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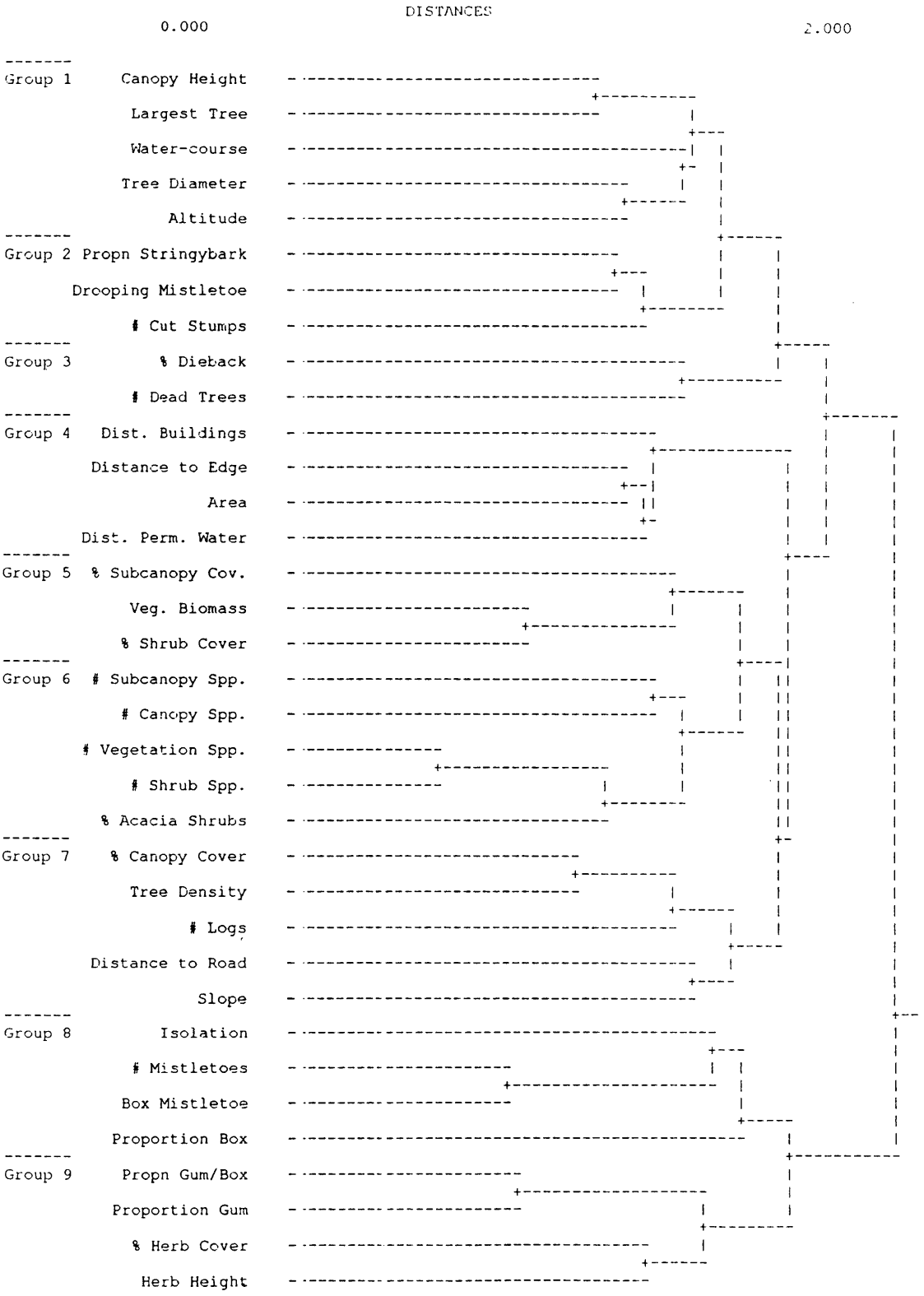
APPENDICES

Appendix 1: Cluster diagram of the 35 environmental variables in 147 sites (estimation sample). Data were transformed to improve normality and standardized. A single variable was selected for the regress on models, from each of the nine groups indicated.


DISTANCES
0.000
2.000
Group 1
Canopy Height
Largest Tree
Water-course
Tree Diameter
Altitude
Group 2
Propn Stringybark
Drooping Mistletoe
Cut Stumps
Group 3
% Dieback
# Dead Trees
Group 4
Dist. Buildings
Distance to Edge
Area
Dist. Perm. Water
Group 5
% Subcanopy Cov.
Veg. Biomass
% Shrub Cover
Group 6
Subcanopy Spp.
Canopy Spp.
Vegetation Spp.
Shrub Spp.
% Acacia Shrubs
Group 7
% Canopy Cover
Tree Density
Logs
Distance to Road
Slope
Group 8
Isolation
Mistletoes
Box Mistletoe
Proportion Box
Group 9
Propn Gum/Box
Proportion Gum
% Herb Cover
Herb Height

Appendix 2: Stepwise regressions of bird groups against 11 principal components (294 sites). All selected components are significant ($p \leq 0.05$). See text for description of components (also Table 2.5). * Square root transformed, [1] Log-transformed, all other bird groups standardized by subtracting the mean and dividing by the standard deviation.

