https://doi.org/10.26749/rstpp.114.209

Papers and Proceedings of the Royal Society of Tasmania, Volume 114, 1980.

(ms. received 19.7.1979)

A SURVEY OF BIRDS OF THE LOWER GORDON REGION SOUTHWESTERN TASMANIA

by R.W. Rose
Zoology Department, University of Tasmania

(with one table and one text figure)

ABSTRACT

ROSE, R.W., 1980 (31 v): A survey of the birds of the Lower Gordon region, southwestern Tasmania. *Pap. Proc. R. Soc. Tasm.*, 114, 209-218. ISSN 0080-4703. Department of Zoology, University of Tasmania, Hobart, Tasmania, Australia.

An area of southwestern Tasmania, the lower Gordon River, was surveyed for bird species during the summers of 1975/76, 1976/77 and 1977/78. Using a transect method of survey, 49 species were located; of these, six were considered very common, 12 common, 24 uncommon and seven rare.

No new species were discovered, but the known range of all species recorded was extended by the survey. The rare orange-bellied parrot was not located during the study.

Bird species were correlated with vegetation structure based on the Specht classification. This classification, in retrospect, proved to be of only limited use but still showed broad habitat preference trends.

The area surveyed appears to be typical of southwestern Tasmania but is unusual, if not unique, in that not one species of exotic bird was discovered in the study area, suggesting that the area is true wilderness.

INTRODUCTION

Southwestern Tasmania is a large, relatively inaccessible area with a mountainous terrain and high rainfall. Because of this, few detailed ornithological studies have been carried out. The area as a whole is unique in an Australian context because of the large area of temperate rainforest and hummock sedgeland.

The part of southwestern Tasmania reported upon in this paper is an area not previously visited by ornithologists; hence its avifauna is unknown. Bird lists for some adjacent areas are available and the data from Thomas and Wall (1972) and Thomas (1979) are particularly relevant. With the exception of hardy bushwalkers, the area has been visited only by loggers (principally after huon pine) and officers of the Hydro-Electric Commission of Tasmania (H.E.C.)in an attempt to assess the hydro-electric potential of the area. This report is one of a series of studies commissioned by the H.E.C.

A map of the study area is shown in figure 1. The area surveyed extended from near Butlers Island and the Franklin River in the north to the Olga and Hardwood valleys in the south. Tributaries of the Gordon River that were surveyed included the Denison, Orange, Sprent, Olga and Maxwell Rivers.

The vegetation of the region has been described by Jarman and Crowden (1978).

The climatic climax of the area is temperate rainforest (closed forest). However a combination of factors such as soil fertility, drainage, fire frequency and selective logging have acted to modify the vegetation (Jackson, 1965). Hence the overall pattern

