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NORMAL.STY@AJHTIT = Preface

@BODY1 = Two Peoples Bay Nature Reserve is one of the more important nature conservation areas along the south coast of Western Australia. This importance is based on two factors. Firstly, it contains remnant populations of rare fauna and flora of which the best known is the Noisy Scrub-bird. Secondly, it is a place where considerable research effort has been concentrated over almost 30 years; therefore it has the potential to serve as a model for development of management practices for the region.

@BODY1IND = This publication had its genesis in 1981 when it was proposed to prepare a management plan for the Reserve. There was a clear need to prepare a comprehensive background document to provide a basis for planning and, at the same time, it was recognized that such a document would encourage further research. The collation of information would also facilitate production of educational and interpretive material and thereby engender a greater interest in, and understanding of, the nature conservation issues of the Reserve and the State in general.

@BODY1IND = Some of the findings reported here result from studies that we began in the 1970s. Because these studies were limited in their scope and because of the need to prepare a comprehensive document, we actively solicited contributions from other people who had relevant knowledge. We wish to acknowledge the very willing support and encouragement that we received from these people and ultimately, their patience while the document was being edited.

@BODY1IND = Much has changed since the initial decision to begin writing a Bulletin on Two Peoples Bay Nature Reserve. A new Department was established in 1985 to manage nature conservation lands and waters, and vesting was formally transferred to the National Parks and Nature Conservation Authority in 1987. More importantly for the Reserve, new discoveries were made about the biota as new people became involved with the place. For example, the present Reserves Management Officer Alan Danks has continued to record new species of birds, since commencing duty in 1985. Management issues have also changed, as public pressure has continued to increase and the full impact of *Phytophthora cinnamomi* became apparent. The challenge for us as editors was to respond positively to these changes without unduly holding up publication.

@BODY1IND = This Bulletin is comprehensive but not absolutely complete. It contains a wealth of information about Two Peoples Bay Nature Reserve that will aid future management and research. It will need to be updated in due course, so we urge readers to make constructive input so that revision is possible.

@BODY1IND = Finally, we thank the many people who have contributed to the diverse studies reported here and to the preparation of this Bulletin. The studies were supported by the Western Australian Department of Fisheries and Wildlife, now incorporated into the Department of Conservation and Land Management, by CSIRO, and by a number of individuals. This support is gratefully acknowledged. We also thank Jan Rayner, Raelene Hick and Jill Pryde for word processing and typesetting. Computing support was provided by Mike Choo and Paul Gioia. Cartography was by the Mapping Branch, Department of Conservation and Land Management and the Australian Survey Office, with technical assistance from Greg Beeston, Department of Agriculture. Peter Chalmer and Roland Taylor of Environmental Drafting Services drafted most of the figures and a number of the maps.

@EDITORS =

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@NO. = 2.2
@BODY1 = The American whaler 'Charles W. Morgan' which was recorded as being anchored at Two Peoples Bay in 1849 (from the Peabody Museum of Salem, USA).

@NO. = 2.3

@BODY1 = Section of the Admiralty Chart of the south coast east of Albany, prepared in 1877 by Commander W.E. Archdeacon RN. The inset at the top of the figure is an elevation of Mt Gardner to Cape Vancouver as viewed from the west. (Crown Copyright. Reproduced from Admiralty chart 2619 with the permission of Her Majesty's Stationary Office.)

@NO. = 2.4

@BODY1 = Area of the Two Peoples Bay Nature Reserve showing the original land title boundaries and nomenclature. (Drafted from lithographs held by the Department of Land Administration.)

@NO. = 2.5

@BODY1 = The Angove River water pumping station and weir as seen in 1941. (Battye Library Accession No. 4246 B/1).

@NO. = 2.6

@BODY1 = Rowing on Gardner Creek in the 1930s (W.W. Green, photo).

@NO. = 2.7

@BODY1 = A family of squatters at Two Peoples Bay in the 1940s (P. Evans, photo).

@NO. = 2.8

@BODY1 = Proposed layout for the Casuarina townsite, cancelled with the gazetting of the Two Peoples Bay Nature Reserve in 1966. (Adapted from original plan held by the Department of Land Administration).

@NO. = 2.9

@BODY1 = Fishing boats hauled onto the beach for maintenance at the southern end of Two Peoples Bay, adjacent to the proposed Casuarina townsite, c. 1950s (P. Evans photo).

@NO.SPACE = 3.1

@BODY1 = Hut No. 4, belonging to Mr A.J. Martin of Albany, constructed at the landward edge of the present picnic ground (H.B. Shugg, photo).

@NO. = 3.2

@BODY1 = Hut No. 15, belonging to Mr N.O. Reeves of Albany. This was purchased by the Department and converted for use by the Reserves Officer (H.B. Shugg, photo).

@NO. = 3.3

@BODY1 = The CSIRO 'A-frame' hut 'Jeemuluk' on the western slopes of Mt Gardner (N.J. Coy, photo).

@NO. = 3.4

@BODY1 = The original public information display situated in the picnic ground. This display featured an audio tape of bird calls which was activated by the button at the bottom righthand corner of the board (photography unknown).

@NO. = 3.5

@BODY1 = The Wilson family's fishing sheds located on Lease 7132 at the mouth of Gardner Creek. The boat shed is the building nearest to the photographer (H.B. Shugg, photo).

@NO. = 3.6

@BODY1 = Observation platform overlooking Two Peoples Bay and constructed as part of the self-guiding nature trail (G.L. Folley, photo).

@NO. = 3.7

@BODY1 = Synoptic charts for 2,3,4 August 1984, illustrating the development of the southerly storm which severely eroded Two Peoples Bay (original data from the Bureau of Meteorology).

@NO. = 3.8

@BODY1 = View of weed bank deposited by the 1984 storm; looking south-east to the access road. Note lagoon backed up behind the weed rack (G.L. Folley, photo).

@NO. = 3.9

@BODY1 = Sketch of beach profile showing extent of storm erosion (adapted from site sketch by G.L. Folley in August 1984).

@NO. = 3.10

@BODY1 = This photo illustrates the extensive foredune erosion caused by the 1984 storm. The observer is 1.7m tall (G.L. Folley, photo).

@NO. = 3.11

@BODY1 = This unobtrusive road bridge over Gardner Creek is often the visitors' introduction to the natural ambience of the Reserve (N.J. Coy, photo).

@NO. = 3.12

@BODY1 = A beached Minke Whale being rescued single-handedly by Reserve Assistant Dave Wilson - a reminder of the days when the Bay was an important whalers' venue (J. Edwards jnr. photo).

@NO.SPAC = 4.1

@BODY1 = Map of the Geology of the Two Peoples Bay area.

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@NO. = 5.3

@BODY1 = An exposed granite section on Mt Gardner, looking north-west across the Bay to the distant Stirling Range. The conical Reservoir Hill is centre background (G.T. Smith, photo).

@NO. = 5.4

@BODY1 = Podsol profile showing the well-defined B Horizon at c. 1m, near the north shore of Moates Lake (W.M. McArthur, photo).

@NO. = 5.5

@BODY1 = The parabolic unstable dunes (Mu) as seen from the north across Moates Lake (M. & I. Morcombe, photo).

@NO. = 5.6

@BODY1 = The granitic Coffin Island, as seen from Webster Hill, looking south-east down Coffin Gully (G.T. Smith, photo).

@NO.SPAC = 6.1

@BODY1 = Map of the beach and dune systems of the Two Peoples Bay-Nanarup area.

@NO. = 6.2

@BODY1 = South coast dunes and beach west of Rocky Point. Note the wide surfzone and steep foredunes subject to frequent storm erosion (S.D. Hopper, photo).

@NO. = 6.3

@BODY1 = A low profile section of the large dunes south of Moates Lake. Water lies in some of the swales and other portions remain vegetated (G.T. Smith, photo).

@NO. = 6.4

@BODY1 = Little Beach - one of the three 'pocket beaches' in the Two Peoples Bay area, with a narrow surfzone and moderately steep gradient (G.T. Smith, photo).

@NO.SPAC = 7.1

@BODY1 = Ombrothermic diagram showing average temperature variations at Two Peoples Bay and rainfall comparisons with the meteorological office at Albany Airport.

@NO. = 7.2

@BODY1 = Surface wind roses adapted from records maintained for Eclipse Island, between 1926 and 1972, after which meteorological recordings ceased at that locality.

@NO.SPAC = 10.1

@BODY1 = Cumulative totals of plant species in flower on the Two Peoples Bay Nature Reserve (data from Table 10.1) compared with rainfall and temperature data for the area (from Chapter 7 of this publication).
@NO. = 10.2
@BODY1 = *Stylidium plantagineum* (D. Coates, photo).
@NO. = 10.3
@BODY1 = The florescence of *Melaleuca* sp. 1 (baxteri) (S.D. Hopper, photo).
@NO.SPACE = 11.1
@BODY1 = Vegetation map of Two Peoples Bay Nature Reserve.
@NO. = 11.2
@BODY1 = Changes in vegetation looking north-west from Tor Hill;
@NO.INDENT = (a)
@BODY1 = 1960: Note that the vegetation through to Gardner Lake is generally low; this is probably the result of recent burning (E. Slater, photo).
@NO.INDENT = (b)
@BODY1 = 1982: Note the extent of regeneration of thicket from the granite to the lake and the clearing of farmland north of Gardner Lake.
@NO. = 11.3
@BODY1 = Changes in vegetation in Tick Flat, looking south-east to the summit of Mt Gardner;
@NO.INDENT = (a)
@BODY1 = 1960: Heath with sparse emergent *Allocasuarina* and *Eucalyptus* (E. Slater, photo).
@NO.INDENT = (b)
@BODY1 = 1982: Heath and thicket vegetation. The emergent trees and shrubs have increased in height and canopy cover since 1960 (L.A. Moore and G. Chapman, photo).
@NO.INDENT = (c)
@BODY1 = 1990: Note that changes since 1982 are relatively minor (N.J. Coy, photo).
@NO. = 11.4
@BODY1 = Changes in heath and mallee at bottom of Tick Flat, looking west across the isthmus to the mobile sand dune south of Moates Lake.
@NO.INDENT = (a)
@BODY1 = 1960: The heath vegetation south of the lakes is uniform with few *Dryandra sessilis* (E. Slater, photo).
@NO.INDENT = (b)
@BODY1 = 1982: Note the regeneration of mallee vegetation in the swale in the foreground and the emergence of *Dryandra sessilis* along the calcareous dunes to the coast (L.A. Moore and G. Chapman, photo).
@NO.INDENT = (c)
@BODY1 = 1990: Photo shows further growth of *Dryandra sessilis* in the midground and the mallee eucalypts in the swale in the foreground (N.J. Coy, photo).
@NO. = 11.5
@BODY1 = From the summit of Tor Hill looking north-east towards Mt Manypeaks.
@NO.INDENT = (a)
@BODY1 = 1960: The vegetation fringing the granite is probably in the order of 15 years old (E. Slater, photo).
@NO.INDENT = (b)
@BODY1 = 1990: The vegetation fringing the granite is now taller and more woody. Records indicate that this area has not been burnt since some time prior to 1946 (N.J. Coy, photo).
@NO. = 11.6

@BODY1 = Agonis juniperina Forest (T1) in wet sedgeland at the eastern end of Moates Lake (A. Danks, photo).
@NO. = 11.7

@BODY1 = Jarrah/Allocasuarina Low Forest (T6) north of Moates Lake (S.D. Hopper, photo).
@NO. = 11.8

@BODY1 = Eucalyptus staerii Low Woodland (T14) over heath in the area of the Moates traverse between Moates lake and Two Peoples Bay Road (S.D. Hopper, photo).
@NO. = 11.9

@BODY1 = Gully Thicket (S2) along the walk trail, due south of Mt Gardner (S.D. Hopper, photo).
@NO. = 11.10

@BODY1 = Coastal Dune Scrub (S4) south of Moates Lake (G.T. Smith, photo).
@NO. = 11.11

@BODY1 = Isthmus Mixed Dense Low Heath (S7) adjacent to Sinker Reef Road, looking south-east towards Mt Gardner (A.J.M. Hopkins, photo).
@NO. = 11.12

@BODY1 = Headland Mixed Dense Low Heath (S8) on deep sands near Wave Sign Gully, west of Mt Gardner (S.D. Hopper, photo).
@NO. = 11.13

@BODY1 = Granite Rock Complex (S12) near Webster Hill (G.T. Smith, photo).
@NO. = 11.14

@BODY1 = Baumea/Juncus Tall Sedge Swamp (V3) in a swale between Gardner Lake and The Sand Dunes (S.D. Hopper, photo).
@NO.SPACE = 12.1

@BODY1 = Map of Two Peoples Bay Nature Reserve divided into 500m grids using Australian Map Grid co-ordinates.
@NO. = 12.2

@BODY1 = Banksia ilicifolia, which grows in a limited area to the north and west of Moates Lake (S.D. Hopper, photo).
@NO. = 12.3

@BODY1 = Eucalyptus conferruminata is one of the mallees growing on coastal granite slopes on the Mt Gardner headland (S.D. Hopper, photo).
@NO. = 14.1

@BODY1 = Drainage systems of the Two Peoples Bay area and locations of fish and aquatic invertebrate sampling points.
@NO. = 14.2

@BODY1 = Depth and water quality data from Angove, Moates and Gardner Lakes. Recordings for Moates Lake spasmodic after 1986.
@NO. = 14.3

@BODY1 = Lower reaches of the Goodga River, looking south-west over the mobile sand dunes to Mt Gardner (S.D. Hopper, photo).
@NO. = 14.4

@BODY1 = Portion of a lagoon, known locally as the 'Limpopo' section of 'Juniperina Creek', south-east of Moates Lake (S.D. Hopper, photo).
@NO. = 14.5

@BODY1 = A section of the eastern shoreline of Gardner Lake. In places the emergent sedges extend 100m from the shoreline (S.A. Halse, photo).
@NO. = 14.6

@BODY1 = Gardner Creek, looking upstream from a low level bridge installed by the Wilson family in the early 1970s (S.D. Hopper, photo).
@NO. = 14.7

@BODY1 = Angove Lake, in summer, looking east from Reservoir Hill. Note the wide expanse of Baumea articulata, the dominant sedge of this wetland (S.A. Halse, photo).

@NO. = 14.8
@BODY1 = This view down West Gully is an example of the steeply sloping gullies draining Mt Gardner headland (G. Chapman, photo).

@NO. = 14.9
@BODY1 = A pair of *Platalea flavipes* yellow-billed spoonbill (M. & I. Morcombe, photo).

@NO. = 14.10
@BODY1 = *Circus aeruginosus* Marsh Harrier (M. & I. Morcombe, photo).

@NO.SPACE = 15.1
@BODY1 = *Lophoictinia isura* Square-tailed Kite (M. & I. Morcombe, photo).

@NO. = 15.2
@BODY1 = A pair of *Haliaeetus leucogaster* White-bellied Sea-Eagle (M. & I. Morcombe, photo).

@NO. = 15.3
@BODY1 = *Falco peregrinus* Peregrine Falcon (M. & I. Morcombe, photo).

@NO. = 15.4
@BODY1 = A family of *Fulica atra* Eurasian Coot (photo unknown).

@NO. = 15.5
@BODY1 = *Vanellus tricolor* Banded Lapwing (E. Lingren, photo).

@NO. = 15.6
@BODY1 = *Calyptorhynchus latirostris* Carnaby's Cockatoo (M. & I. Morcombe, photo).

@NO.SPACE = 16.1
@BODY1 = Past and present locations of the Noisy Scrub-bird (*Atrichornis clamosus*), the Western Whipbird (*Psophodes nigrogularis*) and the Western Bristlebird (*Dasyornis longirostris*).

16.2
@BODY1 = Noisy Scrub-bird male territorial boundaries in Tick Flat and Robinson Valley. Inserts show annual changes, from 1971 to 1974, of the use of two territories by resident birds. Based on Smith (1987a).

16.3
@BODY1 = Locations of Noisy Scrub-bird male territories in the lakes area of Two Peoples Bay Nature Reserve (refer to Table 16.1).

@NO. = 16.4
@BODY1 = Locations of Noisy Scrub-bird male territories on Mt Gardner headland in the Two Peoples Bay Nature Reserve (refer to Table 16.1).

@NO. = 16.5
@BODY1 = A Noisy Scrub-bird nest is well-disguised in this dense vegetation over a small gully stream (G. Chapman, photo).

@NO. = 16.6
@BODY1 = Western Whipbird territories in Tick Flat. Based on Smith (1987a).

@NO. = 16.7
@BODY1 = Western Whipbird nest and two eggs (L.A. Moore, photo).

@NO. = 16.8
@BODY1 = Locations of Western Whipbird territories in the Two Peoples Bay Nature Reserve in 1976 and 1982.

@NO. = 16.9
@BODY1 = Western Bristlebird territories in Tick Flat. Based on Smith (1987a).

@NO. = 16.10
@BODY1 = Locations of Western Bristlebird pairs in 1976 and 1982. The western boundaries of distribution (1970-1982) are also shown.

@NO.SPACE = 17.1
@BODY1 = Map of granite outcrops on Mt Gardner headland; showing streams, 100m interval contours and granite outcrops in black. Transects A-A and B-B relate to Figure 17.2. Based on Smith (1985a).

@NO. = 17.2(a)