Bird Group	Model Variables	Constant	R^2 (ADJ)
# Species *	– 0.156 PC8 (Dieback) + 0.136 PC3 (Mistletoes) – 0.123 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area) + 0.089 PC2 (Stringybark) + 0.086 PC4 (Large Trees)	+ 2.602	0.12
Simpson's Diversity Index [1]	– 0.024 PC8 (Dieback) – 0.015 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area) + 0.015 PC3 (Mistletoes) + 0.014 PC2 (Stringybark) + 0.013 PC6 (Tree Density, % Canopy Cover)	+ 0.409	0.09
# Individuals *	– 0.254 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area) + 0.252 PC3 (Mistletoes) – 0.237 PC8 (Dieback) – 0.178 PC1 (# Veg. Species, % Acacia) + 0.162 PC4 (Large Trees) + 0.132 PC10 (% Herb Cover, Herb Height)	+ 3.762	0.17
Uncommon Spp. (< 10/294 Sites)	– 1.123 PC8 (Dieback) – 1.034 PC9 (Altitude)	0.000	0.05
Common Spp. (> 65/294 Sites)	+ 0.937 PC4 (Large Trees) + 0.812 PC2 (Stringybark) + 0.644 PC6 (Tree Density, % Canopy Cover) + 0.609 PC3 (Mistletoes) – 0.525 PC8 (Dieback) + 0.495 PC9 (Altitude) – 0.457 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area)	0.000	0.16
High Population Density Spp.	– 0.606 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area) – 0.521 PC1 (# Veg. Species, % Acacia) + 0.365 PC10 (% Herb Cover, Herb Height)	0.000	0.07
Woodland Spp.	– 2.548 PC8 (Dieback) + 2.141 PC3 (Mistletoes)	+ 0.125	0.09
Open-country Spp.	– 1.040 PC1 (# Veg. Species, % Acacia) – 0.971 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area) + 0.642 PC8 (Dieback) – 0.616 PC2 (Stringybark) + 0.539 PC10 (% Herb Cover, Herb Height) – 0.448 PC6 (Tree Density, % Canopy Cover)	– 0.528	0.18
Understorey Spp.	+ 0.493 PC5 (Understorey, Veg. Biomass) + 0.448 PC9 (Altitude) – 0.436 PC8 (Dieback) + 0.401 PC3 (Mistletoes) + 0.393 PC2 (Stringybark) + 0.347 PC1 (# Veg. Species, % Acacia)	0.000	0.12

Appendix 2 continued

Bird Group	Model Variables	Constant	R^2 (ADJ)
Honeyeaters	+ 8.343 PC1 (# Veg. Species, % Acacia) – 6.628 PC4 (Large Trees) + 6.176 PC5 (Understorey, Veg. Biomass) + 4.962 PC8 (Dieback) + 4.931 PC6 (Tree Density, % Canopy Cover) + 4.444 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area) + 4.200 PC3 (Mistletoes) + 1.958 PC9 (Altitude) – 1.637 PC2 (Stringybark) – 1.432 PC11 (Dist. Water-coarse, Flat Country)	– 1.348	0.70
Bark-foragers	+ 0.419 PC4 (Large Trees) + 0.410 PC1 (# Veg. Species, % Acacia)	0.000	0.03
Foliage-gleaners	+ 0.642 PC2 (Stringybark) – 0.600 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area) + 0.53(PC3 (Mistletoes)	0.000	0.05
Fruit-eaters	+ 0.428 PC7 (Area) + 0.337 PC4 (Large Trees) – 0.300 PC8 (Dieback) + 0.293 PC6 (Tree Density, % Canopy Cover)	0.000	0.06
Nest Predators	– 0.319 PC7 (Dist. Perm. Water, Dist. Edge, Dist. Buildings, Area)	0.000	0.01
Hollow-nesters	– 0.739 PC8 (Dieback) + 0.594 PC4 (Large Trees) + 0.564 PC10 (% Herb Cover Herb Height) + 0.514 PC1 (# Veg. Species, % Acacia) + 0.477 PC6 (Tree Density, % Canopy Cover)	0.000	0.10
Summer Visitors	– 1.263 PC8 (Dieback) + 0.995 PC3 (Mistletoes) + 0.803 PC10 (% Herb Cover, Herb Height) + 0.741 PC4 (Large Trees) + 0.711 PC2 (Stringybark)	0.000	0.10
Winter Visitors	+ 0.569 PC3 (Mistletoes) + 0.509 PC5 (Understorey, Veg. Biomass) + 0.381 PC9 (Altitude)	0.000	0.08
Residents	– 1.537 PC8 (Dieback)	+ 0.289	0.04

