GREAT SANDY ISLANDS NATURE RESERVE BIOLOGICAL SURVEY
8-12 May 1995

Involved: Brad Barton, Alan Shields, Fran Stanley and Bob Taylor - CALM, Karratha
Lindsay and Elaine Mandy, Harry (Pancho) Townsend - Robe River Iron Associates, Pannawonica
Trevor Douglass - Robe River Iron Associates, Wickham
Mike Zekulich and Don Palmer - West Australian Newspaper, Perth

INTRODUCTION

The Great Sandy Islands Nature Reserve is situated approximately 40 km south west of Dampier and approximately 50 km north east of Onslow. It stretches from slightly north of the mouth of the Fortescue River to the mouth of the Robe River along approximately 100 km of coastline. There are 26 islands in the group which includes the Passage and Mary Anne groups of islands. At the northern end of the group lie four islands which have been used for a number of years as camping sites for the members of the Pannawonica Fishing Club. These are Fortescue, Mardie, Sholl and Steamboat Islands. Very little survey work has been carried out in the area. However, a preliminary survey was done by CALM officers on these four islands and many of the smaller islands in late 1992. This mostly involved pit trapping. Very little vegetation survey work was done.

The nature reserve was declared in 1981 and includes all land above high water mark except Ashburton locations 9 (North Sandy Island), 35 (Great Sandy Island) and 48 (Mary Anne Island) (see Figures 1 and 2). However, the fishing fraternity remained unaware of the illegalities of camping on the islands until 1993. At this time, structures were removed from Steamboat and Sholl Islands by CALM officers and notification was left at the sites as to why this action had been taken. CALM was contacted by the Pannawonica fishing club in early 1994 and arrangements made to carry out a biological survey with the help of the fishing club members. This was to determine whether there were any rare and endangered species present on the islands and whether the camping activities were having an adverse effect on the ecology.

If this was shown not to be the case then it was proposed to attempt to define camping sites and make the necessary changes to legalise camping in these areas. An attempt was made in April/May 1994 to carry out this survey but the weather thwarted all attempts. Therefore, due to availability of the volunteers and staffing changes at CALM's Karratha office, it was not until May 1995 that the survey was finally carried out. This report presents the results of this survey and makes recommendations as to the continuation of camping on the islands.

During the survey, fauna trapping was carried out on Fortescue, Mardie, Sholl and Steamboat Islands. As a representative sample, flora was also surveyed on Fortescue Island. Other islands, namely Stewart, Round, Middle, Long and Angle Islands were visited briefly to determine whether any major differences existed between these smaller islands and the ones more comprehensively surveyed.

MATERIALS AND METHODS

Pit lines, consisting of two pit traps and 10 metres of drift fence, were placed on the four main islands.

On Sholl Island, there were two major vegetation associations, one being the dunal system and the other being in a crater in the middle of the island. Three pit lines were placed in each of these associations. Two pit lines were placed on either end of Mardie island, while there were three pit lines on Fortescue Island. These were on top of the dunes surrounding the island, in the middle of the crater area and part way between the two. On Steamboat Island, there were four pit lines, two on the dunes and two in a slightly different vegetation association, although still on the dunal system.

Elliott traps were also placed on Sholl, twenty five in each vegetation association, Fortescue (twenty five) and Steamboat (twenty five) Islands. These were placed in a ring around the pit lines. Both pit and Elliott traps were checked daily. Two nights of trapping were carried out on all four islands.

RESULTS

Flora

The flora is very similar on all the islands in the group. However, flora samples have only been identified from Fortescue Island. The central areas of all islands are mainly dominated by *Triodia pungens* (Gummy Spinifex), although the crater area on Sholl Island also has small succulent species such as *Halosarcia*. The dunal vegetation is dominated by *Spinifex longifolius* (Beach Spinifex) and *Acacia coriacea* subspecies *coriacea* (Desert Oak). No declared rare fauna were collected from the islands. A small patch of Kapok (*Aerva javanica*) is present on Fortescue Island and Buffel grass (*Cenchrus ciliaris*) is common on Mardie Island.

The following lists the flora species found on Fortescue Island.
Aerva javanica (introduced - small patch in centre of island)
Amaranthus mitchelli
Cynanchum floribundum
Sarcostemma viminali subsp. *australi*
Heliotropum tenuifolium
Cleome viscosa
Neobassia astrocarpa
Salsola kali
Threlkeldia diffusa
Euphorbia atoto
Goodenia microptera
Scaevola crassifolia
Scaevola cunninghamii
Acacia coriacea subsp. coriacea (dominant back of dunes)
Acacia bivenosa
Crotalaria medicaginea
Indigofera linifolia
Indigofera linnaei
Indigofera monophylla
Rhynchosia minima
Swainsona kingii
Tephrosia sp.
Sida rohlenae
Sida sp. 1
Sida sp. 2
Eulalia sp.
Spinifex longifolius (dominant dunal)
Triodia pungens (dominant)
Portulaca ?oleracea
Heterodendrum sp.

