Island Management in South Australia

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Abstract

The varying conservation value of South Australia's 150 offshore islands means that a variety of management strategies must be employed. Kangaroo Island has problems which are specific to an island of this size both in relation to the increasing impact of tourist developments and in general wildlife management on the island. The conservation value and management problems of the eight islands over 800 ha are discussed individually and then some aspects of management of important wildlife populations on the remaining islands is considered. Reintroduction programs for Brush-tailed Bettongs and Stick-nest Rats to islands are considered followed by a summary of the large number of deliberate introductions of native vertebrates both to Kangaroo Island and other smaller islands which have taken place in the past. Finally the specific management needs of the islands of the Sir Joseph Banks Group are presented as a case study to show the range of management strategies which need to be employed.

INTRODUCTION

South Australia has approximately 150 offshore islands around its coastline (depending on distinctions made between reefs, islets and islands). Details of these islands are shown in Table 1, and the location of the main island groups and of places mentioned in the text of this paper are shown in Figs 1-3. All are continental islands and were thus connected to the South Australian mainland during the last Pleistocene glaciation. Using the present water depth between the islands and today's mainland shore and a curve of Pleistocene sea level change (Thom and Campbell 1975) it can be estimated that the oldest South Australian island was isolated 12 600 years ago (South Rocky Island). South and North Neptune Islands were isolated 11 900 years ago, Hart Island 10 850 years ago and Pearson and Greenly Islands 10 500 years ago. The majority of the remaining islands were isolated between 7 000 to 9 500 years ago. Biological surveys have now been completed on most of the South Australian offshore islands (excluding Kangaroo Island) and the preliminary results and methods used have been reported (Robinson and Canty 1984). The detailed results of these surveys are currently being prepared for publication (Robinson *et al.* in prep).

Kangaroo Island with an area of 4 350 km^2 is by far the largest South Australian offshore island and the third largest in Australia. The next largest island is St Peter at only 40 km^2. Kangaroo Island therefore has special management problems and requirements not shared by the other South Australian islands and so will be treated separately first. This will be followed by accounts of some of the management problems of the smaller islands and a general conclusion on future directions for offshore island management in this state.

CONSERVATION MANAGEMENT ON KANGAROO ISLAND

Kangaroo Island had an Aboriginal population which survived the isolation of the island 9 500 years ago by the rising seas, but which appears to have become extinct between 2 250 and 4 300 years ago (Lampert 1981). Following Flinders and Baudins voyages of 1802 and their reports of the numerous seal colonies around Australia's southern coastline bands of sealers worked the island fur-seal and later sea-lion colonies. A permanent European settlement was established at Reeves Point near the present town of Kingscote in July 1836 by the South Australian Company before the formal settlement of Adelaide in December 1836. The Reeves Point site was abandoned in 1839 but over the succeeding years the island was re-settled and a farming and fishing economy developed with much of the island being cleared for livestock production and cereal growing. The present population is approximately 3 500 and in 1981 the most recent figures from the Australian Bureau of Statistics Census showed that 1 652 people were employed as shown in Table 2 (S.A. Department of Tourism 1984). this Table also shows the changes in employment in the various industry categories between 1976 and 1981.

TABLE 1: A LIST OF SOUTH AUSTRALIAN OFFSHORE ISLANDS SHOWING AREA, DISTANCE FROM THE MAINLAND, LATITUDE AND LONGITUDE AND FORM OF LAND MANAGEMENT.

Group	Island	Area (ha)	Distance From Main-	Latitude/ Longitude	Management Land (km)
	Nuyts Reef	5	12	32° 7'30" 132° 8'00"	Conservation Pk
	Sinclair	2	4	32° 8' 0" 132° 8' 0"	Conservation Pk
Nuyts	Lounds	24	8	32°16'30" 133°22'00"	Conservation Pk
Archipelago	Purdie	40	8	32°16'00" 133°13'30"	Conservation Pk
	St Francis	809	35	32°30'30" 133°17'30"	Conservation Pk (Lighthouse Res.)
	Smooth	12	33	32°39'00" 133°18'30"	Conservation Pk
	Egg	60	32	32°28'30" 133°19'00"	Conservation Pk
	Dog	60	32	32°29'30" 133°20'00"	Conservation Pk
	Freeling	16	32	32°29'00" 133°20'30"	Conservation Pk
	West	60	35	32°30'30" 133°17'30"	Conservation Pk
	Masillon	202	40	32°33'30" 133°17'30"	Conservation Pk
	Fenelon	81	43	32°35'00" 133°17'00"	Conservation Pk
	Hart	12	43	32°39'00" 133°14'00"	Conservation Pk
	Lacy	121	21	32°24'00" 133°22'30"	Conservation Pk
	Evans	141	21	32° 0'30" 133° 3'30"	Lighthouse Res
	Franklin	405	19	32°27'00" 133°39'00" Prohibited Area)	Conservation Pk
	St Peter	4 028	5	32°17'00" 133°34'30"	Conservation Pk
	Goat	303	13	33°58'30" 133°29'00"	Conservation Pk
	Eyre	1 012	5	32°22'00" 133°49'00"	Conservation Pk
	Olives	12	8	32°43'30" 133°59'00"	Conservation Pk
	Eba	121	1	32°41'00" 134°16'00"	Conservation Pk
	Pigface	2	0.5	32°42'00" 134°16'30"	Conservation Pk
Baird Bay	Unnamed	13	1	33° 4'00" 134°17'00"	Conservation Pk
Islands	Jones	8	1	33°11'30" 134°54'00"	Conservation Pk
Venus Bay	A	20	2	33°10'30" 134°36'00"	Conservation Pk
Islands	B	2	1	33°11'00" 134°37'30"	Conservation Pk
	C	6	1	33°11'00" 134°36'30"	Conservation Pk
	Germein	202	2	33°12'30" 134°40'30"	Conservation Pk
	Unnamed	1	0.5		Conservation Pk
	Garden	2	1	33°12'30" 134°42'00"	Conservation Pk
	Tank	0.5	0.5	33°13'00" 134°42'00"	Conservation Pk
Investigator	Waldegrave	292	3	33°36'00" 134°47'30"	Conservation Pk
Group	Little Waldegrave	32	5	35°34'30" 138°38'30"	Conservation Pk
	Flinders	3 642	29	33°44'00" 134°31'00"	(Perpetual Lease Agric and Lighthouse Res.

