top
scented groundsel
narrow-leaf groundsel
scented groundsel
fireweed
cotton fireweed
fireweed
field madiker
Inland hedge mustard
Kangaroo apple
native sow-thistle
lime thistle
common sow-thistle
sow-thistle
corn spurrey
salt sand-spurrey
coast sand-spurrey
coast spinifex
salt couch
pink swamp-heath
heath spyridium
Kangaroo Island spyridium
rough spyridium
shining spyridium
narrow-leaf spyridium
spoon-leaf spyridium
thyme-leaf spyridium
winged spyridium
winged spyridium
bush candles
bush candles
bush candles
candles
coast candles
chickweed
swamp starwort
foxtail spear-grass
elegant spear-grass

Scientific Name

Stipa hemipogon
Stipa mollis
Stipa multispiculis
Stipa semibarbata
Stipa sp.
Stipa stipoides
Stuartina muelleri
Styidium calcareatum
Styidium despectum
Styidium graminifolium
Styidium inundatum
Styidium perpusillum
Styidium tepesianum
Styphelia exarhena
Suaeda australis
Swainsona lessertiiifolia
Templetonia retusa
Tetragonia implexicoma
Tetradlea halmaturina
Tetradlea insularis
Thelymitra antennifera
Thelymitra benthamiana
Thelymitra canaliculata
Thelymitra flexuosa
Thelymitra longifolia
Thelymitra luteociliatum
Thelymitra matthewsii
Thelymitra pauciflora
Thelymitra sp.
Thomasia petalocalyx
Threlkeldia diffusa
Thryptomene ericaea
Thysanotus baueri
Thysanotus fractiflexus
Thysanotus junceifolius
Thysanotus nudicaulis
Thysanotus patersonii
Thysanotus sp.
Trachymene pilosa
Tricoryne elatior
Tricostularia pauciflora
Trifolium angustifolium
Trifolium arvense var. *arvense*
Trifolium campestre
Trifolium dubium
Trifolium glomeratum
Trifolium sp.
Trifolium stellatum
Trifolium subterraneum
Trifolium tomentosum
Triglochin procerum var. *procerum*
Triglochin striatum
Trigonella suavissima
Trymalium waynei
Typha domingensis
Urtica incisa
Utricularia dichotoma
Utricularia tenella
Vellereophyton dealbatum
Veronica arvensis
Veronica calycina
Veronica hillebrandii
Villarsia reniformis
Villarsia sp.
Viola hederacea
Viola sieberiana
Vittadinia australasica var. *australasica*
Vittadinia sp.
Vulpia bromoides
Vulpia myuros forma *megalura*
Vulpia myuros forma *myuros*
Vulpia sp.
Wahlenbergia gracilentia
Wahlenbergia multicaulis
Westringia dampieri
Westringia eremicola
Wilsonia humilis var. *humilis*
Wilsonia sp.
Wurmbea centratis
Wurmbea dioica ssp. *dioica*
Xanthorrhoea semiplana ssp. *tateana*
Xanthosia dissecta var. *floribunda*
Xanthosia pusilla
Xanthosia tasmanica
Xyris operculata
Zieria veronicaea
Zygophyllum apiculatum
Zygophyllum billardierei

Common Name

half-beard spear-grass
soft spear-grass
small-seed spear-grass
barbed spear-grass
spear-grass
coast spear-grass
spoon chidweed
small trigger-plant
grass trigger-plant
hundreds and thousands
slender trigger-plant
Kangaroo Island trigger-plant
beard-beath styphelia
austral seabattle
Darling pea
cockles tongue
bower spinach
curly pink-bells
Kangaroo Island pink-bells
lemon sun-orchid
blotched sun-orchid
azure sun-orchid
twisted sun-orchid
early pink sun-orchid
spiral-leaf sun-orchid
sun-orchid
paper-flower
coast bonefruit
heath thryptomene
mallice fringe-lily
zig-zag fringe-lily
rush fringe-lily
twining fringe-lily
fringe-lily
dwarf parsnip
yellow rush-lily
needle bog-rush
narrow-leaf clover
hare's-foot clover
hop clover
suckling clover
ball clover
star clover
sub clover
woolly clover
water-ribbons
streaked arrowgrass
Cooper clover
grey trymalium
bulrush
native nettle
fairies upron
pink bladderwort
wall speedwell
hairy speedwell
coast speedwell
running marsh-flower
marsh-flower
ivy-leaf violet
tiny violet
New Holland daisy
New Holland daisy
rats tail fescue
fox-tail fescue
rat's-tail fescue
annual bluebell
Tadgell's bluebell
shore westringia
slender westringia
silky wilsonia
inland star-lily
common star-lily
Tate's grass-tree
cut-leaf xanthosia
hairy xanthosia
tall yellow-eye
pink zieria
common twinleaf
coast twinleaf

Development of a Biodiversity Database

Appendices

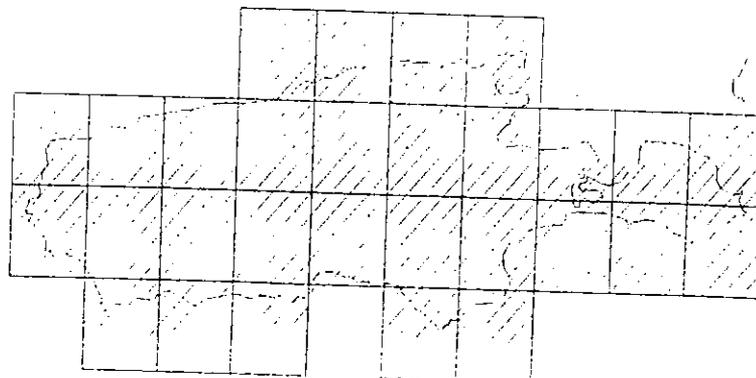
Appendix II

TOTAL FAUNA LIST FOR KANGAROO ISLAND FROM A GRID SEARCH OF THE DATABASE.

The details and map below show the grids searched for this retrieval.