Jasminium lineare subsp. *didyum*

Fauna

Only three species of mammals were captured on the islands surveyed. These were *Pseudomys nanus*, *Pseudomys* sp. and *Rattus tunneyi*. In the previous survey, only two species of mammal were captured. Seven species of reptiles were collected during the trapping.

TABLE 1: MAMMAL AND REPTILE SPECIES TRAPPED AT THE GREAT SANDY ISLANDS

SPECIES	SHOLL				FORTESCUE		MARDIE		STEAMBOAT	
	Dune		Crater							
	Pit	Elliott	Pit	Elliott	Pit	Elliott	Pit	Elliott	Pits	Elliott
MAMMALS										
Pseudomys nanus	(5)	3								
Pseudomys hermannsburgensis					3					
Rattus tunneyi					12(31)	27				
REPTILES										
Ctenotus saxatilis	(1)	8	1	8	1	2	1;2 obs (6)			
Sphenomorphes isolepis	1(1)		2		2;1 obs		1		1(2)	
Lerista bipes	1(1)				1(2)				3(1)	
Lerista muelleri	1		1							
Gemmatophora gilberti					(obs)		1(2)			
Tiliqua multifasciata				1						
Heteronotia binoei	1(1)		1							
Gehyra variegata	(3)								(1)	
Egernia pilbarensis									(3)	
Diplodactylus strophurus	(1)									

Sholl - observed - Varanid (gouldii??); tracks noted on Fortescue by GO, 1992

NOTE: The numbers in brackets refer to animals trapped by the previous survey in November 1992.

TABLE 2: BIRD SPECIES OBSERVED AT THE GREAT SANDY ISLANDS

LATIN NAME	COMMON NAME	SHOLL	MARDIE	FORTESCUE	STEAMBOAT	ROUND	LONG	MIDDLE	ANGLE
PELICANIDAE									
Pelecanus conspicillatus	Australian Pelican	1	6	14				2	
PHALACROCORACIDAE									
Phalacrocorax varius	Pied Cormorant				1			50-100	
ARDEIDAE									
Ardea alba	Great Egret								
Ardea sacra	Reef Egret (grey morph)		5	4	1				1
	(white morph)							1	
PANDIONIDAE									
Pandion haliaetus	Osprey	2		1	1			1 (& nest)	
ACCIPITRIDAE									
Milvus indus	Brahminy Kite								
Haliaetus leucogaster	White Breasted Sea Eagle	2	1 & nest	nest	2				1
FALCONIDAE									
Falco cenchroides	Australian Kestrel				1				1
BURHINIDAE									
Eascus magnirostrus	Beach Thicknees	2			2			x	
HAEMATOPODIDAE									
Haematopus ostralegus	Pied Oystercatcher	5		4	6			x	4
Haematopus fuliginosus	Sooty Oystercatcher	4	10	4				x	
CHARADRIIDAE									
Charadrius ruficapillus	Red-Capped Dotterel				1				
LARIDAE									
Larus novaehollandiae	Silver Gull	numerous	numerous	small flock	numerous			x	nesting
Sterna dougallii	Roseate Tern				rookery				
Sterna anaethetus	Bridled Tern				small flock				
Sterna bergii	Crested Tern	small flock	12	small flock	rookery			x	
Sterna bengalensis	Lesser Crested Tern		6						
COLUMBIDAE									

Geopelia humeralis	Bar Shouldered Dove	1	1						2
PSITTACIDAE									
SF CACATUINAE									
Cacatua pastinator	Little Corella							4	
SF PLATYCERCINAE									
Melopsittacus undulatus	Budgerigar	12							
HIRUNDINIDAE									
Hirundo neoxena	Welcome Swallow				x				
MOTACILLIDE									
Anthus novaeseelandiae	Australian (Richard's) Pipit	2	3		x				
MELIPHAGIDAE									
?	Honeyeater		1						
ZOSTEROPIDAE									
Zosterops lutea	Yellow White-eye		12		numerous			x	12
FRINGILLIDAE									
Taeniopygia guttata	Zebra Finch				10				
ARTAMIDAE									
Artamus leucorhynchus	White Breasted Woodswallow	numerous	12						1

DISCUSSION

There are no species which are rare or endangered on these islands, neither flora nor fauna. [Query - *Pseudomys* sp.] The vegetation is very similar on all the islands in the group. The central areas are mainly dominated by *Triodia pungens*, although the crater area on Sholl Island also has small succulent species such as *Halosarcia*. The dunal vegetation is dominated by *Spinifex longifolius* (Beach Spinifex) and *Acacia coriacea* subspecies *coriacea*.