@7-1HED = RECORD

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@TABTEXT2 = ý <<.005 18.3 days
.005 - .010 25.8 "
.010 - .100 281.7 "
.100 - 1.0 26.8 "
>>1.0 1.6 "
No Record 10.9 "
@TABTHREE2 = ý <<.003 2.4 days
.003 -ý.007 14.9 "
.007 - .150 272.0 "
.150 - 1.5 65.5 "
>>1.5 3.1 "
No Record 7.3 "
@LEFT2 = Minimum instantaneous
@MIDTEXT = Nil/intervals Sept '77 - Feb '78
@TABTHREE = .0013 cumecs in January 1965
@LEFT2 = Maximum instantaneous
@MIDTEXT = 18.5 cumecs in Sept 1970
@TABTHREE = 11.0 cumecs in March 1968
@LEFT2 = Minimum annual
@MIDTEXT = 1.00 million m3 in 1981
@TABTHREE = 2.08 million m3 in 1965
@LEFT2 = Maximum annual
@MIDTEXT = 3.41 million m3 in 1979
@TABTHREE = 8.50 million m3 in 1978
@LEFT2 = Annual extraction for Albany water supply
@MIDTEXT = 0.9 - 1.4 million m3
(av. 1 million m3)
@TABTHREE = -
@TAB2TXTEND = Estimated mean annual
@MIDTEXT = 2.91 million m3
@TABTHREE = 3.93 million m3
@FOOT = *(Flow figures for the weirs only, not for the downstream
catchments)
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@FAMILIES = Laridae      Gulls & terns
Larus novaehollandiae  Silver Gull      23
Chlidonias hybrida     Whiskered Tern      2
Hydroprogne caspia     Caspian Tern        2
Sterna bergii          Crested Tern         1  1
@FAMILIES = Muscicapidae : Sylviinae  Old World Warblers
@END14-2 = Acrocephalus stentoreus Clamorous Reed Warbler      3
Megalurus gramineus    Little Grassbird 1      3
Number of Surveys      5      24      30
Total Number of Species      17      35      29
Number of Breeding Species(a)  1      3      5
@ENDTAB = Highest Total Count      109      420      41

```

@SUPERNO = (a)

@PARAINDENT = Additional breeding records by A. Danks have been included, hence number of breeding species cannot be related to survey effort.

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ï ýýýýá m û ýýýý f 0 ýýýýK _ c ýýýýq ýýýý... X #####
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Daphniidae						
	Simocephalus sp. A					x
@PAGEBREAK = Table 14.5 (continued)						
@TABS =	Angove	Goodga	West	Websters	Angove	Gardner
	Moates					
	River	River	Gully	Gully Lake	Lake	Lake
@CENTRETAB = Bosminidae						
	Bosminia meridionalis	Sars				x x
@CENTRETAB =	?Bosminia sp. B					x
OSTRACODA						
Ostracoda sp 262						
				x		
Cyprididae						
	Cypretta sp. A			x	x	
	Ilyodromus sp. A		x			
	Kennethia cristata	De Deckker				x x
	x					
	Alboa worooa	DeDeckker (259)				x
Darwinulidae						
?Darwinula sp. A				x		
Limnocytheridae						
	Gomphodella aff. maia					
@CENTRTABIND =	DeDeckker				x	x
@CENTRETAB =	Limnocythere mowbrayensis					
@CENTRTABIND =	Chapman				x	
@CENTRETAB =	Candonidae					
	Candonopsis tenuis	(Brady)			x	x
COPEPODA						
Centropagidae						
	Calamoecia attenuata	(Fairbridge)				x
	x					
	Calamoecia tasmanica					
	subattenuata	(Fairbridge)			x	x x
	Gladioferens imparipes	Thomson				x
Cyclopidae						
	Microcyclops sp. A				x	x x
	Mesocyclops sp. A				x	x x
	Paracyclops sp. A			x	x	x
Canthocamptidae						
	Canthocamptidae sp. A				x	x
	Onychocamptus chathamensis				x	
	x					
	Schizopera clandestina	(Klie)				x
	Nitocra sp. A				x	
DECAPODA						
Parastacidae						
	Cherax plebejus	(Hess)	x	x		x
	Cherax quinquecarinatus	(Gray)	x			x
	Cherax tenuimanus	(Smith)	x	x		x
Palaemonidae						
	Palaemonetes australis	Dakin	x		x	x x
AMPHIPODA						
Ceinidae						
	Austrochiltonia subtenuis	Hurley				x x
	x					
Gammaridae						
	Perthia branchialis	(Nicholls)	x			x
	Perthia acutitelson	Straskraba		x		
	Uroctena setosa	Nicholls		x		

Corophiidae
 cf. *Erichthonius* sp. A x
 @PAGEBREAK = Table 14.5 (continued)
 @TABS = Angove Goodga West Websters Angove Gardner
 Moates
 River River Gully Gully Lake Lake Lake
 @CENTRETAB = INSECTA
 COLLEMBOLA x x x
 MEGALOPTERA
 Chauliodidae
Archichauliodes cervulus
 @CENTRTABIND = Theischinger x
 @CENTRETAB = DIPTERA
 Simuliidae
Cnephia tonnoiri tonnoiri
 @CENTRTABIND = Drummond x x x x
 @CENTRETAB = *Austrosimulium furiosum* (Skuse) x x
 Culicidae
Aedes sp. A x
Culex globocoxitus Dobrotworsky x
 Chironomidae
 Tanypodinae
Paramerina levidensis (Skuse) x x x
 x
Macropelopia dalyupensis
 @CENTRTABIND = (Freeman) x
 @CENTRETAB = *Macropelopia* sp. V9 x
 ?*Ablabesmyia* sp. V10 x
 Orthoclaadiinae
Corynoneura ?scutellata Winnertz x
Cricotopus annuliventris (Skuse) x x x x
Stictocladus uniserialis Freeman x
Nanocladus sp. VCD7 x
Thienemanniella sp. V19 x x x x
Limnophyes pullulus (Skuse) x x x x
 ?*Limnophyes* sp. V31 x
 Orthoclaadiinae sp. V11 x x x
 Orthoclaadiinae sp. VTPB1 x x
 Orthoclaadiinae sp. V59 x
 Orthoclaadiinae sp. A x x
 Chironominae
Polypedilum sp. V3 x x x x
Polypedilum sp. V33 x x
Riethia sp. V4 x x
Riethia sp. V5 x x
Tanytarsus sp. V6 x x x x
Stempellina ?australiensis
 @CENTRTABIND = Freeman x
 @CENTRETAB = ?*Paratendipes* sp. V12 x
Rheotanytarsus sp. V18 x
Cryptochironomus griseidorsum
 @CENTRTABIND = Kieffer x
 @CENTRETAB = *Stenochironomus* sp. V27 x
 @CENTRETAB = *Tanytarsini* sp. A x x
 Tipulidae
 Limoniinae sp. A x x x
 Limoniinae sp. B x x
 @PAGEBREAK = Table 14.5 (continued)

@TABS =	Angove	Goodga	West	Websters	Angove	Gardner
	Moates					
	River	River	Gully	Gully Lake	Lake	Lake
@CENTRETAB =	Tipulinae sp. A			x		
	?Pedicia sp. A		x	x		
Ceratopogonidae						
	Ceratopogonidae sp. A		x	x	x	
	Ceratopogonidae sp. B		x	x	x	x
	Ceratopogonidae sp. C				x	
	Ceratopogonidae sp. D					x
Stratiomyidae						
	Stratiomyidae sp. A				x	
Dolichopodidae						
	Dolichopodidae sp. A				x	
ODONATA						
ZYGOPTERA						
Coenagrionidae						
	Ischnura sp. A			x	x	
ANISOPTERA						
Aeschnidae						
	Austroaeschna anacantha Tillyard		x	x	x	x
Cordulidae						
	Cordulidae sp A (immature)		x			
Gomphidae						
	Austrogomphus collaris Hagen			x		
Libellulidae						
	Diplacodes haematodes (Burmeister)					x
Synthemidae						
	Synthemis macrostigma					
	occidentalis Tillyard			x		
HEMIPTERA						
Veliidae						
	Veliidae sp. A			x		
Corixidae						
	Micronecta robusta Hale				x	
EPHEMEROPTERA						
Leptophlebiidae						
	Nyungara bunni Dean		x			
	Bibulmena kadjina Dean			x	x	x
Caenidae						
	Tasmanocoenis tillyardi (Lestage)			x		x
PLECOPTERA						
Gripopterygidae						
	Newmanoperla exigua (Kimmins)			x		
	Gripopterygidae sp. A (immature)				x	
TRICHOPTERA						
Hydropsychidae						
	Smicrophylax australis (Ulmer)		x	x		
Ecnomidae						
	Ecnomina scindens/trulla/merga					
@CENTRTABIND =	group		x			
@CENTRETAB =	Ecnomus pansus/turgidus					
@CENTRTABIND =	complex		x	x		
@PAGEBREAK =	Table 14.5 (continued)					
@TABS =	Angove	Goodga	West	Websters	Angove	Gardner
	Moates					
	River	River	Gully	Gully Lake	Lake	Lake

@CENTRETAB = Leptoceridae

Condocerus aptus Neboiss	x				x		
Lectrides parilis Neboiss	x		x		x		
Triplectides sp. A	x						
Triplectides australis Navas						x	x
x							

Hydroptilidae

Oxyethira retracta Wells	x						
Maydenoptila ?rupina Neboiss			x				

Hydrobiosidae

Taschorema pallescens (Banks)		x	x	x	x		
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COLEOPTERA

Dytiscidae

Lancetes lanceolatus (Clark)						x	x
Liodessus dispar (Sharp)						x	
Megaporus howitti (Clark)						x	
Necterosoma darwini (Babington)						x	
Rhantus suturalis (MacLeay)					x		
Sternopriscus browni Sharp							x

Helodidae

Helodidae sp. A		x	x		x		
-----------------	--	---	---	--	---	--	--

@ENDTAB = Number of Species 36 27 23 26 41 45 32

ominae

Polypedilum sp. V3	x		x	x	x		x
Polypedilum sp. V33	x			x			

Riethia

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134 C:\WORKWORD\NORMAL.STY HPLASER TABLE 14:1
Data on Angove and Goodga River Systems
Adapted from Stream Flow Records of Western Australia to 1982, Vol I.

Function

Angove Creek Pumping Station

Goodga River/Black Cat

Drainage Index No 602 187

Drainage Index No 602 199

Period of Record

April 1963 - January 1982

June 1964 - December 1982

Catchment Area 29.3 km² 46.4 km²

Cleared Portion

30% by 1982 20% in 1965

55% by 1982 25% in 1965

Land Use

70% water and flora reserve and 30% cattle grazing on improved pastures.

Cattle grazing on improved pastures and a small portion in water reserve.

Downstream catchment

Angove Drain - 54.4 km²

Moates Lake 77.7 km²

Installation

Sharp crested combination V shaped weir controls low and medium flows and combines with narrow crested rectangular weir for high flows. Upstream Pipehead Weir for extraction of water for Albany Town Water Supply.

V shape sharp crested weir controls low and medium flows, combines with narrow crested rectangular weir and channel control for high flows. No water extracted from the weir.

Rainfall

770 mm/annum

800 mm/annum

Pan Evaporation

1470 mm/annum

1460 mm/annum

Water Quality

Colour

Highly Coloured

Very Highly Coloured

Total Dissolved Salts

346 mg/l

460 mg/l

pH March 1990

6.8

6.4

June 1990

5.88

6.31

Flow

cumecks/days per annum

<.005

18.3 days

<.003

2.4 days

(Angove figures exclude extractions for Albany Town Water Supply)

.005 - .010

25.8 days

Data on Angove and Goodga River Systems

Adapted from Stream Flow Records of Western Australia to 1982, Vol I.

Function

Angove Creek Pumping Station

Goodga River/Black Cat

Drainage Index No 602 187

Drainage Index No 602 199

Period of Record

April 1963 - January 1982

June 1964 - December 1982

Catchment Area 29.3 km2 46.4 km 2

Cleared Portion

30% by 1982 20% in 1965

55% by 1982 25% in 1965

Land Use

70% water and flora reserve and 30% cattle grazing on improved pastures.

Cattle grazing on improved pastures and a small portion in water reserve.

Downstream catchment

Angove Drain - 54.4 km2

Moates Lake 77.7 km2

Installation

Sharp crested combination V shaped weir controls low and medium flows and combines with narrow crested rectangular weir for high flows. Upstream Pipehead Weir for extraction of water for Albany Town Water Supply.

V shape sharp crested weir controls low and medium flows, combines with narrow crested rectangular weir and channel control for high flows. No water extracted from the weir.

Rainfall

770 mm/annum

800 mm/annum

Pan Evaporation

1470 mm/annum

1460 mm/annum

Water Quality

Colour

Highly Coloured

Very Highly Coloured

Total Dissolved Salts

346 mg/l

460 mg/l

pH March 1990

6.8

6.4

June 1990

5.88

6.31

Flow

cumecks/days per annum

<.005

18.3 days

<.003

2.4 days

(Angove figures exclude extractions for Albany Town Water Supply)

.005 -.010

25.8 days

@AJHTIT = Introduction

@AJHAUT = A.J.M. Hopkins and G.T. Smith

@LEVEL1 = STATUS, LOCATION, ACCESS AND SIZE

@BODY1 = Two Peoples Bay Nature Reserve is a Class A Reserve (No A27956) for the Conservation of Flora and Fauna. It is vested in the National Parks and Nature Conservation Authority, the authority established under the Conservation and Land Management Act 1984.

@BODY1IND = The Reserve is located between 118^{<198>05'} and 118^{<198>13'} East and 34^{<198>56'} and 35^{<198>02'} South, on the south coast 30^ÿkm east of Albany (Figs 1.1 and 1.2). Motor vehicle access is via the Two Peoples Bay Road which turns off the road to Nanarup about 20^ÿkm from the Albany Post Office. It is within the Department of Conservation and Land Management's South Coast Region which is administered from Albany.

@BODY1IND = The Reserve has an area of 4774.6618 ha to the low water mark. This is made up of two portions on the mainland and four adjacent islands: Coffin and Inner Islands, Rock Dunder and Black Rock. These range in size from Coffin Island (c. 28 ha) to Black Rock (c. 3 ha). The main section of the Reserve, of about 4685^ÿha, takes in some 25^ÿkm of coastline from Two Peoples Bay around almost to Nanarup on the south coast. The smaller mainland section (c. 89^ÿha) comprising Angove Lake, its northern margin and part of the Angove River, is located about 2^ÿkm north of the main section of the Reserve. The Angove Lake section has legal access through Reserve 13802 (Albany Water Supply Catchment Area - Angove River) but practical access is gained through farming land, by vehicle through the farming property 'Tandara', or by foot from the Two Peoples Bay beach. Access to the islands by boat is difficult because of the lack of easy landing areas and the normally heavy swells.

@LEVEL1 = GENERAL DESCRIPTION OF THE RESERVE

@BODY1 = The Two Peoples Bay Nature Reserve incorporates a wide variety of habitats; these include the coastal areas and islands already mentioned and many different terrestrial environment types. The topographic map of the Reserve provided in Figure 1.3 illustrates this point. Figure 1.4 gives all the place names within the Reserve and Figures 1.1 and 1.2 give the place names referred to in the text of this publication.

@BODY1IND = Two Peoples Bay is flanked by rocky headlands and backed by a 5^ÿkm long, crescent-shaped, fine sandy beach. Behind the beach are well-vegetated sand dunes up to 10^ÿm high. There are two smaller, but equally attractive, sandy beaches south-east of South Point called Little Beach and Waterfall Beach. The remainder of the shoreline of the Mt Gardner headland is mainly steeply sloping, bare exposures of granite. Along the southern coastline to Rocky Point there is a c. 50^ÿm high limestone cliff with a gentle landward slope and a steep scarp to seaward. At the foot of the scarp are the remnants of an old wave-cut platform and then a wide intertidal reef (Sinker Reef). To the west of Rocky Point and all the way to Nanarup a sandy beach is backed by steep dunes of between 30 to 40^ÿm in elevation.

@BODY1IND = The most conspicuous feature of the Reserve is Mt Gardner, a conical hill some 408^ÿm in elevation, consisting of Pre-Cambrian granite (adamellite). The slopes of Mt Gardner have been deeply dissected to produce well-vegetated gullies which form important habitat for Noisy Scrub-birds. This eastern portion of the Reserve is referred to as the Mt Gardner headland (Fig. 1.4).

@BODY1IND = An isthmus of partially lithified calcareous sandstone with heath communities (isthmus area, Fig. 1.4) separates Mt Gardner from the remnants of the late-Tertiary to early Pleistocene lateritic plateau

which takes in most of the Tandara property. The lateritic plateau is well vegetated with jarrah (*Eucalyptus marginata*)/*Allocasuarina fraseriana* forest.

@BODY1IND = Below the lateritic plateau is the coastal plain of lithified and partially-lithified sands. Gardner Lake, which is brackish, and Moates Lake, with fresh water, are major permanent waterbodies on this coastal plain. They are associated with low-lying terrain which is seasonally wet. Drainage of this area is restricted. Moates Lake is fed by small streams and rivers which include the Goodga River and Black Cat Creek. A series of waterways that flow for a large part of the year drain into Gardner Lake from the upstream Moates Lake. Water may also seep through to Gardner Lake when there is no superficial flow. This second lake drains into the sea via Gardner Creek, however, the bar at the mouth of the creek is usually closed from late summer through to winter.

@BODY1IND = As noted above, the Reserve includes the freshwater Angove Lake and part of the Angove River, in an outlying block to the north of the main body of the Reserve. Drainage is to the south via a drain which enters Gardner Creek near the traffic bridge.

@BODY1IND = Immediately to the south of Moates Lake there is a large, mobile sand dune covering about 300 ha. The area generally circumscribed by the dunes, Moates and Gardner Lakes, the lateritic plateau and the sea cliff is referred to as the 'between-the-lakes area' (Fig. 1.4). To the west of the dune is the western boundary area. These two coastal plain areas are vegetated with a variety of woodland and shrubland types with a predominance of those dominated by *Agonis flexuosa*, *Banksia littoralis*, *Adenanthos serricea* and *Dryandra sessilis*.

@BODY1IND = So far little attention has been given to the marine habitats adjacent to the Two Peoples Bay Nature Reserve. However, the presence of the islands, reefs and the variety of rocky and sandy shorelines suggests that they too might have important conservation values.

@LEVEL1 = SIGNIFICANCE OF THE RESERVE

@BODY1 = The Two Peoples Bay Nature Reserve was created in 1966 following the rediscovery there in 1961 of the Noisy Scrub-bird (*Atrichornis clamosus*). This bird is but one of four species of rare vertebrate fauna known to occur there. The invertebrate fauna have been poorly documented. The aquatic fauna have also been poorly recorded and are in need of a study because there is superficial evidence of uncommon associations. In addition, the Reserve has a rich and interesting flora.

@BODY1IND = The Reserve has a significant place in the maritime exploration and early commercial history of Western Australia, as well as being a place of importance for nature conservation. The Bay, with its sheltered anchorage and reliable supply of fresh water, was a popular stopping place in the 19th century for maritime explorers, and travellers, and for sealers and whalers. Later, the area became popular as a local recreation spot and has remained so, to this day.

@BODY1IND = The Reserve and its biota have been the subjects of extensive research by CSIRO, State Government agencies, academic institutions and private individuals since 1961. Much of the research has focused on the Noisy Scrub-bird; however, other features of the Reserve have also received attention. The Reserve, and related research findings, and the various innovative management initiatives that have been implemented over the past c. 20 years, have all generated considerable public interest at local, national and international levels.

@BODY1IND = The Two Peoples Bay Nature Reserve has long been considered the jewel in the conservation reserve system, principally because of the presence of the rare birds. The information compiled in the succeeding chapters clearly shows that the Reserve has many additional, important values. The information also permits the Reserve to become the model for

the development of management theory and practices for the region and possibly the State.

wet. Drainage of this area is restricted. Moates Lake is fed by small streams and rivers. Drainage of this area is restricted. Moates Lake is fed by small streams and rivers. Drainage of this area is restricted. Moates Lake is fed by small streams and rivers.

134<<Fo99=NORMAL.STY HP3>@ä5ðy99=p@AJHCH = CHAPTER 2
@AJHTIT = History and Establishment of Two Peoples Bay Nature Reserve
@AJHAUT = G.R. Chatfield
@LEVEL1 = INTRODUCTION

@BODY1 = Any person perusing a map of south-west Western Australia will become aware of the multi-national heritage of the area from the various names of coastal features. The first European explorers and merchants progressively named the coastal features as they became known to them. First one nationality, then another, would name sections of the coast, so that today the different languages of the names are intermingled along the entire coast. However, the present names do not demonstrate as clearly as they might the mixture of their national origins. Examples in the vicinity of King George Sound include the Kalgan River which was originally named RiviŠre des Francais and Two Peoples Bay, the subject of this history, was Anglicized from the French BaieydeyDeux-Peuples.

@BODY1IND = The subjects covered in this chapter are many and varied. The early explorers and exploration, and the rivalry between and within various exploration parties, are covered first. The arrival of the sealers and whalers, from both overseas and local settlements, significantly influenced the course of Two Peoples Bay's history, as did the establishment of the Albany settlement. More remote, but nonetheless significant in its influence on the history of the area, were foreign and defence policy decisions made at Westminster. Debates on the rights of British subjects versus those of foreign nationals affected the Bay's development, as did local decisions on such things as the construction of railway lines in the Albany area. Matters of recreation and holiday leisure activities became a focal point later in the history of the Bay, to be dominated after 1961 by the issue of conservation, particularly that of a near-extinct species, the Noisy Scrub-bird (*Atrichornis clamosus*).

@BODY1IND = In many ways the topics touched on in this history are representative of issues and events that have shaped the whole of Western Australia's history and development, in particular the coastal areas and especially those of the south-west coast. It is hoped that a greater understanding of the history of Two Peoples Bay Nature Reserve will help in the development of policies that will conserve areas for future generations, and provide more effective management of those areas already committed to conservation.

@LEVEL1 = DISCOVERY AND EXPLORATION

@LEVEL2 = Early Explorers

@BODY1 = Descriptions of prominent coastal land forms as seen from seaward were essential to the early maritime explorers. By recognizing a described feature a captain was able to establish his position on an uncharted coast. Knowing his position, a ship's captain could determine other information, such as the relative proximity of safe anchorages, watering and timbering points, and reefs and shoals.

@BODY1IND = In September 1791 Captain George Vancouver named and described one such prominent feature at Two Peoples Bay _ the high cone-shaped Mt Gardner to the east of King George Sound. When sailing eastward from there, Vancouver did not stay close in shore and failed to notice the small sheltered bay immediately north of Mt Gardner.<P8M^>1<M>
<P255D>

@BODY1IND = Matthew Flinders provided the first recorded sighting of the Bay when, in the Investigator, he surveyed the immediate vicinity of King George Sound in December 1801 and January 1802. He had written in April 1801 to Sir Joseph Banks:

@INDENTQUOTE = My greatest ambition is to make such a minute examination of this extensive and very interesting country that no person shall have occasion to come after me to make further discoveries.²

@BODY1IND = Though not specifying any person or group, there is no doubt that Flinders had in mind the French expedition under the command of Nicolas Baudin, which also had the specific mission of charting and exploring the coast of north, south and west Australia. Flinders had previously commented to Banks: 'I fear a little longer delay will lose us a summer and lengthen our voyage at least six months; besides the French are gaining time upon us'.³ On 5 January 1802 Flinders, in his haste to discover as much of the coast as possible before his French rivals, sailed from King George Sound toward the Recherche Archipelago and noted in his journal:

@INDENTQUOTE = Mount Gardner is a high, conic-shaped hill, apparently of granite, very well delineated in Captain Vancouver's atlas. It stands upon a projecting cape, round which the shore falls back to the northward, forming a sandy bight where there appeared to be shelter from western winds; indeed, as the coastline was not distinctly seen round the south-west corner of the bight, it is possible there may be some small inlet in that part.⁴

@BODY1 = It is ironic, in view of Flinders' comment to Banks, that the sandy bight sheltered from western winds he described should be minutely examined and named the following year by the French expedition.

@BODY1 = On the morning of 17 February 1803, Captain Nicolas Baudin was sailing toward King George Sound in the corvette Geographe. He thoroughly surveyed the channel between Bald Island and the mainland, then continued west. Baudin noted:

@INDENTQUOTE = ...we saw several inlets along the coast to Mt Gardner which seemed to indicate that there might be some good shelter there. I did not go investigating them with the ship, but resolved to have them examined in detail by one of my boats as soon as we were in a safe place. I also pointed out to the officer for whom I intended this work the parts that I considered of greater importance...⁵

@BODY1IND = That evening Baudin anchored the Geographe between Seal Island and Frenchman Bay, just east of Waterbay Point, where Vancouver had previously noted a watering-place (Fig. 1.2 this publication).

@BODY1IND = On 20 February, Baudin dispatched two boats to survey sections of the coast. The larger boat under the command of Midshipman J.J. Ransonnet was to:

@INDENTQUOTE = ...explore the portion of the coast between Vancouver's Mt Gardner and d'Entrecasteaux's Bald Island. It seems to me that it is particularly useful to know it in detail, as it offers a view of various inlets which could hold resources or a haven in bad weather for the future navigators in these regions.

@INDENTQUOTE = Generals d'Entrecasteaux and Vancouver only saw the coast from a distance; you are going to examine it closely and with scrupulous attention. You will enter all the inlets along it and explore each one in detail. If, as I am inclined to believe, you find some ports there, you are to survey them, take soundings and determine as exactly as possible the points that form their entrances.⁶

@BODY1IND = The second boat, under the direction of the geographer P. Faure and commanded by Midshipman Charles Baudin, was to survey King George Sound, Princess Royal Harbour, and Oyster Harbour, as well as the coast as far as Mt Gardner.

@BODY1IND = Ransonnet completed his task by 27 February. In his report he indicated that he was not the first to enter the Bay north of Mt Gardner. On doubling Cape Vancouver and sailing past what is now called Coffin Island, he noted:

@INDENTQUOTE = At one o'clock being at the opening of a bay, I found, when we moored, a building towards which we advanced. The Captain, P. Jane Pendleton commanding the Brick [sic], of the American Union, welcomed and informed me that he had been in the bay two days, four months after their departure from New York and that the object of his trip was to look for some pelts that he wished to sell to China.⁷

@BODY1IND = Having informed the Americans of Baudin's presence in King George Sound, Ransonnet continued his detailed survey of the Bay. In the meantime, Captain Pendleton weighed anchor and sailed to meet with Baudin. He arrived to find Baudin away on his own survey. On 24 February, however, Baudin and Pendleton dined together and, at Pendleton's request, Baudin provided him with charts of the New Holland coast and information regarding sealing there.⁸

@BODY1IND = Although there is no mention of a name for the Bay in Ransonnet's report, his meeting with the Americans was commemorated in the naming of the Bay. It was Louis Freycinet, who was part of the expedition as commander of the Casuarina, who credited Ransonnet with proposing the name, Baie des Deux-Nations, in memory of the friendly encounter there with the Americans.⁹ Relations between Baudin and Freycinet were, however, less than friendly, and their rivalry has led to conflicting accounts of the naming of the Bay.¹⁰ On the chart drawn for Freycinet, Faure, and Ransonnet (Fig. 2.1) the name is given as Port des Deux-Peuples.¹¹ The Anglicized form of the name became Two Peoples Bay.

@BODY1IND = The significance of the name Two Peoples Bay was soon lost to the international community as demonstrated by the comment of a young American whaler who came to the Bay in 1849:

@INDENTQUOTE = This bay is named Two Peoples, for what reason I know not, for not a soul lives here, nor is there a house to be seen.¹²

@BODY1IND = Further exploration of the south coast continued with Lieutenant Phillip Parker King in 1818 and Captain Dumond D'Urville, who was at King George Sound in 1826. On 12 October, D'Urville met two parties of sealers, six of whom had been marooned on Coffin Island, and on 17 October he noted two whalers in the vicinity.¹³ The sealers and whalers who were to dominate the history of Two Peoples Bay for the next 50 years were already present in the area before any official settlement was established. With D'Urville's departure on 25 October 1826 and the arrival of Major Edmund Lockyer two months later, the period of transient exploration ended. The New South Wales outpost at Albany was established and developed, and subsequently there occurred a corresponding growth of the sealing and whaling industries _ part of these being focused on Two Peoples Bay.

@LEVEL2 = The Sealers

@BODY1 = The two sealing gangs noted by D'Urville in October 1826 were still in the vicinity of King George Sound when Lockyer arrived in December; one group was based on Eclipse Island, the other to the eastward.¹⁴ The presence of these sealers and their relationships with the local Aboriginal population were to be a grave concern to Lockyer in the early days of the establishment of Albany. Lockyer also noted that the continued, uncontrolled exploitation of the fur seal population would cause the industry to become valueless, as the depletion of the fur seal population would effectively reduce profitability. In a dispatch to the Colonial Secretary of New South Wales he recommended that:

@INDENTQUOTE = ...a prohibition should be immediately given against any Individual taking the seals or going at all to the Islands, the Government claiming them as part of the Territory and once in Three Years to Farm the Islands out for the season from November to the end of April following, or such other months as would be found not to interfere with their breeding or the time they shed their Fur.¹⁵

@BODY1 = The Major's recommendation was not acted on and the sealing continued at an even greater rate as settlers of the new colony, hoping to supplement their incomes, joined the ranks of sealers.

@BODY1IND = Lockyer's prediction that over-exploitation would jeopardize the industry was confirmed in 1831 by surgeon and explorer Captain Alexander Collie. Upon accompanying a sealing gang of settlers from Albany to an island off Mt Gardner he identified as Coffin Island, on 4 June 1831, Alexander Collie wrote:

@INDENTQUOTE = That seal have come up and been killed in considerable numbers at one time, is confirmed, in addition to oral information, by the skeletons which still remain; but none of the party saw any alive at this time...16.

@BODY1IND = Collie's journey to Coffin Island provided further information on Two Peoples Bay. He crossed from Coffin Island to the mainland and climbed to the top of Mt Gardner. There he briefly described the soils and vegetation of the area, commenting that he planted almond, castor oil and other seeds. (One of the sealing gang planted 'a variety of flower seeds on Coffin Island.')

17 From the summit of Mt Gardner, Collie described the surrounding area, noting several lakes, 'the nearest and apparently largest communicating by a winding channel with the bay to the N and NE ... it is said to be brackish'.¹⁸ This is Gardner Lake which had been put on the chart by Ransonnet in 1803.

@BODY1IND = Sealing in Two Peoples Bay appears to have become less frequent from the mid-1830s, while the more capital intensive industry of whaling became the dominant activity in the Bay for the next fifty years. Collie in fact mentioned that 'several whales [black] were observed at a short distance off [Coffin Island]'.¹⁹

@LEVEL2 = Bay Whaling

@BODY1 = Two Peoples Bay began a long association with whaling during the 1837 season when Captain Francis Coffin of the Samuel Wright established the first bay whaling station there. How Coffin came to set up his station in Two Peoples Bay is of importance to understanding the later use made of the Bay by other international whalers. On 24 March 1837 the Samuel Wright arrived in King George Sound, 120 days out of Massachusetts.²⁰ For almost a month Captain Coffin stayed in the harbour refitting, replenishing supplies and seeking to employ more hands for the approaching season. He also made contact with the settlement's merchants with whom he hoped to trade in whale-bone and whale-oil.²¹

@BODY1IND = The issue of British subjects' rights to monopolize the whaling industry had been simmering for some time and was inadvertently brought to the boil by Captain Coffin. While attempting to increase his crew he signed on a young man, Andrew Newberry. It so happened that a group of settlers had previously signed up Newberry for their bay whaling enterprise situated at Doubtful Island Bay about 130 km north-east of Two Peoples Bay.²² The loss of an employee at a time when labour was extremely scarce provoked Mr. T. B. Sherratt, one of the partners of the Doubtful Island Bay enterprise, to seek official assistance to stop Coffin from whaling at Doubtful Island Bay, as Coffin intended to do.²³ Sherratt made two appeals; one to the Colonial Secretary, the other to the Commander of H.M. Sloop Friton, which was in harbour at the time.²⁴ In both letters he sought to define the rights of a British subject regarding foreign interference to trade.