Number of Grids Selected : 29
Area Selected : 26974 km²
Number of Species Found : 289

Longitude	Latitude	Longitude	Latitude
136°35'00"	35°45'00"	136°45'00"	35°45'00"
136°55'00"	35°45'00"	137°05'00"	35°45'00"
137°15'00"	35°45'00"	137°25'00"	35°45'00"
137°35'00"	35°45'00"	137°45'00"	35°45'00"
137°55'00"	35°45'00"	138°05'00"	35°45'00"
137°15'00"	35°35'00"	137°05'00"	35°35'00"
137°25'00"	35°35'00"	137°35'00"	35°35'00"
136°35'00"	35°55'00"	136°45'00"	35°55'00"
136°55'00"	35°55'00"	137°05'00"	35°55'00"
137°15'00"	35°55'00"	137°25'00"	35°55'00"
137°35'00"	35°55'00"	137°45'00"	35°55'00"
137°55'00"	35°55'00"	138°05'00"	35°55'00"
136°45'00"	36°05'00"	136°55'00"	36°05'00"
137°05'00"	36°05'00"	137°25'00"	36°05'00"
137°35'00"	36°05'00"		



South Australian Fauna

Scientific Name

Acanthagenys rufogularis rufogularis
 Acanthiza apicalis
 Acanthiza chrysorrhoa
 Acanthiza lineata
 Acanthiza nana
 Acanthiza pusilla
 Acanthorhynchus tenuirostris tenuirostris
 Accipiter cirrhocephalus cirrhocephalus
 Accipiter fasciatus fasciatus
 Acrocephalus stentoreus
 Actitis hypoleucos
 Aegintha temporalis temporalis
 Aegothales cristatus
 Alauda arvensis
 Aleutera lathamii lathamii
 Anas castanea
 Anas gracilis gracilis
 Anas rhynchotis rhynchotis
 Anas superciliosa superciliosa
 Anhinga melanogaster
 Anthochaera carunculata carunculata
 Anthochaera chrysoptera chrysoptera
 Anthus novaeseelandiae
 Anthus novaeseelandiae australis
 Aprasia striolata
 Apus pacificus pacificus
 Aquila audax audax
 Arctocephalus forsteri
 Ardea alba
 Ardea garzetta
 Ardea novaehollandiae novaehollandiae
 Ardea pacifica
 Ardea sacra sacra
 Arenaria interpres
 Artamus cyanopterus
 Austrelaps labialis
 Austrelaps sp.
 Aythya australis
 Balaenoptera acutorostrata
 Bassiana duperreyi
 Bizura lobata
 Bubulcus ibis
 Burhinus grallarius
 Cacatua galerita galerita
 Cacatua sanguinea
 Cacomantis flabelliformis flabelliformis
 Calidris acuminata
 Calidris ferruginea
 Calidris ruficollis
 Caliocephalus fimbriatus
 Calyptorhynchus funereus
 Calyptorhynchus lathamii
 Caperea marginata
 Capra hircus
 Carduelis carduelis
 Cercartetus concinnus
 Cercartetus lepidus
 Cercartetus sp.
 Cereopsis novaehollandiae novaehollandiae
 Chalinolobus gouldii
 Chalinolobus morio
 Charadrius mongolus mongolus
 Charadrius rubricollis
 Charadrius ruficapillus
 Chenonetta jubata
 Chrysococcyx basalis
 Chrysococcyx lucidus
 Cincloramphus cruralis
 Cincloramphus mathewsi
 Circus approximans
 Circus assimilis
 Cladorhynchus leucocephalus
 Collocalia sp.
 Coluricincla harmonica
 Columba livia
 Coracina novaehollandiae novaehollandiae
 Corvus coronoides coronoides
 Corvus mellori
 Corvus sp.
 Coturnix novaeseelandiae
 Crinia signifera
 Ctenophorus decrezii
 Cuculus pallidus
 Cyclodomorphus melanops
 Cygnus atratus
 Dacelo novaeguineae novaeguineae
 Daption capense
 Delphinus delphis
 Dermochelys coriacea
 Diomedea cauta
 Diomedea chlororhynchus
 Diomedea exulans exulans
 Diomedea melanophrys
 Dromaius novaehollandiae
 Egernia multiscutata
 Egernia sp.
 Egernia whitii
 Elanus caeruleus
 Elanus scriptus
 Elseya melanops
 Emblemella bellum
 Emblemella guttatum
 Eolophus roseicapillus
 Eptesicus darlingtoni
 Eptesicus regulus
 Epthianura albifrons albifrons
 Erythronyx cinctus
 Eudiptula minor

Common Name

Spiny-cheeked Honeyeater
 Broad-tailed Thornbill
 Yellow-rumped Thornbill
 Striated Thornbill
 Little (Yellow) Thornbill
 Brown Thornbill
 Eastern Spinbill
 Collared Sparrowhawk
 Australian Goshawk
 Clamorous Reed Warbler
 Common Sandpiper
 Red-browed Finch
 Australian Owl-nightjar
 Common Skylark
 Australian Brush-turkey
 Chestnut Teal
 Australasian Grey Teal
 Australasian Shoveler
 Black Duck
 Darter
 Red Wattlebird
 Little Wattlebird
 Richard's Pipit
 Richard's Pipit
 Lined Worm-lizard
 Fork-tailed Swift
 Wedge-tailed Eagle
 New Zealand Fur-seal
 Great (White) Egret
 Little Egret
 White-faced Heron
 Pacific (White-necked) Heron
 Eastern Reef Egret
 (Ruddy) Turnstone
 Dusky Woodswallow
 Pygmy Copperhead
 Hardhead
 Minke Whale
 Eastern Three-lined Skink
 Musk Duck
 Cattle Egret
 Southern Stone-curlew (Bush Th
 Sulphur-crested Cockatoo
 Little Corella
 Fan-tailed Cuckoo
 Sharp-tailed Sandpiper
 Curlew Sandpiper
 Red-necked Stint
 Gang-gang
 Yellow-tailed Black Cockatoo (G
 Glossy Black Cockatoo
 Pygmy Right Whale
 Goat
 European Goldfinch
 Southwestern Pigmy-Poosum
 Little Pigmy-Poosum
 Cape Barren Goose
 Gould's Wattlebat
 Chocolate Wattlebat
 Mongolian Plover
 Hooded Dotterel (Hooded Plover
 Red-capped Dotterel
 Masked Duck
 Horsfield's Bronze Cuckoo (Ruf
 Shining Bronze Cuckoo
 Rufous Songlark
 Rufous Songlark
 Swamp (Marsh) Harrier
 Spotted Harrier
 Banded Stilt
 Grey Shrike-thrush
 Feral Pigeon
 Black-faced Cuckoo-strike
 Australian Raven
 Little Raven
 Stubble Quail
 Brown Fraglet (Common Eastern
 Tawny Dragon
 Pallid Cuckoo
 Spinfex Slender Bluetongue
 Black Swan
 Laughing Kookaburra
 Cape Petrel
 Common Dolphin
 Leather Turtle
 Shy Albatross
 Yellow-nosed Albatross
 Wandering Albatross
 Black-browed Albatross
 Emu
 Bull Skink
 White's Skink
 Black-shouldered Kite
 Letter-winged Kite
 Black-fronted Dotterel
 Beautiful Firetail
 Diamond Firetail
 Galah
 Large Forest Eptesicus
 King River Eptesicus
 White-fronted Chat
 Red-kneed Dotterel
 Little (Fairy) Penguin