Three mammal species and seven species of reptile were collected from the four islands surveyed. The previous survey collected eight species of reptile, three of which were not collected this time. This may be due to the different time of year that the surveys were carried out, the former being in November and the latter being in May. November is a hotter time of the year and more reptile species may be active at this time. There is no reason to suspect that the smaller island would contain any fauna not previously recorded. However, continuing biological survey work is necessary to continually update records, of both flora and fauna.

Of particular importance are the tern rookeries situated on Steamboat Island. These species lay their eggs and rear their chicks on the open rocky areas at the north western end of the island. This means that they are exposed to danger from humans wandering around the rookeries, both from trampling of eggs and chicks underfoot and abandonment of the nests by the parents. Thus, access to these areas should be restricted.

Another important site would be the northern end of Fortescue Island where the *Psuedomys* sp. was collected. This species has not been previously recorded on these islands and, as only three specimens were caught, may be locally quite rare. However, it is quite common on other islands in the area and on the mainland [assuming it is P. hermannsburgensis!]. Further survey work on Fortescue Island should help to elucidate the abundance of this animal.

Signposting will be an important part of any management strategy in the Great Sandy Islands Nature Reserve. Signs placed on the islands would serve the purpose of notifying the general public of the status of the islands and what activities are not allowed, for example camping, lighting fires etc. On some of the islands, especially those which are visited more often, for example Steamboat, Fortescue and Sholl, signs may also educate the visitors as to what they may see on the islands and what precautions should be taken to avoid disturbing the wildlife. This may also serve to encourage ecotourism on the islands and may create a source of revenue for the Department. A sign should also be placed at the boat ramp at the mouth of the Fortescue River to notify the public that the islands are B Class Nature Reserves and that camping and fires are not allowed. This sign should also include positive activities such as fishing, snorkelling, walking, bird watching etc. A sign plan for the boat ramp was approved in 199?. However, this may need to be slightly modified to take into account the recommendations of this report.

The members of the Pannawonica Fishing Club that volunteered to help with the survey were enthusiastic and appeared to treasure the natural beauty of the islands. They have suggested that they could be made honorary wardens of the islands and police the activities of other visitors and maintain the signs. I feel that this would be a valuable way to involve the main users of the islands in their management and, considering the lack of resources available to manage the islands by CALM officers in the region, would serve a very useful purpose. It would mean that the islands would be 'patrolled' on a more regular basis, since the Pannawonica club members try to get out to the islands at least once a month. The volunteers on this survey have also stated their willingness to participate in the ongoing collection of data and are now conversant with the techniques for trapping small animals and collection of vegetation.

The presence of weeds, namely Kapok (*Aerva javanica*), was determined on Fortescue Island. This needs to be addressed with a weeding and spraying programme and constant vigilance to ensure it does not spread. The Pannawonica club members could also be used to fulfil the latter function as they are on the islands regularly. Constant checks should be made on the other islands that are regularly visited to ensure that this species does not become established. Buffel grass (*Cenchrus*

ciliaris) is abundant on Mardie Island. However, this species is almost impossible to eradicate and there are not the resources available to attempt this.

Overall, it does not appear that the camping activities of the members of the Pannawonica Fishing Club have had any major adverse effects on the ecology of these islands. Those who camp on the islands regularly are fully aware of the importance of not littering and not disturbing the native vegetation and fauna. One minor concern is the introduction of Kapok to Fortescue Island. However, due to the location of the bushes in the centre of the island, this was most likely not due to the activities of the campers and may have become established through airborne seed. This is also the most likely route for the establishment of Buffel grass on Mardie island.