@BODY1IND = Sherratt was impatient to act to prevent competition at his whaling station. Using the information from Commander Crozier of the Friton he wrote to Coffin on 7 April 1837:

@INDENTQUOTE = I acknowledge the receipt of your communication of yesterday to allow one to say that in this far country the attention envinced [sic] by you is highly gratifying, and I beg to return you my

best acknowledgments for the same and to assure you that it is my most sincere wish that there be no need to put the Laws in force - but should unhappily our Fisheries be disturbed or my co-partners annoyed in the prosecution of an undertaking I shall be compelled to call for the protection due to a British subject.²⁵

@BODY1IND = The threat was plain enough and the force was immediately present to back it up. Whether it was the threat, or simply that Coffin required a non-hostile population at Albany with which to trade while whaling in the vicinity, the result was that Coffin did not go to Doubtful Island Bay. Instead, he established himself at Two Peoples Bay which was at that time unused by the settlers.²⁶ It was not long before the American was joined by other American and French whalers in the Bay,²⁷ again giving the original meaning to its name.

@BODY1IND = There is a small and protected, gently-sloping, sandy beach between the main beach and South Point at Two Peoples Bay. Behind the beach there is a well-shaded gully where a small stream runs during the winter months. It was on this protected beach and gully that bay whaling at Two Peoples Bay was centred, the whales being flensed on the beach with the try-pots being set up in the gully area.

@BODY1IND = Whaling at this time was a major income-earner for those nations that were rapidly mechanizing. To protect their interests the French sent a man-o-war to the south coast of Australia to safeguard French whalers.²⁸

@BODY1IND = Although the British subjects of Albany were concerned with their rights, they were also preoccupied with making a living. The foreign whalers provided a focus for a whole range of small enterprises which supported them. Mutton-birders, kangaroo-hunters, vegetable-growers and traders were all involved in some way in supplying the foreign whaling ships. Merchants and traders in particular developed close links with the whalers, trading in bone and oil as well as being ship's chandlers.²⁹

@BODY1IND = Francis Coffin established contacts with Albany's merchants at the outset. Coffin's provocation of Sherratt, however, obliged him to carry out his trading with George Cheyne, one of Sherratt's strongest competitors. This trade, between Cheyne and the Americans and French at Two Peoples Bay, began in 1837. Some time later Cheyne became preoccupied with his own whaling interests at Cape Riche³⁰ (Fig. 1.1 this publication). This allowed Captain Thomas Symes to replace Cheyne as the principal trader and supplier to the whalers at the Bay, in the 1840s and 50s.³¹

@BODY1IND = In those days the track to Albany and the Bay was ill-defined and the following comments from Mrs Mary Taylor, who lived in the district in the 1830s, tells of the arrival at Candyup of:

@INDENTQUOTE = ...MrÿCheyne, MrÿMorley, MrÿDrake and the Doctor of a French whaler. They were all dreadfully tired and famished with hunger, having been lost in the bush since daylight, coming from Two Peoples Bay, a distance of fourteen miles.³²

@BODY1IND = Whaling activities at the Bay peaked in the early 1840s after which they steadily declined. The foreign whalers were gradually replaced by small parties of settlers who used whaling as a means of supplementing their incomes, much the same as they had done with sealing.³³ Similar to the sealing industry, bay whaling was gradually reduced to insignificance through the depletion of whale numbers.

@BODY1IND = During its heyday, Two Peoples Bay was an anchorage particularly preferred by foreign whalers, not only for whaling, but also for a number of other benefits. Firstly, the Bay was considered to be a safe anchorage, particularly from westerly winds. However, a south-east wind was a different matter. On 28ÿAugust 1842 a south-east gale buffeted

several whalers in the Bay. One, the Avis, parted both her cable chains and was blown ashore and wrecked, the hulk being two-thirds buried in sand.³⁴ As was the normal practice, the hulk and all salvageable items including 800 barrels of oil on board were sold.³⁵

@BODY1IND = Secondly, there were no harbour dues or import duties to be paid for items landed at Two Peoples Bay. Albany merchants George Cheyne and Thomas Symes provided the facilities in Albany to allow distribution of such goods as were traded. Trade was particularly good in whale-bone and whale-oil, two commodities easily disposed of in the small colony. Government officials became concerned about this smuggling and trading, yet were helpless to counter it, as the distance and access from Two Peoples Bay to Albany was sufficiently difficult to make it impossible to police the situation.³⁶

@BODY1IND = Thirdly, by staying at Two Peoples Bay, away from King George Sound, the masters of whalers were able to control their crews to some extent. Drunkenness of crews when in port was a major concern to both the captains and the local officials since the crews usually became a public nuisance.³⁷ By anchoring out of port, the crew could be given leave to the settlement in small numbers, yet still be close enough to be recalled easily. The Bay also had the added advantage of being within easy reach of supplies and medical assistance, should the captains need these.

@BODY1IND = Fourthly, the Bay provided plentiful supplies of water and fresh meat. Water was easily obtained from a stream at the north end of the Bay, while fresh meat could be obtained from a number of sources. Mutton-birders and out-of-work sealers hunted kangaroo and mutton birds to sell to the whalers.³⁸ The whalers also hunted kangaroos with dogs as the Aborigines had done before them. In November 1841 Archdeacon Wollaston noted in his PictonyJournal that he purchased four kangaroo-dogs from the captain of an American whaler, Francis Coffin, master of the SamuelyWright.³⁹ Obtaining water was a crucial part of the lives of the whalers. N.C.yHaley, a young harpooner who first came to Two Peoples Bay on board the Charles W. Morgan (Fig. 2.2) in 1849, described the procedure in detail as the ship took on 100 barrels of water.⁴⁰

@BODY1IND = In addition to the avoidance of import duties, as described above, there were also other problems for local officials at Albany. Of particular concern was the ease with which felons and deserters could escape justice by gaining passage on whaling ships stationed in the Bay.⁴¹ A documented example of such a case exists: George Dutton, who had been committed to the Albany prison on a charge of robbery, escaped from the cell `by cutting away a portion of the cell door'. Peter Belchers, the Acting Resident Magistrate, continued:

@INDENTQUOTE = ...he had gone to Two Peoples Bay where I forwarded with a party of soldiers in the hope of being able to secure him, but I found that he had managed to get on board an American Whaler which sailed from the Bay a few hours before my arrival.⁴²

@BODY1IND = Relations with the Aborigines had improved since Lockyer's account of contacts between sealers and Aborigines in 1826<P8M>.<M^>43<P255D> Haley reported that the Aborigines continued to come to the Bay despite the presence of the whalers: <P8>

@INDENTQUOTE = The wandering bands of natives from inland used to come here in the whaling days and feast on the carcass of any whale that had drifted on shore and would gorge themselves on it even it it smelt a mile a minute.⁴⁴

@BODY1IND = This opportunism of Aboriginal groups appears to have been common around the bays of the south coast where whaling occurred.⁴⁵ The Aborigines were also employed on occasions as messengers by the whalers. The captain of the Charles W. Morgan had, on a previous visit to Two Peoples Bay, `sent a message to one of the leading men in a town sixty

miles away'⁴⁶ by an Aboriginal messenger, with the promise of a bucket of ship's biscuits as payment. Only thirty hours later a reply had been returned to Two Peoples Bay. The story continued that whereupon the messenger was paid, he sat down by a stream of fresh water, ate all the biscuits, took a long drink, and then hardly moved for two days.⁴⁷

@BODY1IND = Aborigines were later employed as crew in the settlers' bay-whaling enterprises and were considered to be equal to their fellow white crewmen.⁴⁸ If a report from the Inquirer in 1858 is correct, the employment of Aborigines as whalers caused something of an upset in Aboriginal society: 'The black ladies now declare they will accept no husbands except if they will go fishing (whaling)'.⁴⁹

@BODY1IND = Local settlers continued bay whaling at Two Peoples Bay. The foreign whalers had turned their attention to hunting the Sperm Whale, which did not frequent the bays of the coast, as did the Right and Humpback Whales they had hunted previously. Bay whaling progressively became the domain of small groups of local people, who were not able to make the enormous profits of the past, because the number of whales was greatly reduced.

@BODY1IND = It is interesting to note that during this period (1877) a coastal survey was done on behalf of the British Admiralty by a Royal Navy hydrographer, Staff Commander W.E. Archdeacon. Part of the resulting map of the Albany area and a land profile are shown in Figure 2.3.

@LEVEL1 = LANDWARD DEVELOPMENT

@LEVEL2 = Beverley-Albany Railway

@BODY1 = By the mid-1880s, Albany's development was essential to the surrounding countryside and therefore the construction of the Beverley-Albany section of the Great Southern Railway (Fig. 1.4 this publication) became crucial to the development of the entire district. In the colony at that time capital was extremely limited and became the major problem toward laying down the much sought-after railway.

@BODY1IND = A method in vogue at the time was to attract overseas capital by means of the Government offering large tracts of land in return for a company constructing a railway line. Land thus procured could then be leased or sold as the company saw fit. The land grant contract signed by the Western Australian Government and the W.A. Company, committed the Government:

@INDENTQUOTE = ...to grant 12,000 acres [4,800 ha] of land per mile of railway, which were selected in blocks not less than 12,000 acres in size, and within a belt 40 miles [64 km] either side of the line.

@BODY1 = Another clause granted the company an extra 50 acres [20 ha], to be selected in blocks no smaller than 5000 acres [2000 ha]' for each migrant brought to the Colony by the company.⁵⁰

@BODY1IND = After many delays the Beverley-Albany line was completed in 1889, and the W.A. Land Company then set about applying for land grants under the terms of the contract. Location 416, situated east of the Kalgan River, which took in almost all of the present Two Peoples Bay Nature Reserve, was one of the selections made by the Land Company.

@LEVEL2 = The Reserves

@BODY1 = When the Two Peoples Bay location 416 was granted to the W.A. Land Company, on 12 May 1892, it did not include the whole area applied for.⁵¹ Two existing reserves, Nos 2015 and 2028 (Fig. 2.4), were excluded from the grant.^{52,53} The Company did not agree to the exclusion of these two reserves and carried on a lengthy and sometimes heated debate with the Government, in its attempts to obtain these areas.

@BODY1IND = Reserve No. 2015 (c.1320 ha) was set aside for 'Defence' purposes in March 1892, after the area was withdrawn from the sale lists in May 1890, on the instructions of the Secretary of State. The defence of Princess Royal Harbour had been discussed by the British Government

and the Western Australian Government in early 1890. Through instructions cabled to the Department of Lands & Surveys in April and May 1890, the Secretary of State ordered that all land which provided vantage points to King George Sound and Princess Royal Harbour be withdrawn from the lists of Crown land available for sale.⁵⁴ This action would allow the development of these vantage points as defence centres and maximize the defence of the Sound and its harbour. Mt Gardner was one of the areas withdrawn from the Crown land lists. However, the pressures that led to its withdrawal from the land lists were not great enough to have the area designated a reserve.

@BODY1IND = By March 1892, the influence of the Great Southern Railway and the application for the Mt Gardner area by the W.A. Land Company provided the impetus for the W.A. Government to reassess the reserve status of the area. It was considered that the added strategic importance of the harbour and the railway line required the establishment of gun emplacements on Mt Gardner, for the harbour's defence. Mt Gardner was therefore reserved and not made available for private use.⁵⁵ To complement the Defence reserve the State Government set aside a 5 acre (2 ha) reserve, No. 2028, as a landing place, though it was officially gazetted Public Utility.

@BODY1IND = In its attempts to obtain the two reserves the Land Company argued that Reserve 2015 was excessive in size and that, as there had been no further discussion on the establishment of defence works on the site, the reserve should be cancelled. The construction of Fort Scratchley on Mt Adelaide during 1891-2 resolved the question of defending Princess Royal Harbour and for a while discussions ceased on the issue.⁵⁶ Upon cancellation of the reserve, the area should be added to Location 416 and the Government could have the right to 'resume any portions of the land to set up reserves for defence purposes within 21 years'⁵⁷ of Location 416 being granted. It was also argued that by retaining Reserve No. 2028 the Government would 'prevent the sale of land in small lots for settlement around the landing place'. The Company continued that 'there should be a settlement or village at that place'⁵⁸ and that having a government reserve there would inhibit the development of such a townsite. Just how prophetic these words of Mr C.R. Fenwick proved to be, can be judged when the issue of Casuarina townsite is discussed later. The Land Company's representations were not successful and the two reserves remained excluded from Location 416.

@BODY1IND = Owning land and encouraging its development proved to be two distinct functions for the Land Company. Those areas of land controlled by the Company developed very slowly. The infertile nature of much of the land and the particularly heavy forest covering vast areas were both factors retarding the sale of the land. On Location 416 the land around Two Peoples Bay in particular suffered from soil problems and subsequently was not seen as a profitable investment. Other factors such as high prices for sale and lease of Company land retarded the growth of the Albany district. Eventually, the State Government bailed out the investors who had backed the W.A. Land Company, by purchasing all unsold lands and the Great Southern Railway for one million pounds.⁵⁹ Land sale prices and leases were reduced to Government rates and an increase in the sale of land was noted. However, the land that now makes up Two Peoples Bay Nature Reserve was not purchased, though several long-term leases were taken out for various parts of the area.

@BODY1IND = According to records, N.W. McKail became the first person to lease land in the general area when he leased Location 3985 from the Company in 1893. Location 3985 is the area east of Gardner Lake and to the western boundary of Reserve 2015 (Fig. 2.4). A second lease in the early 1900s, for an area of land between McKail's block and the eastern

end of Moates Lake, was granted to A. de Baun. Later, in 1925, A. and O. Thorne were given a lease for Location 5394 _ the land between Moates and Gardner Lakes _ including part of de Baun's earlier lease.⁶⁰ The more northerly section of de Baun's early lease was reserved as 'Common' Reserve No. 17900 on 13 January 1922, but not vested in any authority. Location A82 was surveyed and released in 1898, and forms part of the western boundary of the current Nature Reserve, while Location 3777 was released in 1911 and forms part of the northern boundary.

@BODY1IND = During these early years of tenure the Reserve area was reputedly used for cattle grazing and a number of people believe the mobile dunes near Moates Lake were part of a sand blow-out caused by the overgrazing of livestock. However, descriptions relating to the coastal survey map of 1877 (Fig. 2.3) note 'a bare sand drift one mile square' (1.6 x 1.6 km).⁶¹ This suggests these dunes preceded grazing activities.

@LEVEL2 = Albany Water Supply

@BODY1IND = In the first decade of the twentieth century Albany suffered from a poor water supply and good freshwater was needed for shipping purposes. A possible solution to this problem was proposed by surveyor W.H. Angove while surveying Location 3777 ('Tandara' on Fig. 1.4 this publication) in 1911, when he relocated a stream in the hills (now the Angove River) he had first recorded in 1898.⁶² Mr Angove, who was also an Albany Town Councillor, succeeded in convincing his fellow Members that this stream could provide the water so desperately needed in Albany. An area of 20000 ha was set aside as a catchment reserve (ch. 14 this publication) and following governmental approval in 1912 work commenced on the Angove weir and pumping station.⁶³ (Fig. 2.5).

@BODY1IND = An upstream weir across a 'clear pool' (Fig. 14.1 this publication) was constructed to supply water through a 25cm wooden pipeline, 2.5km to the pumping station, where a second weir was constructed across the stream. Two small Babcock and Wilcox water tube, wood-fired boilers were installed to generate steam for the pumps to convey water through another 25cm wooden pipeline to the summit tank on Reservoir Hill. From there the water was gravity fed, via a 20cm cast iron and wood pipeline, to a reservoir on the top of Mt Clarence, near Albany (Fig. 1.2 this publication).

@BODY1IND = The water supply scheme was upgraded from steam to electric power in 1953 with the conversion of the power supply and the installation of the present pumphouse and steel pipelines, which run alongside the main road leading to and through the Two Peoples Bay Nature Reserve.⁶⁴ Also in 1953 the Water Supply Catchment Reserve No. 13802 was reduced to 4006ha (ch. 14 this publication). The Angove River is still providing a major part of Albany's water supply (Table 14.1 this publication).

@BODY1IND = An interesting adjunct to the town water supply scheme was an unfulfilled proposal to establish a trout hatchery below the weir. Toward this end the Fisheries Department of the time had water temperatures monitored daily, and the information was relayed to Perth at regular intervals throughout 1916 and 1917. Temperature record sheets were dutifully maintained by J.A. McCallum, engine driver at the pumping station, under the supervision of A.M. Hutchinson, engineer to the Albany Water Board.⁶⁵

@LEVEL2 = Early Recreational Pursuits

@BODY1 = The settling of areas in the immediate vicinity of the Bay, in the early 1900s, led Albany people to come to Two Peoples Bay for picnics and relaxation. Access, usually by horse and cart, was along a sandy track via the pumping station to the northern end of the Bay, and then followed the shore south. This was a different route to the track from

Taylor's Inlet via Gardner Lake to the southern end of the bay, as shown on maps issued in 1890.

@BODY1IND = When World War I commenced in 1914, picnic parties to Two Peoples Bay virtually ceased. Only the pumping station master and his assistant remained at the pumping station to ensure Albany's water supply. However, there was renewed activity at the Bay when the war ended in 1918. Location 3777, known today as 'Tandara', was settled permanently and work commenced to make the farm a viable proposition. The farm was bought by H.C. Poole who settled permanently on Tandara and work commenced to make the farm a viable proposition. His son John Poole and two young friends dug the first drains by hand, from Angove Lake to a stream course leading into Gardner Creek, completing the onerous task by 1930. This allowed the fertile swamp flats to be used for potato cropping.⁶⁶

@BODY1IND = For a number of years two fishermen spent approximately six months of the year living on their boat, or on the shore in the general vicinity of Reserve No. 2028. The fish they caught were smoke-cured in a 'kiln of sorts', in the same gully area where the bay whalers had previously rendered the oil from whales they had taken in the Bay.⁶⁷

@BODY1IND = After the war, Two Peoples Bay again became a popular recreation area for the residents of Albany, with picnics and fishing being the main activities.⁶⁸ It was a place where the Albany people could withdraw to for solitude and isolation and in these respects the Bay reflects the atmosphere of Albany itself.⁶⁹ During this period a new access route was made to the southern section of the Bay. Instead of going via the pumping station, people followed a track along the southern boundary of Tandara, across a rough crossing at the Goodga River, until they reached the stream flowing from Lake Gardner. At this point the track crossed over the sand dunes to the east, onto the beach. If one did not follow the track it was possible to row down the stream (Fig. 2.6) between Lake Gardner and the Bay.

@BODY1IND = In the late 1920s a new route was used to cross the stream at Lake Gardner after it was found that sand in the mouth of the stream was very firm underfoot. Mr E.G. Green, an adventurous young man, drove the family car across this firm ground in Lake Gardner and onto the land opposite where the track had ended. A track was then beaten through the scrub to the southern end of the Bay.⁷⁰ This track was only servicable in summer as no crossing of the lake was possible in winter. The same track was still in use in the early 1950s as was verified by Mr F. North who had travelled that route when going fishing at Two Peoples Bay.⁷¹

@BODY1IND = Between the two World Wars the first very rough, holiday shacks were erected in the vicinity of the Public Utility Reserve No. 2028. They were used primarily for shelter during the day by groups of picnickers. The outbreak of World War II in 1939 interrupted the developing land-use patterns at Two Peoples Bay, as the people of Albany virtually abandoned the area for recreation during the war.

@LEVEL2 = Development Proposals

@BODY1 = Since the end of World War II, Two Peoples Bay has remained popular with Albany residents and has been visited by an increasing number of tourists who enjoy the wide variety of recreational pursuits available there. The duration of the visits began to lengthen and the picnic shelters of the early 1930s developed into quite substantial buildings of a fairly permanent nature (Fig. 2.7). By 1953 there were about 17 buildings in the squatter settlement at Two Peoples Bay.⁷² The addresses of the shack owners reflected the increase in the number of non-Albany visitors to the Bay. Farmers from neighbouring districts were coming to the area to spend their time relaxing over the summer break. Though Albany residents continued to visit the Bay over weekend periods,

the major influx of people came during the summer holidays. The area was seen as ideal _ it was isolated from local authorities and there was plenty to do _ fishing, swimming, horse riding, and even boating. Perhaps the greatest attribute was that it was free.

@BODY1IND = Even before World War II an application was received by the Department of Lands and Surveys for the purchase of 6 ha at South Point. The area north-east of the existing squatter settlement was proposed for development as a tourist resort. Activities such as horse riding, boating, swimming and golf were to be available to the tourists.⁷³ Although the application for the tourist resort was dropped, negotiations between the Department of Lands and Surveys and the Albany Road Board resulted in the establishment of a 15 acre (6ÿha) reserve for Camping and Recreation (Reserve No. 22180). This area was set aside in April 1940 and vested in the Albany Road Board so that the Board could, to some degree, control the increasing numbers of squatters using the Bay area. It was also agreed that the Road Board would not have power to lease any of the area as camping sites.⁷⁴ To strengthen the Board's control of the area, Location 3985 was set aside as a Common Reserve (No. 18886), vested in the Road Board. (A lease on this location was taken out in 1925, but appears to have been abandoned some time prior to April 1940.)

@BODY1IND = Increased interest in the Bay as a holiday resort was seen in the large number of applications received by both the Department of Lands and Surveys and the Albany Road Board for leases of areas of land, ranging from half an acre to two acres (0.2-0.8 ha), as building sites. By 1953 public pressure for building sites at Two Peoples Bay strengthened the resolve of the Albany Road Board to provide for more effective control of the squatter settlement. Subsequently the Board applied to the Under Secretary of Lands to have Public Utility Reserve No. 2028 (which had been increased to 45 acres (18ÿha) in January 1922) added to its existing Camping and Recreation Reserve No. 22180. It was argued that, if this amalgamation of Reserves was permitted, the existing squatter settlement could be effectively controlled under existing Government by-laws. Furthermore, the Albany Road Board argued, it was desirous to have power to lease parts of the area to people for periods up to 21 years as camping and caravanning sites.⁷⁵

@BODY1IND = As a result of this Albany Road Board application and the increase in private applications for sites at Two Peoples Bay, the Department of Lands and Surveys began considering the declaration of a townsite at the Bay. A survey carried out by a Government surveyor in 1954 reported an 'air of permanence' about the squatters' settlement. Vegetable gardens had been established in some of the swamp areas and the houses themselves were becoming more sophisticated. One house had a power plant valued at ø600 (\$1200) in a separate shed.⁷⁶

@BODY1IND = The idea of building a tourist resort was also revived in 1954, and again in 1957, when separate applications were made to the Under Secretary for Lands to allow the Public Utility Reserve No. 2028 to be opened for a camping area and a hostel respectively. The 1957 application to build a hostel was detailed and supported by the Albany Tourist Bureau and the Member for Albany, Mr J. Hall, MLA. It was planned to develop golfing and tennis facilities, and to allow horse-riding. Pasture was to be grown on the Common Reserve and the hostel was to be self-sufficient in vegetables as the swamps were to be cleared and used to grow vegetables.⁷⁷ This was the most complete application, for the development of tourist facilities, received by the Under Secretary for Lands. By this time the idea of establishing a townsite had matured sufficiently, and the reply to the developers made it clear that the development of such facilities would be considered, only as part of an overall concept of a townsite designed for the area.⁷⁸

@LEVEL2 = Casuarina Townsite

@BODY1 = From the point of view of those desiring building lots the story of the survey, declaration and opening for sale of what became known as Casuarina townsite, is one of frustration and bad timing. Following completion of the initial survey in December 1954⁷⁹ _ 50 half acre (0.2 ha) lots _ the townsite design was rejected by the Town Planning Department.⁸⁰ Having had its first townsite design rejected, the Department of Lands and Surveys sought the assistance of the Town Planning Department to redesign the townsite. A Town Planning representative was sent to the proposed townsite in November 1955,⁸¹ however, the completed design was not submitted to Lands and Surveys until February 1957⁸² (Fig. 2.8).

@BODY1IND = By July 1957 the three authorities concerned with the declaration of the townsite had reached agreement.⁸³ At this point, administrative procedures involved the checking of the surveyor's calculations and drawings, and the results of those checks delayed any further action until November 1959. The surveyor's calculations were found to have errors that required the survey be redone.⁸⁴ By May 1960 the resurvey was completed, the calculations checked, and found to be correct.⁸⁵

@BODY1IND = The procedure for declaring a townsite required that the townsite be named. The Nomenclature Advisory Committee was asked to propose a name for the townsite and to name the streets. The name chosen by the Committee was 'Casuarina' (after Louis Freycinet's ship) and the street names were those of members of the French 1800-1804 expedition and the American ship the Union.⁸⁶ Casuarina townsite was formally gazetted on 30 March 1961,⁸⁷ eight years and five months after the initial proposal to establish a townsite at Two Peoples Bay. In the intervening period, between the declared intention to establish a townsite and its gazettal, interest in the area as a holiday site continued to grow. Every inquiry about obtaining land at Two Peoples Bay was replied to in like manner _ progress was being made and as soon as the area was declared a townsite, the inquirer would be informed of the conditions of purchase, sale dates and places.⁸⁸

@BODY1IND = Now the townsite was gazetted it would appear that the time of frustration was over. The Under Secretary for Lands directed that public notices, advertising an auction of 15 lots at Casuarina townsite, be prepared and displayed at all railway stations between Perth and Albany on the Great Southern Railway line. The auction was to be held at the Albany Court House on 22 June 1961 at 2.30 p.m. Minimum prices on the 15 lots to be auctioned were set.⁸⁹ On the 18 April 1961, only five days after the instruction to prepare for the auction of the lots at Casuarina, the following note appeared on file from the Divisional Surveyor for Great Southern:

@INDENTQUOTE = Following the altered policy of this and the Town Planning Department re sanitary provision (septic tanks) in the matter of necessary water supply, it has been decided to re-subdivide the "Casuarina" area to provide (about) quarter acre lots. This will necessitate the survey of the broken lines as shown...⁹⁰

@BODY1IND = This note proved to be a crucial turning point in the destiny of the Casuarina townsite. Instructions were issued for the immediate resurvey of the blocks. However, for some unknown reason the survey was not completed until March 1962,⁹¹ by which time another issue had arisen, which created a new focus in the debate on land use of the Bay area.

@BODY1IND = The confirmation of the existence of the Noisy Scrub-bird at Two Peoples Bay, in December 1961, changed the course of development of the area. The resolution of the dispute will occupy part of the following section. It should be noted though, that had the policy on sanitary

provisions of the Department of Lands and Surveys and the Town Planning Department not changed until after 22 June 1961, there could now be a town called Casuarina instead of one of this State's most important and valuable nature reserves.

@BODY1IND = Further recreational developments occurred during the period 1953-61, when fishing was still a dominant pastime. Several dedicated trout fishermen introduced trout into the Goodga River⁹², to supplement the marron that had been introduced in the late 1930s (ch. 14 this publication). Spear fishing had also become prominent at the Bay.

@BODY1IND = Also, it should be noted that professional fishermen, particular salmon fishermen, again established themselves at the Bay on a fairly permanent basis (Fig. 2.9). From 1954 onwards, Mr C. Wilson lived at Two Peoples Bay and worked as a professional fisherman. His persistence in seeking land as a base for his undertaking resulted in a small area being excised from the Nature Reserve after its establishment.⁹³ The Wilson family set up a stall near the beach at weekends where fresh salmon and Devonshire Teas were sold to picnickers and other visitors to the Bay (R.E.S. Sokolowski, personal communication).

@LEVEL1 = ESTABLISHMENT OF THE RESERVE

@LEVEL2 = The Western Bristlebird