Scientific Name

Eurystomus orientalis
 Falco berigora
 Falco ceacchroides ceacchroides
 Falco longipennis
 Falco peregrinus
 Falco subniger
 Felis catus
 Fulica atra
 Fulmarus glacialisoides
 Gallinago hardwickii
 Gallinula tenebrosa tenebrosa
 Gallinula ventralis
 Gehyra variegata
 Gliciphila melanops
 Globicephala melas
 Glossopsitta concinna
 Glossopsitta porphyrocephala
 Grallina cyanoleuca
 Gymnorhina tibicen
 Haematopus fuliginosus fuliginosus
 Haematopus ostralegus
 Haematopus ostralegus longirostris
 Halcyon sancta sancta
 Haliaeetus leucogaster
 Haliastur sphenurus
 Hemiergis decrensiensis
 Hemiergis peronii
 Hemiergis sp.
 Heteroscelus brevipes
 Himantopus leucocephalus
 Hirundinidae caudacutus caudacutus
 Hirundo ariel
 Hirundo neoxena
 Hirundo nigricans nigricans
 Hoplopterus miles
 Hoplopterus tricolor
 Hydroprogne caspia
 Hylacola cauta
 Isoodon obesulus
 Lampropholis delicata
 Lampropholis guichenoti
 Larus novaehollandiae novaehollandiae
 Larus pacificus
 Larista bougainvillii
 Larista dorsalis
 Larista sp.
 Leucocarbo fuscescens
 Limnodynastes dorsalis
 Limnodynastes dumerilii
 Limnodynastes tasmaniensis
 Limosa lapponica
 Limosa limosa
 Litoria ewingii
 Lophocinia isura
 Macronectes giganteus
 Macropus eugenii
 Macropus fuliginosus
 Macropus giganteus
 Malacorhynchus membranaceus
 Malurus cyaneus
 Megalurus gramineus
 Meliphaga crastina
 Meliphaga leucotis
 Meliphaga virescens
 Melithreptus brevirostris
 Melithreptus lunatus lunatus
 Menetta greyii
 Merops ornatus
 Mesopodion grayii
 Mesopodion iyardii
 Morethia obscura
 Morus serrator
 Mus domesticus
 Myiagra inquieta inquieta
 Neobatrachus pictus
 Neobatrachus sp.
 Neopheba elegans
 Neopheba petrophila
 Neopheba sp.
 Neophox cinerea
 Nephurus milii
 Ninox novaeseelandiae
 Notochis ater
 Notochis scutatus
 Numenius madagascariensis
 Numenius phaeopus
 Nycticorax caledonicus
 Nyctophilus geoffroyi
 Ocyphaps lophotes
 Ornithorhynchus anatinus
 Ovis aries
 Oxyura australis
 Pachycephala pectoralis
 Pachyptila turtur
 Pandion haliaetus
 Pandion haliaetus cristatus
 Pardalotus punctatus
 Pardalotus sp.
 Pardalotus striatus
 Pardalotus xanthopygus
 Passer domesticus domesticus
 Pavo cristatus
 Pelagodroma marina
 Pelecanus conspicillatus
 Petroica multicolor
 Phalacrocorax carbo
 Phalacrocorax melanoleucos melanoleucos
 Phalacrocorax sulcirostris

Common Name

Dollarbird
 Brown Falcon
 Australian Kestrel
 Australian Hobby
 Peregrine Falcon
 Black Falcon
 Cat
 (Eurasian) Coot
 Southern Fulmar
 Latham's (Japanese) Snipe
 Dusky Moorhen
 Black-tailed Native-hen
 Tree Diella
 Tawny-crowned Honeyeater
 Long-tinned Pilot Whale
 Musk Lorikeet
 Purple-crowned Lorikeet
 Australian Magpie Lark
 Australian Magpie
 Sooty Oystercatcher
 Pied Oystercatcher
 Pied Oystercatcher
 Sacred Kingfisher
 White-beasted Sea-eagle
 Whistling Eagle
 Three-toed Earless Skink
 Four-toed Earless Skink
 Grey-tailed Tantler
 Black-winged Stilt
 Spine-tailed Swift (White-thro
 Fairy Martin
 Welcome Swallow
 Tree Martin
 Masked Lapwing
 Banded Lapwing
 Caspian Tern
 Shy Heathwren (Shy Hylacola)
 Short-nosed Bandicoot
 Delicate Skink
 Garden Skink
 Silver Gull
 Pacific Gull
 Bougainville's Skink
 Southern Four-toed Slider
 Black-faced Cormorant
 Western Banjo Frog
 Bull Frog (Eastern Banjo Frog)
 Marbled Frog (Spotted Grass Fr
 Bar-tailed Godwit
 Black-tailed Godwit
 Brown Tree Frog
 Square-tailed Kite
 Southern Giant Petrel
 Dama Wallaby
 Western Grey Kangaroo
 Eastern Grey Kangaroo
 Pink-eared Duck
 Superb Blue Wren
 Little Grassbird
 Purple-gaped Honeyeater
 White-eared Honeyeater
 Singing Honeyeater
 Brown-headed Honeyeater
 White-naped Honeyeater
 Dwarf Skink
 Rainbow Bee-eater
 Gray's Beaked Whale
 Strap-toothed Beaked Whale
 Malie Snake-eye
 Australasian Gannet
 House Mouse
 Restless Flycatcher
 Meowling Frog
 Elegant Parrot
 Rock Parrot
 Australian Sea-Iron
 Thick-tailed Gecko
 Boobook Owl
 Black Tiger Snake
 Eastern Tiger Snake
 Eastern Curlew
 Whimbrel
 Nankeen (Rufous) Night Heron
 Lesser Long-eared Bat
 Crested Pigeon
 Platypus
 Sheep
 Blue-billed Duck
 Golden Whistler
 Fairy Prion
 Osprey
 Osprey
 Spotted Pardalote
 Striated Pardalote
 Yellow-rumped Pardalote
 House Sparrow
 Indian (Blue) Peafowl
 White-faced Storm-Petrel
 Australian Pelican
 Scarlet Robin
 Black Cormorant
 Little Pied Cormorant
 Little Black Cormorant