Group	Island	Area (ha)	Distance From Main-	Latitude/ Longitude	Management Land (km)
	Topgallant	20	24	33°43'30" 134°37'30"	Conservation Pk
	Ward	20	53	33°45'00" 134°19'30"	Conservation Pk
	Pearson	213	62	33°58'00" 134°18'30"	Lighthouse Res.
	The Veteran Isles	14	65	33°59'30" 134°18'30"	Conservation Pk
	Dorothee	56	68	34° 0'30" 134°17'00"	Conservation Pk
	Cap	8	8	33°57'00" 135° 7'00"	Conservation Pk
	Rocky (North)	16	5	34°15'30" 135°15'30"	Conservation Pk
	Greenly	202	30	34°39'30" 134°48'00"	Conservation Pk
Mount Dutton &	Mt Dutton (Nth)	1	0.5	34°32'00" 135°25'30"	Conservation Pk
Coffin Bay	Mt Dutton (Sth)	1.5	0.5	34°35'30" 135°24'30"	Conservation Pk
	The Brothers	8	1	34°36'00" 135°22'30"	Conservation Pk
	Rabbit	4	1	34°37'30" 135°26'00"	Conservation Pk
	Goat	2	1	34°37'00" 135°28'00"	Conservation Pk
	Yangie Bay	45	0.5	34°38'00" 135°23'00"	National Park
Whidbey Group	Avoid	6	0.5	34°34'00" 135°12'30"	Conservation Pk
	Black Rocks	7	1.5	34°37'00" 135°17'00"	Conservation Pk
	Golden	23	1.5	34°42'00" 135°20'00"	Conservation Pk
	Price	58	2	34°42'30" 135°17'00"	Conservation Pk
	Perforated	121	16	34°43'30" 135°09'30"	Conservation Pk
	Four Hummocks (Nth)	8	24	34°45'30" 135°02'30"	Conservation Pk
	Four Hummocks (Cent)	32	24	34°46'30" 135°01'30"	Conservation Pk
	Four Hummocks (Sth)	27	24	34°47'00" 135°02'00"	Lighthouse Res.
	Rocky (South)	8	45	34°49'00" 134°42'30"	Conservation Pk
Port Lincoln	Liguanea	202	5	34°58'30" 136°43'00"	National Park
Islands	Curta Rocks	44	1	34°56'30" 135°52'00"	National Park
	Wanna	8	0.5	34°54'00" 135°51'00"	Crown Land
	Williams	141	3	35°02'00" 135°58'30"	Lighthouse Res.
	North Neptune	243	42	35°14'00" 136°04'00"	Conservation Pk
	South Neptune	104		35°19'30" 136°07'00"	Conservation Pk
	South Neptune (Lighthouse)	98	49	28°08'00" 136°02'00"	Lighthouse Res.
	Wedge	947	38	34°28'04" 136°27'30"	Freehold, Agric. /Tourism
	Peaked Rocks	3	38	35°11'03" 136°29'00"	Conservation Pk
	South-west Rock	1	41	35°10'30" 136°25'30"	Conservation Pk
	North Islet	64	39	35°07'30" 136°28'00"	Conservation Pk
	Thistle	3 925	9	34°59'00" 136°12'00"	Perpetual lease, Agric./Tourism
	Albatross	6	19	35°04'00" 136°11'00"	National Park
	Hopkins	162	5	34°57'00" 137°10'00"	National Park
	Smith	4	3	34°59'00" 136°01'30:	National Park
	Lewis	30	3	33°19'30" 136°00'30"	National Park
	Little Islet	20	3	34°57'00" 136°01'30"	National Park
	Taylor	243	3	34°52'30" 136°00'30"	Perpetual Lease, Agric
	Owen	8	5	34°51'30" 136°00'30"	National Park
	Grindal	81	3	36°39'30" 136°31'30"	Perpetual Lease, Agric

Group	Island	Area (ha)	Distance From Main-	Latitude/ Longitude	Management Land (km)
	Bickers	13	1	34°45'00" 135°57'00"	National Park
	Donnington	1	1	34°43'30" 136°00'00"	National Park
	Grantham	40	1	34°46'30" 135°52'30"	Recreation Res
	Boston	809	3	34°42'00" 135°55'30"	Freehold Agric
	Rabbit	20	5	34°36'30" 135°59'00"	Conservation Pk
	Louth	182	3	34°34'30" 135°57'00"	Freehold & Crown, Agric
	Tumby	30	1.5	34°24'30" 136°08'30"	Conservation Pk
	Lipson	1	0.5	34°15'00" 136°16'00"	Conservation Pk
Sir Joseph	Kirkby	27	11	25°31'30" 136°06'30"	Conservation Pk
Banks Group	Sibsey	30	16	34°38'30" 136°11'00"	Conservation Pk (Lighthouse Res.)
	English	3	19	34°38'00"136°11'00"	Conservation Pk
	Stickney	70	22	34°41'00" 136°16'00"	Conservation Pk
	Spilsby	468	27	34°40'00" 136°20'30"	Perpetual Lease, Agric./Tourism
	Boucaut	16	27	34°39'00" 136°22'00"	Conservation Pk
	Duffield	7.5	29	34°39'30" 136°19'00"	Conservation Pk
	Hareby	53	19	34°35'00" 136°17'30"	Conservation Pk
	Roxby	92	21	34°35'30" 136°19'00"	Conservation Pk
	Langton	26	16	34°36'00" 136°16'30"	Conservation Pk
	Blythe	5	19	34°34'00" 136°17'30"	Conservation Pk
	Dalby	5.5	13	34°34'00" 136°14'00"	Conservation Pk
	Reevesby	344	16	34°31'30" 136°16'30"	Conservation Pk
	Lusby	14	14	34°32'30" 136°15'30"	Conservation Pk
	Marum	10	13	34°39'00" 136°15'00"	Conservation Pk
	Partney	40	13	34°31'30" 136°15'30"	Conservation Pk
	Winceby	30	16	34°29'30" 136°17'00"	Conservation Pk (Lighthouse Res.)
	Dangerous Reef	12	17	34°49'00" 136°12'30"	Lighthouse Res.
Yorke Peninsula					
Islands	Bird	8	0.5	33°58'30" 137°31'30"	Conservation Pk
	Goose	2	5	34°27'30" 137°22'00"	Conservation Pk
	Cormorant	0.5	5	34°27'30"137°22'00"	Conservation
	White Rocks	0.5	5.5	3°27'30" 137°21'30"	Conservation Pk
	Green	0.5	1	34°28'00" 137°24'00"	Annual Licence
	Island Point	1	1	34°26'30" 137°24'30"	Conservation Pk
	Rocky	0.5	0.5	34°29'00" 137°25'30"	Conservation Pk
	Wardang	2 023	5	34°30'00" 137°22'00"	Aboriginal Res.
	Royston	5	0.5	35°12'00" 136°50'30"	National Park
	Middle Islet	45	1	35°13'00" 136°50'00"	National Park
	South Islet	5	0.5	35°14'00" 136°50'00"	National Park
	Chinaman's Hat	0.5	0.5	35°17'30" 136°55'00"	National Park
	Seal	8	6	35°20'30" 136°55'00"	National Park
	Haystack	5	4	35°19'30" 136°54'30"	National Park
	Althorpe	96	8	35°22'30" 136°51'30"	Lighthouse Res. and Conservation Pk
	Troubridge	2	6	35°07'00" 137°49'30"	Conservation Pk (Lighthouse Res.)
	Kangaroo	435,000	25	36°00'00"137°30'00"	Freehold, National Park Conservation Park

Group	Island	Area (ha)	Distance From Main- Land (km)	Latitude/ Longitude	Management
Kangaroo Island Coast	West Bay Islet	2	0.5	35°54'00" 136°32'00"	National Park
	Casuarina (Nth)	2	0.5	36°04'00" 136°42'00"	National Park
	Casuarina (Sth)	2	2.5	36°05'00" 136°41'30"	National Park
	Nobby Islet	12	0.5	36°00'30" 136°10'30"	Conservation Pk
	Pelorus Islet	20	8	36°07'30" 137°31'30"	Crown Land
	Busby Islet	0.5	4	35°37'30" 137°38'30"	Conservation Pk
	Beatrice Islet	10	2	35°39'00" 137°41'00"	Conservation Pk
Encounter Bay Islands	North Page	10	13	35°45'30" 132°18'00"	Conservation Pk
	South Page	10	15	35°47'00" 132°17'30"	Conservation Pk (Lighthouse Res)
	West	10	1.5	35°36'30" 138°35'30"	Conservation Pk
	Wright	2	1	35°35'00" 138°36'30"	Pub. Pleasure Res.
	Granite	32	1	35°34'00" 138°38'00"	Recreation Res. and Harbours Bd. Res.
	Seal	1	3	35°34'30" 138°38'30"	Conservation Pk
	Pullen	1	1	35°32'30" 138°41'30"	Conservation Pk
South-East Coast Islands	Baudin Rocks	40	3	37°05'30" 139°43'00"	Conservation Pk
	PenguinIslet	2	0.5	35°30'00"140°01'00"	Conservation Pk