Appendix 3: Standard multiple regression models from a single survey in 147 sites (estimation sample). Only significant models and variables included ($p \leq 0.05$). The root average squared prediction error (RASPE) is given for both the estimation and validation samples. * Square root transformed, ' Log-transformed, all other groups standardized by subtracting the mean and dividing by the standard deviation. The differences between the actual and predicted values were compared between the estimation and validation samples, only models which showed no significant difference are included here (Wilcoxon's signed rank test, $p < 0.05$).

Bird Group	Model Variables	Constant	R^2 (ADJ)	RASPE Estimation	RASPE Validati'n
# Species *	+ 0.214 # Logs – 0.134 Dist. Perm. Water – 0.128 Dieback + 0.117 % Herb Cover	+ 2.630	0.16	2.72	2.67
Simpson's Diversity Index '	+0.039 # Logs – 0.023 Dist. Water-course – 0.021 Dieback – 0.019 Dist. Perm. Water	+ 0.413	0.22	1.04	1.14
# Individuals *	– 0.246 Dist. Water-course + 0.229 # Mistletoe – 0.218 Slope + 0.215 % Herb Cover – 0.211 # Veg. Species – 0.201 Dieback + 0.188 # Cut Stumps	+ 3.808	0.19	1.10	0.12
Uncommon (< 10/294 Sites)	– 2.142 Altitude + 1.833 Propn. Box	– 0.105	0.21	8.41	7.15
Common (>65/294 Sites)	+ 1.069 # Cut Stumps – 0.920 Dist. Water-course + 0.873 # Logs – 0.661 Dieback	+ 0.111	0.16	0.36	0.36
Low Population Density Spp.	– 0.841 Altitude – 0.724 Dist. Building + 0.638 # Logs + 0.595 % Herb Cover	– 0.113	0.06	3.35	4.25
High Population Density Spp.	– 1.079 Altitude + 0.892 % Herb Cover – 0.820 Dist. Edge + 0.792 # Dead Trees	+ 0.172	0.22	2.91	2.95
Woodland Spp.	– 2.148 Altitude – 1.683 Isolation + 1.550 % Acacia Shrub	– 0.478	0.08	9.07	11.65
Open-country Spp.	+ 1.391 Herb Cover – 0.917 Dist. Edge	– 0.268	0.18	3.86	3.73
Understorey Spp.	+ 0.628 # Drooping Mistletoe + 0.504 Shrub Cover	– 0.141	0.08	2.44	2.92
Honeyeaters	+ 8.304 # Veg. Species + 5.053 # Dead Trees + 4.725 Veg. Biomass + 4.199 Canopy Height + 4.092 # Drooping Mistletoe + 3.011 Propn. Gum-box	– 0.645	0.57	12.32	12.62
Bark-foragers	+ 0.874 # Logs + 0.508 Canopy Height	+ 0.139	0.11	2.81	3.04
Foliage-gleaners	+ 0.953 # Mistletoe – 0.789 # Veg. Species + 0.706 Veg. Biomass + 0.657 # Logs	– 0.211	0.08	3.44	4.77
Fruit-eaters	+ 0.538 Dist. Edge + 0.531 Veg. Biomass + 0.506 Tree Diameter	+ 0.507	0.11	2.54	2.34
Hollow-nesters	– 1.211 Propn Stringybark + 1.062 % Acacia Shrub +0.780 # Logs + 0.744 Dist. Building	+ 0.321	0.19	3.69	3.89
Summer Visitors	– 1.697 Dieback + 1.262 % Herb Cover	+ 0.089	0.09	5.96	5.68
Winter Visitors	+ 0.716 # Mistletoe – 0.668 Dist. Water-course + 0.594 Veg. Biomass	– 0.006	0.11	2.82	2.76

Appendix 4: Standard multiple regression models for the 63 sites in which surveys were repeated each season for two years Each species was scored 0 - 8, depending on its presence or absence over eight seasonal surveys, standardized (x-mean/SD) and summed as group. The total number of species was not transformed (# Species). Only significant variables and significant models are presented ($P < 0.05$).