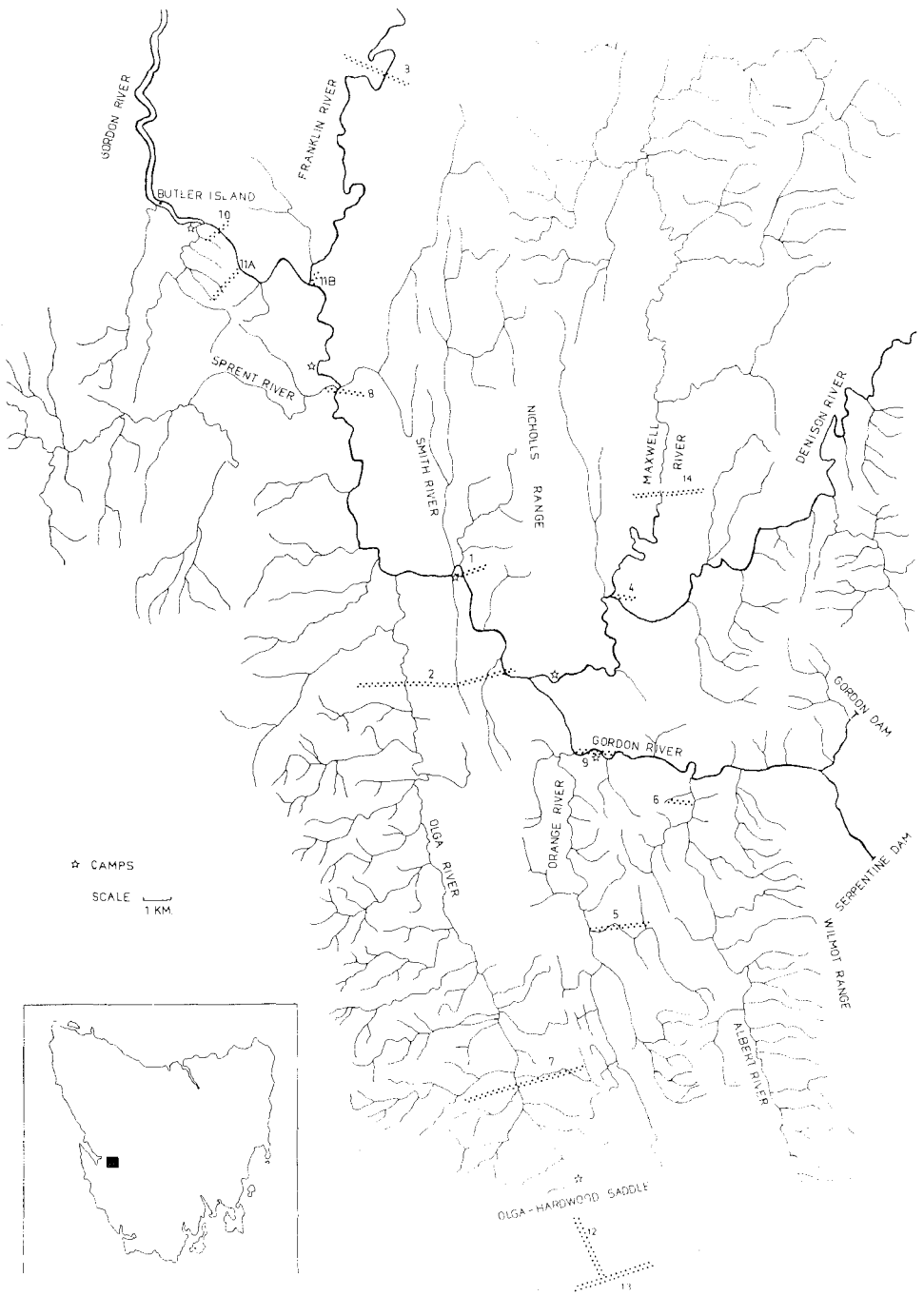

FIG. 1.- Locality Map

of the area is one of a mosaic of community types composed of temperate rainforest, wet sclerophyll, scrub, heathland, sedgeland and bog communities (Jarman and Crowden 1978).

The major objective of this study was to determine the avifauna of regions which may be considered for hydro-electric development. Other objectives included the determination of the status of each bird species (common, rare etc.) and associations of bird species with the vegetation.

Rose (1978a) has shown that although southwestern Tasmania as a whole has many more species than believed by Ridpath and Moreau (1966) its avifauna should still be regarded as depauperate. This study reinforces that view.

METHODS

The study area was surveyed by a simple transect method. Fourteen transects (see figure 1) were cleared prior to the survey. The transects were approximately 1 metre wide and varied in length from 250 m to 7-8 km. Transect slope varied from flat to extremely steep. Transects were marked by a red tape every 50 m so that it was possible to pinpoint the locality of each bird for future correlations.

The identity and number of bird species for each 50 m of a transect were noted but not the number of individuals of each species and so determinations of abundance could only be crude estimates.

The survey was carried out from very late spring to late summer 1975-76, 1976-77 and 1977-78. Seven visits, each of approximately one week duration, were made. At least two observers were in the field at any one time but this was increased to four or five on several occasions. Altogether approximately 600 man hours of observations were made.

At the completion of a day's observation, records were transferred to data sheets which listed all bird species and their position on the transect lines. This allowed later analysis for the following:

(a) Species list for each transect.
(b) Correlation of bird species with vegetation.
(c) Relative abundance of each species.