TABLE 2: INDUSTRY OF THE EMPLOYED POPULATION OF KANGAROO ISLAND IN 1976 AND 1981, FIGURES FROM AUSTRALIAN BUREAU OF STATISTICS CENSUS DATA (SOURCE S.A. DEPARTMENT OF TOURISM 1984)

Industry Category	1976 Nos. Employed	1976 % of Workforce	1981 Nos. Employed	1981 % of Workforce	% Growth
Agriculture, etc.	784	(48.1)	652	(39.5)	-16.8
Mining	12	(0.7)	15	(0.9)	25.0
Manufacturing	49	(3.0)	39	(2.4)	-20.9
Electricity, Gas, Water	14	(0.9)	14	(0.8)	0.0
Construction	72	(4.4)	67	(4.1)	-6.0
Wholesale, Retail Trade	181	(11.1)	183	(11.1)	1.1
Transport and Storage	106	(6.5)	94	(5.7)	-11.3
Communications	24	(1.5)	24	(1.4)	0.0
Finance, Business Services	35	(2.1)	39	(2.4)	11.4
Public Administration	22	(1.3)	53	(3.2)	9.5.
Community Services	130	(8.0)	173	(10.5)	33.1
Entertainment, Motels, Restaurants, Recreation	114	(7.0)	135	(8.2)	18.4
Other, not classified not stated	86	(5.3)	164	(9.9)	90.7
TOTAL	1629		1652		1.4

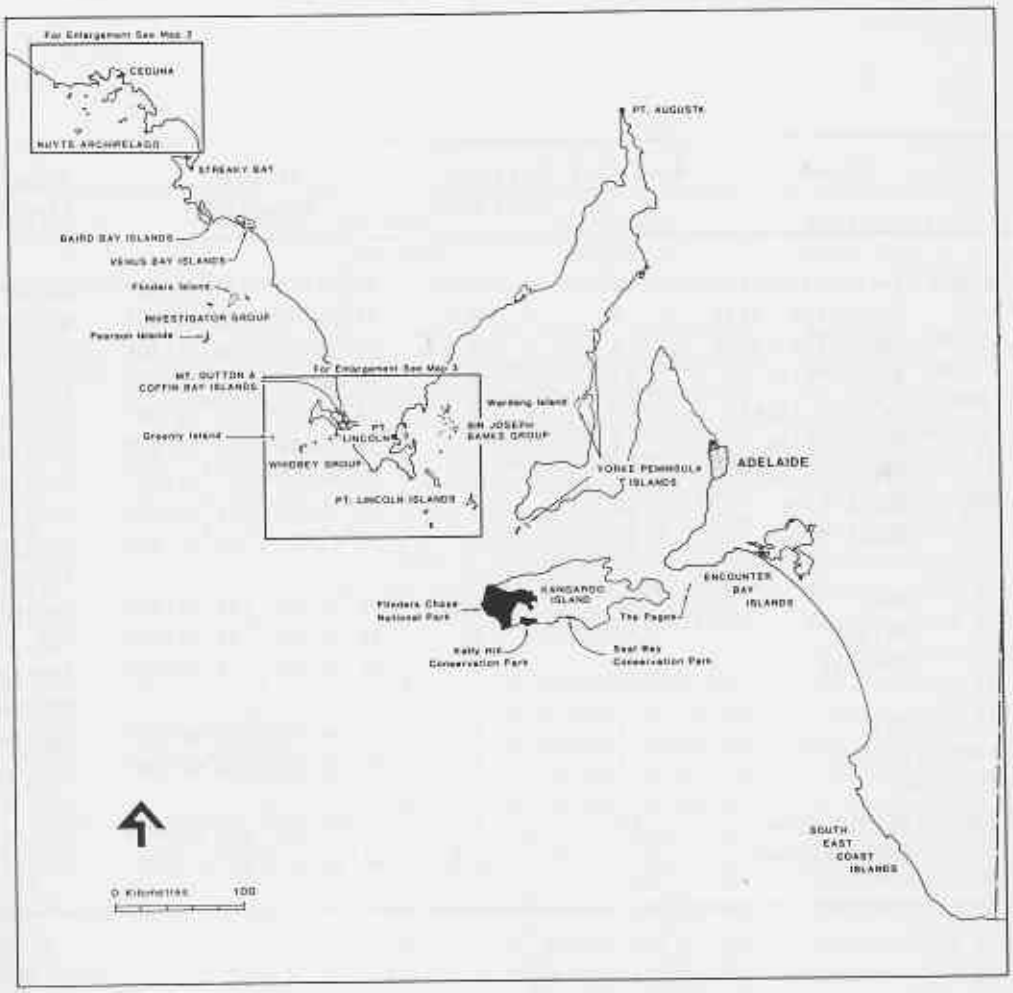

Figure 1.
The major island groups off the South Australian coast and the three conservation areas on Kangaroo Island mentioned in the text.

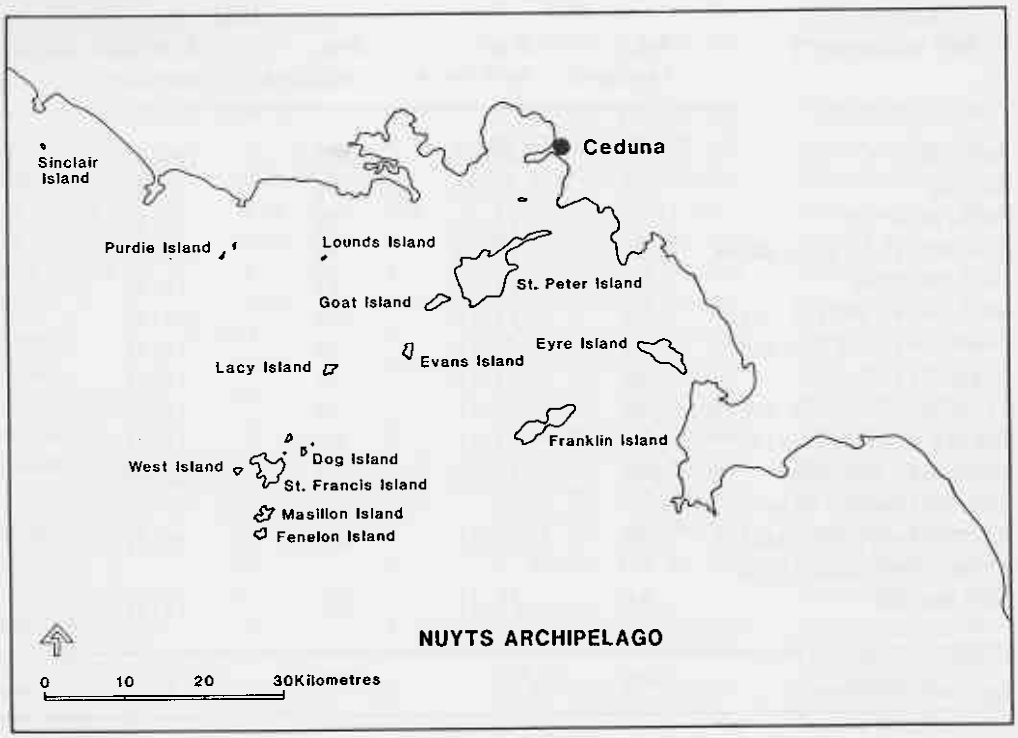

Figure 2.
Nuyts Archipelago and the Isles of St Francis.