Bird Group	Model Variables	Constant	R^2 (ADJ)
# Species	– 4.593 Dieback – 1.873 Slope	+ 23.420	0.32
Uncommon Spp. (< 10/294 Sites)	+ 1.931 % Acacia Shrub	+ 0.821	0.07
Common Spp. (> 65/294 Sites)	– 2.146 Dieback	+ 0.823	0.18
Low Population Density Spp.	– 1.753 Dieback	+ 0.647	0.16
High Population Density Spp.	– 1.416 Area + 1.178 Herb Height + 0.641 Dist. Building	– 0.787	0.36
Woodland Spp.	– 8.633 Dieback	+ 3.066	0.28
Open-country Spp.	– 2.715 Area – 1.039 Slope	– 0.756	0.42
Understorey Spp.	– 1.729 Dieback – 1.552 Propn Box + 1.174 # Sub-canopy Species	+ 0.725	0.46
Ground-foragers	– 1.726 Dieback – 1.416 Propn Gum	+ 0.154	0.24
Honeyeaters	– 1.685 Dieback + 1.464 Mistletoe	+ 0.545	0.37
Bark-foragers	+ 1.218 % Acacia Shrub – 1.170 Dieback	+ 1.028	0.29
Foliage-gleaners	– 1.804 Dieback	+ 0.569	0.15
Fruit-eaters	– 0.610 Dieback + 0.539 # Mistletoe	+ 0.250	0.19
Nest Predators	– 0.905 Area	– 0.364	0.14
Hollow-nesters	+ 1.265 Propn Gum-box – 1.157 Canopy Cover	+ 0.180	0.18
Summer Visitors	– 2.453 Dieback – 1.415 Dist. Road	+ 1.383	0.22
Winter Visitors	+ 2.380 # Veg. Species + 1.676 Canopy Cover – 1.391 # Canopy Spp + ..258 Area	+ 1.570	0.42
Residents	– 2.882 Dieback +2.798 % Acacia Shrub	+ 2.350	0.24

Appendix 5: Correlation coefficients for the six most 'influential' habitat variables, for each bird group ordination. Species occurring in fewer than 10/294 sites were excluded from the ordination. All counts were standardized (x-xmin/range). Correlations between ordination axes, habitat variables and bird counts were used to indicate whether each variable is likely to have a positive or negative influence (±).

Habitat Variables	# Spp.	Common Spp.	Low Pop. D.	High Pop. D	Summer Visitors	Winter Visitors	Resident Spp.
Total Veg. Biomass	+ 0.399						
Total # Veg. Species					+ 0.388	– 0.183	
Propn Gum		– 0.373		+ 0.374	– 0.327		– 0.356
Propn Gum-box	– 0.410	– 0.476	– 0.279	+ 0.474	– 0.376	– 0.212	+ 0.433
Propn Stringybark	+ 0.417	+ 0.481	+ 0.282	– 0.471		+ 0.219	– 0.433
# Drooping Mistletoe						+ 0.326	
# Box Mistletoe				+ 0.349	+ 0.270		+ 0.334
# Logs	+ 0.386	+ 0.413	+ 0.249	– 0.395	+ 0.298	+ 0.225	+ 0.411
# Cut Stumps			+ 0.210				
% Dieback		– 0.352	– 0.201				
Slope			– 0.205				
Altitude (m)	+ 0.552	+ 0.593		– 0.597	– 0.327	+ 0.256	– 0.581
Area Patch (ha)	– 0.367						
Dist. Edge (km)				– 0.384			

Appendix 5 continued

Habitat Variables	Woodl. Spp.	Open-country Spp.	Undst. Spp.	Ground-foragers	Honey-eaters	Bark-foragers	Foliage-glean.	Nest Predat.
% Canopy Cover								– 0.178
% Shrub Cover				– 0.210				
Total Veg. Biomass	+ 0.368							
Herb Height (cm)				+ 0.219				
# Shrub Spp.		– 0.333	+ 0.323					– 0.228
Total # Veg. Species		– 0.315						– 0.216
Prop Gum					– 0.308		– 0.274	
Propn Gum-box	– 0.414				– 0.434	– 0.219	– 0.358	
Propn Stringybark	+ 0.427		+ 0.279		+ 0.431	– 0.226	+ 0.367	
Tree Density				+ 0.221		+ 0.228	+ 0.242	
# Drooping Mistletoe					+ 0.304			
# Box Mistletoe				+ 0.180	– 0.294			
Total # Mistletoes						+ 0.226		
# Logs	+ 0.426					+ 0.302	+ 0.370	
# Cut Stumps		+ 0.312						
% Dieback				– 0.176				
Altitude (m)	+ 0.532	+ 0.322	+ 0.303	– 0.330	+ 0.562	+ 0.224	– 0.414	+ 0.182
Area (ha)		– 0.359	+ 0.289					– 0.211
Dist. Buildings (km)			+ 0.328					– 0.193
Dist. Perm. Water (km)			+ 0.290					
Dist. Edge (km)	+ 0.369	– 0.318						