Vegetation structure was used as a basis for habitat/bird species correlation. The habitats, which were classified according to Specht (1970), were simplified by the lumping of certain habitats. For example closed forest comprised tall closed forest, and low closed forest; scrub was lumped with shrubs while heath and sedgeland were treated as a single habitat.

RESULTS

The results are presented in table 1 listing all bird species located on the transects. Scientific species names are given in Appendix A. Further details of results may be obtained from Rose (1978b).

Table 1 illustrates the correlation of bird species with the simplified vegetation structure and details the number of different species in each habitat. Perhaps surprisingly, closed forest, open forest, woodland and heath/sedgeland have similar numbers of bird species although the composition of the avifauna in each habitat differs somewhat. Scrub shows the highest number of species, having birds characteristic of both forest and open habitats as well as several birds found only in scrub, illustrating the importance of edge effects.

TABLE 1

BIRD SPECIES, RELATIVE ABUNDANCE AND VEGETATION

Species	Relative abundance	Closed Forest	Open Forest	Wood-land	Scrub	Heath/ Sedge	River
Great Cormorant	10						x
White-faced Heron	3						x
Great Egret	1						x
Accipiter sp.*	1				x		
Grey Goshawk	6	x	x		x	x	x
Wedge-tailed Eagle	3					x	
Brown Falcon	2				x	x	
Common Sandpiper	1						
Latham's Snipe	1				x		
Brush Bronzewing	1	x					
Yellow-tailed Black Cockatoo	20	x	x	x	x	x	
Sulphur-crested Cockatoo	9	x	x	x	x	x	
Ground Parrot	4					x	
Swift Parrot	2			x			
Green Rosella	118	x	x	x	x	x	
Fan-tailed Cuckoo	12	x	x		x		
Shining-bronze Cuckoo	17	x	x	x	x		
Southern Boobook	3	x			x		
Masked Owl	2	x			x		
Spine-tailed Swift	23			x	x	x	
Azure Kingfisher	3						x
Welcome Swallow	11			x	x		x
Tree Martin	8		x		x	x	x
Black-faced Cuckoo-Shrike	7		x	x	x		
White's Thrush	16	x	x	x	x		
Superb Blue Wren	4				x		
Southern Emu-Wren	37				x	x	
Tasmanian Thornbill	184	x	x	x	x	x	
Scrub Tit	99	x	x	x	x	x	
White-browed Scrub-Wren	137	x	x	x	x	x	
Calamanthus	26				x	x	
Pink Robin	57	x	x	x	x		
Flame Robin	3	x		x		x	
Dusky Robin	5		x		x	x	
Grey Fantail	142	x	x	x	x	x	x
Golden Whistler	51	x	x	x	x	x	
Olive Whistler	128	x	x	x	x	x	
Grey Shrike-Thrush	80	x	x	x	x	x	
Striated Pardalote	17	x	x	x			
Silvereye	88	x	x	x	x	x	x
Yellow Wattle Bird	1				x		
Yellow-throated Honeyeater	97	x	x	x	x	x	
Strong-billed Honeyeater	12	x	x	x	x		
Crescent Honeyeater	292	x	x	x	x	x	
New Holland Honeyeater	6		x	x	x		
Eastern Spinebill	85	x	x	x	x		
Beautiful Firetail	4			x	x		
Black Currawong	45	x	x	x	x	x	
Forest Raven	6	x	x		x		
TOTAL		27	27	27	38	24	9

* Probably a Collared Sparrowhawk

Generally speaking, there were no great differences in species composition as one moved from closed forest through to the more open wooded areas. The only closed forest species that was not found in the more open forest is the brush bronzewing pigeon. Several species found in open forest and woodland are not found in closed forest and these include the dusky robin, blackfaced cuckoo-shrike, swift parrot, new holland honeyeater and beautiful firetail: except for the swift parrot all are probably breeding residents. Scrub differs from the forested habitats in possessing a number of species characteristic of heath/sedgeland (e.g. southern emu-wren and calamanthus) and a number of birds of prey; also present are species found nowhere else e.g. superb blue wren and Lathams snipe). The composition of the avifauna of heath sedgeland differed most from other habitats. Birds such as the southern emu-wren, calamanthus and ground parrot are virtually restricted to this vegetation type (although some make excursions to nearby habitats, specifically scrub). Birds of prey were more noticeable in this habitat then in any other probably due to the open nature of the habitat.