@BODY1 = As access to Two Peoples Bay became easier, the number of people using the area increased, with fishing remaining the dominant recreational activity. A growing number of those people who came to fish were also naturalists, who were able to pursue their hobby in the rich diversity of plant and animal species of the area. One such person, Mr C. Allen, had begun a long association with the Bay area in the late 1920s. On his numerous visits he became acquainted with birds that were not readily identifiable and he suspected that one bird with a particularly piercing call was the Noisy Scrub-bird.⁹⁴

@BODY1IND = In February 1945 Mr K. Buller, of the W.A. Museum, went with Allen to Two Peoples Bay 'with hopes of seeing or hearing something of interest'.⁹⁵ Indeed, they did find something of interest, as it was during this excursion that the first sighting of a Western Bristlebird was made since the last specimen was collected in 1907 (by F.B.L. Whitlock, near Wilson's Inlet). The two men moved from the area around Gardner Lake, where the Western Bristlebird had been sighted, to the southern end of the Bay and heard calls of this bird 'within a stones throw of an inhabited fisherman's camp'.⁹⁶ It is interesting to note that years later, in this same area only a short distance from the squatter's settlement, the Noisy Scrub-bird was found. The two ornithologists were well-pleased with their discovery and in their discussion about the days events, some doubt was raised as to whether or not the bird originally seen by Allen was the Noisy Scrub-bird, or the now confirmed Western Bristlebird.

@BODY1IND = In many ways 1961 was a pivotal year in the course of events at Two Peoples Bay. During that year two parties of ornithologists independently undertook studies of the Western Bristlebird. A group comprising Messrs J.R. Ford, K.G. Buller and Mr C. Allen began a taxonomic study⁹⁷ while, unknown to them, Mr H.O. Webster began a study on its breeding and behaviour.⁹⁸ The group Ford, Buller and Allen, were working on the Western Bristlebird with the knowledge of the W.A. Museum and wrote, in a report on the progress of their work:

@INDENTQUOTE = For some time now, we have been hopeful of rediscovering the Noisy Scrub-bird in the Two Peoples Bay district... One of us (Allen) is positive that he saw and heard the species in 1944 but the fact remains that we have been unable to verify our contention by collecting a specimen.⁹⁹

@LEVEL2 = Noisy Scrub-bird Rediscovered

@BODY1 = Among ornithologists, the hope of positively identifying the Noisy Scrub-bird never really faded. Occasional reports of sightings were given to the Department of Fisheries and Fauna but mostly these were shown to be incorrect or unsubstantiated.¹⁰⁰ The last of these reports was received from Nannup in August 1961.¹⁰¹

@BODY1IND = Hopes of positively confirming Allen's 1944 sighting were given an added boost when Mr P.J. Fuller returned from a trip to Albany and told Ford that, on 5 November 1961, he and Allen had been at Two Peoples Bay and had again sighted a bird that Allen was certain was the Noisy Scrub-bird.¹⁰² Ford made plans to visit Albany in the company of Buller, the trip being carried out over the weekend 11-12 November 1961. However, Allen did not accompany them to the Bay and in Ford's words they had 'inadvertently worked the margins of Lake Gardner about one mile from the actual place where the scrub-bird had been watched by Allen and Fuller, and consequently missed confirming Allen's record'.¹⁰³

@BODY1IND = Although Ford and Buller did not confirm Allen's sighting, their trip to Two Peoples Bay was not fruitless. Four specimens of the Western Bristlebird were collected to continue their study.¹⁰⁴ Also, it was very enlightening because, when Ford and Buller visited Allen on the Sunday evening and showed him the Western Bristlebird skins, Allen categorically stated that these were not the same as the species he had seen. Allen then pointed out the differences between the specimens and the bird he had seen.¹⁰⁵ Ford and Buller returned to Perth anxious to co-ordinate their free time, for another trip to search the area near the squatter's settlement, as it was in that area Allen and Fuller had made their observations on 5 November.

@BODY1IND = Two of the Western Bristlebirds collected on that trip were a breeding pair being studied by Mr H.O. Webster. It was through this most regrettable situation that the two parties of researchers came in contact. Webster found evidence at the site, where he had been observing the Western Bristlebirds, indicating they had been collected by a person or persons associated with the W.A. Museum. Enquiries led him to believe that Mr. Ford had collected the birds, though he made no approach to Ford as he was unknown to Webster at that time.¹⁰⁶ As can be imagined, Webster was very annoyed at having his research so abruptly ended.

@BODY1IND = The then Director of the W.A. Museum, Dr W.D.L. Ride, became aware of the situation and, through Dr D.L. Serventy, communicated to Ford early in the week 23-30 November, that he should contact Webster to explain the situation surrounding the taking of the two birds. Ford followed up the suggestion by telephoning Webster.¹⁰⁷ During the conversation he passed on information about his group's work on the Western Bristlebird and also mentioned in passing their hope of finding the Noisy Scrub-bird in the Two Peoples Bay area. Ford followed up the telephone conversation by writing a brief note to Webster on 30 November 1961. In it he explained something of the group's work on the Western Bristlebird and then wrote:

@INDENTQUOTE = I also mentioned the Scrub-Bird in my phone call. As far as I'm concerned, this bird is not extinct but undoubtedly has disappeared from many of its haunts due to alteration of its habitat. The Two People [sic] Bay area appears to be the type of country in which Webb, Masters and Gilbert found the Scrub-Bird, but as yet I have heard no strange calls nor seen any bird that may have been this species. However I have been informed by a naturalist friend of mine that in 1944 he saw and heard a Scrub-Bird, so this is a promising clue. Perhaps if you saw any strange bird you could let me know?¹⁰⁸

@BODY1 = It can be seen that the most recent sighting of the Noisy Scrub-bird was not mentioned to Webster.

@BODY1IND = Webster had not been to the Bay since discovering that the pair of Western Bristlebirds he'd been observing had been collected as specimens. On 17th December, he again went to the area, this time to fish for black bream in the stream that flows from Lake Gardner to the sea.¹⁰⁹ He described in his field notebook how a series of fairly long and very loud, frequent calls distracted him from fishing and drew him away to a rush-covered swamp area to try and identify the mystery caller.¹¹⁰ He spent the remainder of the day following the bird through very thick swamp and scrub and:

@INDENTQUOTE = ...came away in the evening with impressions of a brown bird with a call that really made my ears ring and with the knowledge that it was almost certainly the Noisy Scrub-bird.¹¹¹

@BODY1 = A more positive identification was possible the following weekend after good sightings were made of the distinctive:

@INDENTQUOTE = ...yellow gape, the inverted white 'V' under the beak and the blackish triangular patch below it... the wings were rounded, did not reach to the base of the tail and had darker brown fine barring running across them.¹¹²

@BODY1IND = Webster had his news published on 25th December 1961 _ a Christmas present to ornithologists of the world. A typical ornithological reaction to such news as the 'rediscovery' of a species considered extinct is shown in the notes of Dr. D.L.¹¹³ Serventy:

@INDENTQUOTE = When the article appeared in 'The¹¹³ West¹¹³ Australian' I was partly sceptical, though I respected Harley Webster as a seasoned observer.¹¹³

@BODY1IND = Dr.¹¹³ Serventy's scepticism was overcome on 28th December when, in the company of Webster, and later Ford and Allen, he satisfied himself by gaining good views of the bird; that it was in fact the Noisy Scrub-bird.¹¹⁴ Allen also confirmed that it was the same species he had seen in 1944.¹¹⁵ As all had confirmed the identity of the species, it was not considered necessary to collect a specimen to verify its identity.¹¹⁶

@BODY1IND = The existence of the Noisy Scrub-bird was now no longer in doubt. The identification of the species at the same place as Allen had seen the bird in 1944 had been verified; it only remained as to who should have the honour of rediscovering the 'lost species'. That debate continued in much the same vein as the debate between Flinders and the French over place names on the south coast.¹¹⁷

@LEVEL2 = Support from World Ornithologists

@BODY1 = H.O. Webster forecast that the effect of the rediscovery would draw the attention of ornithologists from all over the world to Two Peoples Bay. He was proved correct, even more quickly than he might have thought. In January 1962 a well known American ornithologist, Mr.¹¹⁸ D.Lamm, accompanied a group to Two Peoples Bay.¹¹⁸ It was Dr.¹¹⁸ G.F. Mees, a member of this group, who discovered the second Noisy Scrub-bird in habitat quite distinct from that of the first bird. Instead of living among the rushes in swamps, it was found in the thick scrub of a valley on the watershed of Mt Gardner.¹¹⁹ This discovery led the ornithologists to explore the Mt Gardner region and they were rewarded by finding a number of other Noisy Scrub-birds.

@BODY1IND = Two Peoples Bay became the centre of attention for ornithologists, as two rare species were now known to be in the area. The problem was to retain enough of the habitat of these species in its natural state, to ensure the continuance of the species. From this view point, Casuarina Townsite was considered a threat. The area of conflict centred around the Public Utility Reserve No. 2028, where Townsite and Scrub-bird territory overlapped.

@BODY1IND = Numerous opinions existed among ornithologists, as can be seen by the variety of suggestions put forward in the many national and

international representations made to the Government of the day, to establish a reserve in the area. There were those who wanted to have the whole area of Mt Gardner and the land in the vicinity of Moates and Gardner Lakes reserved;¹²⁰ those who considered that the townsite should be removed to the Common Reserve No. 17900 to the west of the proposed townsite and a small reserve established in the immediate area of the Scrub-bird habitat;¹²¹ and those who wanted the townsite to stay where it was and for the reserve to be established in whatever other area was considered necessary.¹²² Between 1961 and 1967, when the Two Peoples Bay Nature Reserve was finally gazetted at its present size and classification, all of these above options were considered. In September 1962 the then Premier, Hon. D. Brand, wrote to H.O. Webster that it was 'proposed to create a reserve of approximately 13,600 acres [5440 ha], of which only approximately 1000 acres [400 ha] would be required for township purposes'.¹²³ This proposal was to proceed as a matter of urgency, the reserve to be classified 'A' Class and vested in the Fauna Protection Advisory Committee, for the purpose of conservation of flora and fauna. The townsite, however, was to stay.¹²⁴

@BODY1IND = The action to proceed along those lines came to an abrupt halt when, on 28 November 1962, H.R.H. Prince Philip, the Duke of Edinburgh, wrote to the Premier noting that '...efforts to secure the abandonment of the proposed and already surveyed townsite have not been successful...' and appealed for the matter to be reconsidered.¹²⁵ The appeal for reconsideration was successful and the proposal to establish the townsite was deferred 'until a comprehensive investigation into all aspects of the position has been carried out'.¹²⁶ From this time on, much was made of Prince Philip's involvement in the matter, with newspaper articles often referring to his part in the whole affair to have the Townsite abandoned.¹²⁷

@LEVEL2 = Conflict of Opinions

@BODY1 = The debate centred on the threat the proposed townsite would be to the Noisy Scrub-bird. Conservationists argued that the threat from fire, feral cats and dogs, as well as increased use of the area which would open up the undergrowth, would all be greatly increased if the townsite were allowed to be developed.¹²⁸ Other reasons for establishing the reserve were raised by international conservation bodies:

@INDENTQUOTE = ...the enormous value, as an example to the rest of the world, of a firm decision by the Western Australian Government that no town will be built in the Scrub birds territory...¹²⁹

@BODY1IND = Arguing for the retention of the townsite, Mr. J. Hall MLA suggested that the presence of people in the area would minimise vandalism, reduce the fire risk and retain the presence of the Noisy Scrub-birds, as the birds would withdraw if people were evicted from the area.¹³⁰ A member of the squatter community also argued that the presence of people would reduce the risk of fire and vandalism, yet interestingly, then cited the problem of increased use of the area affecting the Noisy Scrub-bird:

@INDENTQUOTE = Since the rediscovery of the bird has been publicised, ornithologists and curious tourists have visited the area. As a result of the birds habitat being thus disturbed, it has moved away from the immediate area.¹³¹

@BODY1IND = In an attempt to reduce the heat of the debate the South Coast Townsite Committee was established, one of its functions being to make recommendations on the Two Peoples Bay area. After hearing evidence for and against the retention of the townsite the committee made its recommendations. The crucial recommendation was to relocate the townsite, to the west on the Common Reserve No.17900, if the land proved suitable.¹³² Other recommendations hinged on this first proposal.

However, when surveyors and town planners viewed the proposed site it was rejected as unsuitable and the arguments began again. With the failure of the compromise put forward by the South Coast Townsite Committee and the appointment of a new Under Secretary for Lands, the Department of Lands and Surveys began to favour the representations made by the Albany MLA, the Albany Shire, and individuals desiring the retention of Casuarina townsite.

@BODY1IND = Conservation groups became increasingly alarmed and the number of representations, in particular from international bodies, began to increase. One international body, the World Wildlife Fund, gained prominence in reporting of the debate, as it was known that the Duke of Edinburgh was involved with that group. Although the Duke's influence was a reality it was not as great as some newspaper reports made out. By March 1965, the balance had swung in favour of the hardline conservation groups, as shown in a file note on a Lands and Surveys file:

@INDENTQUOTE = If the desire is to create a Reserve for the 'Protection of Fauna' and vest the area in the FPAC (Fauna Protection Advisory Committee) to exercise overall control, then no action should be taken to establish a townsite. In fact the existing 'squatters' should be removed and development to take place on freehold land some distance away.133

@LEVEL2 = Establishing the Nature Reserve

@BODY1 = Meetings between the Departments of Fisheries and Fauna, and Lands and Surveys were held during October 1965. In these, it was agreed that the Casuarina townsite should be cancelled and a reserve created for the conservation of flora and fauna, vested in the Fauna Protection Advisory Committee. The Committee alone should be responsible for resolving the squatter problem.134 By February 1966, the Shire of Albany had agreed to relinquish control of all its vested reserves in the Bay area. The way was now clear to formally establish the Two Peoples Bay Nature Reserve. The formalities were completed when, on 22 April 1966, a notice in the Government Gazette proclaimed the establishment of Reserve No. 27956.

@BODY1IND = News of the event spread rapidly and letters of congratulations came in, to the Premier and various Ministers, from many conservation groups around the world who had made representations for the establishment of the reserve.135 Unfortunately the original gazettal notice had not been correct. Only two locations were included in the reserve; Location 5408 (Reserve No. 2028) and Location 6906 (Casuarina townsite). The area thus reserved was greatly reduced compared with the area committed by various Ministers at earlier times.136 The error was discovered, the original gazettal notice cancelled and a new notice published on 28 April 1967, along with the vesting of the reserve in the Fauna Protection Advisory Committee. On 2 June 1967 the reserve was classified as a class 'A' reserve. Two Peoples Bay Nature Reserve had now been established and could not be altered except by Act of Parliament. The problems of managing such an expanse of land with its numerous rare species of flora and fauna, as well as the fragile environment and the 'squatter' problem, were now the responsibility of the Fauna Protection Advisory Committee.

@BODY1IND = The Two Peoples Bay Nature Reserve was established by the Western Australian Government, by a deliberate decision to support conservation, as a result of much debate and discussion involving conservation groups, government departments, individuals and parts of the international conservation community. However, the history of the area shows quite clearly that such deliberate decisions were not solely responsible for the existence of this Reserve. Although matters of remoteness and poor agricultural soil were influential, it is clear that a conservative approach to decisions and matters of policy has been an

essential part of the history of the area, thus ensuring that much of it has remained in a natural state. It is hoped this history, up to the time the Two Peoples Bay Nature Reserve was created, will not only provide interesting reading but will also describe the setting for the future management of the area.

@LEVEL1 = ACKNOWLEDGEMENTS

@BODY1 = Compiling this history required substantial amounts of time researching written documents and talking with long-term residents of the immediate area, local historians, and those involved in the rediscovery of the Noisy Scrub-bird.

@BODY1IND = My deepest thanks to Mr and Mrs D.A.P. West for their invaluable assistance in charting the course of developments from 1911; to Mr G.L. Johnson, local journalist and history enthusiast of the area, who provided a number of useful leads into the maritime history of the area. Mr H. White, President of the Western Australian Historical Society, Albany Branch, gave freely of his time and knowledge, as did the staff of the Albany Shire Library. Other long-term Albany residents, Messrs W.W. Green, P. Evans and F. North, supplied some interesting information and photographic records of activities at Two Peoples Bay.

@BODY1IND = Mrs K. Hendersen of the Battye Library, Perth, patiently dealt with my numerous enquiries and requests in a most helpful and cheerful manner as did the staff of the Western Australian Maritime Museum. The Head Librarian, Reid Library, University of Western Australia, gave permission for the reproduction of the Baudin expeditions map of Two Peoples Bay; and the Peabody Museum, Salem, Massachusetts, graciously gave permission to use a photograph of the Charles H. Morgan to illustrate the text.

@BODY1IND = Professor L. Marchant, University of Western Australia, provided helpful suggestions concerning the French expedition of 1800-1804.

@BODY1IND = The former Surveyor General of the now Department of Land Administration permitted research of Departmental files and archive material, and provided facilities to work while in the archive and records sections.

@BODY1IND = The section on the rediscovery of the Noisy Scrub-bird is controversial. To come to the present conclusions, detailed individual interviews were held with each of the persons involved. The information from these interviews was complemented by examining documentary evidence, both published material and private correspondence, which the individuals supplied. I am grateful for the help of the late Dr D.L. Serventy (1904-1988) and the late J. Ford (1932-1987), and Messrs C. Allen, K.G. Buller, P.J. Fuller and the late H.O. Webster (1909-1990), for without their assistance this section would be incomplete.

@LEVEL1 = ABBREVIATIONS

@AJHFIGS = CALM:

@FIGIND2 = Department of Conservation and Land Management

@AJHFIGS = CSIRO:

@FIGIND2 = Commonwealth Scientific and Industrial Research Organisation

@AJHFIGS = CSO:

@FIGIND2 = Letters to the Colonial Secretaries Office, Perth (held at the Battye Library, Perth, W.A.)

@AJHFIGS = DOLA:

@FIGIND2 = Department of Lands Administration

@AJHFIGS = RAOU:

@FIGIND2 = Royal Australasian Ornithologists Union

@LEVEL1 = NOTES

@FOOTNOTENO. = 1

@FOOTNOTES = G. Vancouver, Voyage of Discovery to the North Pacific Ocean and Round the World. Bibliotheca Australiana No. 30. (Da Capo Press, New York, 1967), Vol. 1, p. 32, Charts 1 and 2.

@FOOTNOTENO. = 2

@FOOTNOTES = Flinders to Banks, 24 April 1801. In K.A. Austin, The Voyage of the Investigator, (Rigby, Adelaide, 1964), p. 78.

@FOOTNOTENO. = 3

@FOOTNOTES = Austin, - Flinders to Banks, 3 June 1801, p.90.

@FOOTNOTENO. = 4

@FOOTNOTES = M. Flinders, A Voyage to Terra Australis. Australian Facsimile Edition, (Libraries Board of South Australia, Adelaide, 1966), Vol. 1, p.74.

@FOOTNOTENO. = 5

@FOOTNOTES = N. Baudin, The Journal of Post Captain Nicolas Baudin Commander in Chief of the Corvettes Geographe and Naturaliste. Transcript Christine Cornell, (Libraries Board of South Australia, Adelaide 1974) p.482.

@FOOTNOTENO. = 6

@FOOTNOTES = Baudin, p.484.

@FOOTNOTENO. = 7

@FOOTNOTES = M. Ransonnet, Report to Commander N. Baudin on an expedition between 20-27 February, 1803. (Translated manuscript held at the Battye Library, Perth.)

@FOOTNOTENO. = 8

@FOOTNOTES = Baudin, p.489.

@FOOTNOTENO. = 9

@FOOTNOTES = F. Peron and L. Freycinet, Voyage de De Couvertes Aux Terres Australes. 4 Vols. (Paris, 1818), vol. 2, p.154.

@FOOTNOTENO. = 10

@FOOTNOTES = For variation in detail compare: W. Charnley, 'Two Peoples Bay (Western Australia) - Some impressions of Early Seamen', Walkabout, June 1955, p.17; P.W. Henn, French Exploration on the Western Australian Coast, Journal and Proceedings of the Western Australian Historical Society, 2, (1934), pt.15, p.16; R. Stephens, 'History of Two Peoples Bay', Albany Advertiser, 27 June 1961, p.2; and 'Two Peoples Bay Once had a Sealing Industry', The Countryman, Perth, 23 May 1963, p.11; E.B. Webb, 'An Outline of the History of Two Peoples Bay', unpublished manuscript read to the Albany Branch of the Western Australian Historical Society, August 1963; L. Marchant has resolved the issue of conflicting accounts in his work France Australe, (Artlook Books, Perth, 1982).

@FOOTNOTENO. = 11

@FOOTNOTES = Peron and Freycinet, Vol.4 (Atlas). Figure titled: Du Port Du Roi George (King George the Third Sound) (A La Terre de Nuyts, Nouvelle Hollande) pan MM. L. Freycinet, Faure and Ransonnet (Fevrier 1803).

@FOOTNOTENO. = 12

@FOOTNOTES = N.C. Haley, Whale Hunt. The Narrative of a Voyage by Nelson Cole Haley, harpooner in the ship Charles W. Morgan 1849-53. (Travel Book Club, reprint, London, 1951), p.50.

@FOOTNOTENO. = 13

@FOOTNOTES = Henn, pp.20-1.

@FOOTNOTENO. = 14

@FOOTNOTES = E. Lockyer to Macleay, 22 January 1827. Historical Records of Australia. Series 3. Despatches and papers relating to the settlement of the states edited by Frederick Watson, Sydney: Library Committee of the Commonwealth Parliament, 6 vols., 1921-1923. Vol. 6, pp.468-490.

@FOOTNOTENO. = 15

@FOOTNOTES = E. Lockyer to Macleay, 22 January 1827. Historical Records of Australia. Series 3, p.472, p.490.

@FOOTNOTENO. = 16
@FOOTNOTES = A. Collie, 'Account of an excursion to the north of King George's Sound between the 26th April and the 4th of May 1831', In Journal of Several Expeditions made in Western Australia during the years 1829, 1830, 1831 and 1832, ed. J. Cross (J. Cross, London, 1833) p.150.

@FOOTNOTENO. = 17
@FOOTNOTES = Collie, p.151.

@FOOTNOTENO. = 18
@FOOTNOTES = Collie, p.151

@FOOTNOTENO. = 19
@FOOTNOTES = Collie, pp.150-1.

@FOOTNOTENO. = 20
@FOOTNOTES = Harbour return, 1837. Colonial Secretaries Office, Perth (held at Battye Library, Perth).

@FOOTNOTENO. = 21
@FOOTNOTES = P. Belchers to Governor Stirling, 9 August 1837, Letters to the Colonial Secretaries Office (CSO).

@FOOTNOTENO. = 22
@FOOTNOTES = T.B. Sherratt to Colonial Secretary, 7 April 1837, CSO.

@FOOTNOTENO. = 23
@FOOTNOTES = T.B. Sherratt to Colonial Secretary, 5 April 1837, CSO.

@FOOTNOTENO. = 24
@FOOTNOTES = T.B. Sherratt to Commander Crozier, 5 April 1837, CSO.

@FOOTNOTENO. = 25
@FOOTNOTES = T.B. Sherratt to F. Coffin, 7 April 1837, CSO,

@FOOTNOTENO. = 26
@FOOTNOTES = N. Wace and B. Lovett, Yankee Maritime Activities and the Early History of Australia, (Australian National University Press, Canberra, 1973), p. 99; Other American whalers known to have been active in Two Peoples Bay during the 1837 season were the Delphos and Tuscaloosa. It should also be noted that the question of 'fishing rights' followed Coffin when he shifted his whaling station from Two Peoples Bay to Leschenault Bay in 1840. He defended the rights to foreign whalers in a reply to Mr. H. Bull:
@FOOTNOTES = 'Sir, I hereby acknowledge the receipt of a copy of a letter from the local government in which they say we have no right to whale in this bay but at the same time do not intend to interfere with us so long as there is no English Whaler at the same place this act of Courtesy [sic] I consider our due for having found and proved the best Anchorages on this coast such as Doubtful Island, Cape Riche, Two Peoples Bay, Geographe, Lesunault [sic] and Saftey [sic] Bays all of which have been first proved by Yankee enterprise...' (F. Coffin to H. Bull, 22.6.1840. CSO.)

@FOOTNOTENO. = 27
@FOOTNOTES = R. McNab, The Old Whaling Days. (Whitcomb and Tombs, Christchurch, 1913), pp.245-6.

@FOOTNOTENO. = 28
@FOOTNOTES = R. Glover, Captain Symes at Albany. Journal and Proceedings of the Western Australian Historical Society, 6 (1953), p.82.

@FOOTNOTENO. = 29
@FOOTNOTES = P. Belchers to Governor Stirling, 9 August 1837, CSO.

@FOOTNOTENO. = 30
@FOOTNOTES = Stephens, 'Sealing Industry', pp.73-5.

@FOOTNOTENO. = 31
@FOOTNOTES = Glover, pp.86-8.

@FOOTNOTENO. = 32
@FOOTNOTES = Stephens, 'Sealing Industry' p.72.

@FOOTNOTENO. = 33

@FOOTNOTES = B. Hicks, History of Americans in Albany, W.A., (unpublished manuscript, in Battye Library, Perth) 1966, Part 1.
@FOOTNOTENO. = 34
@FOOTNOTES = G. Henderson, Unfinished Voyages. (Western Australian Shipwrecks 1622-1850). (University of Western Australia Press, Nedlands, 1980), pp.195-6.
@FOOTNOTENO. = 35
@FOOTNOTES = Henderson, p.195. It is of interest to note that the Samuel Wright was itself wrecked in similar circumstances to the Avis but at Leschenualt Bay. J.R. Wollaston, second part of note in Reference List.
@FOOTNOTENO. = 36
@FOOTNOTES = I.D. Heppingstone, 'The American Whalers in Western Australian Waters'. Journal and Proceedings of the Western Australian Historical Society, 7, (1969), pp.39-40.
@FOOTNOTENO. = 37
@FOOTNOTES = P. Belchers to Colonial Secretary, 3 October 1840, CSO.
@FOOTNOTENO. = 38
@FOOTNOTES = I.D. Heppingstone, 'Bay whaling in Western Australia'. Journal and Proceedings of the Western Australian Historical Society, 6, (1966), pp.29-41.
@FOOTNOTENO. = 39
@FOOTNOTES = J.R. Wollaston (1948). Wollaston's Picton Journal 1841-1844: being Volume 1 of the Journals and Diaries (1841-1856) of Revd. John Ramsden Wollaston, M.A., Archdeacon of Western Australia, 1849-1856. Collected by Rev. Canon A. Burton - Perth: (C.H. Pitman, 1948); (reissued University of Western Australia Press, Nedlands, 1975), p.18.
@FOOTNOTENO. = 40
@FOOTNOTES = Haley, p.40.
@FOOTNOTENO. = 41
@FOOTNOTES = Heppingstone, 'Bay Whaling in Western Australia', p.40.
@FOOTNOTENO. = 42
@FOOTNOTES = P. Belchers to Colonial Secretary, 10 June 1849, CSO.
@FOOTNOTENO. = 43
@FOOTNOTES = E. Lockyer to Macleay, Historical Records of Australia, Vol. 6, pp.466-72.
@FOOTNOTENO. = 44
@FOOTNOTES = Haley, pp.50-1.
@FOOTNOTENO. = 45
@FOOTNOTES = Heppingstone, 'Bay whaling in Western Australia', p.29.
@FOOTNOTENO. = 46
@FOOTNOTES = Haley, p.51. The destination of the message was only about 20 miles away, in Albany.
@FOOTNOTENO. = 47
@FOOTNOTES = Haley, pp.51-2.
@FOOTNOTENO. = 48
@FOOTNOTES = Heppingstone, 'Bay Whaling in Western Australia', p.37.
@FOOTNOTENO. = 49
@FOOTNOTES = Heppington, p.37
@FOOTNOTENO. = 50
@FOOTNOTES = D.S. Gardon, Albany - A Panorama of the Sound from 1827, (Nelson, Melbourne, 1977), pp.185-6.
@FOOTNOTENO. = 51
@FOOTNOTES = DOLA 138/91, Vol.1, p.2.
@FOOTNOTENO. = 52
@FOOTNOTES = DOLA 782/90, Vol.1, p.6. Reserve No.2015 was gazetted on 12 March 1892.
@FOOTNOTENO. = 53

@FOOTNOTES = DOLA 138/91, Vol.1, p.66. Reserve No.2028 gazetted on 12 May 1892.

@FOOTNOTENO. = 54

@FOOTNOTES = Garden, p.211.

@FOOTNOTENO. = 55

@FOOTNOTES = DOLA 782/90, pp.2-5.

@FOOTNOTENO. = 56

@FOOTNOTES = Garden, pp.224-5.

@FOOTNOTENO. = 57

@FOOTNOTES = DOLA 138/91, p.21.

@FOOTNOTENO. = 58

@FOOTNOTES = DOLA 138/91, pp.30-2.

@FOOTNOTENO. = 59

@FOOTNOTES = Garden, p.228.

@FOOTNOTENO. = 60

@FOOTNOTES = Land Titles Office, Deeds and Registrations section.

@FOOTNOTENO. = 61

@FOOTNOTES = References to the sand dune are as follows:

@FOOTNOTENO. = A.

@FOOTNOTES = The original map of the area in 1803 does not show the sand dune though it would have been clearly visible from the sea and land where the two teams of Ransonnet & Baudin/Faure went to prepare detailed charts.

@FOOTNOTENO. = B.

@FOOTNOTES = In 1831 Alexander Collie did not mention the dune when he surveyed the area from the top of Mt Gardner. From the top of Mt Gardner the dune is clearly visible. Collie noted Moates Lake yet did not mention the sand blowout.

@FOOTNOTENO. = C.

@FOOTNOTES = A description of the coastal features in the Albany area in the Government Gazette of 18 February 1879, includes: 'Behind the east end of this beach [Taylor Inlet to Rocky Point] is a black bushy topped peak rising from the southern edge of a bare sand drift over a mile square. Behind the sand drifts are several lakes and swamps...'.

@FOOTNOTENO. = D.

@FOOTNOTES = The W.A. Land Company maps of location 416 detailed a number of tracks that were in use in 1890-1. One of these tracks passed south of Moates Lake through the heart of the sand dune area. There is no indication of the dunes on these maps.

@FOOTNOTENO. = E.

@FOOTNOTES = The 1912 map drawn by the Department of Lands and Surveys shows a small sand dune in the same region as the present one.

@FOOTNOTENO. = F.

@FOOTNOTES = The 1931-2 lithograph of the area shows the dune in its present position and approximately the same size as today. F.G. Medcalf surveyed the area east of Moates Lake in 1925, this area centred on the brackish Lake Gardner was leased as location 5394. No lease was taken out on the area around the freshwater Moates Lake.

@FOOTNOTENO. = 62

@FOOTNOTES = Garden, p.272; classification roll, Plan 631, December 1898, DOLA.

@FOOTNOTENO. = 63

@FOOTNOTES = Garden, p.272.

@FOOTNOTENO. = 64

@FOOTNOTES = Historical Data - Two Peoples Bay: Reference PWWS 759/54 - memo 17 May 1963. Supplied by Water Authority of Western Australia, Albany office.

@FOOTNOTENO. = 65

@FOOTNOTES = Fisheries Department of Western Australia, File 1894-1964, Albany District Fisheries: Temperatures in streams in vicinity of acclimatisation of fish, AN 108/1, File 271/16, Accession 652, Battye Library, Perth.

@FOOTNOTENO. = 66

@FOOTNOTES = Mr & Mrs D.A.P. West, personal correspondence.

@FOOTNOTENO. = 67

@FOOTNOTES = Mr & Mrs D.A.P. West, personal correspondence; E.G. Green, personal correspondence.

@FOOTNOTENO. = 68

@FOOTNOTES = Green, personal correspondence.

@FOOTNOTENO. = 69

@FOOTNOTES = Garden, pp.294-298.

@FOOTNOTENO. = 70

@FOOTNOTES = Green, personal correspondence.

@FOOTNOTENO. = 71

@FOOTNOTES = Mr. F. North, from private interview.

@FOOTNOTENO. = 72

@FOOTNOTES = DOLA 782/90. Vol.1, pp.107-9.

@FOOTNOTENO. = 73

@FOOTNOTES = DOLA 782/90, Vol.1, pp.93-5

@FOOTNOTENO. = 74

@FOOTNOTES = DOLA 1299/40, Vol,1 p.6.

@FOOTNOTENO. = 75

@FOOTNOTES = DOLA 138/91,. Vol.2, p.132.

@FOOTNOTENO. = 76

@FOOTNOTES = DOLA 138/91, Vol.2, pp.135-7.

@FOOTNOTENO. = 77

@FOOTNOTES = DOLA 138/91, Vol.2, p.147.

@FOOTNOTENO. = 78

@FOOTNOTES = DOLA 4932/54, Vol.1, p.1. Under Secretary of Lands in reply to the application to develop the area made in 1957.