South Australian Fauna

Scientific Name	Common Name	Scientific Name	Common Name
<i>Phalacrocorax varius</i>	<i>Pied Cormorant</i>		
<i>Phalacrocorax varius hypoleucos</i>	<i>Pied Cormorant</i>		
<i>Phaps chalcoptera</i>	<i>Common Bronzewing</i>		
<i>Phaps elegans elegans</i>	<i>Brush Bronzewing</i>		
<i>Phaps sp.</i>			
<i>Phascogalea cinereus</i>	<i>Koala</i>		
<i>Phylidonyris albifrons</i>	<i>White-fronted Honeyeater</i>		
<i>Phylidonyris novaehollandiae novaehollandiae</i>	<i>New Holland Honeyeater</i>		
<i>Phylidonyris pyrrhoptera</i>	<i>Crescent Honeyeater</i>		
<i>Phylodactylus marmoratus</i>	<i>Marbled Gecko</i>		
<i>Physeter macrocephalus</i>	<i>Sperm Whale</i>		
<i>Platalea flavipes</i>	<i>Yellow-billed Spoonbill</i>		
<i>Platalea regia</i>	<i>Royal Spoonbill</i>		
<i>Platycercus elegans</i>	<i>Crimson Rosella</i>		
<i>Platycercus elegans 'adelaide'</i>	<i>'Adelaide Rosella'</i>		
<i>Plegadis falcinellus</i>	<i>Glossy Ibis</i>		
<i>Pluvialis squatarola</i>	<i>Grey Plover</i>		
<i>Podiceps cristatus</i>	<i>Great Crested Grebe</i>		
<i>Pogona barbata</i>	<i>Eastern Bearded Dragon</i>		
<i>Poliocephalus poliocephalus</i>	<i>Hoary-headed Grebe</i>		
<i>Porphyrio porphyrio</i>	<i>Purple Swamphen</i>		
<i>Porzana fluminea</i>	<i>Australian Crake</i>		
<i>Porzana pusilla</i>	<i>Baillou's (Marsh) Crake</i>		
<i>Porzana tabuensis</i>	<i>Spotless Crake</i>		
<i>Pseudemoia entrecasteauxii</i>	<i>Southern Grass Skink</i>		
<i>Pseudocheirus peregrinus</i>	<i>Common Ringtail</i>		
<i>Pseudophryne bibronii</i>	<i>Brown Toadlet</i>		
<i>Psophodes nigrogularis</i>	<i>Western Whipbird</i>		
<i>Pteropus scapulatus</i>	<i>Little Red Flying-fox</i>		
<i>Puffinus carneipes</i>	<i>Flesh-footed Shearwater</i>		
<i>Puffinus tenuirostris</i>	<i>Short-tailed Shearwater</i>		
<i>Rallus pectoralis pectoralis</i>	<i>Lewin's Rail</i>		
<i>Rattus fuscipes</i>	<i>Bush Rat</i>		
<i>Rattus fuscipes greyii</i>	<i>Bush Rat</i>		
<i>Rattus lutreolus lutreolus</i>	<i>Eastern Swamp Rat</i>		
<i>Rattus rattus</i>	<i>Black Rat</i>		
<i>Rattus sp.</i>			
<i>Recurvirostra novaehollandiae</i>	<i>Red-necked Avocet</i>		
<i>Rhipidura fuliginosa</i>	<i>Grey Fantail</i>		
<i>Rhipidura leucophrys leucophrys</i>	<i>Willie Wagtail</i>		
<i>Sericornis frontalis frontalis</i>	<i>White-browed Scrubwren</i>		
<i>Sericornis maculatus</i>	<i>Spotted Scrubwren</i>		
<i>Sminthopsis aitkeni</i>	<i>Sooty Dunnart</i>		
<i>Stercorarius parasiticus</i>	<i>Arctic Jaeger</i>		
<i>Sterna nereis nereis</i>	<i>Fairy Tern</i>		
<i>Sterna vittata</i>	<i>Antarctic Tern</i>		
<i>Stictonetta naevosa</i>	<i>Freckled Duck</i>		
<i>Stipiturus malachurus</i>	<i>Southern Emu-wren</i>		
<i>Strepera versicolor</i>	<i>Grey Currawong</i>		
<i>Streptopelia chinensis</i>	<i>Spotted Turtle-dove</i>		
<i>Sturnus vulgaris vulgaris</i>	<i>(Common, European) Starling</i>		
<i>Sus scrofa</i>	<i>Pig</i>		
<i>Suta flagellum</i>	<i>Little Whip Snake</i>		
<i>Tachybaptus novaehollandiae</i>	<i>Australasian Grebe</i>		
<i>Tachyglossus aculeatus</i>	<i>Echidna</i>		
<i>Tadarida australis</i>	<i>White-striped Mastiff-Bat</i>		
<i>Tadorna tadornoides</i>	<i>Australian Shelduck</i>		
<i>Thalasseus bergii</i>	<i>Crested Tern</i>		
<i>Threskiornis aethiopicus</i>	<i>Suared (White) Ibis</i>		
<i>Threskiornis spinicollis</i>	<i>Straw-necked Ibis</i>		
<i>Tiliqua scincoides</i>	<i>Eastern Bhetongie</i>		
<i>Trichoglossus haematodus</i>	<i>Rainbow Lorikeet</i>		
<i>Trichosurus vulpecula</i>	<i>Common Brushtail</i>		
<i>Tringa nebularia</i>	<i>Greenshank</i>		
<i>Tringa stagnatilis</i>	<i>Marsh Sandpiper</i>		
<i>Turdus merula merula</i>	<i>Blackbird</i>		
<i>Turnix varia varia</i>	<i>Painted Button-quail</i>		
<i>Tursiops truncatus</i>	<i>Bottle-nosed Dolphin</i>		
<i>Tyto alba</i>	<i>Barn Owl</i>		
<i>Varanus rosenbergi</i>	<i>Heath Goanna</i>		
<i>Vespertilionidae sp.</i>			
<i>Zoothera lunulata lunulata</i>	<i>Mountain Thrush (Ground Thrush)</i>		
<i>Zosterops lateralis</i>	<i>Silvereye</i>		

Development of a Biodiversity Database

Appendices

Appendix III

FREQUENCY LIST OF TERRESTRIAL VERTEBRATES RECORDED IN CONSERVATION PARKS ON KANGAROO ISLAND.