The Gordon River and its tributaries were poor habitats for birds (aquatic or otherwise); only nine species were seen on the transects that crossed the river, although there were reports of a further three species lower down the river at Sir John Falls Camp near Butlers Island (the black duck, black swan and white-breasted sea-eagle). Of the nine species, the silvereye was seen passing to and fro across the river from one canopy to another while the tree martin, welcome swallow and grey fantail hawked for insects over the river. The great cormorant, white-faced heron and azure kingfisher were seen on the Gordon River and its banks and the great egret was seen on the Gordon River below the Franklin Junction. The common sandpiper was seen once on a shingle bank near Transect 8 on the Gordon River.

The relative abundance of each species is also shown in Table 1 based on a score of 1 for each 50 m of a transect in which a bird was noted (regardless of the number of individuals of that species in any 50 m length). This measure will tend to underestimate flocking birds and the more common species and overestimate the larger and more vocal species. In Table 2 results are presented on an arbitrary scale of abundance as follows:

>100	very common
20-100	common
2-29	uncommon
1-2	rare

A degree of subjectivity was used in the determination of borderline cases, particularly where birds were seen on only one or two occasions and may have been transients.

From table 2 it can be seen that there are at least 18 species that are considered to be common or very common and that seven species are rare. Some birds are migratory (north-south or altitudinal) and these birds may be common in spring and early summer (e.g. cuckoos) and absent in late summer; on the other hand, altitudinal migrants (such as the flame robin) in summer but are probably more common in the winter; they may be more common at higher altitudes not included in the survey.

DISCUSSION

As a bird habitat, the area surveyed is typical of most of southwestern Tasmania (excluding coastal and disturbed regions) and the species noted were mainly those expected. It would be fair to refer to the area as depauperate in bird species compared to the drier regions of eastern Tasmania. The habitats are best described as a continuum from rainforest to heath/sedgeland with factors such as soil fertility, drainage and fire-frequency being of greatest importance. The banks of the Gordon River are extremely steep in most places and usually covered with rainforest down to the water's edge. There are few flat open banks suitable as a habitat for wading

birds and where present, the sudden changes in river depth which occur after heavy rainfall, would limit their availability and render any aquatic plant life and its associated aquatic fauna an irregular food source (at best) for water fowl.

Generally the valleys of the Olga and Hardwood are poorly drained, infertile areas with a high fire frequency, such that the dominant vegetation type is heath/sedgeland. This habitat is an unusual one, uncommon in mainland Australia. Temperate rainforest is also a habitat best developed in Tasmania and is present only as relict areas on the mainland. These two habitats are probably the most characteristic of the area but do not support the most species. Greatest species richness was found in the disturbed habitats (disturbed usually by fire), with the subsequent development of scrub or eucalypt forest. One area visited during the survey was the Truchanas Huon Pine Reserve on the Denison River, but the birds of this area did not differ from those in *Nothofagus* rainforest. There appears to be a 'spillover' of birds usually associated with closed forest into the open forest and woodland, but this apparent anomaly is a result of the use of the Specht (1970) method of vegetation structure classification. This method classifies vegetation only on the basis of the height, and density of the top layer (canopy), so that closed forests with a dense undergrowth (e.g. horiziontal scrub) would not be distinguished from a closed forest with an open understory. It is also unfortunate that Specht (1970) takes terms already in common usage (e.g. woodland and scrub), since they have certain connotations that may differ from the Specht definitions. Although southwestern Tasmania is a high rainfall area, it is ironically, also prone to wildfires. These fires, which may start in the heath/sedgelands, can spread to the closed forests. The effects of these fires may result in the eventual regrowth of 'mixed forests' (Gilbert 1959) that comprise both eucalypt and rainforest plant species, so that it is possible to have a fairly mature rainforest with an emergent story of eucalypt. The eucalypts will be of an even age and do not usually occur in the understory. A closed forest with an emergent eucalypt canopy might be classified using Specht as either open forest or woodland, depending on the density of the emergent eucalypts (Specht does mention this anomaly). It is also possible to have a growing rainforest classified as scrub due to the low height of the trees. These anomalies in classification help to explain why many birds that are usually associated with closed forests (e.g. pink robin and scrub tit), were also found in open forest, woodland and scrub. In addition Thomas (1979) has shown that the bird species in mixed forests resemble those found in wet sclerophyll rather than those in rainforest. One further problem arising from the use of the Specht classification is that a particular category of Specht e.g. closed forest, may refer to a number of distinct habitats such as *Nothofagus* rainforest or a dense tea-tree forest, two habitats that have somewhat different bird populations.