RECOMMENDATIONS

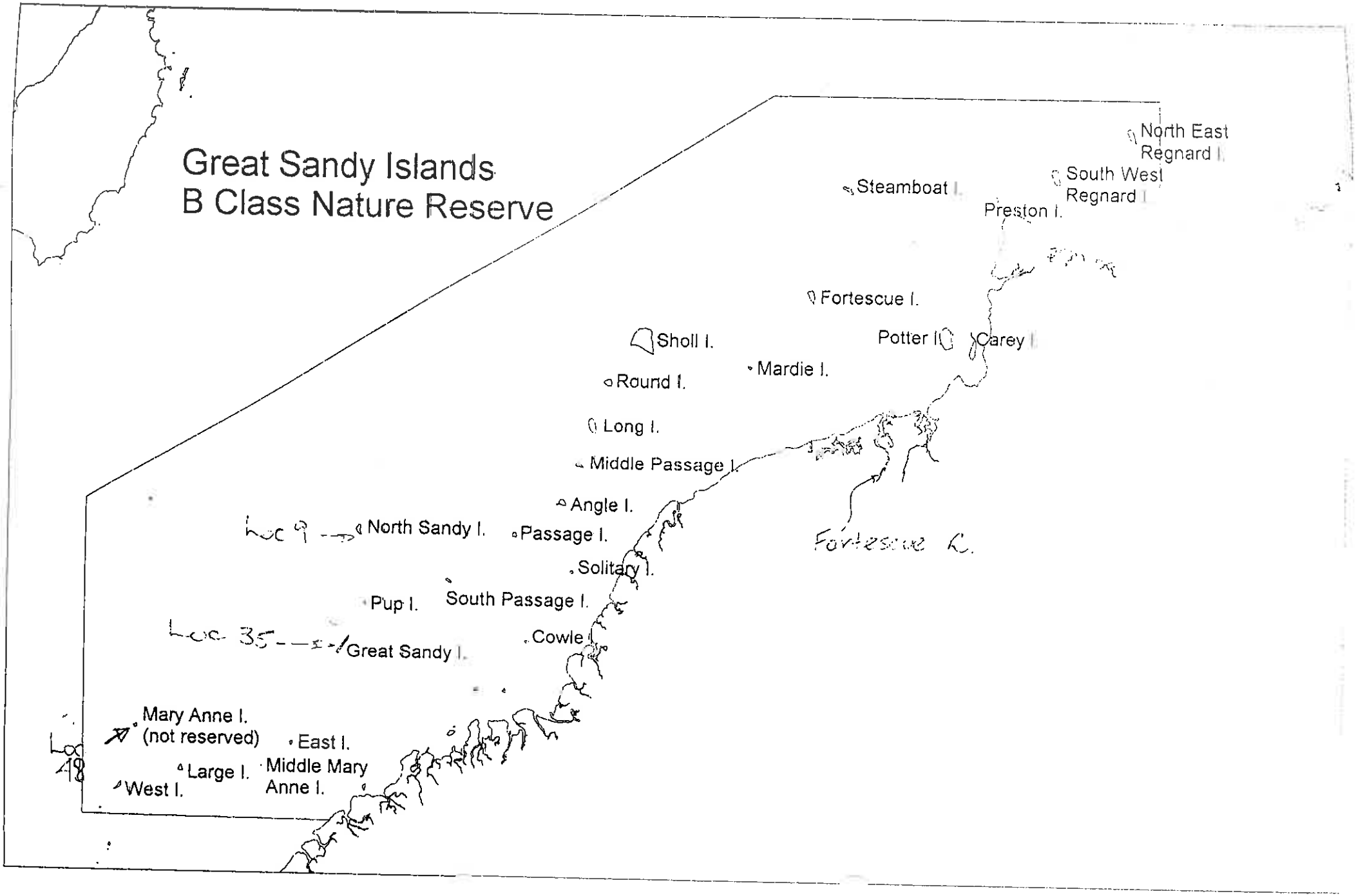
That camping be allowed on Sholl, Fortescue and Steamboat Islands but only in the areas designated on the map (see Figure 2). Some form of licence/permit should be issued to those wishing to camp on these islands in an attempt to keep track of the numbers of people and how often they visit. This information may be useful in managing the island group in future years.