The SP CODE is the unique identifier used in the taxonomic databases of the Viridans system
STATUS is divided into the following categories:

* European Introduction

The two letter codes refer to the National (in capitals) and the South Australian (in lower case)
conservation status divided into the following categories:

The definition for the status codes are as follows:

(E, e) Endangered: taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating.

(V, v) Vulnerable: taxa believed likely to move into endangered category in the near future if the causal factors continue operating.

(R, r) Rare: taxa with small populations in South Australia that are not at present endangered or vulnerable, but are at risk.

(N, n) Status not yet assessed

Note that this table is an unedited retrieval from the combined databases searched for this project and so includes records of species only identified to genus a couple of whales from the Museum database and other potential database errors which can now be edited thanks to the ease of this type of retrieval in the Viridans system

SP. CODE	STATUS	SCIENTIFIC NAME	COMMON NAME	NO. SITES	FREQ
10		<i>Acanthiza lineata</i>	Striated Thornbill	6	1.86
12		<i>Acanthiza pusilla</i>	Brown Thornbill	11	3.42
622		<i>Acanthorhynchus tenuirostris tenuirostris</i>	Eastern Spinebill	10	3.11
951		<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	1	0.31
878		<i>Aegintha temporalis temporalis</i>	Red-browed Finch	3	0.93
29	*	<i>Alauda arvensis</i>	Common Skylark	2	0.62
425		<i>Anas castanea</i>	Chestnut Teal	1	0.31
1049		<i>Anas gracilis gracilis</i>	Australasian Grey Teal	1	0.31
430	Nr	<i>Anas rhynchotis rhynchotis</i>	Australasian Shoveler	1	0.31
432		<i>Anas superciliosa superciliosa</i>	Black Duck	1	0.31
704		<i>Anthochaera carunculata carunculata</i>	Red Wattlebird	18	5.6
705		<i>Anthochaera chrysoptera chrysoptera</i>	Little Wattlebird	3	0.93

733		<i>Anthus novaeseelandiae</i>	Richard's Pipit	2	0.62
53		<i>Aprasia striolata</i>	Lined Worm-lizard	10	3.11
331		<i>Aquila audax audax</i>	Wedge-tailed Eagle	3	0.93
451		<i>Ardea novaehollandiae novaehollandiae</i>	White-faced Heron	2	0.62
461	Nr	<i>Ardea sacra sacra</i>	Eastern Reef Egret	1	0.31
467		<i>Artamus cyanopterus</i>	Dusky Woodswallow	1	0.31
2358		<i>Austrelaps labialis</i>		8	2.49
599	Nn	<i>Austrelaps sp.</i>	Pygmy Copperhead	1	0.31
60	Nr	<i>Balaenoptera acutorostrata</i>	Minke Whale	1	0.31
2334		<i>Bassiana duperreyi</i>	Eastern Three-lined Skink	2	0.62
435	Nv	<i>Biziura lobata</i>	Musk Duck	1	0.31
491		<i>Cacatua sanguinea</i>	Little Corella	3	0.93
1051		<i>Cacomantis flabelliformis flabelliformis</i>	Fan-tailed Cuckoo	7	2.18
495	Nv	<i>Calyptorhynchus funereus</i>	Yellow-tailed Black Cockatoo (3	
0.93					
497	Ne	<i>Calyptorhynchus lathamii</i>	Glossy Black Cockatoo	1	0.31
632	*	<i>Carduelis carduelis</i>	European Goldfinch	1	0.31
482		<i>Cercartetus concinnus</i>	Southwestern Pigmy-Possum	29	9.03
81		<i>Chalinolobus morio</i>	Chocolate Wattled Bat	3	0.93
85	Vv	<i>Charadrius rubricollis</i>	Hooded Dotterel (Hooded Plover	3	0.93
437		<i>Chenonetta jubata</i>	Maned Duck	1	0.31
557		<i>Chrysococcyx basalis</i>	Horsfield's Bronze Cuckoo (Ruf	7	2.18
559	Nr	<i>Chrysococcyx lucidus</i>	Shining Bronze Cuckoo	1	0.31
360		<i>Circus approximans</i>	Swamp (Marsh) Harrier	2	0.62
747		<i>Colluricincla harmonica</i>	Grey Shrike-thrush	14	4.36
502		<i>Coracina novaehollandiae novaehollandiae</i>	Black-faced Cuckoo-strike	1	
0.31					
546		<i>Corvus coronoides coronoides</i>	Australian Raven	1	0.31
96		<i>Corvus mellori</i>	Little Raven	2	0.62
2042		<i>Corvus sp.</i>		5	1.55
797		<i>Crinia signifera</i>	Brown Froglet (Common Eastern	24	7.47
438		<i>Cygnus atratus</i>	Black Swan	3	0.93
915		<i>Egernia multiscutata</i>	Bull Skink	3	0.93
2291		<i>Egernia sp.</i>		2	0.62
149		<i>Egernia whitii</i>	White's Skink	9	2.8
875	Nv	<i>Emblema bellum</i>	Beautiful Firetail	2	0.62
487		<i>Eolophus roseicapillus</i>	Galah	7	2.18
153		<i>Eptesicus regulus</i>	King River Eptesicus	1	0.31
2346		<i>Epthianura albifrons albifrons</i>	White-fronted Chat	4	1.24
161		<i>Eudyptula minor</i>	Little (Fairy) Penguin	2	0.62