It is well known that bird species diversity is directly related to habitat diversity as measured by foliage height diversity (MacArthur *et al.* 1962). This simply means that numbers of different species and the numbers of each species are related to the complexity of vegetation at all levels in any given habitat, not just to the complexity of the uppermost layer (canopy). Therefore one would expect to find a greater diversity of birds in a closed forest with a dense understory than in one with an open understory. For this reason, it would be pointless to calculate bird species diversities for each 'habitat' as classified by Specht.

Although most of the common habitats of southwestern Tasmania were prominent in the study area, the survey was somewhat unrepresentative in that no higher altitude habitats were looked at, nor were any lakes present.

Although there are many more species in the region than previously reported (Ridpath and Moreau 1966), the overall impression is of the paucity of species in comparison with the drier eastern part of the State. It would be surprising, if one

did not obtain a bird list almost twice as long as that obtained in this survey after a similar amount of time spent in the eastern part of the State. The area may thus be described as depauperate.

Nevertheless, some birds seen during the survey are much more common in the south-western than in the drier regions of Tasmania. These birds, which include the grey goshawk, ground parrot, kingfisher, southern emu-wren, tasmanian thornbill, scrub tit, white-browed scrub wren, pink robin, olive whistler, crescent honeyeater (summer only), and Whites thrush are characteristic of the avifauna of the area surveyed, but with the exception of the ground parrot, azure kingfisher, and the southern emu-wren, all are fairly well distributed throughout the State where suitable habitat exists.

The two major habitats that characterise the area, closed forest rainforest and heath/sedgeland, are found in most of southwestern Tasmania as well as areas in the west and northwest of the State; however it may be that the areas surveyed are more isolated from the effects of man, than other similar habitats. Of considerable importance is the fact that not one exotic bird species was recorded during the survey, although there are records for adjacent areas (Fielding *et al.* 1976, Thomas 1979). This fact implies that the area is indeed a wilderness.

At least nine of the birds considered to be species endemic to Tasmania were located in the survey area. None of these birds are endangered in the State as a whole.

The status of two species should be of concern: the ground parrot and the azure kingfisher. The kingfisher is a sub-species of the mainland form. It is uncommon in Tasmania, and appears to be restricted almost entirely to the west of the State, although little information is available on its distribution. The preferred habitat of this bird is forested streams and waterways (Eastman 1970). As far as is known it is not a bird of open water and hence its status is unlikely to be enhanced by hydro-electric development.

The ground parrot is more common in western Tasmania than anywhere else in Australia; in fact it would be correct to refer to this area as its stronghold. Surprisingly, the bird was not found to be common in its usual habitat (heath/sedgeland) during the survey. This may in part be due to the facts that it is difficult to detect by the transect mode of survey (it requires 'flushing'), possesses excellent camouflage and rarely calls during the day. However, even overnight stays in sedgeland failed to detect the bird, which usually calls at dawn and dusk. It must be accepted that the bird is uncommon in the survey area, while apparently more common in areas closer to the coast. The bird is extremely rare in other parts of Australia and is considered an endangered species (Fisher *et al.* 1969).