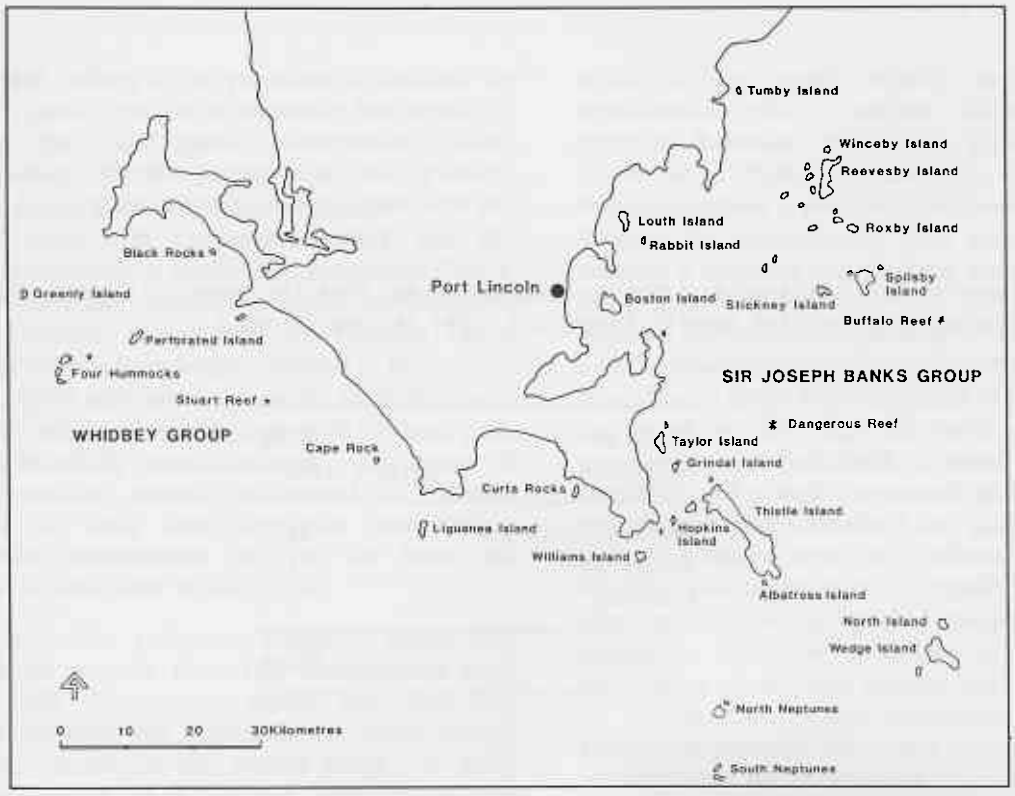

Figure 3.
The Whidbey and Sir Joseph Banks Groups.

The things to note in the context of conservation management on Kangaroo Island are the decline in employment in agriculture and manufacturing and the increase in community service and other industries related to tourism. A detailed report on future management of Kangaroo Island for tourism has been prepared (South Australian Department of Tourism 1984) while Table 4 shows the origin of visitors to Flinders Chase National Park on the western end of the island in 1982/83 (NPWS 1986).

It can be seen that the majority of visitors to Kangaroo Island and its major National Park are from South Australia with only between 3% and 4% from outside Australia.

Details of tourist use of Kangaroo Island have been provided because although up until relatively recent times, development for agriculture has been the main impact on wildlife conservation, the tourist industry will have a much more significant impact in the future. Up top 30 June 1985 there was one National Park and 15 Conservation parks on Kangaroo Island covering 107 762 ha or 26.6% of the island. It is now estimated (Vegetation Management Branch, S.A. Department of Environment and Planning) that only 13% of Kangaroo Islands remaining natural vegetation in on private land. In 1974 when these figures were last calculated 43% of the island was covered with natural vegetation and this has now been reduced to 39% of which 64% is now within the park system. This is by far the highest percentage (and area) of natural vegetation remaining in the agricultural districts of South Australia and its occurrence on an offshore island with no rabbits of foxes (although feral cats are present) makes the remaining natural areas of Kangaroo Island among the most significant for conservation in the higher rainfall areas of the State.

The move towards acquisition of areas for conservation on Kangaroo Island has a long history which is documented, in some detail in NPWS (1986). Flinders Chase Fauna and Flora Reserve (now Flinders Chase National Park) was the second area set aside in South Australia for conservation in 1919. The actual battle for this magnificent park however begin 1892 (Dixon 1920). It was managed by a Fauna and Flora Board from 1920-1972 comprising two representatives from each of the Government, the University of Adelaide and the Royal Society of South Australia. In 1972 with the passing of the National Parks and Wildlife Act, management of the re-named Flinders Chase National Park was transferred to the newly established National Parks and Wildlife Service. As with most major National Parks the predominant

TABLE 3: THE ORIGIN OF VISITORS TO KANGAROO ISLAND FROM THE DOMESTIC TOURISM MONITOR, INTERNATIONAL VISITOR SURVEY (SOURCE S.A. DEPT OF TOURISM 1984)

Place of Residence	% of Total visitors
South Australia	86.1
Interstate	11.1
Overseas	2.8
TOTAL	100.0

TABLE 4:THE ORIGIN OF OVERNIGHT VISITORS TO FLINDERS CHASE NATIONAL PARK, KANGAROO ISLAND, JULY 1982 TO JUNE 1983 FROM RECORDS OF CAMPING PERMITS ISSUED AT THE PARK. (SOURCE NPWS (in prep))

Place of Residence	Number of Permits	% of Total Visitors
SA Mainland	389	57.6
Kangaroo Island	84	12.4
VIC.	95	14.0
NSW	54	30.
ACT	10	1.5
WA	8	1.2
QLD	2	0.3
TAS.	1	1.2
NT	3	0.4
Overseas	29	4.3

management activity is the provision of facilities for visitors in such a way as to minimise the impact of visitation on the parks conservation value. Approximately 40 000 people now visit Flinders Chase National Park annually and together with the caves at Kelly Hill Conservation Park and the Australian Sea-lions at Seal Bay Conservation Park it is by far the major "tourist attraction" on Kangaroo Island. Wildlife management on Flinders Chase National Park has been largely devoted to fire control measures to try and ensure that in the inevitable event of a major wildfire some large parts of the total park area can hopefully remain unburnt. The legacy of native Australian animals introduced to Flinders Chase in its early days form the other major conservation management problem but these are discussed in detail later in this paper.

The two other parks on Kangaroo Island with major visitor use are Kelly Hill Conservation Park with 18 500 visitors per annum and Seal Bay Conservation Park with approximately 70 000 visitors per annum (Robinson and Dennis 1988). At Kelly Hill Conservation Park the vast majority are day visitors who come to tour the caves and then either return to Kingscote to stay or continue on to camp in nearby Flinders Chase National Park. The portions of this extensive cave system accessible to tourists have recently been extensively upgraded by the National Parks and Wildlife Service with installation of a safer entrance and modern lighting system. The interpretation provided for visitors by both the resident ranger and casually employed cave guides has been significantly modified and now concentrates on the geological and biological aspects of caves and the element of fantasy using the shapes of cave formation has been reduced.