628		<i>Falco berigora</i>	Brown Falcon	3	0.93
629		<i>Falco cenchroides cenchroides</i>	Australian Kestrel	4	1.24
164		<i>Falco peregrinus</i>	Peregrine Falcon	1	0.31
165	*	<i>Felis catus</i>	Cat	4	1.24
167		<i>Fulica atra</i>	(Eurasian) Coot	1	0.31
728		<i>Gliciphila melanops</i>	Tawny-crowned Honeyeater	7	2.18
669		<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	7	2.18
549		<i>Gymnorhina tibicen</i>	Australian Magpie	11	3.42
647		<i>Haematopus fuliginosus fuliginosus</i>	Sooty Oystercatcher	1	0.31
649		<i>Haematopus ostralegus longirostris</i>	Pied Oystercatcher	1	0.31
335	Nv	<i>Haliaeetus leucogaster</i>	White-beasted Sea-eagle	3	0.93
177		<i>Hemiergis decresiensis</i>	Three-toed Earless Skink	4	1.24
180		<i>Hemiergis peronii</i>	Four-toed Earless Skink	26	8.09
2293		<i>Hemiergis sp.</i>		1	0.31
181		<i>Hirundo neoxena</i>	Welcome Swallow	12	3.73
651		<i>Hirundo nigricans nigricans</i>	Tree Martin	4	1.24
2345		<i>Hoplopterus miles</i>	Masked Lapwing	1	0.31
185		<i>Hydroprogne caspia</i>	Caspian Tern	1	0.31
173	Nv	<i>Hylacola cauta</i>	Shy Heathwren (Shy Hylacola)	2	0.62
190		<i>Lampropholis delicata</i>	Delicate Skink	4	1.24
916		<i>Lampropholis guichenoti</i>	Garden Skink	35	10.9
660		<i>Larus novaehollandiae novaehollandiae</i>	Silver Gull	2	0.62
191		<i>Larus pacificus</i>	Pacific Gull	2	0.62
199		<i>Lerista bougainvillii</i>	Bougainville's Skink	14	4.36
209		<i>Leucocarbo fuscescens</i>	Black-faced Cormorant	1	0.31
782		<i>Limnodynastes dumerilii</i>	Bull Frog (Eastern Banjo Frog)	13	4.04
786		<i>Limnodynastes tasmaniensis</i>	Marbled Frog (Spotted Grass Fr)	4	
1.24					
653		<i>Litoria ewingii</i>	Brown Tree Frog	10	3.11
222	Nn	<i>Macropus eugenii</i>	Dama Wallaby	31	9.65
223		<i>Macropus fuliginosus</i>	Western Grey Kangaroo	29	9.03
228		<i>Malurus cyaneus</i>	Superb Blue Wren	14	4.36
233		<i>Megalurus gramineus</i>	Little Grassbird	2	0.62
709		<i>Meliphaga cratitia</i>	Purple-gaped Honeyeater	10	3.11
712		<i>Meliphaga leucotis</i>	White-eared Honeyeater	2	0.62
722		<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater	5	1.55
236		<i>Menetia greyii</i>	Dwarf Skink	4	1.24
1048	Nr	<i>Mesoplodon layardii</i>	Strap-toothed Beaked Whale	1	0.31
245		<i>Morethia obscura</i>	Mallee Snake-eye	12	3.73
740	*	<i>Mus domesticus</i>	House Mouse	28	8.72
788		<i>Neobatrachus pictus</i>	Meowling Frog	12	3.73

860	Nn	<i>Neophema elegans</i>	Elegant Parrot	2	0.62
861	Nn	<i>Neophema petrophila</i>	Rock Parrot	2	0.62
816	Nr	<i>Neophoca cinerea</i>	Australian Sea-lion	4	1.24
2374		<i>Nephrurus milii</i>	Thick-tailed Gecko	7	2.18
253		<i>Ninox novaeseelandiae</i>	Boobook Owl	2	0.62
1433		<i>Notechis ater</i>	Black Tiger Snake	18	5.6
608		<i>Notechis scutatus</i>	Eastern Tiger Snake	3	0.93
259	Nv	<i>Numenius madagascariensis</i>	Eastern Curlew	1	0.31
264		<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	7	2.18
270		<i>Oxyura australis</i>	Blue-billed Duck	1	0.31
765		<i>Pachycephala pectoralis</i>	Golden Whistler	13	4.04
817	Nv	<i>Pandion haliaetus cristatus</i>	Osprey	1	0.31
818		<i>Pardalotus punctatus</i>	Spotted Pardalote	1	0.31
2099		<i>Pardalotus sp.</i>		1	0.31
820		<i>Pardalotus striatus</i>	Striated Pardalote	5	1.55
822	Nv	<i>Pardalotus xanthopygus</i>	Yellow-rumped Pardalote	3	0.93
277	*	<i>Pavo cristatus</i>	Indian (Blue) Peafowl	1	0.31
279		<i>Pelagodroma marina</i>	White-faced Storm-Petrel	1	0.31
281		<i>Pelecanus conspicillatus</i>	Australian Pelican	1	0.31
771		<i>Petroica multicolor</i>	Scarlet Robin	4	1.24
833		<i>Phalacrocorax melanoleucos melanoleucos</i>	Little Pied Cormorant	1	
0.31					
1061		<i>Phalacrocorax varius</i>	Pied Cormorant	1	0.31
834		<i>Phalacrocorax varius hypoleucos</i>	Pied Cormorant	1	0.31
537		<i>Phaps elegans elegans</i>	Brush Bronzewing	8	2.49
2007		<i>Phaps sp.</i>		1	0.31
291	Nr	<i>Phascolarctos cinereus</i>	Koala	2	0.62
729		<i>Phylidonyris novaehollandiae novaehollandiae</i>	New Holland Honeyeater	15	
4.67					
295		<i>Phylidonyris pyrrhoptera</i>	Crescent Honeyeater	10	3.11
643		<i>Phyllodactylus marmoratus</i>	Marbled Gecko	14	4.36
866		<i>Platycercus elegans</i>	Crimson Rosella	3	0.93
884		<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe	2	0.62
905		<i>Porzana fluminea</i>	Australian Crake	1	0.31
791	Nn	<i>Pseudophryne bibronii</i>	Brown Toadlet	3	0.93
809	Nv	<i>Psophodes nigrogularis</i>	Western Whipbird	3	0.93
322		<i>Puffinus tenuirostris</i>	Short-tailed Shearwater	1	0.31
326		<i>Rattus fuscipes</i>	Bush Rat	8	2.49
744		<i>Rattus fuscipes greyii</i>	Bush Rat	18	5.6
2232		<i>Rattus sp.</i>		1	0.31
776		<i>Rhipidura fuliginosa</i>	Grey Fantail	6	1.86
778		<i>Rhipidura leucophrys leucophrys</i>	Willie Wagtail	3	0.93