@FOOTNOTENO. = 79

@FOOTNOTES = DOLA 4932/54, Vol.1, p.19.

@FOOTNOTENO. = 80

@FOOTNOTES = DOLA 4932/54, Vol.1, p.22.

@FOOTNOTENO. = 81

@FOOTNOTES = DOLA 4932/54, Vol.1, p.25.

@FOOTNOTENO. = 82

@FOOTNOTES = DOLA 4932/54, Vol.1, p.34.

@FOOTNOTENO. = 83

@FOOTNOTES = DOLA 4932/54, Vol.1, p.1, Department of Lands and Surveys; p.39 Town Planning Department; p.44 Albany Road Board.

@FOOTNOTENO. = 84

@FOOTNOTES = DOLA 4932/54, Vol.1, p.1, p.80.

@FOOTNOTENO. = 85

@FOOTNOTES = DOLA 4932/54, Vol.1, p.88.

@FOOTNOTENO. = 86

@FOOTNOTES = DOLA 189/60 Vol.1, p.4 and accompanying plan of Casuarina townsite.

@FOOTNOTENO. = 87

@FOOTNOTES = DOLA 4932/54, Vol.1, p.109.

@FOOTNOTENO. = 88

@FOOTNOTES = DOLA 4932/54, Vol.1, pp.11,20,27,30,32,45,53, 75,79,93.

@FOOTNOTENO. = 89

@FOOTNOTES = DOLA 4932/54, Vol.1, p.111.

@FOOTNOTENO. = 90

@FOOTNOTES = DOLA 4932/54, Vol.1. p.114.

@FOOTNOTENO. = 91
@FOOTNOTES = DOLA 4932/54, Vol.1. p.149.
@FOOTNOTENO. = 92
@FOOTNOTES = H. White, private interview. For further information see sections on introduced species in Chapter 14 in this publication.
@FOOTNOTENO. = 93
@FOOTNOTES = DOLA 782/90. Vol.2, pp.115-128.
@FOOTNOTENO. = 94
@FOOTNOTES = C. Allen, private interview.
@FOOTNOTENO. = 95
@FOOTNOTES = K.G. Buller, A new record of the Western Bristle-bird. Emu, 1945, 45, p.78.
@FOOTNOTENO. = 96
@FOOTNOTES = Buller, p.79.
@FOOTNOTENO. = 97
@FOOTNOTES = CALM File No. 015301F3516, Licence to Take Fauna for Scientific Purposes pp.16-19. Mr Ford collected six Western Bristlebird specimens from Two Peoples Bay in two trips on 24-25 January 1961 and 11-12 November 1961.
@FOOTNOTENO. = 98
@FOOTNOTES = The late H.O. Webster, private interview. Mr Webster began his study on the breeding habits of the Western Bristlebirds in September 1961.
@FOOTNOTENO. = 99
@FOOTNOTES = CALM File No. 015163F3807 - Rare and Endangered Fauna: Noisy Scrub Bird, Vol.1, p.32.
@FOOTNOTENO. = 100
@FOOTNOTES = CALM File No. 015163F3807, pp.1-21.
@FOOTNOTENO. = 101
@FOOTNOTES = CALM File No. 015163F3807, p.21.
@FOOTNOTENO. = 102
@FOOTNOTES = J.R. Ford, Western Australian Branch Secretary Notes. Emu 63, 1963, p.90.
@FOOTNOTENO. = 103
@FOOTNOTES = K.G. Buller and J.R. Ford, 'The Rediscovery of the Noisy Scrub Bird' (Unpublished) 1962.
@FOOTNOTENO. = 104
@FOOTNOTES = CALM 015301F3516, Vol.1, p.19.
@FOOTNOTENO. = 105
@FOOTNOTES = Individual interviews with Messrs Ford, Buller and Allen, each occurring without the knowledge of the other participants in the saga. They independantly produced the same story of the meeting at Mr Allen's house on the night of 12 November 1961.
@FOOTNOTENO. = 106
@FOOTNOTES = Webster, from private interview.
@FOOTNOTENO. = 107
@FOOTNOTES = The late J.R. Ford, private interview and personal papers.
@FOOTNOTENO. = 108
@FOOTNOTES = Webster, 30 November 1961; Ford, personal papers.
@FOOTNOTENO. = 109
@FOOTNOTES = Webster, Field Note Book entry from 17 December 1961.
@FOOTNOTENO. = 110
@FOOTNOTES = Webster, 17 December 1961.
@FOOTNOTENO. = 111
@FOOTNOTES = H.O. Webster, Re-discovery of the Noisy Scrub-Bird *Atrichornis clamosus*, Western Australian Naturalist, 8, (1962), p.57
@FOOTNOTENO. = 112
@FOOTNOTES = Webster (1962).

@FOOTNOTENO. = 113

@FOOTNOTES = D.L. Serventy to W.D.L. Ride, 30 December 1961, CALM 015163F3807, pp.26-32.

@FOOTNOTENO. = 114

@FOOTNOTES = D.L. Serventy to W.D.L. Ride, 30 December 1961.

@FOOTNOTENO. = 115

@FOOTNOTES = D.L. Serventy to W.D.L. Ride, 30 December 1961.

@FOOTNOTENO. = 116

@FOOTNOTES = D.L. Serventy to W.D.L. Ride, 30 December 1961. Ford had approached Dr Ride of the Western Australian Museum upon reading the news of the rediscovery and had proceeded to the place at Two Peoples Bay which Allen had described to him on the evening of 12 November 1961, to collect two specimens for the Museum. This collection could take place since the Director of the Department of Fisheries and Fauna had full knowledge of the operation and had authorized the collection. Ford was not convinced that Webster had found the Noisy Scrub-bird at Two Peoples Bay as the newspaper article only mentioned the general area of King George Sound.

@FOOTNOTES = Ford and Allen met Webster at his home on the evening of 28 December 1961. This meeting was confused and people became agitated when Ford announced his intention to collect two specimens for the Museum and then learnt that Webster's sightings occurred at the very place Ford intended to go to collect the Museum specimens. Serventy to Ride op.cit.; Ride to Serventy 5 January 1962, CALM 015163F3807, Vol.1, p.35; Private interviews with J.R. Ford, H.O. Webster and C. Allen.

@FOOTNOTENO. = 117

@FOOTNOTES = The matter of who should receive the honour for the rediscovery weighed heavily on the minds of some of those involved. See:

@FOOTNOTES = 29 July 1963, 'Finder of Noisy Scrub Bird Annoyed' Albany Advertiser ; 16 August 1963, 'Noisy Scrub Bird' Albany Advertiser ; Webster, Field Note Book, entry for 17 December 1961; J.R. Ford, 'The Rediscovery of the Noisy Scrub-bird' unpublished; Serventy to Ride, 30 December 1961, CALM 015163F3807, Vol.1., pp.26-31.

@FOOTNOTENO. = 118

@FOOTNOTES = Serventy to Fraser, 22 January 1962., CALM 015163F3807, Vol.1., pp.45-6; H.O. Webster, Re-discovery of the Noisy Scrub-Bird *Atrichornis clamorus* - Further Observations, Western Australian Naturalist, 8, (1962), p.81.

@FOOTNOTENO. = 119

@FOOTNOTES = Webster (1962, pp.81-2.

@FOOTNOTENO. = 120

@FOOTNOTES = Webster to Under Secretary of Lands, August 1962, DOLA 955/62, Vol.1, pp.25-6.

@FOOTNOTENO. = 121

@FOOTNOTES = R.A.O.U. to Under Secretary of Lands, 10 February 1962. DOLA 955/62, Vol.1, p.5.

@FOOTNOTENO. = 122

@FOOTNOTES = Albany Shire to Under Secretary of Lands, July 1962. DOLA 955/62, Vol.1, pp.23.

@FOOTNOTENO. = 123

@FOOTNOTES = Hon. D. Brand to H.O. Webster, 3 September 1962. DOLA 955/62, Vol.1, p.35.

@FOOTNOTENO. = 124

@FOOTNOTES = File note, Under Secretary of Lands, 13 September 1962. DOLA 955/62, Vol.1, p.35.

@FOOTNOTENO. = 125

@FOOTNOTES = H.R.H. the Duke of Edinburgh to Minister of Fisheries and Fauna, 28 November 1962. DOLA 955/62, Vol.1, p.43.

@FOOTNOTENO. = 126
@FOOTNOTES = Minister of Lands to Minister of Fisheries and Fauna, 28 November 1962. DOLA 955/62, Vol.1, p.44.
@FOOTNOTENO. = 127
@FOOTNOTES = 7 November 1962 Daily Mail; 29 March 1963 West Australian; 10 April 1963 West Australian; 15 January 1963 Daily News; 19 December 1963 West Australian.
@FOOTNOTENO. = 128
@FOOTNOTES = CALM 015163F3807. Vol.1, 6-8 April 1964, pp.5-6.
@FOOTNOTENO. = 129
@FOOTNOTES = World Wildlife Fund to Minister of Lands, 14 February 1964, DOLA 995/62, Vol.2., p.108.
@FOOTNOTENO. = 130
@FOOTNOTES = Mr J. Hall, MLA, 7 July 1967, Albany Advertiser.
@FOOTNOTENO. = 131
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HP3 f ä5 ð y b b e p @AJHCH = CHAPTER 3

@AJHTIT = Management of the Reserve

@AJHAUT = N.J. Coy, A.A. Burbidge, A. Danks, G.L. Folley and R.E.S. Sokolowski

@LEVEL1 = INTRODUCTION

@BODY1 = With the cancellation of the Casuarina townsite on 22 April 1966, the first 260 ha portion of the Two Peoples Bay Reserve was gazetted as Reserve No. 27956 for the purpose of Conservation of Fauna,1 vested in the Fauna Protection Advisory Committee (FPAC).2 The Reserve was to be administered by the then Department of Fisheries and Fauna.

@BODY1IND = Creating this sanctuary for the preservation of the rediscovered Noisy Scrub-bird (Atrichornis clamosus) set a precedent which was followed two months later when two reserves were gazetted in the Perth metropolitan region for the preservation of the Short-necked tortoise (Pseudemydura umbrina), which had been rediscovered in 1953. These benchmark wildlife sanctuaries (as nature reserves were then known) were a new concept in Western Australia at a time when the conservation ethic was still alien to most people.3

@BODY1IND = With the newly declared Reserve at Two Peoples Bay the Department and FPAC were inheriting a varied coastal landscape, degraded in parts by recreational access and human occupation, overgrazing by livestock and frequent fires. Parts of the Reserve had been exploited for timber by the sealers, whalers and woodcutters of the nineteenth century. During the first half of the twentieth century contract woodcutters procured sheoak from the Reserve to supply the cooperage at Albany. A limited amount of firewood was also cut from the Reserve to fire the pumping station boilers at the Angove River dam, prior to power being converted to the State Electricity Commission supply in 19534 (ch. 2 this publication).

@BODY1IND = The authorities also inherited a degree of resentment amongst the local community, displaced to create the Reserve, because they had anticipated their squatters' settlement would develop into a burgeoning holiday village. The public, including professional fishermen and anglers, had enjoyed access to the coastline, and Moates Lagoon (now Moates Lake) was popular for boating and catching marron (Cherax tenuimanus). The members of several local football clubs used the area as a pre-season training course, by running over the sand dunes after swimming across the lake.

@BODY1IND = These factors were to become important elements in managing the Reserve in a manner acceptable to the public while, at the same time, fulfilling the reason for its creation _ the preservation of the Noisy Scrub-bird in its natural environment. The past quarter of a century has seen dramatic increases in rare bird numbers, regeneration of native vegetation, removal of squatters' camps and conservation of large areas of bush. Although the Reserve is still potentially threatened by both humans and natural forces, the story of its development to 1991 is in the vanguard as a model example of intelligent and determined nature conservation management.

@LEVEL1 = THE FIRST TENTATIVE STEPS

@BODY1 = At first, the Department was not in a strong position to manage the newly declared Reserve. There were only four Fauna Wardens (now known as Wildlife Officers) to cover the whole State and only one of these was based in the country. The sole, graduate fauna research officer employed by the Department was fully occupied on waterfowl conservation. The Department depended largely on advice from the FPAC because it had limited expertise and experience in managing nature conservation reserves. In 1966 an additional warden, Mr Malcolm MacDonald, was

stationed at Albany to patrol an enormous area along the south coast that extended inland to Kojonup. He was also to manage the new sanctuary at Two Peoples Bay.⁵

@BODY1IND = A problem that needed early resolution was the administrative error in the gazetted description of the area set aside for the Reserve. This was ultimately corrected on 2 June 1967 with re-gazetting of Reserve No. 27956 to increase the area to 4638 ha.⁶ The boundary along the 25 km of coastline extended only to high water mark - a situation that remained unchanged until the Reserve was extended to the low water mark in 1987.

@BODY1IND = In July 1966, Fauna Officer, Mr H.B. (Harry) Shugg was sent overseas to study the organisation of nature conservation in the United Kingdom. While overseas he addressed three environment-oriented conventions at Lucerne, in Switzerland, and at Cambridge and Oxford in Great Britain. As a guest speaker, Mr Shugg described work being done on the Noisy Scrub-bird and, to a lesser extent, the short-necked tortoise. Mr Shugg's visit brought further international acclaim from conservationists, as exemplified in a letter from the Secretary of the Survival Services Commission of the International Union for the Conservation of Nature and Natural Resources (IUCN) to the Minister for Lands:

@INDENTQUOTE = ...the Commission was greatly heartened by the wonderful news of your outstanding decision not to proceed with plans for the Casuarina township...at Two People Bay...without any doubt at all it will ever be quoted as a most memorable example of true conservation, designed to ensure the survival in perpetuity of an interesting and unique bird.⁸

@LEVEL2 = Squatters Evicted

@BODY1 = The first management problem to be addressed concerned the 16 squatters' shacks (Fig. 3.1) which had been built on the cancelled Casuarina townsite, in the vicinity of the present picnic area (ch. 2 this publication). Following FPAC's decision to exclude residential development and camping activities on the Reserve, the Department wrote to the shack owners in June 1966, directing them to remove all shacks and materials by 31 December 1966.⁹ After several shack owners asked for the notices to be withdrawn, Mr J. Hall, MLA for Albany, wrote to the Minister for Fisheries and Fauna enclosing a petition signed by 22 squatters. In his covering letter dated 2 November 1966, Mr Hall stated:

@INDENTQUOTE = To the people who enjoy Two People Bay, that notice is a tragic blow...It could also be claimed that they live in harmony with the Noisy Scrub-bird, in fact the bird will leave the area when the children are not about and return when they come back for their holidays after school has broken up...It is my firm conviction that the Noisy Scrub Bird does like children and if denied their company will leave the area...¹⁰

@BODY1IND = Early in 1967 the FPAC met to consider the objections to the eviction notices and resolved to recommend to the Lands Department that one person, Mr C. Wilson, who fished the Bay professionally, be granted a lease.¹¹ All other pleas were rejected and the Crown Law Department was approached to give an opinion as to what action could be taken against persons who had not removed their buildings.¹² Crown Law advised that there was no power to prosecute under the Fauna Conservation Act but that the FPAC could take court action under Common Law to take possession of buildings and other materials left on the Reserve.¹³ The FPAC resolved accordingly and the matter was heard in the Albany Court on 8 September 1967. Action was originally taken against sixteen persons but thirteen removed their buildings before the hearing date and actions against them were discontinued. The FPAC was granted an order for possession of the remaining three buildings.¹⁴

@BODY1IND = One owner was overseas at the time of the court action and, on his return late in 1967, he approached the Department to see if it was

interested in buying his cottage for \$1000 on a 'walk-in walk-out' basis. This building was well constructed and, after obtaining a valuation, the Department agreed to purchase it.¹⁵ The cottage, plus additions, is still in use today as the Research Station and Reserve Office (Fig. 3.2).

@LEVEL2 = Management Policies Formulated

@BODY1 = Another major management problem was dramatically highlighted on 20 December 1966 when a large tract of land west of Mt Gardner was burnt out - much of it by back-burns lit by volunteer members of the Lower Kalgan Bushfire Brigade (LKBB). Although the fire was primarily outside the cancelled Casuarina townsite reserve it burnt a considerable portion of the area then under consideration for the enlarged Reserve. Early in 1967 Departmental officers discussed fire control with the Captain of the LKBB and agreed on an initial system of bulldozed firebreaks (ch. 19 this publication).

@BODY1IND = Having overcome the immediate management problems the FPAC next considered its long-term policy for the Two Peoples Bay Reserve. In September 1967 a Sub-Committee was appointed to look at all aspects of management of the Reserve. The Sub-Committee consisted of Dr D.L. Serventy, Mr A.J. Milesi, Mr A.H. Robinson, Mr H.B. Shugg and Mr A.T. Pearce.¹⁶ Arthur Pearce was a former rock lobster fisherman and fisheries inspector from Geraldton who had replaced Mr MacDonald as Fauna Warden at Albany.

@BODY1IND = The Sub-Committee visited the Reserve and reported back to the FPAC in October. The FPAC adopted recommendations that the Reserve should be open to as much public use as possible without compromising the purpose of the Reserve, i.e. the protection of the Noisy Scrub-bird and other species of animals and plants. It was decided that public use should be on the basis of day visits only. Camping and the parking of caravans were not to be permitted.¹⁷ Plans for a system of firebreaks were also adopted and it was resolved to commence a census of the flora and fauna of the Reserve. The initial bulldozed firebreaks, begun in March 1968, were later extended in an attempt to prevent fires from crossing the Reserve boundary and to provide a firebreak and fire-fighting access between Lake Gardner and the Southern Ocean (Fig. 19.3).

@BODY1IND = In October 1968, the Department appointed its first two officers to work mainly on reserve management research. One of these was Dr A.A. (Andrew) Burbidge, who was responsible for developing and administering policies at Two Peoples Bay Nature Reserve.

@LEVEL2 = Research Future Assured

@BODY1 = After publishing his reports in 1962 on the re-discovery of the Noisy Scrub-bird, the late Mr H.O. (Harley) Webster (see notes 111 and 112 in ch. 2 this publication) commenced a study on the bird's song. He was supervised by Mr F.N. (Norm) Robinson, Division of Wildlife Research, CSIRO, who had previously completed studies on the Lyre bird's song. In 1966 Mr Robinson was transferred to Perth from Canberra and began a study of the Noisy Scrub-bird under a part-time study grant from the Science and Industry Endowment Fund.¹⁸ Automatic recording equipment was installed to measure song output and ecological and behavioural data were collected in an attempt to understand the function of the song. Fifty-five territories of singing male Noisy Scrub-birds were identified on the Mt Gardner headland, (from data collected between 1962 and 1965), and the bird population (ch. 16 this publication) appeared to be reasonably viable in its limited environment.¹⁹

@BODY1IND = In August 1968 the Western Australian Wildlife Authority, which had replaced the FPAC, requested a report from Robinson for the development of a management program. Information on the history of the Reserve, particularly relating to fire, was also sought from Webster (ch. 19 this publication). Robinson's report concluded that it was not

possible for him to make suggestions on a long-term management program but he was sure that the survival of the rare birds had been 'entirely due to the relative protection of the small promontary of Mt Gardener [sic] from perennial firing by man.'. Both reports stipulated a total ban on fires and the closure of tracks, especially those eroding badly on steep terrain.²⁰ Robinson also advocated sign-posted walking tracks and a few shelter sheds, especially in the Mt Gardner area: 'The flora and scenic views on the seaward side of Mt Gardner...are amongst the finest in the world...[but] have been seen by very few people'.²¹

@BODY1IND = These reports reinforced the opinion that before an effective management plan could be developed for the Reserve a great deal of information would be needed on the biology of the Noisy Scrub-bird and the other rare species occurring there. Departmental staff were fully committed so the Wildlife Authority decided to ask the CSIRO Division of Wildlife Research to expand its work on the Reserve.²² In April 1969, Dr H.J. Frith, Chief of the Division, stated in his reply that the part-time study (of Robinson and Webster) had created a reasonable basis on which future work could be planned. Dr Frith and Dr S.J.J.F. Davies (Officer-in-Charge, Perth Laboratory of CSIRO Division of Wildlife Research) proposed a change in direction by broadening the terms of reference for a wider study:

@INDENTQUOTE = We should suggest that although the central work would be around the Noisy Scrub-bird the behavioural and other inter-relations that exist with the Western Whip-bird, Heath Wren, Bristle Bird and Emu Wren should also be used to provide background and depth to the work. We would hope that the work would demonstrate the value of the behavioural and other population control mechanisms that operate in that specialised environment. The study would also be expected to give some insight into the management of a relatively small and isolated reserve.²³

@BODY1IND = The Wildlife Authority met in June 1969 and resolved to accept the broad-based research program outlined by Dr Frith who then approached the CSIRO Executive with a definite proposition.²⁴ This proposal was approved and Research Scientist, Dr G.T. (Graeme) Smith commenced work in April 1970.²⁵ In the summer of 1970/71 an A-frame research station (Fig. 3.3) was built adjacent to the small shed on Tick Flat that had been built by CSIRO personnel in 1966.²⁶ The research station was named 'Jeemuluk' _ an Aboriginal word for the Noisy Scrub-bird.²⁷

@BODY1IND = Just prior to Dr Smith's appointment a biological survey of the vertebrate fauna (excluding birds) on the Reserve, was carried out by Dr J.L. Bannister of the Western Australian Museum (ch. 15 this publication).

@LEVEL1 = GATHERING MOMENTUM

@LEVEL2 = Administration Upgraded

@BODY1 = The early 1970s heralded great changes in the development of the Reserve. Management and research policies were put in place and finances were made available to both upgrade and construct facilities, and to employ the State's first resident Reserve Officer to administer the Reserve. The need for a resident officer was further emphasised in March 1970 when two wildfires burnt out much of the Reserve area (ch. 19 this publication).

@BODY1IND = When Mr R.J. (Dick) Grayson was appointed Reserve Officer in August 1970 he had to provide his own accommodation. Mr Grayson, an ex-police officer and well-known local identity, was also an experienced part-time builder. Because the cottage purchased early in 1968 was not suitable for a family to inhabit year-round, Mr Grayson set to work to improve it. Two rooms and a toilet were added, a bore was sunk to provide a reliable water supply and a 240 volt alternator was installed to

replace the old 32 volt DC supply. He also constructed a public toilet block at the picnic area.²⁸

@BODY1IND = The Reserve's first Draft Management Plan to promote the conservation of flora and fauna was developed by A.A. Burbidge and T. Evans in 1970. It aimed at the management of the three main problems at that time - fire, public use and the proliferation of vehicle tracks. The Management Plan was adopted by the Wildlife Authority in January 1971. The final plan excluded a section recommending the Reserve be declared a <F128M>, <F255D>Fire Protected Area<F128M>, <F255D> under Section 16 of the Bushfires Act in the belief that fires on adjacent land could be better managed by co-operation than with rules.²⁹

@BODY1IND = The Plan was approved by the then Minister for Fisheries and Fauna, the Hon. Ron Davies, MLA, and the classification of parts of the Reserve into <F128M>, <F255D>Prohibited Area<F128M>, <F255>, <F128>, <F255D>Limited Access Area<F128M>, <F255D> and <F128M>, <F255D>Unlimited Access Area<F128M>, <F255> w<D>as published in the Government Gazette on 25 June 1971 (see Appendix 3.1 at end of chapter and Fig. 1.3 this publication).

@BODY1IND = Roads proposed in the Plan were upgraded from rough sand tracks into gravel roads by the Shire of Albany in October and November 1971, financed by funds for tourist roads. The original tracks were re-routed in several places to improve access for amateur anglers and to direct traffic away from the environmentally sensitive Mt Gardner area. The Shire of Albany agreed to the imposition of a 40 km/h (then 25 miles per hour) speed limit on these roads in order to increase safety and reduce road maintenance costs.³⁰

@BODY1IND = Other occurrences of note during this period included the allocation of a small lease, Plantagenet Location 7132 (Fig. 2.4 this publication) to professional salmon fisherman, Charles Wilson.³¹ In 1972, Mr Wilson was also given permission to construct a small wooden bridge over Gardner Creek to provide access to three huts on his beachfront lease.³² Although the lease was cancelled in 1986 the bridge remains to this day, about 100 metres upstream from the creek mouth.

@BODY1IND = On 26 January 1972 the Two Peoples Bay Fauna Reserve was officially declared a Wildlife Sanctuary. (This terminology was later changed when the Fauna Conservation Act (1950-1970) was replaced by the Wildlife Conservation Act (1950-1975) and gazetted on 5 December 1975. The Department of Fisheries and Fauna was renamed Fisheries and Wildlife and former Wildlife Sanctuaries were renamed Nature Reserves.)³³

@LEVEL2 = Change of Personnel

@BODY1 = In 1972 Mr Grayson was promoted to the position of Fauna Warden at Albany, where he replaced Mr Pearce. Local farmer, R.E.S. Sokolowski was appointed as Reserve Officer at the Two Peoples Bay Wildlife Sanctuary in August 1972. Ron Sokolowski was to become well-known through his rapport with visitors to the Reserve. During his six years there he also provided assistance to the Noisy Scrub-bird research program as he had special interests in ornithology and herbarium collections. He established biological and botanical study areas within the Reserve and at Gull Rock National Park, for students from the Albany Senior High School.

@BODY1IND = Public facilities were further upgraded in 1973 when direction and courtesy signs were erected in the Reserve. In the picnic area the changeroom block, with fresh water showers, and three wood-fired barbecues were built. A display board featuring Noisy Scrub-bird biology (Fig. 3.4) was installed. This display included a tape recording of Noisy Scrub-bird song, with a commentary by Dr Smith. The recording, a visitor-operated, battery tape-deck, was designed for educational use by

visitors, but it sometimes stimulated territorial song from a Noisy Scrub-bird in the swamp adjacent to the picnic area.

@BODY1IND = Later in 1973, American lawyer Mr L. Milgraum purchased 'Tandara' from the Webb family who had farmed the property since 1949, when they bought the farm from H.C. Poole.³⁴ Mr Milgraum expressed an early interest in the welfare of the Reserve and conservation in general. He also purchased the farming land west of the Reserve through to Nanarup at a later date.

@LEVEL2 = Prince Philip's visit to the Reserve

@BODY1 = A highlight of the Two Peoples Bay Nature Reserve's history was the visit of His Royal Highness Prince Philip, the Duke of Edinburgh. Prince Philip's influence made a significant contribution toward the creation of the Reserve and he had a special interest in the Noisy Scrub-bird (ch. 2 this publication).

@BODY1IND = On the afternoon of 6 March 1974, Prince Philip officially opened the Western Australian Wildlife Research Centre at Woodvale in the Perth metropolitan area. That evening he was flown to Albany and the following morning his royal entourage drove through rain in the the pre-dawn darkness to Two Peoples Bay from their Albany hotel - quite a change after sweltering in 42<198>C heat at Woodvale the previous day.

@BODY1IND = The Royal Party was met at the reception area on the beachfront by Departmental and CSIRO personnel after which Prince Philip was driven by Dr Smith, accompanied by Dr Burbidge and Prince Philip's Aide-de-Camp, to the CSIRO station on Tick Flat to inspect a display inside the hut.³⁵ At 0700 h he set off on foot with Dr Smith, who was equipped with a tape recording of the male Noisy Scrub-bird's territorial song. Prince Philip and Dr Smith heard bird calls from four different observation points and in one instance a male bird was singing within one metre of Prince Philip but remained hidden in the thick scrub.³⁶

@BODY1IND = After driving down from the mist-enshrouded Mt Gardner the party was treated to morning tea prepared by the Lower Kalgan Branch of the Country Women's Association. The ladies proudly provided their finest crockery and silverware for this very auspicious occasion, underneath a large canopy set up outside the Ranger's residence. Prince Philip met a number of local dignitaries, Reserve neighbours and other persons associated with the Reserve.

@BODY1IND = Although a little disappointed at not seeing a Noisy Scrub-bird in the incessant rain, Prince Philip was very enthusiastic about the experience and the overall concept of the Reserve. His symbolic visit to the home of the Noisy Scrub-bird gave much credibility to the Reserve and the conservation ideals it represents.³⁷

@LEVEL1 = SETBACKS AND ADJUSTMENTS

@LEVEL2 = At Odds with the Shire

@BODY1 = In response to repeated requests from the public to have the Two Peoples Bay Road bituminised, the Albany Shire Council passed a resolution in January 1975 to seal the road from the Nanarup turn-off to the Reserve boundary. Discussions in April, between representatives from the Wildlife Authority and the Shire, resulted in a reversal of the decision on the basis that the expected increase in visitors to the Reserve would overtax the available facilities.³⁸ The Shire also vigorously challenged the lack of prescribed burning and the Shire President complained to the Minister for Lands, Mr Ridge, MLA, that he regarded the Reserve as a fire hazard over which the Shire had no control.³⁹ This matter was resolved in November when Mr Sokolowski addressed the Shire Council to explain the revised fire control policies designed to protect the special needs of the rare fauna on the Reserve.⁴⁰

@LEVEL2 = Improving Management and Facilities

@BODY1 = As the Reserve gathered popularity with visitors there was a pressing need to improve facilities for administrative, research and public purposes.

@BODY1IND = In 1975 a house was purchased from the Education Department and transported in three sections on the back of a low-loader truck, from the Albany Primary School to the Reserve, to become the permanent residence for the Reserve Officer and his family. The former beach shack, which had previously doubled as the Reserve Officer's residence and office, was refurbished as a research station and office for use by bona fide research and management personnel.

@BODY1IND = With the ever-increasing number of cars and people entering the Reserve, facilities became severely taxed. During 1976, for example, visiting groups included 32 tourist buses, 830 school students on organised outings and eight social club picnics involving a total of 850 persons. This naturally led to requests for the parking areas, toilets and change-rooms to be extended. However, these were not accepted by management as desirable additions, in keeping with the management objectives.⁴¹

@BODY1IND = Further upgrading of the firebreak system created a strategic, fuel-reduced zone between the Mt Gardner headland and the rest of the Reserve. The first two segments of this twelve section firebreak were burnt in September 1976 (ch. 19 this publication).

@LEVEL2 = Cyclone Alby

@BODY1 = On the night of 4 April 1978 Cyclone Alby brought havoc and destruction to the south coast. Fortunately, there was not too much damage at Two Peoples Bay. Anemographic records from the Albany Airport show that at 1710 h the 10-35 km/h easterly wind suddenly swung to the north and increased dramatically with gusts to 85 km/h. The gale force winds increased to 130 km/h for ten minutes, then intensified to hurricane force at 150 km/h as the eye of the cyclone passed to the south-west. Half an hour after midnight the south-westerly suddenly abated to 50 km/h and, by dawn, a comparatively gentle 20-35 km/h breeze greeted those local inhabitants who ventured out to inspect the cyclone's damage.⁴²

@BODY1IND = Part way through the storm, members of the Wilson family arrived to find waves pounding on the front door of their net shed (Fig. 3.5) and they had to tear off the rear wall to rescue their fishing gear from the besieged shed.⁴³ The north to south-westerly winds and the surging sea scoured beach and frontal dunes and dumped tonnes of weed on the beach. The wind from this very severe but short-lived, seven and a half hour storm, was not from a direction to severely damage the foredune at Two Peoples Bay as did the great storm of 1984.

@LEVEL1 = CHANGING DIRECTION

@LEVEL2 = Change in Administration

@BODY1 = In January 1979 Mr Sokolowski was transferred by the Department to Karratha. He was replaced by Mr G.L. (Graeme) Folley as Reserve Officer at Two Peoples Bay in October 1979. A former cartographer with the Department of Mines, Mr Folley was a keen naturalist who subsequently helped to pioneer relocation of Noisy Scrub-birds to other reserves along the South Coast.