Only day visitation is allowed to Seal Bay Conservation Park and although provision of a picnic area in recent years has given people some incentive to spend more time in the park the majority of visits are of quite short duration (1-2 hours). The beach at Seal Bay provides visitors with very close access to a wild population of Australian Sea-lions (*Neophoca cinerea*) and an experience of contact with seals which is generally available in very few other parts of the world outside the Arctic and Antarctic regions. The sea-lions breed in rocky coves at either end of the beach which is accessible to visitors and these areas have been prohibited to the public since 1967. Fairly regular counts of the sea-lion at Seal Bay have been maintained since 1967 and it appears that numbers increased from peaks of about 200 in 1967 to 400 in 1974. Since that time numbers have generally peaked at around 400 with considerable variation in counts within a year mostly relating to events in the reproductive cycle. Complete counts to 1987 are given in Robinson and Dennis (1988). Seal Bay Conservation Park was the first park in South Australia to have a plan of management prepared for it when the provision of park management plans became a statutory requirement under the National Parks and Wildlife Act 1972. The draft plan was released for public comment in 1976 (NPWS 1976) and the final plan was released in 1977 (NPWS 1977). Since then a major redevelopment of visitor access to the beach at Seal Bay has been completed. It provides a single boardwalk, a raised bridge over the dunefield and a well constructed graded track from an enlarged and formalised car park. In addition there is a walking track to a lookout over the beach for those who do not wish to actually see the seals at close quarters on the beach. Interpretive signs and pamphlets are now available to visitors giving information on sea lion biology and warning visitors to respect these quite formidable wild animals. Perhaps surprisingly, there have been very few people actually bitten by the sea-lions, just a slight lunge and a roar from a full-grown bull sea-lion is usually enough to deter even the most enthusiastic seal toucher! It appears that to date the number and distribution of visitation to Seal Bay has not affected the sea-lion population at the gross level of total numbers counted on the beach. In September 1987 the National Park and Wildlife Service established a guiding system on Seal Bay beach for which all visitors to the park pay a fee. Future monitoring will address issues such as retreat of seals into the water when large numbers of people are on the beach and the possible need to further regulate in some way both the timing and total numbers of people on the beach in the future. The details of present management at Seal Bay are discussed in Robinson and Dennis (1988).

The thirteen other Conservation Parks on Kangaroo Island are largely accessible only to walkers on a day visit basis and were acquired to obtain as representative as possible range of the islands ecosystems. The management of 65% of the remaining natural vegetation on Kangaroo Island that is reserved under the National Parks and Wildlife Act is the responsibility of 5 rangers, based at Kingscote, Murrays Lagoon (Cape Gantheaume and Seal Bay Conservation Parks) Kelly Hill Conservation Park and Flinders Chase National Park (2 rangers). Within the context of the approximately 80 ranger staff in the whole of South Australia this represents a significant commitment to reserve management on Kangaroo Island.

Responsibility for wildlife management in broader terms on Kangaroo Island as a whole however, is not nearly so clear cut. The mosaic of natural vegetation and agricultural land has created ideal habitat for the two native macropod species the Tammar (*Macropus eugenii*) and the Western Grey Kangaroo (*Macropus fuliginosus*). Both these species are biologically important, the Kangaroo Island population of *Macropus fuliginosus* is the nominate race and differs significantly from Australian mainland populations (Poole, 1976). The large Tammar population on Kangaroo Island is probably the last South Australian population although there was a small population which persisted on Eyre Peninsula into the 1970s (Smith 1983). Its present status however is unknown. Both Tammars and Kangaroos are regarded as agricultural pests on Kangaroo Island where they compete with domestic stock for food on the improved pastures of the island farms. The conflict is particularly pronounced on the western half of the island with its complex mosaic of natural vegetation patches and farmland providing very large areas of the scrub - pasture transitions favoured by these macropods. Management of the problem to date has been the issue of limited numbers of destruction permits to farmers and one individual farmer has developed something of a business in the capture of Tammars alive for sale to Australian Universities as a research animal under the system of Permits to Take Protected Animals from the Wild operated by the South Australian National Parks and Wildlife Service. In addition to their impact on the farming community both these species are frequent road kills on the island road network (together with goannas, brush-tailed possums and echidnas) and the impact of increased tourist traffic and proposals to seal some of the main island roads may increase the impact of road kills on these populations.

The clearance of native vegetation for agriculture on Kangaroo Island which has, until very recently, been the most significant conservation management problem on Kangaroo Island has now virtually ceased and a good network of conservation reserves has been established which only require relatively minor additions to be as representative as it is now possible to obtain. The potential problem for the future is posed by a significant increase in tourist use of the island. The importance of the three natural "attractions" managed by the National Parks and Wildlife Service for tourism, namely the sea-lions at Seal Bay, caves at Kelly Hill and the Flinders Chase National Park has already been highlighted. While the sea-lions are perhaps most vulnerable to increased tourist pressure all natural areas will undoubtedly be adversely affected. Because Kangaroo Island is an island it should be relatively easy to assign to it a "carrying capacity" which retains for visitors the quality of holiday they now experience. The latest plan for increased tourist development (S.A. Department of Tourism 1984) does not really adequately address the problem of a finite limit to potential tourist development, although it does at least go part of the way by defining areas of the island which are inappropriate for particular types of tourist development. Clearly conservation managers in South Australia have some way to go in educating the public and the tourist industry about the potentially large impact of increased tourism on natural areas and the very special biological problems of mans impact on offshore islands.

Island over 800 ha

St Peter (4 028 ha), Thistle (3 925 ha), Flinders (3 642 ha), Wardang (2 023 ha), Eyre (1 012 ha), Wedge (947 ha), Boston (809 ha) and St Francis (809 ha) Islands make up this group of large islands. All of them with the exception of Eyre Island have been extensively modified by nearly a hundred years of agricultural development. The land tenure of these large islands is given in Table 1 and it can be seen that only Eyre, St Francis and St Peter Islands are Conservation Parks. Management of the remaining islands is therefore the responsibility of the lessee or owner and a fair diversity of management approaches are apparent.

St Peter Island was held as a pastoral lease until 1987 when it was purchased by the National Parks and Wildlife Service and proclaimed a Conservation Park and the sheep removed. Approximately one third of the island has been cleared and fenced and the natural vegetation on the remainder of the island was grazed and regularly burnt, normally in early summer when a steady northerly wind is blowing resulting in quite hot fires. In spite of this type of management history St Peter Island has considerable conservation value. The extensive mangroves and tidal mud flats provide very important habitat for migratory waders while the remaining natural vegetation is quite diverse and, in spite of the fire and grazing history, it is probably still in much better condition than any of the adjacent mainland where rabbits have caused severe degradation.

Thistle Island off the southern tip of Eyre Peninsula has a higher rainfall than St Peter Island and therefore supports quite different vegetation. Again roughly half the island has been cleared for agriculture, sheep are still grazed and occasional oats and barley crops are grown. Summer burning has been extensively practiced and much of the remaining

natural vegetation has dense thickets of the fire tolerant species *Acacia paradoxa*. This extremely thorny shrub effectively discourages sheep from grazing much of the vegetation and a wide diversity of heath and mallee understorey plants grows in the shelter of these bushes. The tenure of this island has been converted from leasehold to freehold with the provision that most of the remaining natural vegetation be fenced to exclude sheep and that future burns are excluded from the natural vegetation. Thistle Island (together with nearby Taylor Island) supports a large population of Brush-tailed Possums, (*Trichosurus vulpecula*), possibly the last remaining on Eyre Peninsula. Together with Kangaroo, Taylor and Boston Islands, Thistle Island is the last breeding stronghold of the Stone Curlew (*Burhinus magnirostris*) in the State. It also has a natural population of goannas (*Varanus rosenbergi*) which will be discussed later when island introductions are considered. Thistle Island is permanently occupied by a caretaker who maintains the water supply and manages the sheep. Approximately 50 holiday house blocks have been sold in a single consolidated subdivision and houses will be progressively built on these blocks. The airstrip on the island enables easy access for holiday house owners.