261		<i>Sericornis maculatus</i>	Spotted Scrubwren	14	4.36
583	Nr	<i>Sminthopsis aitkeni</i>	Sooty Dunnart	1	0.31
665	Nv	<i>Sterna nereis nereis</i>	Fairy Tern	1	0.31
355	Nv	<i>Stipiturus malachurus</i>	Southern Emu-wren	1	0.31
552		<i>Strepera versicolor</i>	Grey Currawong	17	5.29
949	*	<i>Sturnus vulgaris vulgaris</i>	(Common, European) Starling	2	0.62
358		<i>Tachybaptus novaehollandiae</i>	Australasian Grebe	1	0.31
955		<i>Tachyglossus aculeatus</i>	Echidna	14	4.36
440		<i>Tadorna tadornoides</i>	Australian Shelduck	2	0.62
847		<i>Threskiornis aethiopicus</i>	Sacred (White) Ibis	4	1.24
849		<i>Threskiornis spinicollis</i>	Straw-necked Ibis	1	0.31
671		<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	9	2.8
835	Nn	<i>Trichosurus vulpecula</i>	Common Brushtail	41	12.77
429	Nn	<i>Varanus rosenbergi</i>	Heath Goanna	15	4.67
2328		<i>Vespertilionidae sp.</i>		1	0.31
393		<i>Zosterops lateralis</i>	Silvereye	15	4.67

Development of a Biodiversity Database

Appendices

Appendix IV

TAXONOMIC LIST OF TERRESTRIAL VERTEBRATES RECORDED IN CONSERVATION PARKS ON KANGAROO ISLAND.

The SP CODE is the unique identifier used in the taxonomic databases of the Viridans system
STATUS is divided into the following categories:

* European Introduction

The two letter codes refer to the National (in capitals) and the South Australian (in lower case)
conservation status divided into the following categories:

The definition for the status codes are as follows:

(E, e) Endangered: taxa in danger of extinction and whose survival is unlikely if the causal factors
continue operating.

(V, v) Vulnerable: taxa believed likely to move into endangered category in the near future if the
causal factors continue operating.

(R, r) Rare: taxa with small populations in South Australia that are not at present endangered
or vulnerable, but are at risk.

(N, n) Status not yet assessed

Note that this table is an unedited retrieval from the combined databases searched for this project and
includes records of species only identified to genus a couple of whales from the Museum database
and other potential database errors which can now be edited thanks to the ease of this type of retrieval
in the Viridans system

AMPHIBIA

Hylidae

Litoria ewingii

Brown Tree Frog

Leptodactylidae

Crinia signifera

Brown Froglet (Common Eastern

Limnodynastes dumerillii

Bull Frog (Eastern Banjo Frog)

Limnodynastes tasmaniensis

Marbled Frog (Spotted Grass Fr

Neobatrachus pictus

Meeowing Frog

Nn *Pseudophryne bibronii*

Brown Toadlet

REPTILIA

Elapidae

Austrelaps labialis

Nn *Austrelaps* sp.

Notechis ater

Notechis scutatus

Pygmy Copperhead

Black Tiger Snake

Eastern Tiger Snake

Gekkonidae

Nephrurus milii

Phyllodactylus marmoratus

Thick-tailed Gecko

Marbled Gecko

Pygopodidae

Aprasia striolata

Lined Worm-lizard

Scincidae

Bassiana duperreyi

Eastern Three-lined Skink

Egernia multiscutata

Bull Skink

Egernia sp.

White's Skink

Egernia whitii

Three-toed Earless Skink

Hemiergis decresiensis

Four-toed Earless Skink

Hemiergis peronii

Hemiergis sp.

Delicate Skink

Lampropholis delicata

Garden Skink

Lampropholis guichenoti

Bougainville's Skink

Lerista bougainvillii

Dwarf Skink

Menetia greyii

Mallee Snake-eye

Morethia obscura

Varanidae

Nn *Varanus rosenbergi*

Heath Goanna

AVES

Accipitridae

Aquila audax audax

Wedge-tailed Eagle

Circus approximans

Swamp (Marsh) Harrier

Nv *Haliaeetus leucogaster*

White-beasted Sea-eagle

Nv *Pandion haliaetus cristatus*

Osprey

Alaudidae

**Alauda arvensis*

Common Skylark

Anatidae

Anas castanea

Chestnut Teal

Anas gracilis gracilis

Australasian Grey Teal

Nr *Anas rhynchotis rhynchotis*

Australasian Shoveler

Anas superciliosa superciliosa

Black Duck

Nv *Biziura lobata*

Musk Duck

Chenonetta jubata

Maned Duck

Cygnus atratus

Black Swan

Oxyura australis

Blue-billed Duck

Tadorna tadornoides

Australian Shelduck

Ardeidae

Ardea novaehollandiae novaehollandiae

White-faced Heron

Nr *Ardea sacra sacra*

Eastern Reef Egret

Charadriidae

Vv *Charadrius rubricollis*

Hooded Dotterel (Hooded Plover)

Haematopus fuliginosus fuliginosus

Sooty Oystercatcher

Haematopus ostralegus longirostris

Pied Oystercatcher

Hoplopterus miles

Masked Lapwing

Columbidae

Phaps elegans elegans

Brush Bronzewing

Phaps sp.