@BODY1IND = Mr Folley's seven years at Two Peoples Bay were to see great changes, during which time pressures on him as the only Reserve Officer increased tremendously. One of his early tasks was to assist in establishing the first section of the self-guiding nature trail, designed by Dr Burbidge (Fig. 3.6). As originally planned this was later extended to its present circuit route.⁴⁴ In 1980 Mr Folley designed new gas barbecues which were installed to replace the wood-fired ones in the picnic area and the Shire of Albany subsequently adopted the design for

other reserves in the region.⁴⁵ He also initiated biology camps for secondary school students who camped on a nearby farm and commuted to the Reserve each day.

@LEVEL2 = Reserve Under Threat

@BODY1 = Two Reserve-threatening problems emerged in 1980 when the pathogenic fungus *Phytophthora cinnamomi* was positively identified on the Reserve and a resort development was proposed on adjoining farmland to the west.

@BODY1IND = The long-term problem of *P. cinnamomi* was identified in December 1980 when Mr A.J.M. (Angas) Hopkins, who had been researching fire ecology in the Reserve since 1976, and Mr Folley gathered soil samples from around dying banksias near the access track to Moates Lake.⁴⁶ When tested by the Department of Agriculture these samples proved to contain *P. cinnamomi*, thereby confirming fears that the dreaded 'jarrah dieback' was established in the Reserve (ch. 21 this publication). This discovery resulted in the western third of the Reserve, which was largely free of the fungus, being gazetted as a <F128M>, <F255D> Limited Access Area <F128M>, <F255D> on 4 December 1981 (Fig. 1.3 this publication). Because vehicles are the main cause of spreading *P. cinnamomi*, vehicular access to Moates Lake was banned, although marron-fishers and other members of the public were still permitted pedestrian access around the shores of Moates Lake and the sand dunes to the south.⁴⁷

@BODY1IND = In June 1980 the Milgraum family applied to the Albany Shire Council for an 850 ha resort and settlement complex for Nanarup. The proposal included the establishment of several wetland reserves and a flora and fauna reserve of 169 ha abutting the western boundary of the Two Peoples Bay Nature Reserve. The resort was to include holiday cottages, townhouses, community and recreation centre, a possible convention centre, residential and rural lots, and an 18-hole golf course.⁴⁸ The Department expressed concern about the resort on the grounds that wetlands could be polluted within the Reserve; there would be problems of sewerage disposal; further spreading of *P. cinnamomi* could occur; and such an increase in the number of people in close proximity could lead to other unmanageable problems for the Reserve. The development did not proceed.⁴⁹

@LEVEL2 = Research Extended on the Reserve

@BODY1 = During the early 1980s, research into many of the biogeographical aspects of the Reserve was actively encouraged by the Department to complement preliminary field studies on fire ecology begun by Mr Hopkins in 1976. Much of the data collected from this research formed the basis for this publication, thereby fulfilling the guidelines agreed to by the Wildlife Authority and CSIRO when the broad-based research program was outlined in 1969.⁵⁰

@BODY1IND = Scientific research teams from government departments, academic institutions and several private consultants were invited to participate in the detailed surveys and gathering of data on the Reserve. These included the Department's Western Australian Wildlife Research Centre, CSIRO, Department of Mines, and the University of Western Australia. Extensive assistance was given by Mr Folley, as recognised by his co-authorship of a number of chapters in this publication.⁵¹

@BODY1IND = In the early 1980s the CSIRO's Dr Smith continued his research at Two Peoples Bay. His work mainly involved annual censuses and captive breeding research, after his initial biological research on the Noisy Scrub-bird had concluded in 1976. However, further studies were being made on the Western Whipbird and the Bristlebird⁵² and these were being aided by observations of a volunteer, Mrs Lesley Harrison.⁵³ Other

volunteers also proved invaluable in assisting research teams and on the Noisy Scrub-bird translocation program.

@LEVEL2 = Translocation of the Noisy Scrub-bird

@BODY1 = By 1983 the number of identifiable Noisy Scrub-bird territories within the Reserve had increased to 138, a threefold increase since 1970 (ch. 16 this publication), and it appeared that the fire exclusion policy of the seventies had been successful. The amount of habitat for Scrub-birds at Two Peoples Bay, however, is limited and the population could never be expected to be really large. Therefore a decision was made to establish Scrub-bird colonies in other localities, or else they would remain vulnerable as a single, isolated population.⁵⁴

@BODY1IND = Successful but time-consuming and expensive experiments on captive breeding by the CSIRO at Helena Valley, proved that this method was possible if ever needed.⁵⁵ Meanwhile, the Department decided to capture birds from the Mt Gardner area and transfer them to new sites (ch. 18 this publication). Towards this end the Department sought and obtained the services of Mr D.W. (Don) Merton, a world-renowned expert on the translocation of endangered birds. He was seconded from the New Zealand Wildlife Service (NZWS) to Two Peoples Bay for two months in 1983. Techniques for transferring threatened species had been pioneered and developed by NZWS over many years and these techniques proved applicable, with some modifications, to Noisy Scrub-birds. Capturing these elusive and secretive birds was more difficult and required many weeks of trial and error by the translocation team with some advice from the CSIRO's Dr Smith before reliable methods evolved.⁵⁶

@BODY1IND = In the winter of 1983 ten male and four female birds were released in two valleys on the north-west slopes of Mt Manypeaks, 15 km north-east of Mt Gardner across Two Peoples Bay, in an area first recommended for translocation by Dr Smith in 1975.⁵⁷ In the summer of the same year two more females were translocated. By the spring of the following year six males were defending territories on Mt Manypeaks and the successful colonization of the mountain range had begun.⁵⁸

@LEVEL1 = THE HUNDRED YEAR STORM

@BODY1 = In early August 1984 a very severe storm wreaked considerable damage along the south coast, especially in the Albany District. The storm's severity can be gauged by local people referring to it as 'The Hundred Year Storm'. Large Norfolk Island pines were washed out of the ground at Albany's Middleton Beach and beachcombers picked up live crayfish among hundreds of other marine animals that had been washed in from offshore reefs.⁵⁹

@BODY1IND = On 2 August a dual-centered, low pressure meteorological system developed; one centered near Albany and the other to the south, with a cold front stretching from Carnarvon to Albany and extending further south to the southern low. A slow moving, complex cut-off low developed and was centred in the western portion of the Great Australian Bight. A tightening of the pressure gradients late in the day caused gale force southerly winds throughout 3-4 August (see synoptic charts, Fig. 3.7).⁶⁰

@BODY1IND = Pre-frontal north-west winds throughout the morning of 2 August dramatically increased to 74 km/h at 1710 h as the gale approached from the south. The peak of this prolonged storm continued with gusts to 110 km/h until 0130 hours of 3 August, before easing slightly to a gusty 40-90 km/h gale which continued unabated from the south-south-east, until it eased and turned westerly at about 1700 h on 4 August.⁶¹ The storm kept Two Peoples Bay under constant bombardment from pounding waves and driving wind for 48 hours, with the swell driving almost directly into the Bay.

@BODY1IND = When relieving Reserve Officer Alan Danks looked along the Bay on the morning of 3 August the beach had virtually disappeared and, out in the Bay, the wave action had torn big gaps in the sea grass beds. By the time the storm was over the beach along the southern quarter of the Bay was clogged with torn and uprooted sea grass to a depth of about 3ým (Fig. 3.8). This 'weed rack' banked up the water of Gardner Creek and created a spongy morass that prevented any access to the Bay.⁶²

@BODY1IND = Along the beach itself the storm had moved thousands of tonnes of sand out into the Bay. In his later report Mr Folley stated: '...the entire beach, foredune and half of the vegetated (stable) dune was eroded' (Figs. 3.9 and 3.10). Of the pocket beaches to the south of the main beach many of the stable slopes had been eroded and, at Waterfall Beach, virtually all the sand had been swept out to sea.⁶³ The fringing woodland and swamp near the tidal pool, that had been home to a Noisy Scrub-bird since 1982, was destroyed by wave action and salt water, which had swept over the rocks and across the pool.⁶⁴

@BODY1IND = As the forces of nature, aided by the high spring tides of the Equinox, had failed to restore the beach by the time the tourist season began⁶⁵ there were numerous complaints from visitors and fishermen, and vehement attacks on the Department by the local news media.⁶⁶ The boat launching area was eventually re-opened in April after the Department sought advice from the Public Works Department and \$4000 was allocated to remove the weed and restructure the area.⁶⁷ Part of the restructuring included work by Mr Folley who, with a tractor, reshaped the southern end of the Bay by redistributing weed to form a sand trap for further stabilising of the beach.

@BODY1IND = Other pressures on the Reserve during this era included further requests by the Shire and the Public Works Department to seal and realign the road and to build a two-lane bridge over Gardner Creek.⁶⁸ The prolonged debates on both these issues reflected the continuing conflict of attitudes between the Department and some other authorities on the amount of public use that was desirable in the Reserve.

@LEVEL1 = THE BLACKWELL REPORT

@BODY1 = Late in 1984 the Department contracted biological and landscape consultant Mrs M.I. (Marion) Blackwell to compile a report on 'Recreation Management and Interpretive Strategy' for the Reserve.

@BODY1IND = Mrs Blackwell studied public usage of the Reserve based on information provided by Mr Folley and noted in particular the excessive numbers of people using the limited facilities at peak times of the year. On holiday weekends, in the period December - March, more than 200 vehicles (600 people) were often in the Reserve at one time. This number was nearly four times the capacity of the main carparks. Other statistics from vehicle counts between October 1977 and May 1985 included: 481 vehicles entered the Reserve on New Years Day 1982; 566 vehicles entered the Reserve on the four day Easter weekend of 1985; an average of 2188 vehicles entered the Reserve in January, and 4462 during the summer months December-February; 2802 vehicles in autumn (March-May); 1529 in winter (June-August); and an average of 2525 vehicles entered the Reserve during the spring (September-November). Most of the 35 000 people visiting each year focussed on the picnic area whereas, for instance, only 400-500 visited Rocky Point and only a few hundred marroners fished at Moates Lake. An estimated 1000 people, mostly from interstate or overseas, came especially for bird watching, drawn by the success of the Noisy Scrub-bird conservation program and the presence of other rare birds.

@BODY1IND = A survey of visitors carried out over the three-day holiday weekend in March 1985 showed that, at that time of the year, 50 per cent lived in Albany, about 25 per cent in Perth, 15 per cent were from nearby

country towns and 'other visitors' constituted about ten per cent. Casuals who regarded the picnic area as 'just another place to go' formed the largest proportion of visitors. The report considered that these people could be better catered for at a number of other recreational sites in the vicinity of Albany. The report also stated that:

@INDENTQUOTE = ...there is increasing pressure to accommodate larger numbers of visitors, many of whom come for general recreation rather than the Reserve's raison d'etre... When such recreation pressure is considered in the light of the Reserve's primary function of wildlife conservation...it becomes evident that detailed planning and remedial management initiatives are urgently needed... There is the opportunity to develop a 'model reserve' to generate public interest in conservation with comparisons to other parts of the world.

@BODY1 = Mrs Blackwell's major recommendation for interpretation and recreation at Two Peoples Bay Nature Reserve was:

@INDENTQUOTE = That this area be treated primarily as an Education and Conservation resource (as is the purpose for the setting aside of Nature Reserves), and that measures be taken to convey this function (as well as its value) to the public.

@BODY1IND = Among many specific recommendations the report emphasised that pertinent usage be encouraged and that future development should focus on interpretive presentation of the Reserve for educational purposes and to help change the present public use of the area.

@BODY1IND = The specific recommendations included: the promotion of other coastal recreation areas of the Albany Region to assist in providing a regional perspective for the Two Peoples Bay Nature Reserve; a review of the positioning and design of an administration complex, allied to the future possibility of setting up a display centre; and protection of the Reserve by including the land between low and high water marks.⁶⁹

@LEVEL1 = MANAGEMENT UNDER CALM

@BODY1 = In March 1985 the Wildlife part of the former Department of Fisheries and Wildlife was incorporated into the newly created Department of Conservation and Land Management (CALM) and the Reserve was vested in the new National Parks and Nature Conservation Authority.

@BODY1IND = At Two Peoples Bay several inconvenient changes caused by the 1984 storm were still creating problems and other emerging uncertainties needed resolution. These included debates on whether or not the Gardner Creek bridge should be realigned and widened⁷⁰ and the possibility of amalgamating the Goodga River and Gull Rock National Park reserves within the Two Peoples Bay Nature Reserve.⁷¹ Other points of concern included the probable spread of dieback in the district by wildflower pickers;⁷² uncertainties about professional fishermen using the Bay as their base;⁷³ the probability that off-road vehicles would increase pressure on normal beach activities, as the Shire of Albany intended upgrading the road to the northern end of the Bay and developing a camping area there;⁷⁴ and urgency in formulating new management plans.⁷⁵

@BODY1IND = These problems, combined with the restructuring of procedures and personnel within the new Department, and the pressure of implementing the Noisy Scrub-bird translocation program, culminated in very demanding times at Two Peoples Bay. Following on from bird census work in April 1985 the first concerted translocation program released eight male and eight female birds between June and August, to add to those previously released on Mt Manypeaks.⁷⁶

@LEVEL2 = Reserve Management Officer

@BODY1 = In early January 1986 Reserve Officer Graeme Folley expressed his intention to resign at the end of April.⁷⁷ The Department realised they were losing a very valuable officer who had been 'burnt out' by his work on the Reserve. There was a general realisation 'that no one man

should be asked to carry the load of implementing the Noisy Scrub-bird program and managing the Reserve'.⁷⁹ In April both Mr Folley and his assistant Andrej Molan left the Reserve.

@BODY1IND = Mr A. (Alan) Danks, a naturalist living near Nannup, had been Relieving Officer at Two Peoples Bay Nature Reserve since 1980 - taking charge each year when Mr Folley was on annual leave. He had participated in the translocation work in 1983 with Mr Merton and Mr Folley and also on the 1985 project. At the time of Folley's resignation Danks was a Technical Officer at the Wildlife Research Centre at Woodvale. After carrying out the 1986 translocation project while based at Woodvale, Mr Danks commenced duties in the newly-created position of Reserve Management Officer (RMO) in September. He was initially assisted by National Park Ranger Mr N. (Neil) Scott, who had taken care of the Reserve since April.

@LEVEL2 = Further Changes to the Status Quo

@BODY1 = Mr Folley's resignation had underlined the urgency for completing management plans as it was important to incorporate his knowledge into future plans for the Reserve. In March, planning consultant Mr R. McKellar, who had previously acted as a relief officer on the Reserve, was contracted to prepare a first draft for a new Reserve Management Plan.⁸⁰

@BODY1IND = In January 1986 the salmon fishing lease on Plantagenet Location 7132 was cancelled and the huts removed from the beach front the following November.⁸¹ This resumption was made possible by the Wilson brothers' transfer of their salmon fishing license to Bremer Bay.⁸² (They had taken over the Two Peoples Bay lease following their father's death in 1981.) The Bay, however, remained a 'Fishing Zone' as proclaimed under the Fisheries Act in 1975.⁸³ Since 1986 pilchard fishing boats have been based in the Bay and as many as eight boats operate out of Two Peoples Bay, using the beach for launching boats, parking trucks and vehicles, and off-loading catches.

@BODY1IND = Upon the resumption of Location 7132, the Department applied to extend the Reserve boundary to the low water mark.⁸⁴ When proclaimed in the Government Gazette on 13 November 1987, the additional land and the inclusion of Rock Dunder extended the Reserve area to 4744.6618 ha,⁸⁵ an increase of about 100 ha, as a few small areas, created by road realignments, had previously been added. (The area reserved in June 1967 was 4638.7ha). Extending the Reserve to low water mark allowed the Department to restrict vehicle access along the beach. A ban on off-road vehicles was also extended to the Rocky Point track that had been badly damaged in places by off-road vehicles, which were also creating ad hoc tracks to fishing spots.⁸⁶

@BODY1IND = The debate on the Gardner Creek bridge was temporarily resolved in 1987 when the Main Roads Department reinforced and raised the bridge 30 cm and erected wooden rails in keeping with the aesthetic setting of the bridge (Fig. 3.11). More debate concerning Two Peoples Bay Road arose in April 1987 when a 323-signature petition, supported by the Albany Tourist Bureau, was submitted to support the Shire Council's quest to gain Government funding to bituminise the road.⁸⁷ The Department has since accepted that sealing of the road will eventually occur, though there will likely be serious implications for the management of the Reserve.

@LEVEL2 = Tandara for Sale

@BODY1 = Early in 1988 the Milgraum family placed Tandara on the market⁸⁸ and a full colour glossy brochure advertised the property as 'Paradise Down Under':

@INDENTQUOTE = ...The rare opportunity to own a freehold investment of 3261 acres (1319 ha), which provides two miles of ocean frontage. The

serene Two Peoples Bay has a protected panorama of white beach which "rests at the feet" of the two protecting mountains which overlook the tranquillity of this southern hide-away...Tandara in Western Australia is indeed a paradise where beauty has a new meaning. "Tandara" unfolds its secrets daily as the seasons change, and nature provides an endless parade of wonderment. - \$US 10 million.⁸⁹

@BODY1 = Although the farm is still owned by the Milgraum family in 1990 the asking price is perhaps an indication of what kind of values would be placed on the Two Peoples Bay area at an international level.

@LEVEL2 = Noisy Scrub-bird Management Program

@BODY1 = In 1986 the Noisy Scrub-bird Management Program was formulated by Dr Burbidge, Dr Smith and Mr Folley and published by the Department of CALM. The aim of the program was to establish and maintain at least four viable populations of the Noisy Scrub-bird. But, in order to maintain four viable populations at any given point in time, it was considered necessary to establish six to eight populations, during the ten years of the program, to allow a safety margin in case some areas are burnt.⁹⁰

@BODY1IND = Through the late 1980s and into the 1990s the work of translocating Noisy Scrub-birds has continued in accordance with the Management Program and birds have also been released at two locations west of Albany. Selecting and monitoring release sites, preparing for and carrying out capture and release work, now occupies the major part of the RMO's time (see ch. 18 this publication). Volunteers have assisted with the capture and release projects since 1985 and supply a large part of the labour force required to do this work. Many of these people return regularly to participate in the project and their enthusiasm and dedication are essential ingredients in successful Scrub-bird translocation.

@BODY1IND = These projects have also been valuable training grounds for Departmental staff whose interests and professional work involve wildlife management and research. A Nature Reserve Assistant (NRA) was appointed in 1988 after several National Park Rangers had been temporary assistants since 1985. In December 1988 a link with the past was reforged when Dave Wilson took up the NRA position. He is the youngest of the three Wilson brothers who had fished the Bay professionally with their father and Dave subsequently spent much of his childhood at Two Peoples Bay.

@LEVEL1 = CONCLUSION

@BODY1 = In concluding this chapter on the history of Two Peoples Bay Nature Reserve it seems appropriate to reflect on two coincidences that occurred in 1989. The first took place in May when timbers, probably from the old whaling ship Avis, were washed up on the beach 100m north of the mouth of Gardner Creek.⁹¹ The Avis was wrecked in a severe south-easterly storm on 28 August 1842 (ch. 2 this publication), just a few weeks before John Gilbert 'discovered' the Noisy Scrub-bird at Drakesbrook,⁹² near modern-day Waroona (ch. 16 this publication).

@BODY1IND = The second event occurred later in 1989 when Dave Wilson single-handedly rescued a Minke Whale (Fig. 3.12) that had stranded itself on the beach at Two Peoples Bay⁹³ - a reflection on the changing attitudes of society to nature conservation. Other reminders of the attitudes of the past can be seen in the remains of the old try works in 'Whalers Cove' and a circular stone enclosure on the middle of Coffin Island, that may be a legacy from the old sealing days.⁹⁴

@BODY1IND = The sequence of events leading up to the present day, as described in this chapter and chapter 2 of this publication, should allow an appreciation of the fortuitous circumstances that have allowed the Noisy Scrub-bird to make a comeback from the verge of extinction. Since then, the course of events have required courageous decisions, and much

hard work and determination by many people, to bring the species back to a position of greater security than at any time in the past 100 years.
@BODY1IND = Much remains to be done and there are many challenges ahead, not least of which is the continuance of a high standard of management in times of dwindling resources. A revised Two Peoples Bay Management Plan, based on the information in this publication, will be formulated to address the new challenges and set out a path for the following ten years.

@LEVEL1 = ACKNOWLEDGEMENTS

@BODY1 = We wish to thank a number of people who have been most helpful in providing information vital to the authenticity of this chapter. Firstly, thanks to Dave Wilson for his first hand knowledge of Two Peoples Bay, and Mr and Mrs Dunstan West for their extensive historical knowledge of the Albany area, and Harry Shugg for his historical perspective. Ian Elliot and Brian Goodchild, of the Geographic Names Section of the Department of Land Administration, provided critical information on several facets. Librarians at both the Western Australian Wildlife Research Centre at Woodvale, and Battye Library were also most helpful. Angas Hopkins, Harry Shugg, Graeme Smith and Dunstan West made valuable comments on the text.

@LEVEL1 = ABBREVIATIONS

@BODY1 = CALM : Department of Conservation and Land Management

@BODY1 = Department of Conservation and Land Management Files appertaining to the Two Peoples Bay Nature Reserve:

@FILEBOD = Tenure 1: CALM 015749F3102 (Tenure vol. 1)

Tenure 2: CALM 015750F3102 (Tenure vol. 2)

Tenure 3: CALM 015751F3102 (Tenure vol. 3)

Tenure 4: CALM 015752F3102 (Tenure vol. 4)

Tenure 5: CALM 015753F3102 (Tenure vol. 5)

Management 1: CALM 016178F3102 (Management vol. 1)

@BODY1 = CSIRO : Commonwealth Scientific and Industrial Research Organisation

@BODY1 = DOLA : Department of Land Administration

@BODY1 = LKBB : Lower Kalgan Bushfire Brigade

@BODY1 = MLA : Member of Legislative Assembly

@BODY1 = WAM : Western Australian Museum

@LEVEL1 = NOTES

@NO.8POINT = 1

@NO.INDENT = Government Gazette, 22 April 1966 'Cancellation of Casuarina Townsite'. (The locality was known as Two People Bay prior to an official nomenclature change to Two Peoples Bay in 1978). Department of Conservation and Land Management, Two Peoples Bay Nature Reserve, File No. 015749F3102 (Tenure 1). Tenure 1, p.9.

@NO.8POINT = 2

@NO.INDENT = Under-Secretary of Lands to Director of Fisheries and Fauna, 28 April 1966. Tenure 1, p.12; The Fauna Protection Advisory Committee during that era comprised: Mr A.J. Fraser, Chairman (Director, Department of Fisheries and Fauna); Dr A.R. Main (Zoology Department, University of Western Australia); Dr W.D.L. Ride (Director, Western Australian Museum (WAM)); Dr G.M. Storr (WAM); Mr J.B. Higham; Mr A.R. Tomlinson (Agriculture Protection Board of Western Australia); Mr A. Milesi (Forests Department of Western Australia); Dr D.L. Serventy (Division of Wildlife Research, CSIRO) and Mr H.B. Shugg, Secretary, (Fauna Officer, Fisheries and Fauna Department). Extracts from Fauna Protection Advisory Committee minutes (1966-1968), In Tenure 1.

@NO.8POINT = 3

@NO.INDENT = H.B. Shugg, personal communication; Government Gazette, 30 September 1966. Declaration of the Ellen Brook and Twin Swamps reserves for the preservation of the Short-necked Tortoise (*Pseudemydura umbrina*).
@NO.8POINT = 4
@NO.INDENT = D. Wilson, personal communication.
@NO.8POINT = 5
@NO.INDENT = H.B. Shugg, personal communication.
@NO.8POINT = 6
@NO.INDENT = Government Gazette, 2 June 1967.
@NO.8POINT = 7
@NO.INDENT = H.B. Shugg, personal communication.
@NO.8POINT = 8
@NO.INDENT = Letter of Minister for Lands and Forests from Colonel J. Vincent, Survival Service Commission, International Union for Conservation of Nature and Natural Resources, 14 September 1966. Tenure 1, pp.46-7.
@NO.8POINT = 9
@NO.INDENT = Director of Fisheries and Fauna to owners of dwellings at Two Peoples Bay. Copies sent to C.H. Johnson, W.W. Haddleton, Mrs C. Evans, J. Martin, Mrs M. Parkin, A.D. Wilson, W.T. Clark, K. McCusker, C.E. Rule, E.M. Gray, A. Kleeman, L.H. Jones, K.E. Western, N.O. Reeves, L. Fitzpatrick. Tenure 1, p.24; Sketch plan of squatters' settlement. Tenure 1, p.119.
@NO.8POINT = 10
@NO.INDENT = Mr J. Hall, MLA for Albany, to Minister for Fisheries and Fauna, 2 November 1966. Tenure 1, pp.52-3.
@NO.8POINT = 11
@NO.INDENT = Director of Fisheries and Fauna to Under Secretary for Law, 5 April 1967. Tenure 1, p.76.
@NO.8POINT = 12
@NO.INDENT = Crown Law Department to Director of Fisheries and Fauna; and copy of legal opinion to Fauna Protection Advisory Committee. Tenure 1, pp.77-80.
@NO.8POINT = 13
@NO.INDENT = J.M. Forrest, Crown Law Department, to Director of Fisheries and Fauna, 21 April 1967. Eviction of squatters. Tenure 1, p.77.
@NO.8POINT = 14
@NO.INDENT = State Crown Solicitor to Director of Fisheries and Fauna, 15 September 1967. Tenure 1, p.129.
@NO.8POINT = 15
@NO.INDENT = A. Pearce to H.G. Shugg, 28 November 1967, Tenure 1, p.144; State Government Insurance Office to Director of Fisheries and Fauna 13 February 1968, Tenure 1, p.163; A.A. Burbidge and G.L. Folley (1984). Unpublished version of this chapter on Management and Recreation at Two Peoples Bay Nature Reserve.
@NO.8POINT = 16
@NO.INDENT = Fauna Protection Advisory Committee minutes, 1 September 1967. Tenure 1, p.140.
@NO.8POINT = 17
@NO.INDENT = Fauna Protection Advisory Committee minutes, 1 September 1967. Tenure 1, p.131.
@NO.8POINT = 18
@NO.INDENT = F.N. Robinson, (1968) Unpublished Report to Fauna Protection Advisory Committee. Tenure 1, pp.197-204.
@NO.8POINT = 19
@NO.INDENT = Robinson 1968.
@NO.8POINT = 20

@NO.INDENT = Robinson and H.O. Webster, Reports to FPAC 1968. Tenure 2, pp.1-3.
@NO.8POINT = 21
@NO.INDENT = Robinson, 1968.
@NO.8POINT = 22
@NO.INDENT = H.B. Shugg to J.H. Frith, CSIRO, Canberra, 21 January 1969. CALM File No. 015750F3102, Tenure 2, pp.14-15.
@NO.8POINT = 23
@NO.INDENT = H.J. Frith to H.B. Shugg, 30 April 1969. Tenure 2, pp.24-5.
@NO.8POINT = 24
@NO.INDENT = Western Australian Wildlife Authority, minutes 24 June 1969. Tenure 2, p.36; H.J. Frith to H.B. Shugg; proposal for CSIRO, 1 August 1969. Tenure 2, p.39.
@NO.8POINT = 25
@NO.INDENT = G.T. Smith, personal communication.
@NO.8POINT = 26
@NO.INDENT = Smith, personal communication.
@NO.8POINT = 27
@NO.INDENT = D.L. Serventy & H.M. Whittell Birds of Western Australia 5th edition, (University of Western Australia Press, Perth, 1976). p.314.
@NO.8POINT = 28
@NO.INDENT = Burbidge and Folley (1984).
@NO.8POINT = 29
@NO.INDENT = Burbidge and Folley.
@NO.8POINT = 30
@NO.INDENT = Imposing 25 mph (40 km/h) speed limit within the Nature Reserve. Crown Law advised Department could not impose speed limits. Management CALM File No. 016178F3102, 1, pp.59-61. Department then contacted Shire of Albany which applied to Minister for Transport who granted permission for the speed limit. The Department then purchased and erected the signs. Management 1, pp.165-7.
@NO.8POINT = 31
@NO.INDENT = Government Gazette, 23 January 1970. An area of 2 roods 16 perches excluded from the Reserve; identified as Plantagenet Location 7132. Plan 451C/40 DOLA. Tenure 2, p.48.
@NO.8POINT = 32
@NO.INDENT = B.K. Bowen to Harbour and Lights Department 25 February 1971. Tenure 2, p.83; reply Tenure 2, p.85.
@NO.8POINT = 33
@NO.INDENT = Government Gazette, 26 January 1972. Naming of Two Peoples Bay Wildlife Sanctuary. Tenure 2, pp.94-5; Government Gazette, 5 December 1975. Legislation of the Wildlife Conservation Act (1950-1975).
@NO.8POINT = 34
@NO.INDENT = Mr and Mrs D.A.P. West, personal communication.
@NO.8POINT = 35
@NO.INDENT = Details of schedule for the Tour of Inspection by His Royal Highness, the Prince Philip, Duke of Edinburgh. Tenure 3, pp.68-74.
@NO.8POINT = 36
@NO.INDENT = Smith, personal communication.
@NO.8POINT = 37
@NO.INDENT = Smith, personal communication.
@NO.8POINT = 38
@NO.INDENT = R.E.S. Sokolowski to A.A. Burbidge. Sealing of road. CALM File No. 015751F3102 Tenure 3, p.83; W.A. Wildlife Authority minutes 17 March 1975 and 21 April 1975. Tenure 3, pp.90-1.
@NO.8POINT = 39

@NO.INDENT = R.E.S. Sokolowski to A.A. Burbidge, 21 March 1976; Under-Secretary of Lands to B.K. Bowen, 21 March 1976. Tenure 3, p.108; pp.112-25.

@NO.8POINT = 40

@NO.INDENT = R.E.S. Sokolowski to A.A. Burbidge, 11 November 1976. Tenure 3, p.123.

@NO.8POINT = 41

@NO.INDENT = W.P. Norman, Secretary of the Lower Kalgan Progress Association to Department of Fisheries and Wildlife, 27 April 1979. Lack of parking space of picnic area. Tenure 3, p.169; Hon. R.J. O'Connor, Minister for Fisheries to W.P. Norman, 8 August 1979. Tenure 3, p.174. B.K. Bowen to Minister of Fisheries and Wildlife, 7 December 1978. Tenure 3, p.154; W.A. Wildlife Authority minutes 29 February 1979. Tenure 3, pp.164-73.

@NO.8POINT = 42

@NO.INDENT = Australia. Bureau of Meteorology, Monthly weather review: Western Australia, 1-30 April 1978, (Department of Science, Canberra, 1978). Daily weather maps 1000k (00GMT), 4-5 April 1978; Chart daily for Dines anemograph: station Albany, 0830yh, 4 April 1978 - 0830yh, 5 April 1978; Summary of cyclone No. 5: Class I: "Alby", pp. 25-35, and Fig. 5.1, tracing route of Tropical Cyclone "Alby", 27 March - 4 April 1978.

@NO.8POINT = 43

@NO.INDENT = Wilson, personal communication.

@NO.8POINT = 44

@NO.INDENT = G.L. Folley to A.A. Burbidge, 28 October 1979 and 3 March 1981. Photographs and notes of the newly completed nature trail, and data on numbers of visitors using the trail. Tenure 3, pp.177-83; Incorporating the nature trail into the Management Plan, 7 December 1978. Management 1, pp.169-70.