Flinders Island must originally have been a magnificent natural area but most of the natural vegetation has now been cleared and the distinctive sub-species of the Tammar (*Macropus eugenii*) it once supported now appears to be extinct (Delroy, 1974, Robinson *et al.* in prep). The largest remaining area of natural vegetation has been fenced to exclude sheep since 1968, in an effort to provide some undisturbed habitat for the last remnant of the wallaby population, but this appears to have failed. None-the-less, this and a few other smaller areas of natural vegetation and its magnificent coastline still make Flinders Island a valuable natural area. Breeding Ospreys and Sea Eagles add to its conservation value.

Wardang Island is vested with the Aboriginal Lands Trust of South Australia and is currently under investigation as to the feasibility of a Commonwealth Government funded long-term programme to re-vegetate and ultimately re-establish some of its original native fauna. Virtually the entire island has been cleared and grazed and a large lime sand mine has only recently ceased operation. It supports a large population of rabbits and is generally in an extremely degraded condition. With the exception of its coastline and an area of saltmarsh its present conservation value is minimal.

Eyre Island, although only isolated from the mainland for about 6 000 years is a magnificent coastal wilderness of mangrove channels, samphire flats and well vegetated sand dunes. The surrounding tidal mud and sand flats support a wide variety of shorebirds and migratory waders. It supports a large population of Southern Bush Rats (*Rattus fuscipes*) and an important Death Adder (*Acanthophus antarcticus*) population. It's series of stranded dune lines are beginning to be examined to help document past sea-level changes and it is undoubtedly one of the more important and undisturbed island Conservation Parks in South Australia.

Wedge Island is held in freehold title and although grazed and farmed for many years is now like Thistle Island, in the process of trying to sell several hundred holiday house subdivisions. Access to and from the island is by light aircraft. Wedge Island has some small areas of natural vegetation but the removal of sheep should allow considerable regeneration. Negotiations are currently underway to proclaim that portion of the island outside the holiday house subdivisions and associated facilities as a Conservation Park.

Boston Island has been held in freehold title for many years and is virtually completely cleared. It is still primarily used for agriculture but tourist use is increasing. Efforts are being made to replant some areas of the island, mainly with Drooping Sheoaks (*Allocasuarina verticillata*) which were originally widespread on the island.

St Francis Island is part of the Isles of St Francis Conservation Park, and, although a large part of the island was cleared and the whole island was grazed by sheep, it is beginning to recover. It supports an extremely important population of Carpet Pythons (*Morelia spilotes*) and is one of only two islands which has a Short-nosed Bandicoot (*Isoodon obesulus nauticus*) population. The Brush-tailed Bettong re-introduction programme will be discussed later in this paper.

In summary then the eight large islands in South Australia have varying conservation value but in general, the current management practices on all of them are at least not accelerating the long decline in their conservation value due to their history of agricultural development. In some cases current management practices are actually increasing their conservation value. Their future undoubtedly lies not in farming but in tourism and any increase in their natural values will also increase their value for visitors.

Important wildlife on the remaining islands

As can be seen from Table 1, most of the remaining islands less than 800 ha in area are National or Conservation Parks managed by the National Parks and Wildlife Service. The following section outlines the conservation value of some of these island parks.

The islands of the Sir Joseph Banks Group Conservation Park support most of the winter breeding population of Cape Barren Geese (*Cercopsis novaehollandiae*) in South Australia. The natural history and management of this species is discussed in detail in Robinson *et al.* (1982). The only important development since this was published has been the establishment of a breeding population on Reevesby Island first noted in the winter of 1985 (Robinson and Delroy 1986). If these geese are able to raise clutches in the face of the small feral cat population on Reevesby Island this large island (344 ha), which has not had Cape Barren Geese breeding on it in living memory, has the potential to significantly expand the total summer population of this species in South Australia, currently estimated at approximately 3 000 birds (Robinson *et al.* 1982).

Franklin Island in Nuyts Archipelago Conservation Park supports the last known population of the Greater Stick-nest Rat (*Leporillus conditor*). A three-year ecological study of this population has been completed (Read 1984, Copley 1988). It is too early yet to formulate detailed management recommendations for this species but the establishment of another population, possibly on Reevesby Island is being seriously investigated.

The Australian Sea-lion (*Neophoca cinerea*) is one of the rarest seals in the world (Ling 1978). It is restricted to the southern coast of Australia from Eclipse Island in Western Australia to The Pages Islands in South Australia. With a total estimated population of approximately 5 000, 3 000 are found in South Australia together with the major breeding populations. The three main breeding areas in order of size are Seal Bay (discussed earlier), Dangerous Reef and The Pages. Smaller breeding colonies are found on 14 other south Australian islands (Robinson and Dennis 1988). Virtually all the islands however are used as hauling out sites and are a vital part of the sea-lions habitat even though they only actually breed on relatively few. Sea-lions take fish from nets tearing the nets to get them and, although totally protected, a small number are illegally shot. These tend to be lone animals, often large males and the shooting of a single animal often solves the problem. There have also been reports of people moored in boats off sea lion colonies shooting the animals "for sport". These incidents are quite rare and hopefully, with increasing public concern for marine mammals will cease altogether. A biologically interesting but virtually unknown potential management problem relates to the removal of the major predator of sea lions the White Pointer (*Carcharodon carcharias*) by game fishermen. The waters off the sea lion breeding colony at Dangerous Reef are one of the major white pointer fishing sites in the world with about 3-4 very large sharks being taken each year. At present this game fishing is totally unregulated in South Australia.

The Pearson Island Rock Wallaby (*Petrogale lateralis*) occurs naturally only on Pearson Island, isolated for 10 500 years. This spectacular granite island is one of the most unspoiled of all South Australian islands. It has a population of approximately 500 wallabies on the main section (Robinson 1980) but visitors to the island in 1923 and the 1960's noted that there were no wallabies or signs of wallabies on the central and southern sections. These sections, although containing apparently suitable habitat, are separated from the main island by a rocky point and sand spit which can be crossed at low tide. In 1960 five wallabies were captured on the main part of the island for transport back to Adelaide to establish a captive colony. They were kept penned on the central section and four females, a male and one of unknown sex escaped. These have now established and there were between 50 and 150 animals in 1969 (Thomas & Delroy 1971) on the central and southern sections. The most recent estimate in 1976 (Robinson 1980) was of 150 individuals and they have caused a measurable reduction in the cover of the chenopod shrublands on these parts of the island (Fatchen 1982). In 1974,75, 16 animals were transported to Thistle and in 1975 10 to Wedge to establish additional colonies in case of a disaster on Pearson Island. Neither of these islands are known to have supported rock wallabies, and they have quite different habitat from Pearson Island. Both however are much larger than Pearson Island and have been significantly degraded by past agriculture. These introduced populations are both still present and breeding has been recorded. The 200 m cliffs that the wallabies inhabit makes it virtually impossible to carry out any systematic population monitoring.