One other bird, the orange-bellied parrot, is accepted as breeding in southwestern Tasmania and nowhere else (Milledge 1972). It is also an endangered species and one of the rarest parrots in Australia. This species was not located in the survey area. This attests to its rarity but as with the ground parrot, it may be more common near the coast. Almost nothing is known about this species in Tasmania.

The scientific significance of the results is primarily one of extending the known range of the species recorded into areas not previously reported upon. The results show that although there are many more species in the area than previously realised, the region is best described as depauperate in avifauna. The lack of exotic species, however, points to the region being a wilderness area. Importantly, the mammal survey also failed to locate exotic species of mammals with the exception of one feral cat

(Hocking *et al.* 1979).

Of ecological importance is the considerable enhancement in our knowledge of the birds inhabiting temperate rainforest (closed forest). Ridpath and Moreau (1966) considered there to be only 17 species in temperate rainforest in Tasmania, of which only 6 were common. These results show this to be a considerable underestimation. The study has also contributed to the bird atlas schemes of the Bird Observers Association of Tasmania and the Royal Australian Ornithological Union.

The survey was not an intensive one as most observations occurred in summer and much of the breeding season could not be covered due to helicopter flying restrictions at that time of year. Also, additional species (that is, species not previously recorded) were continually being seen. A number of species that could be in the area but were not seen include the water rail, brown quail, masked lapwing, little pied cormorant, hoary-headed grebe, Richards pipit, silver gull, little grassbird, orange-bellied parrot and the tawny frogmouth.

However the survey does provide valuable information on a part of Tasmania of which previously we had little scientific knowledge. Quantitative data on abundance and correlations with vegetation provide a preliminary insight into habitat preferences.

The effects of flooding part of this region may be assessed when it is realised that the habitats most under environmental pressure are the low lying valleys of heath/sedgeland and the steep banks of the river covered with temperate rainforest. These habitats are best developed in this area of the state and are poorly represented on the mainland of Australia. With its absence of exotic species of birds (and mammals), this region of Tasmania may indeed be a unique wilderness.

ACKNOWLEDGEMENT

I wish to thank the H.E.C. for its assistance in transport and accommodation during this study as well as the financial assistance it provided to one observer (Mr. R. Wilson, National Parks and Wildlife Service). I also wish to thank those members of the Bird Observers Association of Tasmania who assisted in observations (D. Thomas, L. Wall, A. Fletcher, K. Harris, M. Newman and R. Patterson), and I am grateful to the University of Tasmania for a research grant towards this project. Mr. David Thomas made numerous helpful comments on this paper.

REFERENCES

Eastman, W., 1970: THE LIFE OF THE KOOKABURRA AND OTHER KINGFISHERS. Angus and Robertson, Sydney.

Fielding, P, Newman, O.M.G. and Rose, R.W., 1976: Avian fauna of the Crotty area. *Tasm. Nat.*, 44: 1-9.

Fisher, J., Simon, N. and Vincent, J. 1969: THE RED BOOK, WILDLIFE IN DANGER. IUCN. Collins. London.

Gilbert, J.M., 1959: Forest succession in the Florentine Valley, Tasmania. *Pap. Proc. R. Soc. Tasm*, 93: 129-51.

Hocking, G.J., Guiler, E.R. and Colquhoun-Kerr, J.S., Mammal survey of the Lower Gordon River. Lower Gordon River Scientific Survey: The Hydro-Electric Commission, Hobart.

Jackson, W.D., 1965: The Vegetation . In Davies, J.L. (ed.): ATLAS OF TASMANIA. Mercury Press, Hobart.

Jarman, J. and Crowden, R., 1978: A survey of the vegetation from the lower Gordon River and its associated catchments. *Lower Gordon River Scientific Survey:* The Hydro-Electric Commission, Hobart.

MacArthur, R.H., MacArthur, J.W. and Preer, J., 1962: On bird species diversity. II. Prediction of bird censuses from habitat measurements. *Amer. Nat.*, 96: 167-174.