Corvidae

<i>Artamus cyanopterus</i>	Dusky Woodswallow
<i>Colluricincla harmonica</i>	Grey Shrike-thrush
<i>Coracina novaehollandiae novaehollandiae</i>	Black-faced Cuckoo-strike
<i>Corvus coronoides coronoides</i>	Australian Raven
<i>Corvus mellori</i>	Little Raven
<i>Corvus sp.</i>	
<i>Gymnorhina tibicen</i>	Australian Magpie
<i>Pachycephala pectoralis</i>	Golden Whistler
Nv <i>Psophodes nigrogularis</i>	Western Whipbird
<i>Rhipidura fuliginosa</i>	Grey Fantail
<i>Rhipidura leucophrys leucophrys</i>	Willie Wagtail
<i>Strepera versicolor</i>	Grey Currawong

Cuculidae

<i>Cacomantis flabelliformis flabelliformis</i>	Fan-tailed Cuckoo
<i>Chrysococcyx basalis</i>	Horsfield's Bronze Cuckoo (Ruf
Nr <i>Chrysococcyx lucidus</i>	Shining Bronze Cuckoo

Eopsaltriidae

<i>Petroica multicolor</i>	Scarlet Robin
----------------------------	---------------

Falconidae

<i>Falco berigora</i>	Brown Falcon
<i>Falco cenchroides cenchroides</i>	Australian Kestrel
<i>Falco peregrinus</i>	Peregrine Falcon

Fringillidae

* <i>Carduelis carduelis</i>	European Goldfinch
------------------------------	--------------------

Hirundinidae

<i>Hirundo neoxena</i>	Welcome Swallow
<i>Hirundo nigricans nigricans</i>	Tree Martin

Laridae

<i>Hydroprogne caspia</i>	Caspian Tern
<i>Larus novaehollandiae novaehollandiae</i>	Silver Gull
<i>Larus pacificus</i>	Pacific Gull
Nv <i>Sterna nereis nereis</i>	Fairy Tern

Maluridae

<i>Malurus cyaneus</i>	Superb Blue Wren
Nv <i>Stipiturus malachurus</i>	Southern Emu-wren

Meliphagidae

<i>Acanthorhynchus tenuirostris tenuirostris</i>	Eastern Spinebill
<i>Anthochaera carunculata carunculata</i>	Red Wattlebird
<i>Anthochaera chrysoptera chrysoptera</i>	Little Wattlebird
<i>Epthianura albifrons albifrons</i>	White-fronted Chat
<i>Gliciphila melanops</i>	Tawny-crowned Honeyeater
<i>Meliphaga cratitia</i>	Purple-gaped Honeyeater
<i>Meliphaga leucotis</i>	White-eared Honeyeater
<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater
<i>Phylidonyris novaehollandiae novaehollandiae</i>	New Holland Honeyeater
<i>Phylidonyris pyrrhoptera</i>	Crescent Honeyeater

Pardalotidae

<i>Acanthiza lineata</i>	Striated Thornbill
<i>Acanthiza pusilla</i>	Brown Thornbill
Nv <i>Hylacola cauta</i>	Shy Heathwren (Shy Hylacola)
<i>Pardalotus punctatus</i>	Spotted Pardalote
<i>Pardalotus sp.</i>	
<i>Pardalotus striatus</i>	Striated Pardalote
Nv <i>Pardalotus xanthopygus</i>	Yellow-rumped Pardalote
<i>Sericornis maculatus</i>	Spotted Scrubwren
Passeridae	
<i>Aegintha temporalis temporalis</i>	Red-browed Finch
<i>Anthus novaeseelandiae</i>	Richard's Pipit
Nv <i>Emblema bellum</i>	Beautiful Firetail
Pelecanidae	
<i>Pelecanus conspicillatus</i>	Australian Pelican
Phalacrocoracidae	
<i>Leucocarbo fuscescens</i>	Black-faced Cormorant
<i>Phalacrocorax melanoleucos melanoleucos</i>	Little Pied Cormorant
<i>Phalacrocorax varius</i>	Pied Cormorant
<i>Phalacrocorax varius hypoleucos</i>	Pied Cormorant
Phasianidae	
* <i>Pavo cristatus</i>	Indian (Blue) Peafowl
Podicipedidae	
<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe
Procellariidae	
<i>Pelagodroma marina</i>	White-faced Storm-Petrel
<i>Puffinus tenuirostris</i>	Short-tailed Shearwater
Psittacidae	
<i>Cacatua sanguinea</i>	Little Corella
Nv <i>Calyptorhynchus funereus</i>	Yellow-tailed Black Cockatoo (
Ne <i>Calyptorhynchus lathami</i>	Glossy Black Cockatoo
<i>Eolophus roseicapillus</i>	Galah
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet
Nn <i>Neophema elegans</i>	Elegant Parrot
Nn <i>Neophema petrophila</i>	Rock Parrot
<i>Platycercus elegans</i>	Crimson Rosella
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet
Rallidae	
<i>Fulica atra</i>	(Eurasian) Coot
<i>Porzana fluminea</i>	Australian Crake
Scolopacidae	
Nv <i>Numenius madagascariensis</i>	Eastern Curlew
Spheniscidae	
<i>Eudyptula minor</i>	Little (Fairy) Penguin
Strigidae	
<i>Ninox novaeseelandiae</i>	Boobook Owl

Sturnidae	
* <i>Sturnus vulgaris vulgaris</i>	(Common,European) Starling
Sylviidae	
<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler
<i>Megalurus gramineus</i>	Little Grassbird
Threskiornithidae	
<i>Threskiornis aethiopicus</i>	Sacred (White) Ibis
<i>Threskiornis spinicollis</i>	Straw-necked Ibis
Zosteropidae	
<i>Zosterops lateralis</i>	Silvereye
MAMMALIA	
Balaenopteridae	
Nr <i>Balaenoptera acutorostrata</i>	Minke Whale
Burramyidae	
<i>Cercartetus concinnus</i>	Southwestern Pigmy-Possum
Dasyuridae	
Nr <i>Sminthopsis aitkeni</i>	Sooty Dunnart
Felidae	
* <i>Felis catus</i>	Cat
Macropodidae	
Nn <i>Macropus eugenii</i>	Dama Wallaby
<i>Macropus fuliginosus</i>	Western Grey Kangaroo
Muridae	
* <i>Mus domesticus</i>	House Mouse
<i>Rattus fuscipes</i>	Bush Rat
<i>Rattus fuscipes greyii</i>	Bush Rat
<i>Rattus sp.</i>	
Otariidae	
Nr <i>Neophoca cinerea</i>	Australian Sea-lion
Phalangeridae	
Nn <i>Trichosurus vulpecula</i>	Common Brushtail
Phascolarctidae	
Nr <i>Phascolarctos cinereus</i>	Koala
Tachyglossidae	
<i>Tachyglossus aculeatus</i>	Echidna
Vespertilionidae	
<i>Chalinolobus morio</i>	Chocolate Wattled Bat
<i>Eptesicus regulus</i>	King River Eptesicus
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat
<i>Vespertilionidae sp.</i>	

Ziphiidae

Nr *Mesoplodon layardii*

Strap-toothed Beaked Whale