Tammer wallabies occurred naturally on kangaroo, St Peter, Flinders, St Francis, Thistle and possibly Reevesby Islands as well as on the South Australian mainland at the time of European settlement. As mentioned previously the only population still definitely remaining is that on Kangaroo Island

although the Flinders Island population only became extinct in the late 1960s. In 1907 Tammars were introduced to Greenly Island from Kangaroo Island as food for shipwrecked mariners. With an area of only 200 ha, Greenly Island is very much smaller than any of the islands that supported natural Tammar populations. The results over the subsequent 74 years were disastrous and the wallabies have converted much of the island from a quite diverse shrubland to a virtually single species *Poa poiformis* grassland. In addition there is no evidence of seedling regeneration of either the Sheoaks or the *Melaleuca lanceolata* scrubs which cloth the top of the island. Tammars did not reach the NE section of the island which is separated from the main island by a 3-5 m sea-way which humans can jump across in calm weather. The dramatic difference in both vegetation structure and floristic composition between the main island and this ungrazed section has been documented by Fatchen (1982).

Black Tiger snakes occur on a number of South Australian offshore islands and there are mainland populations on the southern tip of Eyre and Yorke Peninsulas and in the southern Flinders Ranges. The taxonomy and ecology of South Australian tiger snakes has been examined by T.D. Schwaner by studying populations from Kangaroo, Franklin, Goat, Roxby, Hareby and Hopkins Islands. There are a large number of both morphometric and biochemical differences between these populations with the extremes being the very large snakes on Franklin Island and the small animals, on Roxby Island, two populations which have diverged to the point when they will not now interbreed. Preliminary results of these studies have been published by Schwaner (1985a)

Reintroduction Programs

The South Australian National Parks and Wildlife Service has carried out a major program to reintroduce Brush-tailed Bettongs (*Bettongia penicillata*) to St Francis Island. The original population on this island became extinct in the early 1900s when the lessees the island, experiencing problems with the bettongs in their vegetable garden, imported cats to the island. These cats, coupled with the habitat distruction brought about by clearing a large part of the island for cereal growing, caused the Bettongs extinction. The population of Nuyts Archipelago Bandicoots however managed to survive and are still present. In 1975 five Bettongs were obtained from Western Australia and a captive colony was established at Para Wirra Recreation Park just north of the city of Adelaide. Animals from the captive colony were released on three small islands to test the ability of captive-bred animals to survive in the wild and to provide additional stock for ultimate re-introduction to St Francis Island. Forty captive-bred animals were released on St Francis Island in 1980 and an additional 20 "wild" animals from the introduced population of Island A in Venus Bay were introduced in 1983. On the 1983 trip to St Francis Island trapping established that although some of the 1980 release had died, one female with a pouch young conceived on the island was still present. The most recent trip, in 1988, again resulted in the capture of a single female and it appears that this re-establishment has not been successful. Further details of this program are in Delroy *et al.* (1986). A group of bettongs were also released on Wedge Island in 1983 where they are still present and a follow up monitoring in 1988 resulted in the capture of 38 individuals and evidence was seen of a large population now present.

The Greater Stick-nest Rat (*Leporillus conditor*) which was widespread across southern Australia at the time of European settlement is now only found on the Franklin Islands in Nuyts Archipelago Conservation Park. It has now been the subject of a three year ecological study (Read, 1983; Copley, 1988). A captive colony has now been established in specially designed facilities in Adelaide and, further down the line, it is proposed to release some of these captive-bred animals onto Reevesby Island in the Sir Joseph Banks group, the only other off shore island known to have supported the Greater Sticknest Rat in the past. This is based on the discovery of skeletal material in sandhill blowouts on Reevesby Island together with Tammar Wallaby remains. None of the living former lessees of Reevesby Island whose periods of residence on the island go back to the 1920s can remember either of these mammals being present there. The major impediment to the establishment (or re-establishment) of Sticknest Rats on Reevesby Island is the presence of a small (we think) population of feral cats and these will have to be eradicated before any release can be contemplated.

Introductions of Australian native animals to South Australian islands

There are a number of introductions of native animals to South Australian islands which have already been discussed, Pearson Island Rock Wallabies to Wedge and Thistle Islands, Tammar Wallabies to Greenly Island and Brush-tailed Bettongs to islands in Venus and Baird Bay, and Wedge Island. There was no evidence that these species had occurred on these

TABLE 5: DETAILS OF INTRODUCTIONS OF NATIVE VERTEBRATES TO SOUTH AUSTRALIAN ISLANDS OTHER THAN KANGAROO ISLAND

Species	Island	Source of Animals	Number of Animals	Date of Introduction	Comments
Varanus gouldi?	St. Peter	Adjacent mainland	?	?	
Varanus rosenbergi	Spilsby	? Thistle Is			
" "	Reevesby	Spilsby & Thistle Is	? & 6	pre 1937 & 1952	
" "	Taylor	?	?	pre 1960	
" "	Louth	?	?	?	
Dromaius novaehollandiae	Wedge	Adjacent mainland	?	1975	Still Present
Lasiorhinus latifrons	Wedge	Blanchtown region	6	1971	Still present, no Breeding noted
Macropus fuliginosus	Granite	Kangaroo Island	?	1971	All removed in 1984
Macropus eugenii	Greenly	Kangaroo Island	?	1907	Caused major vegetation change
" "	Granite	Kangaroo Is. (Captive Stock)	?	1970	Present & Breeding, now a "problem"
" "	Boston	Kangaroo Is. (Captive Stock)	?	?	Present & Breeding, now a "problem"

Species	Island	Source of Animals	Number of Animals	Date of Introduction	Comments
Petrogale lateralis	Thistle	Peason Island	11	1974	Still present & Breeding
" "	Wedge	Peason Island	10	1975	Still present & Breeding
" "	Central & Sth Peason	Main Peason Is.	6	1960	Accidental release now established & degrading habitat
" "	West	Peason Island (Captive Stock)	6 & 7	1973, 1975	Survived to 1980 - no breeding now? extinct.
Bettongia penicillata	Bird Club	W. Aust. (Captive Stock)	2 & 4	1979	No longer present
" "	Island A	" "	7	1980	Present & Breeding
" "	Bairds Bay	Island A "	10	1982	Present & Breeding
" "	Wedge	W. Aust. "	11	1983	Present

islands since their isolation from the mainland and so they were true introductions rather than re-introductions of a population that had become extinct since European settlement such as the St Francis Island Bettong re-introduction program. Kangaroo Island also has a number of deliberate introductions of native animals and these will be discussed separately. The known introductions of native vertebrate species to South Australia's islands (excluding Kangaroo Island) are shown on Table 5.

These introductions have been carried out for a variety of reasons by people with various motivations. Goannas for example were introduced by island farmers to get rid of venomous snakes on the islands and the acedotal evidence now available on these introductions is discussed in detail in Schwaner (1985b) and Robinson *et al.* (1985). As would be expected the introductions of herbivorous mammals to islands which had never supported natural populations of these species since their isolation have resulted in significant degradation of the natural vegetation. the effects of introduced predators such as goannas is much more difficult to assess but there are quite low density snake populations (or no snakes at all) on islands with introduced goanna populations. Other forms of environmental degradation is addition to goanna predation however have undoubtedly also affected these snake populations. Although future proposals for introducing native vertebrate species to offshore islands must be assessed on their individual merits, the environmental damage from many of the South Australian introductions to date, would argue against supporting future island introductions.

On Kangaroo Island, Flinders Chase National Park has a long history of introductions and these are listed in Table 6.