Milledge, D., 1972: The orange-bellied parrot in Tasmania. S.A. ORNITHOLOGIST 26: 56-58.

Ridpath, M.G. and Moreau, R.E., 1966: The birds of Tasmania. Ecology and Evolution. *Ibis*, 108: 348-93.

Rose, R.W., 1978a: Diversity and Habitat. In Gee, H.G. and Fenton, J. (eds): THE SOUTH WEST BOOK. Australian Conservation Foundation, Melbourne.

_____, 1978b: The Birds. *Lower Gordon River Scientific Survey*. The Hydro-Electric Commission, Hobart.

Specht, R.L., 1970: Vegetation. In Leeper, G.W. (ed.): THE AUSTRALIAN ENVIRONMENT, Chapt. 5.

Thomas, D.G., 1979: Tasmanian Bird Atlas. FAUNA OF TASMANIA HANDBOOK NO. 2. University of Tasmania, Hobart.

_____, and Wall, L.E., 1972: Birds of Lake Pedder and the Sentinel Range, south-west Tasmania. *Tasm. Nat.*, 29: 6-8

APPENDIX A

SPECIES CHECKLIST

Common Name	Scientific Name
Great Cormorant	*Phalacrocorax carbo*
White-faced Heron	*Ardea novaehollandiae*
Collared Sparrowhawk	*Accipter cirrhocephalus*
Grey Goshawk	*Accipter novaehollandiae*
Wedge-tailed Eagle	*Aquila audax*
Brown Falcon	*Falco berigora*
Common Sandpiper	*Tringa hypoleucos*
Brush Bronzewing	*Phaps elegans*
Swift Parrot	*Lathamus discolor*
Yellow-tailed Black Cockatoo	*Calyptorhynchus funereus*
Sulphur-crested Cockatoo	*Cacatau galerita*
Green Rosella	*Platycerus caledonicus*
Ground Parrot	*Pezoporus wallicus*
Fan-tailed Cuckoo	*Cacomatis pyrrhophanus*
Shining-bronze Cuckoo	*Chrysococcyx plagosus*
Southern Boobook	*Ninox novaeseelandiae*
Spine-tailed Swift	*Hirundapus caudacutus*
Azure Kingfisher	*Alcyone azurea*
Welcome Swallow	*Hirundo neoxena*
Tree Martin	*Petrochelidon nigricans*
Black-faced Cuckoo-Shrike	*Coracina novaehollandiae*
White's Thrush	*Zoothera dauma*
Superb Blue Wren	*Malurus cyaneus*
Southern Emu-Wren	*Stipiturus malaechurus*
Tasmanian Thornbill	*Acanthiza ewingii*
Scrub-Tit	*Acanthornis magnus*
White-browed Scrub-Wren	*Sericornis frontalis*
Calamanthus	*Sericornis fuliginosus*
Flame Robin	*Petroica phoenicea*
Pink Robin	*Petroica rodinogaster*
Dusky Robin	*Petroica vittata*
Grey Fantail	*Rhipidura fuliginosa*
Golden Whistler	*Pachycephala pectoralis*

Olive Whistler	*Pachycephala olivacea*
Grey Shrike-Thrush	*Colluricincla harmonica*
Striated Pardalote	*Pardalotus striatus*
Silvereye	*Zosterops lateralis*
Latham's Snipe	*Gallinago hardwickii*
Great Egret	*Egretta alba*
Masked Owl	*Tyto novaehollandiae*
Yellow Wattle Bird	*Anthochaera paradoxa*
Yellow-throated Honeyeater	*Meliphaga flavicollis*
Strong-billed Honeyeater	*Melithreptus validirostris*
Crescent Honeyeater	*Phylidonyris pyrrhoptera*
New Holland Honeyeater	*Phylidonyris novaehollandiae*
Eastern Spinebill	*Acanthorhychus tenuirostris*
Beautiful Firetail	*Emblema bella*
Black Currawong	*Strepera fuliginosa*
Forest Raven	*Corvus tasmanicus*