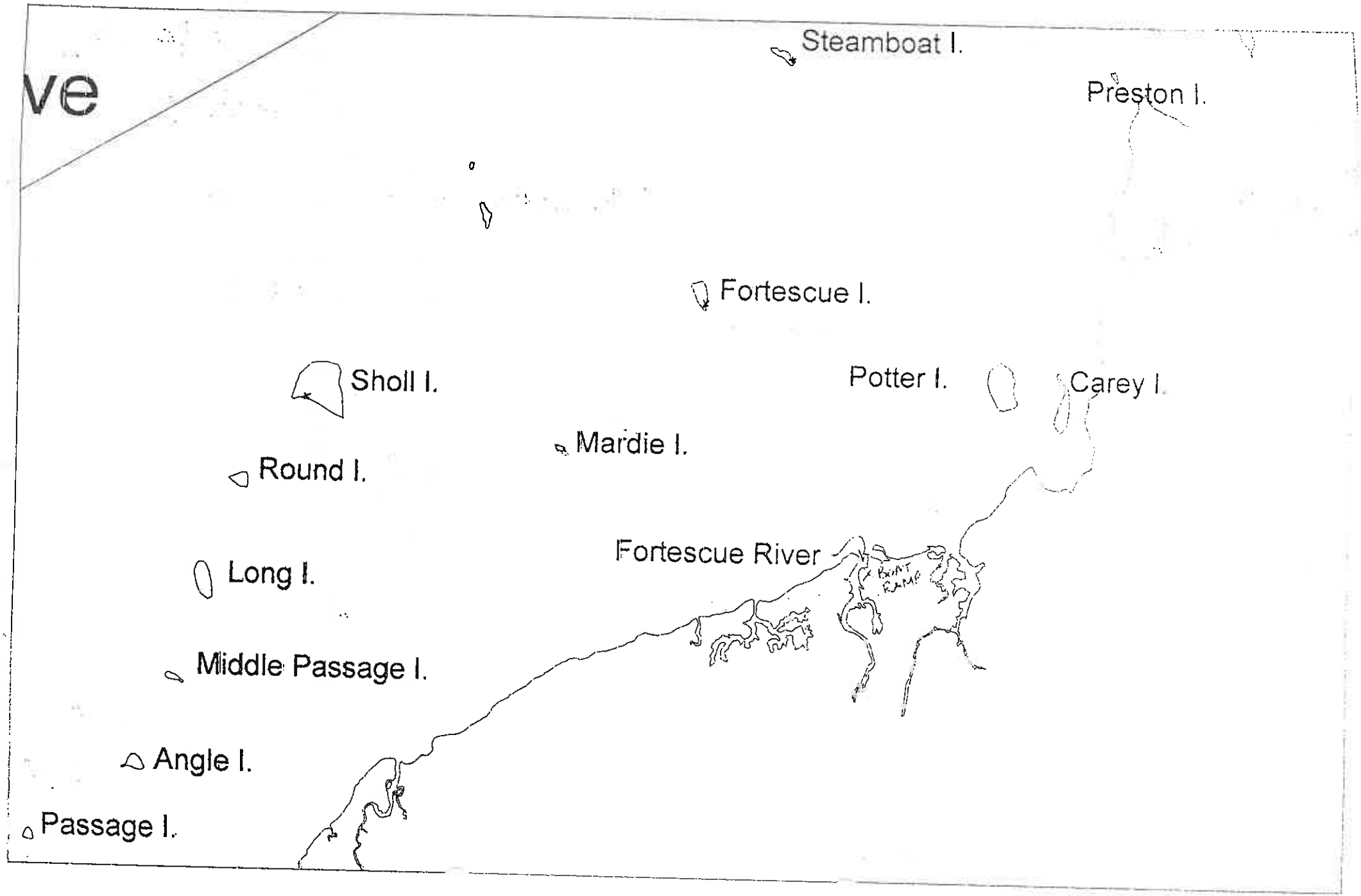
That the structures already present on Fortescue Island be removed.

That weed control be carried out on Fortescue Island to control Kapok. Constant checks of all regularly visited islands should be made to ensure that this species does not become established.

That signs be erected both at the boat ramp at the mouth of the Fortescue River and on the islands. The islands that should have signs on them include, but are not necessarily exclusive to, Sholl, Fortescue and Steamboat.

That the members of the Pannawonica Fishing Club be actively involved in the management of the islands. This may involve policing camping in the designated camping areas, issuing permits to campers and assisting with future biological surveys and weeding programmes.


Great Sandy Islands
B Class Nature Reserve
North East Regnard I.
South West Regnard I.
Steamboat I.
Preston I.
Fortescue I.
Sholl I.
Potter I.
Carey I.
Mardie I.
Round I.
Long I.
Middle Passage I.
Angle I.
North Sandy I.
Passage I.
Solitary I.
Pup I.
South Passage I.
Cowle I.
Great Sandy I.
Mary Anne I.
(not reserved)
East I.
Large I.
Middle Mary Anne I.
West I.
Loc 9 -->
Loc 35 -->
Loc 18
Fortescue R.


ve
Steamboat I.
Preston I.
Fortescue I.
Sholl I.
Potter I.
Carey I.
Mardie I.
Round I.
Fortescue River
Long I.
Middle Passage I.
Angle I.
Passage I.