@NO.8POINT = 45

@NO.INDENT = G.L. Folley to I. Crook, 3 February 1983; Albany Advertiser, 1 February 1983; 'Shire Council Notes'. Tenure 4, p.174.

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@NO.INDENT = D.L. Chatel, Department of Agriculture to G.L. Folley (Verifying *P. cinnamomi*), 16 December 1980. CALM File No. 015752F3102, Tenure 4, p.16; G.L. Folley to A.A. Burbidge, 13 January 1981. Tenure 4, p.18.

@NO.8POINT = 47

@NO.INDENT = Director of Fisheries and Wildlife to Minister for Fisheries and Wildlife, 13 November 1981. Proposal for a limited access area in the vicinity of Moates Lake. Tenure 4, p.71.

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@NO.INDENT = Great South News, 2 July 1980. 'Resort at Nanarup proposed'.

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@NO.INDENT = B.K. Bowen to C. Glossage, Shire of Albany, 15 July 1981. Tenure 4, p.40-1.

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@NO.8POINT = 51

@NO.INDENT = Hopkins, personal communication..

@NO.8POINT = 52

@NO.INDENT = Smith, personal communication.

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@NO.INDENT = G.L. Folley to A.A. Burbidge, 17 July 1982. Success of capturing Bristlebird through observations by Mrs Harrison. Tenure 4, pp.165-7.

@NO.8POINT = 54

@NO.INDENT = A.A. Burbidge, G.L. Folley and G.T. Smith (1986). The Noisy Scrub-bird. Wildlife Management Program No. 2, Department of Conservation and Land Management. pp. 15-16.
@NO.8POINT = 55
@NO.INDENT = Smith, personal communication.
@NO.8POINT = 56
@NO.INDENT = Burbidge, Folley and Smith, pp.18-20; Smith, personal communication.
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@NO.8POINT = 59
@NO.INDENT = Australia. Bureau of Meteorology, Monthly weather review: Western Australia, 1-31 August 1984, (Department of Science and Technology, Canberra, 1984), p.10.
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@NO.8POINT = 63
@NO.INDENT = G.L. Folley, Report on Storm Damage. Tenure 5, pp.12-22.
@NO.8POINT = 64
@NO.INDENT = Danks and Folley, personal communications.
@NO.8POINT = 65
@NO.INDENT = G.L. Folley. Tenure 5, pp.12-22.
@NO.8POINT = 66
@NO.INDENT = Shire of Albany to Director of Fisheries and Wildlife, 26 November 1984. Tenure 5, p.47; Albany Advertiser 'Beach in disrepair'. Tenure 5, p.53.
@NO.8POINT = 67
@NO.INDENT = G.L. Folley, 4 November 1984, cost estimate to restore beach. Tenure 5, p.46; Director of Fisheries and Wildlife to Shire of Albany, 21 February 1985. Tenure 5, p.56.
@NO.8POINT = 68
@NO.INDENT = K.J. Wallace, 23 January 1985, notes on replacement of bridge. Tenure 5, pp.75-9; B.K. Bowen to Director of Main Roads Department, 15 March 1984. Tenure 5, p.87.
@NO.8POINT = 69
@NO.INDENT = M.I. Blackwell and Associates, June 1985. Two Peoples Bay Nature Reserve: Recreation Management and Interpretative Strategy: Consultant submission to Department of Conservation and Land Management. Summary and extracts from full report.
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@NO.8POINT = 72

@NO.INDENT = B. Backhouse, Secretary W.A. Wildflower Society, to Dr Barry Wilson, 28 November 1985. Desecration of wildflowers in the Gull Rock and Cheynes Beach areas. Tenure 5, p.123; J. Watson to B. Wilson, 16 December 1985. Wildflower picking on non-vested Crown land in the Albany district. Tenure 5, pp.124-6.

@NO.8POINT = 73

@NO.INDENT = Minister for Fisheries to Minister for CALM, 10 February 1986. Salmon fishing at Two Peoples Bay. Tenure 5, p.145.

@NO.8POINT = 74

@NO.INDENT = File Note W304/66, R. Powell, 30 October 1986. Tenure 5, p.189; L.H. Watt to J. Watt 26 March 1987. Management 1, pp. 235-6; H. Chevis to L.H. Watt, MLA Member for Albany, 25 May 1987, Restriction of access. Management 1, pp. 237-8.

@NO.8POINT = 75

@NO.INDENT = R.J. Underwood, 9 January 1986. Notes on visit to Two Peoples Bay Nature Reserve (item 7). Tenure 5, pp.134-5.

@NO.8POINT = 76

@NO.INDENT = Burbidge, Folley and Smith, pp.18-19.

@NO.8POINT = 77

@NO.INDENT = R.J. Underwood, 9 January 1986. Notes on visit to Two Peoples Bay Nature Reserve. G.L. Folley's intended resignation (item 1). Tenure 5, pp.134-5.

@NO.8POINT = 78

@NO.INDENT = Underwood, 1986 (item 3). Tenure 5, pp.134-5.

@NO.8POINT = 79

@NO.INDENT = Underwood, 1986. Future policy for management personnel on the Reserve (item 4). Tenure 5, pp. 134-5.

@NO.8POINT = 80

@NO.INDENT = A.J.M. Hopkins, 7 January 1986. Draft proposals for Management Plan, Management 1, pp.200-06; Proposing R. McKellar to prepare preliminary Draft Management Plan. Management 1, pp.197-98; J. Williamson to R. McKellar, 24 February 1986. Offering consultancy. Management 1, pp.210-12.

@NO.8POINT = 81

@NO.INDENT = Under-Secretary of Lands to Executive Director of CALM, 3 June 1986. Status of cancelled lease 3116/8094 - Plantagenet loc. 7132. Tenure 5, p.17; A. Danks to J. Watson, 27 November 1986. Removal of buildings from cancelled lease. Tenure 5, p.196.

@NO.8POINT = 82

@NO.INDENT = Under-Secretary of Lands to CALM, 3 June 1986. Former lease Plantagenet loc. 7132. Tenure 5, p.169.

@NO.8POINT = 83

@NO.INDENT = Minister for Fisheries, Hon. H.D. Evans MLA to Minister for CALM, Hon. J. Berrinson MLA, 10 February 1986. Salmon fishing at Two Peoples Bay. Management 1, p.213; Other related references Management 1, pp.225-33; Two Peoples Bay was proclaimed a Fishing Zone in the Government Gazette 29 August 1975.

@NO.8POINT = 84

@NO.INDENT = Executive Director of CALM to Under-Secretary for Lands, 17 April 1986. Request to extend Two Peoples Bay Nature Reserve to low water mark. Tenure 5, p.148.

@NO.8POINT = 85

@NO.INDENT = Government Gazette, 13 November 1987. Amending area of Two Peoples Bay Nature Reserve to 4744.6 ha., including Plantagenet Location 7608 (Rock Dunder) and former Location 7132; Map and letter from A.A. Skinner, Acting Director, DOLA. Tenure 5, pp.213-27.

@NO.8POINT = 86

@NO.INDENT = H. Chevis to L.H. Watt MLA, Member for Albany, 25 May 1987. Restrictions of 4WD access at Two Peoples Bay Nature Reserve Management 1, pp.237-8; A. Danks, 25 June 1987. Note of concern for 4WD beach access. Tenure 5, p.209.

@NO.8POINT = 87

@NO.INDENT = A. Danks to R. Powell, 31 October 1986. Proposed closure of Road Reserve near the Gardner Creek bridge. Tenure 5, p.192; Albany Advertiser, 28 October 1986. Local Government Notice, Shire of Albany.

@NO.8POINT = 88

@NO.INDENT = Mr R.K. Snowball, of Arthur Johnston Snowball Pty Ltd (real estate agents, Albany) to the Hon. B.J. Hodge, Minister for CALM. Received 16 January 1989. Tenure 5, p.259.

@NO.8POINT = 89

@NO.INDENT = John Garland International, 1989. Brochure advertising the intended sale of 'Tandara'. Tenure 5, pp.275-6.

@NO.8POINT = 90

@NO.INDENT = Burbidge, Folley, and Smith. p. 22.

@NO.8POINT = 91

@NO.INDENT = WA Maritime Museum: Ship's timbers uncovered at Two Peoples Bay - assessment that said timbers were probably from the wrecked American whaler Avis, as construction was in the French tradition, rather than the British, as was in use in North America during the first half of the Nineteenth Century.

@NO.8POINT = 92

@NO.INDENT = D.L. Serventy and H.M. Whittel, p.317; Burbidge, Folley and Smith, p.9. Discovery of the Noisy Scrub-bird in November 1942 by naturalist John Gilbert.

@NO.8POINT = 93

@NO.INDENT = Wilson, personal communication.

@NO.8POINT = 94

@NO.INDENT = In 1977 R.E.S. Sokolowski took the opportunity to fly over the Reserve in a helicopter. He noted a small, circular person-built stone wall, about a metre high, on the middle of Coffin Island. The mystery of the enclosure's origin and purpose has not yet been proven, though it has been surmised that it may have been a lookout or refuge for sealers, in the early nineteenth century.

@LEVEL1 = REFERENCES

@REFS = Australia. Bureau of Meteorology (1978). Monthly weather review : Western Australia, 1-30 April 1978. Department of Science, Canberra.

@REFS = Australia. Bureau of Meteorology (1978). Chart daily for Dines anemograph : station Albany, 1-6 April 1978. Department of Science, Canberra.

@REFS = Australia. Bureau of Meteorology (1978). Summary of cyclone No. 5 : Class 1 : "Alby". Department of Science, Canberra.

@REFS = Australia. Bureau of Meteorology (1984). Monthly weather review : Western Australia, 1-31 August 1984. Department of Science and Technology, Canberra.

@REFS = Australia. Bureau of Meteorology (1984). Chart daily for Dines anemograph : station Albany, 1-4 August 1984. Department of Science and Technology, Canberra.

@REFS = Burbidge, A.A., Folley, G.L. and Smith, G.T. (1986). The Noisy Scrub-bird. Wildlife Management Program No 2, Department of Conservation and Land Management.

NORMAL.STY@TABHEAD2 = Appendix 3.1

@TABHEAD1 = The Two Peoples Bay Management Plan of June 1971. As presented in S.W.A.N.S. vol. 2, No. 3.

@LEVEL = TWO PEOPLES BAY MANAGEMENT PLAN (JUNE 1971)

@LEVEL = Introduction

@BODY1 = Two Peoples Bay Reserve is situated approximately 15 miles east of Albany and is vested in the Western Australian Wildlife Authority. It was set aside for the purpose of "Conservation of Fauna" in April 1966 following the rediscovery of the Noisy Scrub Bird (*Atrichornis clamosus*) in the area in 1961. subsequently a number of other interesting and rare species have been found to occur there, and these include the Western Whip Bird, the Bristle Bird, the Southern Emu-Wren, the Quokka, the Honey Possum, the Ringtail Possum, the Yellow-footed Marsupial Mouse and the Water Rat.

@BODY1 = C.S.I.R.O. officers commenced research on the Noisy Scrub Bird in 1963, and studies have been made firstly of the bird's song, and more recently of its ecology and behaviour. A field station is being erected to facilitate further research work.

@BODY1 = While the main value of the Reserve is the rare fauna it contains, it is also very attractive to tourists because of its fame as the locality of the Noisy Scrub Bird, the scenery and the excellent fishing facilities. The high degree of public usage led to the appointment of a ranger in August 1970 who is housed in a cottage near the main beach and picnic area.

@BODY1 = The danger of fire is the greatest problem for management personnel. The Noisy Scrub Bird probably remains in the locality because of the lack of frequent fires in the Mount Gardner area, which is protected from prevailing winds from the south-west and east; but fire in the reserve as a whole has been relatively common over the past four years, and the heathland burns easily at almost any time, even immediately after heavy rain. Heath will carry a fire again after only three years regrowth and other types of vegetation are probably similar in this respect.

@BODY1 = Another management problem is the continual multiplication of vehicle tracks on the sanctuary. Much of the area is sandy and when a track becomes boggy it is relatively easy to drive across the heath and another track soon results. This problem will continue while there are no good roads on the Reserve.

@LEVEL = Aims of the Management Plan

@BODY1 = The primary aim of any plan for the Two Peoples Bay Wildlife Sanctuary must be to protect and conserve the Noisy Scrub Bird and all other native flora and fauna. Secondly, the plan should allow controlled public usage and provide facilities in such a way that the primary aim of conservation is not compromised. Thirdly, the plan should provide for continuing research to be carried out into the requirements of the fauna, the regeneration of the flora after fire, the effects of fire on the fauna, fire control methods and the impact of human usage on the area.

@LEVEL = Management Plan

@BODY1 = The following recommendations have been made by the Western Australian Wildlife Authority, and approved by the Hon. Minister for Fisheries and Fauna.

@NO. = 1.

@INDENT = That roads be constructed from the bridge over Lake Gardner Creek through the reserve, roughly as shown on the map. Parking areas to be constructed at the end of the roads as shown.

@NO. = 2.

@INDENT = That apart from these roads, only those tracks which are indicated on the map remain open to public use. No vehicle may use any

other track unless authorized by the Chief Warden of Fauna or the resident ranger.

@NO. = 3.

@INDENT = That a limited number (approximately six) of barbecue places be constructed in the picnic area near the ranger's cottage. No fires to be lit elsewhere in the reserve.

@NO. = 4.

@INDENT = That a toilet-changing room block be built near the picnic area and main beach.

@NO. = 5.

@INDENT = That the firebreak system be progressively enlarged so that the perimeter breaks exist on all boundaries, and further internal breaks to be created by use of a topper instead of a bull-dozer.

@NO. = 6.

@INDENT = That walking tracks be marked out from the area below "Tick Flat" to Mt Gardner and Cape Vancouver.

@NO. = 7.

@INDENT = That research be continued or carried out into

@NO. = (a)

@INDENT = the ecology of the Noisy Scrub Bird and methods of management to ensure its persistence;

@NO. = (b)

@INDENT = the effect of fire on the fauna and flora;

@NO. = (c)

@INDENT = the number of animals and plants occurring in the reserve.

@NO. = (d)

@INDENT = Any other factor which the Officer-in-Charge of Reserve Management deems necessary and practical.

@NO. = 8.

@INDENT = That notices be erected on the reserve advertising this plan and the regulations. That a brochure be printed giving details of the reserve and usage of the area.

@INDENT2 = Following acceptance of this Management Plan the two areas shown on the map were classified as prohibited and limited access areas. Notice of this classification appeared in the Government Gazette on June 25, 1971.

@INDENT2 = On 7 December 1978 another recommendation was added to the management plan:

@NO. = 9.

@INDENT = That a small self-guiding nature trail be established. This trail to run from the present picnic area, along existing tracks to a thick area of bullich, woodland and swamp. Thence through an adjoining area of heath.

s persistence

@BODY1IND = Residual sands formed by leaching of the Pleistocene aeolian calcareous quartz sandstones overlies the Proterozoic granite on the flanks of Mt Gardner. These are effective reservoirs for groundwater, feeding small permanent springs and seepages. Consequently, many of the creeks draining Mt Gardner flow throughout the year, although the rate of flow is generally very small during the summer. The presence of this permanent water, with consequent dense vegetation, is perhaps one of the reasons why the Noisy Scrub-bird was able to survive in this small area.

@LEVEL1 = GEOLOGY

@BODY1 = Rocks exposed in the area on and surrounding the Two Peoples Bay Nature Reserve are Precambrian (Proterozoic) granitic and gneissic rocks and Cainozoic (Tertiary, Pleistocene, and Holocene) sediments (Fig. 4.1).

@LEVEL2 = Proterozoic

@BODY1 = Proterozoic granite (a monzogranite or adamellite; Stephenson 1973) outcrops prominently in elevated parts of the area. The rock is porphyritic, with prominent megacrysts of microcline in a groundmass of quartz, microcline, plagioclase (oligoclase/andesine) and biotite. Most of the granitic rocks are homogeneous, without layering, but there is also some granitic gneiss, intruded by granite or occurring as rafts within granite. Some minor pegmatite and quartz veins and microgranite dykes intrude the granite at a few localities (Stephenson 1973).

@BODY1IND = The granites are cut by a number of well-developed fracture zones, which may have formed in association with early wrench-fault movements along the Darling Fault, some 200 km to the west (L.B. Harris, written communication, 1990).2

@LEVEL2 = Tertiary

@BODY1 = The only positively dated Tertiary rocks exposed in the area belong to the Eocene Plantagenet Group. However, some of the sandy soils overlying these rocks are lateritized and they are probably at least partly Tertiary. The laterites themselves may range from Oligocene to Pleistocene in age.

@BODY1IND = The Plantagenet Group in this area consists of the Pallinup Siltstone and Werrilup Formation.

@BODY1IND = The Werrilup Formation is exposed above Herring Bay, where it overlies Proterozoic granite and is overlain by the Pallinup Siltstone. The contact with the granite is strongly irregular, with local relief of about 3 m, although the total relief in the vicinity is at least 30 m. The Werrilup Formation at Herring Bay consists of grey to dark-brown, strongly cross-bedded, medium-grained quartz sandstone, which is partly siliceous or ferruginous. The thickness of the exposed unit is 13.5 m. The Werrilup Formation is also exposed in road cuts on the road to Albany immediately west of the mapped area.

@BODY1IND = The Pallinup Siltstone is well exposed at Herring Bay, overlying the Werrilup Formation, and overlain by lateritized sandy soil. It is about 14 m thick, consisting of orange, yellow, and whitish, bedded spongolite which is clayey in part. It contains prominent silicified 'stick' sponges and some poorly preserved bivalves, echinoid spines, and bryozoans. Strong bioturbation is visible in some horizons.

@BODY1IND = The Pallinup Siltstone is also exposed in two dams near Tandara homestead, west of Angove Lake.

@BODY1IND = Laterite in the area is massive to pisolitic, sandy, and ferruginous. It is exposed principally in the north-eastern part of the map area, overlying Proterozoic granite and sandy soils. Much of this laterite is presumed to be Tertiary (?Oligocene, Miocene, or younger), but part must be Pleistocene or Holocene, as it occurs within the Pleistocene dune sandstones in the south-western part of the Reserve.

@LEVEL2 = Quaternary

@BODY1IND = At about 5500 years BP, sea level fell by about 3m to its present position (Playford and Leech 1977). Thus the wave-cut bench formed at the higher level was stranded and it remains as important evidence of sea-level changes; it is well expressed along the coast between Sinker Reef and Rocky Point (Fig. 5.2). Similar benches occur below sea level. At the same time land in the corridor emerged to be just above sea-level and there were probably two inlets and associated flat, swampy land. The most westerly inlet, which probably included the present Moates and Gardner Lakes, possibly entered the ocean near Rocky Point; the other, Angove Lake, was probably much the same as it is now. Also, at about the beginning of the Holocene, there were apparently periods of landscape instability when sand from various sources was re-worked by wind to form sand sheets, dunes and hummocks.

@BODY1IND = Finally, during the Holocene, a complex system of parabolic coastal dunes was blown inland partially covering prior land surfaces to produce the present coastal landscape.

@BODY1IND = The landscape features mentioned above have been studied, both in the field and from aerial photographs, and classified to form a system of landform-soil mapping units. Thus Mt Gardner and Boulder Hill, with the associated sand deposits, are referred to as the Gardner unit (Fig. 5.1); Reservoir Hill, which was subjected to laterite formation, is mapped as the Barrow unit. The Plantagenet Group of sediments, with the lateritic surface and showing erosional modifications, is known as the Dempster unit. The Meerup system of parabolic dunes, with four phases of activity, occur as a partial cover over the Gardner and Dempster units and almost completely obscure the Tamala Limestone. The swampy country associated with Gardner and Angove Lakes is mapped as the Owingup unit while the sandy plain between the lakes is separated as the Blackwater unit; these last two units are partially obscured by the latest phase of the Meerup dunes. Figure 5.1 shows the distribution of the landform-soil mapping units.

@LEVEL1 = DESCRIPTION OF THE MAPPING UNITS

@LEVEL2 = Gardner (G).

@BODY1 = This is a landscape of rocky hills, with greater than 60m relief, partially blanketed by sand; the incidence of sand is the main basis for subdivision. The crests and upper slopes (Gg) are dominated by granite outcrop and boulders. These are represented in the Reserve by Mt Gardner and Tor Hill. On gentler slopes there may be a shallow soil of gritty loam over gritty clay with granite at 15-20cm, or shallow peaty sands in some hollows (Fig. 5.3).

@BODY1IND = Gardner Sand (Gs) occurs as a smooth landscape between the granite crests and extends down on the gentler slopes. The localities known as Tick Flat, Pizzy Gully and The Moors are parts of the Gs unit. The upper parts of the Gs unit, between the granite crests, are poorly drained and this is reflected by the humus podzol profile. The surface is very dark and there is an iron-organic hard pan at 1-1.5 m; granitic detritus commonly occurs in the lower layers. On the flanks of Mt Gardner the sandy landscape is well drained and the soil is an iron podzol with a grey sandy surface, a light grey sub-surface, and a bright yellow-brown sandy subsoil which is often indurated. On the northern flank of Robinson Gully is an exposure of indurated yellow-brown sand, about 5m thick, which is probably a remnant of such a profile.

@BODY1IND = Run-off from the granite peaks is very high and this has resulted in the formation of spectacular erosion gullies (Gr). Many of these have been identified because they are the favoured habitat of the Noisy Scrub-bird; the local names are shown on Figure 1.4 (this publication). The gullies usually have steep, sandy slopes with granite

outcropping in the floors. Many of the gullies are aligned NW-SE possibly in response to a jointing pattern in the granite basement.

@LEVEL2 = Barrow (BA).

@BODY1 = This unit comprises hills and ridges, often with irregular crests and upper slopes dominated by granitic pavements, domes, pinnacles, and tors. Local relief is in excess of 60m and frequently more than 100m. This unit occurs only on Reservoir Hill to the north of the Reserve. Granitic rocks outcrop on the crests and upper slopes while on the lower slopes these rocks are deeply weathered and may be overlain by a sandy mantle. Some Plantagenet sediments may be present on the lower slopes. Yellow duplex soils are dominant but there are some gritty loams. Two subdivisions have been recognized, mainly based on the incidence of granite outcrop.

@BODY1IND = BA_g represents crests and upper slopes dominated by granitic rock outcrops; some shallow brown, gritty loamy soils are on the fringes of granitic outcrop, along with some pockets of gritty yellow duplex soils.

@BODY1IND = BA_f comprises the smooth, gently-sloping, middle and lower slopes that are dominated by yellow duplex soils having sandy A horizons and pale yellow and brown mottled clay B horizons. A₂ horizons are present, often with lateritic gravel, but they are not usually bleached. The surface may have a scattering of lateritic duricrust boulders. Extensive areas of deep sands (yellow or grey) occur on the lower slopes. @LEVEL2 = Dempster (D).

@BODY1 = This landscape, formed on the sediments of the Plantagenet Group, consists of low spurs separated by narrow swampy drainage lines. Subdivision is based on topography. The tops of the spurs (D₁) are generally mantled by laterite duricrust and ferruginous gravels; at the edges of the spurs the soil consists of sandy gravelly surface over a reddish-brown clay. Associated with the laterite on some spurs are areas of deep gritty sand (D_s) which occur as saddles. The flanks of the spurs (D_r) are generally occupied by sand which, on upper slopes, may overlies duricrust at shallow depth; the sand becomes deeper down slope and may be more than 1m deep in mid-slope. In lower positions, where the slope decreases, the land becomes swampy and the soil is a humus podzol profile (Fig. 5.4). In the Goodga River valley the floor is interrupted by sandy hummocks; also the floor is dissected to form a deep narrow channel. Associated with the Dempster units is a series of linear dunes and hummocks occurring in all landscape positions. In some instances the sand apparently occurs as outwash fans (D_d) which have later been remodelled by wind action.

@LEVEL2 = Meerup (M)

@BODY1 = This system of parabolic dunes is represented by four phases of activity. The oldest (M_s) is represented as a pattern of very subdued ridges extending over the old limestone, leaving much of the substrate exposed, and continuing onto the western flank of Mt Gardner. The material is siliceous throughout and has a podzol soil profile with a brown or yellow-brown B horizon at about 1m. There may be soft ferruginous concretions in lower layers. On Mt Gardner this unit overlies the Gardner sand.

@BODY1IND = The next phase (M_p) of the Meerup system consists of low parabolic dune ridges which extend from the south coast, over the limestone, almost to Two Peoples Bay. The soil profile is characterised by a weak podzol developed in the surface and calcareous sand at about 1.5m. The pattern of distribution of the M_p unit is difficult to explain. The main system has come from the south coast and clearly extends to the main road. However, another small area east of the road appears to have come from Two Peoples Bay. This is unlikely because the

present dunes (Me) coming from the east are siliceous throughout. Therefore it is possible that this small group of parabolic dunes represents a re-worked deposit which came originally from the south coast. Similarly, the dune fringing the southern corner of Two Peoples Bay possibly came from the south coast, and was then re-directed. The Mp unit appears to overlie the Ms unit although no proof of this relationship was seen. The age of the Two Peoples Bay Me dunes in relation to other Meerup dunes is not known. On the basis of dune morphology there are at least two phases present but, since the sand has little or no carbonate content, no direct comparison can be made. The dunes show little soil profile development and so may be relatively young.

@BODY1IND = The next phase (Mc) differs markedly from older phases in that it shows moderate relief with fairly steep, irregular dune ridges. It extends from the south coast over a low barrier of limestone, partially covers spurs of the Plantagenet beds, and continues inland over the coastal plain where it was probably effective in cutting off Moates Lake. Soil profile development is minimal; the surface is organic stained and is siliceous or only faintly calcareous, but is strongly calcareous at about 10 cm. The youngest phase (My) has been separated on the basis that there is no organic staining in the surface and the very loose material is highly calcareous throughout. Also, the My unit shows high relief with a very irregular outline and much evidence of recent modifications by wind. The My unit has come in from the south coast, over the low limestone barrier and the coastal plain, and onto a spur of the Plantagenet beds where it has effectively cut off Moates Lake from Gardner Lake. The areas of unstable sand (Mu) are mainly associated with the My and Mc units and the inference is that they are more prone than other phases to become unstable when disturbed (Fig. 5.5).

@BODY1IND = Within the Meerup system there are small, flat or gently undulating areas (Mf) which have been enclosed by dune ridges. These vary greatly in their composition, depending on the nature of the substrate and the manner in which the dunes have moved over the land. Generally, the dune sand has blanketed the Mf unit, so that the soil is similar to that in the adjacent dunes. However, as the unrelated substrate is sometimes exposed, this may be a sand or rock surface. In the Reserve the Mf units enclosed by the younger dune phases are mostly very swampy areas which probably were originally part of an inlet linking Moates Lake and Gardner Lake. Where the Mp dunes have extended onto the plain near the main road, the Mf unit has the same profile as the dunes.

@LEVEL2 = Owingup (O)

@BODY1 = The lakes are fringed by the Owingup unit, consisting of low ridges and intervening swales, forming a landscape at about 1 m above water level. The soils are very young and reflect the poorly drained conditions; they consist of layers of organic loam, sand, estuarine shells and clay. Included are some low benches fringing the ocean in protected situations. These are very wet areas, about 1-2 m above sea level, which are probably watered by springs coming from the adjacent hills. The soil consists of layers of material including organic loam, grey sand, and bluish-grey clay.

@LEVEL2 = Blackwater (Bw)

@BODY1 = This unit occurs near Angove Lake, as a flat landscape composed of sand, 1-2 m above sea level. The water table is at about 1 m and the soil profile is a humus podzol; peaty sands also occur. A small area immediately south of the Gardner Creek has a siliceous surface overlying indurated calcareous clay. This has possibly formed from carbonates dissolving from the adjacent dunes and precipitating on the plain.

@LEVEL2 = Islands

@BODY1 = Four islands _ Coffin Island, Inner Island, Rock Dunder and Black Rock _ are also included in the Reserve. These were not visited but, from air photo interpretation, Coffin Island appears to be the only one with substantial vegetation (see also Smith and Kolichis 1980). It has a flat, gently sloping surface, with shallow granitic soils which support a dense low vegetation (Fig. 5.6). Inner Island may have a small area of low vegetation but the other two appear to be completely barren.

@LEVEL1 = CONCLUSION

@BODY1 = The Reserve has been shown to have variation in topography and soils and these are seen to be orderly when considered in a geological and geomorphological framework. The detail shown on the map is by no means the ultimate, as most units are known to vary in terms of colour and thickness of horizons of soils, and incidence of rock outcrop.

@LEVEL1 = REFERENCES

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@PAGEBREAK =

@LEVEL1 = FIGURE 5:1 LEGEND

@BODY1 = Gardner (G) _ Coastal headlands; >>60ým relief; steep irregular rocky crests and upper slopes separated by smooth sandy tracts; deep erosion ravines.

@BODY1 = Gg _ Granite outcrop and shallow gritty soils.

@BODY1 = Gs _ Leached sands and pozols.

@BODY1 = Gr _ Erosion ravines with sandy slopes and granite exposed in channels.

@BODY1 = Barrow (BA) _ Hills and ridges >>60ým relief; granite outcrop on crests; gently sloping flanks:

@BODY1 = BA_g _ Granite outcrop and boulders

@BODY1 = BA_f _ Lateritic duricrust and gravelly yellow duplex soils.

@BODY1 = BA_s _ Grey leached sands or iron podzols.

@BODY1 = Dempster (D) _ Broad ridge crests and intervening swampy drainage lines.

@BODY1 = D_l _ Lateritic duricrust and gravelly duplex soils and spurs.

@BODY1 = D_s _ Leached sands and podzols on spurs.

@BODY1 = D_r _ Sandy valley slopes with iron podzols.

@BODY1 = D_f _ Valley floor with humus podzols.

@BODY1 = D_d _ Dunes and Hummocks; iron podzols.

@BODY1 = Meerup (M) _ Parabolic coastal dunes and interdunal flats overlying various substrata:

@BODY1 = M_s _ Parabolic dune ridges, of very low relief, making up the oldest member of the Meerup dune system. The soil is an iron podzol with white sand over a B horizon of yellow-brown sand at about 1.5ým; soft ferruginous concentration may occur at lower levels.

@BODY1 = M_p _ Parabolic dune ridges, of moderate relief, forming the next member of the Meerup Dunes. The soil is a weakly developed podzol with white sand over a light yellow brown B horizon at about 1ým and then passing into calcareous sand at about 1.5ým.

@BODY1 = M_c _ Parabolic dune ridges of high relief forming the next member of the Meerup Dunes. The material shows slight soil development with a faintly calcareous organic stained surface overlying strongly calcareous sand.

@BODY1 = My _ Small parabolic dunes of high relief, fringing the present coastline, representing the youngest phase of the Meerup system. The sand is calcareous to the surface and is characteristically loose and unstable.

@BODY1 = Mu _ Presently unstable sand.

@BODY1 = Me _ Small parabolic dunes of high relief, which have originated as a fringe along Two Peoples Bay from an easterly wind. They are siliceous throughout the profile and show little soil development.

@BODY1 = Mf _ Flat or gently undulating land enclosed within parabolic dune ridges. The soils are generally sandy, sometimes swampy and reflect the character of materials in adjacent ridges and the substrate.

@BODY1 = Blackwater (BW): _ Coastal plain of very low relief, generally mantled by sand. Soils recognized are deep siliceous sands, peaty sands, and shallow siliceous sands over calcareous clay.