Between 1911 and 1957 fourteen species of birds were introduced but of these only three emus, a few Gang Gang Cockatoos and a breeding population of Brush Turkeys remain in the park today. The Cape Barren Goose introduction was undoubtedly the one that has had the most impact on the islands biology. The expansion and subsequent management problems of the Kangaroo Island Cape Barren Goose population are discussed in Robinson *et al.* (1982).

The mammal introductions were more successful. A small breeding population of the Platypus now appears to be well established along Rocky River and recently a small number have been released into nearby Breakneck River (NPWS 1986). The introduced Koala population has unfortunately, become only too well established, and as is happening with introduced koala populations elsewhere in eastern Australia, is now causing severe defoliation of Manna Gums and to a lesser extent Swamp Gums. The origins and spread of this koala population are discussed in Robinson (1978). It is not known (and details of its impact on Kangaroo Island are in Robinson *et al.* [1989]) if Common Ringtail Possums occurred on Kangaroo Island naturally prior to the 1926 release but they are now widely distributed on the western end of the island. Hairy-nosed Wombats and Wallaroos apparently failed to become established but there are continuing reports of the possible persistence of a population of Burrowing Bettongs in Flinders Chase National Park at least into the 1960s but there have unfortunately been no recent sightings. Of the reptile introductions, shinglebacks are still present but the tortoises did not survive.

Small Island management problems in South Australia. The Sir Joseph Banks Group, a case study.

The Sir Joseph Banks Group consists of 14 islands and two outlying reefs at the head of Spencer Gulf 40 km east of the town of Port Lincoln. They are relatively easily accessible, contain a variety of safe anchorages and they are becoming increasingly popular with cruising yachts and diving groups. Their conservation value is high, and as mentioned previously, they are the major breeding area for Cape Barren Geese in South Australia and in addition support large and important sea-bird breeding colonies. The following species are present: White-faced Storm Petrels, Black-faced Cormorants, Pacific, and Silver Gulls, Crested and Fairy Terns and Little Penguins. Important shoreline breeding birds include Pied and Sooty Oyster-catchers, Hooded Plovers, Ospreys and Sea Eagles, while major breeding populations of Rock Parrots and a variety of other passerine birds are also found. Dangerous Reef has the second largest breeding colony of Australian Sea lions in the region while Hareby, Roxby, Reevesby and Winceby Islands support the important populations of Black Riger snakes already mentioned. The two main islands, Reevesby and Spilsby, were farmed for nearly one hundred years and most of the outlying islands were grazed by sheep during the winter months. Extensive guano mining operations were carried out on some islands. The whole group, with the exception of Spilsby Island and Dangerous Reef, have been part of the Sir Joseph Banks Group Conservation Park since 1972. There is no resident ranger staff and the islands are managed from Port Lincoln. The National Parks and Wildlife Service has only had its own Port Lincoln based boat for the last nine years. Dangerous Reef is managed by the Commonwealth as an automatic lighthouse reserve

TABLE 6: NATIVE VERTEBRATES RELEASED ON KANGAROO ISLAND BETWEEN 1911 AND 1957 (SOURCE NPWS, (1986)

DATE	NUMBER	COMMON NAME	SCIENTIFIC NAME
1911	17	Malleefowl	Leipoa ocellata
1923	2	Malleefowl	Leipoa ocellata
	6	Koalas	Phascolarctos cinereus
	2	Cape Barren Geese	Cereopsis novaehollandiae
1924	2	Malleefowl	Leipoa ocellata
	2	Burrowing Bettong	Bettongia lesueur
1925	12+ young	Koala	Phascolarctos cinereus
1926	4	Laughing Kookaburra	Dacelo gigas
	2	Burrowing Bettong	Bettongia lesueur
	1	Hairy-nosed Wombat	Lasiorhinus latifrons
	15	Common Ringtail Possum	Pseudocheirus peregrinus
	50	Shingle-backs	Trachydosaurus rugosus
	2	Emu	Dromaius novaehollandiae
1928	2	Emu	Dromaius novaehollandiae
	3	Platypus	Ornithorhynchus anatinus
1929	2	Emu	Dromaius novaehollandiae
1932	2	Cape Barren Goose	Cereopsis novaehollandiae
1936	3	Cape Barren Goose	Cereopsis novaehollandiae
	1	Wombat	Probably Lasiorhinus latifrons
	2	Brush Turkey	Alectura lathami
	6	Mallee Fowl	Leipoa ocellata
1937	12	Crested Pigeon	Ocyphaps lophotes
	12	Peaceful Dove	Geopelia placida
	2	Common Wallaroo	Macropus robustus
	4	Common Bronzewing	Phaps chalcoptera
	12	Zebra Finch	Poephila guttata
	4	Diamond Dove	Geopelia cuneata
1940	4	Bar-shouldered Dove	Geopelia humeralis
	2	Magpie Goose	Anseranas semipalmata
	2	Spinifex Pigeon	Geopelia plumifera
	10	Peaceful Dove	Geopelia placida
	8	Gang-gang Cockatoo	Callocephalon fimbriatum
1941	6	Platypus	Ornithorhynchus anatinus
	2	Northern Rosella	Platycercus venustus
1946	6	Platypus	Ornithorhynchus anatinus
	4	Wonga Pigeon	Leucosarcia melaoleuca
	2	Tortoise	Species unknown
1948	3	Malleefowl	Leipoa ocellata
1956	16	Gang-gang Cockatoo	Callocephalon fimbriatum
1957	3	Emu	Dromaius novaehollandiae

but, with the exception of the light tower and a small shed, this development has not disturbed the sea lions and breeding seabirds at all (negotiations to include Dangerous Reef within Sir Joseph Banks Group Conservation Park will be included by the end of 1989). Spilsby Island is not longer an economic farm although some sheep are still run on it. It now supports a small holiday house subdivision similar to those on Wedge and Thistle Islands.

The grazing history of the Group has left a legacy of disturbance particularly in the form of introduced plants. All islands support extensive winter growing pastures of Medic and introduced grasses between the native *Atriplex paludosa* shrubland and the larger islands, where the native vegetation was actually cleared and large areas cultivated for barley and oats, have a wide variety of weed species. The most severe weed problem from a conservation management point of view is African Boxthorn. It grows extremely well on islands eventually choking out much of the native shrub vegetation. Its red berries are consumed by a variety of birds including starlings, gulls and rock parrots and the seeds spread from island to island in their droppings. the only way to begin to control it is to start on the smaller patches cutting, poisoning and burning by hand and then gradually working in towards the major infestations which will have to be tackled with machinery.

Reevesby Island currently supports introduced populations of cats, goannas and house mice with Spilsby, Stickney and several of the small islands still support (or have supported in the recent past) populations of chinchilla rabbits originally introduced to provide a rabbit fur industry which never eventuated. Eradication of the feral cats on Reevesby Island is of critical importance both in efforts to preserve the large White-faced Storm Petrel populations nesting there and in the longer term, in relation to the possible re-introduction of Stick-nest Rats.

The control of access to and visitor use of these islands is extremely difficult without resident ranger staff and can really only be achieved by an education program among the groups who are likely to visit such as yachtsman, fisherman and scuba-diving groups. Consideration is being given to extending the Conservation Park boundaried to low-water-mark to achieve management control over the island beaches and to the possibility of establishing a large Aquatic Reserve in association with these islands. Visitor access to sea lion, seabird and Cape Barren Goose breeding areas during the breeding season needs some form of voluntary control by visitors rather than complete prohibition which could not be enforced.

The development of a successful management strategy for the Sir Joseph Banks Group for conservation, should enable the development of management guidelines for the State's other island Conservation Parks where the pressures are currently nowhere near as great as in this group of islands with its wide array of management problems.

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