@BODY1 = Owingup (OW): _ Lacustrine deposits, consisting of low ridges and intervening swales, fringing the lakes. The materials show layering and consist of organic loam, sand, and estuarine shell deposits; seasonally flooded.

@BODY1 = Substrates

@BODY1 = General dunes

@BODY1 = Limestone

@BODY1 = Plantagenet

@BODY1 = Granite

@BODY1 = Limestone Scarp

:1 LEGEND

@BODY1 = Gardner (G) _ Coastal headlands; >>60m relief; steep irregular rocky crests and upper slopes

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@BODY1 = Nanarup beach receives much higher energy waves than other beaches on the Reserve and is modally an intermediate (longshore bar-trough) type 'b' or dissipative (linear, parallel bars and troughs) type 'a' surfzone system. The bay east of Nanarup faces into the prevailing south and south-west swell and breaker wave heights commonly exceed 3-4 m during storms.

@BODY1IND = The surfzone is wide, and waves may break on the linear, carbonate reef lines which trend alongshore in the outer surfzone/nearshore zone (Fig. 6.1). Beach mobility (the degree of erosion and accretion) is high, and both wave-induced and wind-induced sediment transport is high.

@LEVEL2 = Foredunes

@BODY1 = Foredunes are formed during periods of accretion and low-moderate wave activity, but are eroded fairly quickly and regularly during storms. The erosion scarps are prone to wind attack and sand blowouts are common along the seaward edge of the dunes. Sand transport and salt spray inundation are much greater on this beach than on Two Peoples Bay and the vegetation zonation is generally wide, the pioneer zone being dominated by Spinifex. The vegetation zones are truncated by scarping, and in places locally disrupted because of blowout and gully development (Fig. 6.2)

@LEVEL2 = Holocene Dunes

@BODY1 = The Holocene dunes are extensive transient dune fields overlying bedrock and Pleistocene (10,000 - 1.8 million years B.P.) terrain. They are dominated by massive, vegetated transgressive dunes, and one large, unvegetated, mobile sand sheet which abuts Moates Lake (Figs 6.3 and 5.5 this publication).

@BODY1IND = The sinuous ridge pattern prevalent on the vegetated dune results from in-place stabilization by vegetation of the edges of active dune sheets (Hesp and Thom 1990). Just west of Rocky Point individual transverse dune ridges have been stabilized in place by vegetation. These dunes were probably forming as the Postglacial rise in sea level or Transgression, which began 18,000 years B.P. and reached the present level 6500-7000 years B.P., was still in progress (Thom and Roy 1983). The landward-most dunes, assuming no reactivation, may be in the order of 10,000 years old.

@BODY1IND = The Holocene dunes overlie a formerly extensive lake and estuarine system. Although Moates Lake, Gardner Lake and Angove Lake may not have been estuaries in the Holocene, they were almost certainly linked together to form an extensive estuary during the last Interglacial (~120,000 years B.P.) when sea level was around 5m higher than present. The entrance of this Pleistocene estuary may have been located near the centre of the bay close to the present boundary between the Holocene and Pleistocene dunes (Fig. 6.1).

@LEVEL2 = Pleistocene Dunes

@BODY1 = The Pleistocene dunes have been lithified to form aeolian calcarenites, which have been eroded to form cliffs along the seaward edge of the bay east of Rocky Point. They were also formed as transgressive dune fields both during low and high sea level phases.

@BODY1IND = The present cliff provides a strong indication that much of the surface terrain was formed during periods when sea level was lower than at present. Surface dune forms extend to the cliff edge, dune sequences and palaeosols are visible in cliff exposures, and these appear to extend below present sea level.

@LEVEL1 = THE POCKET BEACHES

@BODY1 = Three 'pocket' beaches are present within or near the Reserve. Two lie immediately south-west of South Point (Little Beach and Waterfall Beach) and one immediately east of the northern end of Two Peoples Bay

(Herring Bay). These beaches are reflective beaches. That is, the surfzone is very narrow, and plunging to surging breakers break near the base of the beach, surge up the beach as accentuated swash and the return swash is reflected off the beachface back out to sea (Fig. 6.4).

@BODY1IND = The beaches have moderately steep gradients and display limited aeolian sand transport. Dune formation is restricted to minor incipient foredunes which are occasionally scarped by storm waves.

@LEVEL1 = CONCLUSION

@BODY1 = The beaches and barrier systems comprise a major geomorphic element of the Two Peoples Bay Nature Reserve. They range in type from relatively high to low energy systems and include all the major dune types present along the W.A. coast. They also represent a Quaternary sequence extending from Last Interglacial (120,000 B.P.) transgressive dunes, Last Glacial (40,000 - 10,000 B.P.) cliff top parabolic and transgressive dunes, to Holocene (10,000 B.P.) parabolic, and transgressive dunes and foredunes. The beach and barrier systems are both dynamic and fragile and warrant sensitive management.

@LEVEL1 = REFERENCES

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@BODY1IND = The ombrothermic diagram (Fig. 7.1) when compared with those given in UNESCO-FAO (1963) shows the climate pattern of the Reserve to be mesomediterranean attenuated (with a short dry season of about 4 months). Irregularities in the rainfall curve (low September rainfall, high January/February rainfall) are probably a result of the short-term nature of the records for the Albany Meteorological Office and the Reserve, since these patterns are not obvious in the Albany town record.

@BODY1IND = Beard (1981) used the scheme of Bagnouls and Gausson (1957) to describe the climates of south-western Australia; according to this scheme the Reserve has a moderate mediterranean climate. Dick (1975) has mapped the climate patterns for Australia using up-to-date data and the Köppen scheme and shows the Reserve as CSb _ a humid mild-winter climate with cool dry summers and wet winters.

@LEVEL1 = WIND

@BODY1 = The Reserve forms part of the coastal zone and therefore is at the interface between the land, the ocean and the atmosphere. It is a very dynamic environment and one of the most effective elements is the wind. It has been shown that, in the past, movement of materials by wind has been a major factor in landscape modelling (chs 4, 5 and 6 of this publication). It is evident that wind is still having a significant effect in redistributing detritus in the Reserve. Wind also has an effect on other management considerations, such as provision of access to beaches, location and orientation of tracks and firebreaks, and in relation to fire generally.

@BODY1IND = The nearest wind recording stations are on Eclipse Island, about 8½km offshore (Fig. 1.2 this publication), and at Albany Airport, about 13½km inland, and Albany town (1960-1963). Although conditions on the Reserve would not be identical to these three locations the wind pattern would probably be similar. Wind is expressed by four independent parameters _ direction, speed, frequency, and duration _ which are not fully shown by the 0900h and 1500 h recordings. Figure 7.2 shows three of these parameters for the Eclipse Island station for four separate months; representing summer, autumn, winter and spring.

@BODY1IND = The wind speed required to move sand varies with the nature of the surface and the atmospheric conditions, but it can be assumed that under conditions on the Reserve any wind of 20 km/h or higher would move sand grains. The efficiency of wind in sand movement increases as the cube of the speed. This has importance because, apart from the high speeds which may be recorded, there are sometimes very strong gusts. These may be of short duration but may initiate sand movement or cause structural damage to vegetation. (See details on storm damage in ch. 3.)

@BODY1IND = In summer the days are dominated by easterly winds, evidently at high speeds for much of the time, because of the position of the belt of high pressure systems. This wind has influence on sand movement in the east-facing bays. In the afternoons there is a significant component of onshore winds from the southerly quadrant. The south-westerly wind has a high percentage of winds greater than 20½km/h and some higher than 51½km/h. (This is when the sea-breeze coincides with the system wind at the eastern end of a high pressure pattern.)

@BODY1IND = In April the pattern changes with mornings having no clearly defined dominant wind but, probably because of the high ridge axis shifting to the north, there is a significant north-westerly component. In the afternoons the south-westerly wind is dominant, with easterlies still present at times.

@BODY1IND = This pattern continues into July with the north-west wind even more dominant in the mornings, mostly at very high speeds, and continuing in the afternoon. The afternoons also have a strong south-west component at consistently high speeds. For example, of the 21 per cent of

@BODY1 = *Amanita preissii* (Fr.) Sacc.
@HANGIND = *Amanita subalbida* Cleland - found in heath, also recorded in South Australia and Queensland (Reid 1980).
@HANGIND = *Amanita umbrinella* Gilbert & Cleland.
@HANGIND = *Amanita virgineoides* Bas. aff.
@HANGIND = *Amanita xanthocephala* (Berk.) Reid & Hilton [= *A. pulchella* (Cooke & Masee) Gilbert] - common in the Mt Gardner area.
@BODYSP3 = Family BOLBITIACEAE
@HANGIND = *Bolbitius vitellinus* Fr. - common in grassy areas.
@BODYSP3 = Family BOLETACEAE
@HANGIND = *Austroboletus occidentalis* Watling.
@HANGIND = *Boletellus obscure-coccineus* (Hoehn.) Singer - common in heath areas and gullies around Mt Gardner.
@HANGIND = *Phylloporus hyperion* (Cooke & Masee) Singer.
@AJHIND = A number of other boletes have been rendered unrecognisable by attack by the mould *Sepedonium* sp.
@BODYSP3 = Family CANTHARELLACEAE
@HANGIND = *Cantharellus lilacinus* Cleland & Cheel - characteristic fungus of the karri forest. Found in the forested gullies around Mt Gardner.
@BODYSP3 = Family COPRINACEAE
@HANGIND = *Coprinus comatus* (Muller ex Fr.) Gray - common in the picnic area and areas adjacent to farmland.
@HANGIND = *Coprinus disseminatus* (Pers. ex Fr.) Gray.
@HANGIND = *Coprinus micaceus* (Bull. ex Fr.) Fr.
@HANGIND = *Panaeolus campanulatus* (Fr.) Qu, l.
@BODYSP3 = Family CORTINARIACEAE
@HANGIND = *Cortinarius*, the genus after which this family is named, is represented by a number of species, all mycorrhizal with native plants, but still awaiting specific identification.
@HANGIND = *Crepidotus uber* (Berk. & Curtis) Sacc. - collected on bark of bullich (*E. megacarpa*); common throughout the Reserve on a number of other woody species.
@HANGIND = *Gymnopilus penetrans* (Fr. ex Fr.) Murrill - common in gullies around Mt Gardner.
@HANGIND = *Gymnopilus purpuratus* (Cooke & Masee) Singer.
@BODYSP3 = Family ENTOLOMATACEAE (= RHODOPHYLLACEAE)
@HANGIND = *Entoloma* and *Leptonia* species are common but identifications for most specimens await Dr E. Horak's descriptions of Western Australian members of this family.
@HANGIND = *Entoloma sericellum* (Fr.) Kummer.
@HANGIND = *Leptonia incana* (Fr.) Gillet.
@HANGIND = *Leptonia lampropa* (Fr.) Gillet.
@BODYSP3 = Family HYGROPHORACEAE
@HANGIND = *Hygrocybe coccinea* (Fr.) Kummer - collected at the foot of the sand dune at the edge of Moates Lake. Common in the deeper gullies in the Mt Gardner area.
@BODYSP3 = Family LEPIOTACEAE
@HANGIND = *Lepiota cristata* (Fr.) Kummer - collected in heath on Tick Flat.
@HANGIND = *Lepiota konradii* P.D. Orton - collected in heath on Tick Flat.
@BODYSP3 = Family PAXILLACEAE
@HANGIND = *Paxillus muelleri* (Berk.) Sacc. - common fungus throughout the wooded part of the Reserve.
@BODYSP3 = Family PLUTEACEAE (=VOLVARIACEAE)
@HANGIND = *Pluteus* spp. have been collected from decaying wood but not identified to species.
@HANGIND = *Volvariella speciosa* (Fr. ex Fr.) Singer - found in grassy areas.

@BODYSP3 = Family RUSSULACEAE
@BODY1 = *Russula clelandii* Miller & Hilton.
@BODY1 = *Russula delica* Fr. - common in wooded areas.
@HANGIND = *Russula flocktonae* Cleland & Cheel - common in wooded areas.
@BODYSP3 = Family STROPHARIACEAE
@HANGIND = *Stropharia semiglobata* (Fr.) Sacc. - found on dung of the Western Grey kangaroo (*Macropus fuliginosus*).
@HANGIND = *Naematoloma fasciculare* (Huds ex Fr.) Kummer - sulphur tuft. Found on dead wood.
@BODYSP3 = Family TRICHOLOMATACEAE
@HANGIND = *Anthrachophyllum archeri* (Berk.) Pegler - abundant in heavy, woody undergrowth. Collected from dead *Melaleuca* sp. 1 on Mt Gardner.
@HANGIND = *Armillaria luteo-bubalina* Watling & Kile - common.
@HANGIND = *Collybia butyracea* Fr.
@HANGIND = *Laccaria laccata* (Scop. ex Fr.) Berk. & Broome - on litter and roots in gullies around Mt Gardner.
@HANGIND = *Lentinus lepideus* (Fr. ex Fr.) Fr.
@HANGIND = *Mycena subgalericulata* Cleland.
@HANGIND = *Oudemansiella radicata* (Relhan ex Fr.) Singer.
@HANGIND = *Pleurotus nidiformis* (Berk.) Sacc. - the ghost fungus - has been found on *Eucalyptus marginata*, *Agonis flexuosa*, *Melaleuca thymoides*, and *Banksia grandis*.
@HANGIND = *Resupinatus applicatus* (Batsch ex Fr.) - S.F. Gray - abundant in heavy woody undergrowth.
@HANGIND = *Tricholoma* is represented, but the species have not been determined.
@BODY1 = Order APHYLLOPHORALES - the bracket fungi and their allies.
@BODYSP3 = Family HYMENOGALIALES
@HANGIND = *Coltricia cinnamomea* (Pers.) Murrill - grows in troupes from detritus buried in the ground.
@BODYSP3 = Family FISTULINACEAE
@HANGIND = *Fistulina hepatica* Fr. - the beef steak fungus - recorded once.
@BODYSP3 = Family GANODERMATACEAE
@HANGIND = *Ganoderma applanatum* (Gray) Pat. - rarely found; on rotten wood.
@BODYSP3 = Family HYDNACEAE
@HANGIND = *Hydnum repandum* L. ex Fr. - a spine fungus, sporadic in its distribution.
@BODY1 = *Phellinus gilvus* (Schwein.) Pat.
@HANGIND = *Phellinus rimosus* (Berk.) Pilat - common in gullies around Mt Gardner.
@BODYSP3 = Family POLYPORACEAE
@HANGIND = *Piptoporus australiensis* (Wakef.) G. Cunn - curry punk - found in Robinson Gully.
@HANGIND = *Piptoporus portentosus* (Berk.) G. Cunn - giant punk - has been found on marri (*E. calophylla*) and bullich (*E. megacarpa*).
@HANGIND = *Pycnoporus coccineus* (Fr.) Bond & Singer - scarlet bracket fungus - common throughout the Reserve.
@HANGIND = *Trametes lilacino-gilva* complex.
@BODYSP3 = Family CONIOPHORACEAE
@HANGIND = *Podoserpula pusio* (Berk.) Reid - The many-tiered pagoda fungus - remarkable member of this group, found in wetter parts of the Reserve, e.g. growing on dead branches on *Melaleuca* sp. 1 in Coffin Gully. Also found in *Nothofagus* forests in the Otway Ranges in southern Victoria, in Tasmania and South America.
@BODYSP3 = Family CLAVARIACEAE

@HANGIND = Ramaria sinapicolor Cleland - coral fungus - common in gullies around Mt Gardner.

@BODYSP3 = Family STEREOACEAE

@HANGIND = Stereum hirsutum (Wild.) Pers. ex Gray - common on rotten wood, e.g. Gastrolobium bilobum.

@BODY1 = Order DACRYMYCETALES - jelly fungi related to the mushrooms and toadstools

@BODYSP3 = Family DACRYMYCETACEAE

@HANGIND = Calocera guepinioides Berk - abundant on dead Banksia littoralis on the shore of Moates Lake.

@HANGIND = Heterotextus peziziformis (Berk.) Lloyd - abundant on living and dead Banksia littoralis trunks on the shores of Moates Lake.

@BODYSP = Class GASTEROMYCETES - puffballs, earth-stars, stink-horns and their allies.

@BODYSP2 = Order LYCOPERDALES

@BODYSP3 = Family GEASTRACEAE

@HANGIND = Geastrum triplex Jungh. - earth star - common throughout the Reserve.

@BODY1 = Order SCLERODERMATALES

@BODYSP3 = Family SCLERODERMATAACEAE

@HANGIND = Pisolithus tinctorius (Mich. ex Pers.) Coker & Couch.

@HANGIND = Scleroderma verrucosum Pers. - earth ball - common.

@LEVEL1 = CONCLUSION

@BODY1 = The species of large fungi so far recorded are only a fraction of what must be present and further studies are in hand to identify this large and varied flora of the Reserve. Further information on the distribution of the fungi recorded above is given in Hilton (1982, 1988).

@BODY1IND = Fungi are dependent for their survival on organic matter that is either dead or a part of living organisms. If the latter, they are parasitic or, as is much more usual with the larger fungi, symbiotic. Consequently, any management policy that encourages tree growth, and favours the accumulation of organic matter in and on the soil will maintain a rich fungus flora. Exclusion of burning is the most important factor. This has been a policy in parts of the Reserve in the interests of the Noisy Scrub-bird. Not only do such unburnt areas reveal a rich fungus flora but they act as a centre from which burnt areas can be re-colonised. It is desirable to have more areas protected from fire that can form a chain of isolated reserves from Two Peoples Bay west to Augusta.

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, University of Western Australia, where it was

possessed by the author. The author is grateful to the University of Western Australia for the facilities provided for the study of the fungi of the Reserve. The author is also grateful to the staff of the University of Western Australia for their assistance in the study of the fungi of the Reserve.

134 {4rNORMAL.STY@AJHCH = CHAPTER 9

@AJHTIT = Bryophytes

@AJHAUT = R. Wyatt, A. Stoneburner and S.D. Hopper

@LEVEL1 = INTRODUCTION

@BODY1 = There is a general lack of knowledge of the bryophyte flora of Western Australia. According to Ramsay (1977), the flora is thought to be depauperate with only about 100 species compared with over 1200 species for the rest of Australia. Ramsay (1977) also notes a lack of endemism in the bryophyte flora compared with the high degree of endemism found among flowering plants (Beard 1981). She suggests that the low incidence of rainforest habitat may account for the lack of a rich and diverse bryophyte flora. From our own experience in south-west Western Australia, it appears that the presumed lack of species is attributable to a lack of bryophyte collecting. We are preparing a checklist of Western Australian mosses, which includes nearly 200 species, in collaboration with David Catcheside of the University of Adelaide. The majority of collections were made in the South-West Botanical Province.

@BODY1IND = Bryophytes can be considered part of the natural assemblage of whole floras acted upon by the same geological, climatic, and ecological conditions that shape the evolution of the vascular members of that flora (Crum 1972). It is therefore likely that further study will reveal that the bryophyte flora of the State is more diverse than previously supposed.

@BODY1IND = At Two Peoples Bay Nature Reserve, the moderate mediterranean climate with wet, mild winters and cool, dry summers provides favourable conditions for the establishment and growth of bryophyte colonies. However, the relative youth of much of the landmass of the Reserve may have hindered development of a diverse bryophyte flora as the Mt Gardner headland apparently emerged from the sea during the mid-Pleistocene and the sands of the isthmus and lakes areas have accumulated since that time (chs 4 and 5 of this publication). For most species, long-range dispersal by spores or plant fragments is not common (Crum 1972). However, wind is an important component in the environment of the Reserve (ch. 7) and may play a larger role in dispersal here than expected.

@LEVEL1 = MATERIALS AND METHODS

@BODY1 = During the period April-September 1984, seven sites were visited in the Reserve and 105 collections of mosses and 19 of liverworts were made. Voucher specimens of all collections have been deposited in the Western Australian Herbarium (PERTH). Prior to this survey only one specimen from the Two Peoples Bay Nature Reserve (*Campylopus bicolor* from Mt Gardner) was available for study (PERTH). A limited number of collections made subsequent to the survey have been reported to us. These reports are included in Table 9.1 under the heading 'Other Collections'.

@BODY1IND = This survey should be considered a preliminary one. An attempt was made to visit different kinds of habitats in the relatively short time available. More time will be required in future to study in detail mesic habitats, especially the gullies and sclerophyll woodlands.

@BODY1IND = Mosses were identified using the manuals of Catcheside (1980) and Scott and Stone (1976) and by comparison with specimens from PERTH and the Herbarium of the University of Western Australia (UWA).

Geographical distributions of the species were noted and compared for provinces within Western Australia, using Beard's (1980) classification, and within Australia and the rest of the world, as described in the aforementioned manuals and Index Muscorum (Wijk et al. 1959-1969).

Liverworts were identified using keys made available and subsequently published by Scott (1985). Members of the genus *Riccardia* were identified using Hewson's (1970) keys and descriptions.

@LEVEL1 = RESULTS

@LEVEL2 = Mosses

@BODY1 = The 37 species of mosses listed in Table 9.1 represent 20 genera from 13 families. Two species are reported as new for Western Australia : *Bryum inclinatum* and *Tortella dakinii*. Three of the taxa inventoried here are new to science in the genera *Bryum*, *Pleurophascum* and *Tortella*. Descriptions of the new species will be published elsewhere. The Pottiaceae is the largest family represented with six genera and eleven species.

@BODY1IND = The habitats occupied by these taxa are not narrowly specific. Most are found on soil at the bases of trees or boulders or on rocks in protected crevices or fissures. In more mesic sites, bryophytes grow on fallen logs or on the trunks and branches of trees and shrubs. Numerous species, while not strictly acidophilic, calciphilic or epiphytic, appear to favour particular habitats over others. Accordingly, granitic sites like Robinson Gully support a different set of bryophytes when compared with Sinker Reef, which is largely limestone. More than one-half of our collections came from just two of the seven sites _ Robinson Gully and the forests adjacent to the picnic area.

@BODY1IND = The majority of moss and liverwort species collected at Two Peoples Bay Nature Reserve are found elsewhere in the South-West Botanical Province of Beard (1980), notably from the Darling Botanical District. Except for the three new taxa, all of the species have been reported from elsewhere in Australia or New Zealand. The bryophyte flora of South Australia is especially similar to that of south-west Western Australia. The greatest number of species (46 per cent) are endemic to Australia and/or New Zealand; 24 per cent demonstrate a Gondwanaland distribution; 27 per cent can be described as nearly cosmopolitan; and only one species (*Sematophyllum homomallum*) shows an Australasian distribution (i.e., it occurs in Australia, New Zealand and parts of Asia).

@LEVEL2 = Liverworts

@BODY1IND = Table 9.2 lists 11 species of liverworts, with site notes. As with mosses, Robinson Gully supported the most abundant and diverse flora.

@LEVEL1 = DISCUSSION

@BODY1 = Worldwide there are about 14,000 species of mosses and liverworts. Their origin is thought to be more ancient than that of vascular plants. With the exception of fairly local colonizations of newly available or disturbed sites, their present distributional patterns probably antedate the origin of flowering plants and the breakup of Gondwanaland in the Cretaceous (Crum 1972). A rich and diverse bryophyte flora would not be expected along that portion of the south-west coast that is of geologically recent exposure. The genus : species ratio, 1:1.85, is similar to that of mosses of the Hawaiian Islands (1:1.80), another landmass of geologically recent origin (Crum 1972).

@BODY1IND = The Pottiaceae, the most common family occurring in the Reserve, forms a highly polymorphic group. Many of its members are adapted to semi-arid to arid conditions and are commonly thought of as small, tufted mosses of soil and rocks.

@BODY1IND = Regardless of family relationships, nearly one-half of the species collected in the Reserve have the capacity to occupy open, relatively dry habitats. The morphological adaptations to drought of several of these species are described in detail by Scott (1982). Those sites with the greatest diversity and cover of bryophytes are the most mesic, especially Robinson Gully and the sclerophyll forests adjacent to the picnic area. The driest sites have a distinctly depauperate bryophyte

flora, particularly 'Rock Island'<+>, the shores of Gardner Lake, and Sheoak Ridge.

@BODY1IND = The bryophyte flora of the Reserve is, as expected, similar to that of adjacent regions. Only three species (*Campylopus pallidus*, *Barbula crinita*, and *Funaria salsicola*) had not been collected previously from the Darling District, although they are known from other districts in the South-West Province. The majority of all other collections of the Two Peoples Bay Nature Reserve species are also recorded in the Darling District. The Eyre and Avon Districts appear to have a decidedly lesser influence on the flora, and the Irwin and Roe the least.

@BODY1IND = The flora of south-west Western Australia and South Australia appear very similar, thereby making Mosses of South Australia (Catcheside 1980) an invaluable manual for collectors in W.A. The most commonly collected species (collected at five or more sites) show the following geographical affinities: *Rhacopilum convolutaceum* is an Australian-New Zealand endemic; *Tortella calycina* and *Campylopus bicolor* have a Gondwanaland distribution; *Campylopus introflexus* is cosmopolitan; and *Sematophyllum homomallum* is found in Australia, New Zealand and parts of Asia.

@BODY1IND = Although the majority of species collected from the Reserve were not unexpected, several collections support the importance of continuing the bryophyte survey: *Bryum inclinatum* and *Tortella dakinii* had not been reported previously from Western Australia, and three species appear to be new to science. Two of the taxa reported as new belong to genera which are notorious for blurred species boundaries (*Bryum* and *Tortella*). With further study these taxa may be treated as conspecific with species as yet unknown from Australia. *Pleurophascum occidentale*, however, differs distinctly from the one described species of genus, *P. grandiglobum* and represents a striking geographical disjunction from Tasmania and New Zealand, where the latter occurs (Wyatt and Stoneburner 1989). It is important to continue floristic investigations in south-west Western Australia, a region unique in its geographical diversity and ecological amplitude.

@BODY1IND = The hepatic flora of Australia is even less studied than the moss flora. A recent manual by Scott (1985) has done much to remedy that situation for southern Australia. Scott (1985), however, does not consider his manual exhaustive nor intensive in scope. Distributional information available for Australian liverworts is especially incomplete. The list of species reported here should not be considered definitive, but rather an indication of the orders, families, and genera likely to be most common in the Reserve. For southern Australia, Scott (1985) lists 80 genera in five orders and 33 families.

@BODY1IND = Bryophytes play an important role in soil conservation (Moul and Buell 1955; Golding and Stanton 1972), vegetation development (Thieret 1956) and nutrient cycling (Brown 1982). A well developed colony of a moss or liverwort may be decades in the making. It is well to remember 'that mosses are vulnerable ... and that indiscriminate or wasteful collecting is unethical, immoral and altogether to be deplored' (Scott and Stone 1976). Management policy at Two Peoples Bay Nature Reserve should continue with protection of the flora and fauna as its number one priority.

@LEVEL1 = ACKNOWLEDGEMENTS

@BODY1 = Valerie Hobbs and Graeme Smith collected additional specimens after our survey and communicated their identifications to us. Various specimens were referred to David Catcheside and G.A.M. Scott, who were most helpful in solving troublesome problems. We thank G.G. Smith and John Green, former curators of the herbariums at UWA and PERTH,

respectively, for their assistance with herbarium specimens, and Neville Marchant and Marion Blackwell for comments on the manuscript.

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NORMAL.STY
@TABHEAD2 = Table 9.1
@TABHED1 = List of species of moss collected at Two Peoples Bay Nature
Reserve
@SPECIES = SPECIES
@SITE = SITE*
@HEADTAB1 =
                Other
                collections
RG    RO    WB    SRf    RI    SRd    LG
@TAB1BODY = Barbula crinita Schultz      x
Barbula torquata Tayl.          x
Bryum albo-limbatum (Hampe) Jaeg. x    x
Bryum billardieri Schwaegr.      x
Bryum campylothecium Tayl.      x
Bryum chrysoneuron G. Mull.      x
Bryum inclinatum (Brid.) Bland   x
Bryum sp. nov.                  x    x
Campylopus australis Catche. & Frahm x
Campylopus bicolor (C. Muell.)
Hook. f. & Wils. x
Campylopus introflexus (Hedw.) Brid. x    x
Campylopus pallidus Hook. f. & Wils.
Dicranoloma diaphanonerum
(Hampe & C. Muell.) Par. x
Fissidens tenellus Hook. f. & Wils. x
Funaria hygrometrica Hedw. x
Funaria salsicola C. Mull. x
Grimmia laevigata (Brid.) Brid.
Gymnostomum calcareum Nees
& Hornsch. x    x
Hypnum cupressiforme Hedw. x
Orthodontium inflatum (Mitt.) Par. x
Pleurophascum occidentale x
Rhacocarpus purpurascens (Brid.) Par. x
Rhacopilum convolutaceum
(C. Muell.) Reichdt. x    x    x    x
Sematophyllum amoenum (Hedw.) Mitt. x
Sematophyllum contiguum (Mitt.) Mitt. x
Sematophyllum homomallum
(Hampe) Broth. x    x    x    x    x
Thuidium furfurosum
(Hook. f. & Wils.) Reichdt. x
Thuidium laeviusculum (Mitt.) Jaeg. x    x
Tortella calycina (Schwaegr.) Dix. x    x
Tortella dakinii Willis x
Tortella rubripes (Mitt.) Broth. x
Tortella sp. nov. x
Tortula muralis Hedw. x
Tortula princeps De Not. x    x    x
Trichostomopsis australasiae
(Hook. & Grev.) Robins. x    x
Triquetrella paillata

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NORMAL.STY

@LEVEL1 = Colour Plates

@BODY1 = Cover View of Mt Gardner across Gardner Lake

@BOD2 = Frontispiece Aerial mosaic of Two Peoples Bay Nature Reserve and adjacent areas.

@BODY1 =

@BODY1 = CENTREFOLD (Between pages and).

@PLATE =

@PLATE = Plate 1 Little Beach and Waterfall Beach from Mt Gardner (S.D. Hopper photo)

@PLATE = Plate 2 View across Moates Lake to the mobile sand dunes (M. & I. Morcombe photo)

@PLATE = Plate 3 The picnic area near Two Peoples Bay beach (G.T. Smith photo)

@PLATE = Plate 4 Limestone cliff between Mt Gardner headland and Sinker Reef (G.T. Smith photo)

@PLATE = Plate 5 View of Mt Gardner and the mobile sand dunes, looking east from the

Goodga River (S.D. Hopper photo)

@PLATE = Plate 6 View of Two Peoples Bay and the Stirling Range from Mt Gardner (S.D. Hopper photo)

@PLATE =

@PLATE = Plate 7 Beaufortia anisandra (S.D. Hopper photo)

@PLATE = Plate 8 Cephalotus follicularis (M. & I. Morcombe photo)

@PLATE = Plate 9 Banksia nutans var. cernuella (S.D. Hopper photo)

@PLATE = Plate 10 Adenanthos cunninghamii (M. & I. Morcombe photo)

@PLATE = Plate 11 Thelymitra canaliculata (A.P. Brown photo)

@PLATE = Plate 12 Caladenia corynephora (A.P. Brown photo)

@PLATE =

@PLATE = Plate 13 Tarsipes rostratus Honey-possum (M. & I. Morcombe photo)

@PLATE = Plate 14 Notechis coronatus Crowned snake (R.E. Johnstone photo)

@PLATE = Plate 15 Galaxias truttaceus and G. maculatus in the Goodga River (G.R. Allen photo)

@PLATE = Plate 16 Pseudocheirus peregrinus occidentalis Western Ringtail (M. & I. Morcombe photo)

@PLATE = Plate 17 Antechinus flavipes Yellow-footed Antechinus (M. & I. Morcombe photo)

@PLATE = Plate 18 Neophoca cinerea Australian Sea-lion (M. & I. Morcombe photo)

@PLATE =

@PLATE = Plate 19 Malurus elegans Red-winged Fairy-wren (M. & I. Morcombe photo)

@PLATE = Plate 20 Atrichornis clamosus Noisy Scrub-bird (L.A. Moore photo)

@PLATE = Plate 21 Dasyornis longirostris Western Bristlebird (G.S. Chapman photo)

@PLATE = Plate 22 Psophodes nigrogularis Western Whipbird (L.A. Moore photo)

@PLATE = Plate 23 Pandion haliaetus Osprey (M. & I. Morcombe photo)

@PLATE = Plate 24 Emblema oculata Red-eared Firetail (M. & I. Morcombe photo)

@BODY1 =

@BODY1 = CENTREFOLD (Between pages and).

@PLATE =

@PLATE = Plate

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