

Contents

Preface	v
1 Australian conditions and their consequences	1
Shape of Australia after break-off from Gondwana and bird life	5
Australia a hotspot for cooperative behaviour in birds	8
2 Brain size, long life and resourcefulness	17
The problem with brain size as a measure of intelligence	17
The problem with reliance on body/brain ratios	18
The problem of the neocortex as an index of complex cognition	21
The problem of reductionism	22
Explaining big-brained birds in the context of life histories	24
Downside of a large brain	25
Cognitive complexity	27
3 Foragers, food-switchers and innovators	33
Type of foods eaten	33
Methods of obtaining food	34
Cognitive adaptations	36
Geographical mobility as a feeding strategy	43
Spatial memory and hiding food	44
4 Tool use	49
Australian tool users	51
Dunking behaviour	57
Other agents or uses	58
Means-end test	59
5 Nest and bower builders	63
Innovations in nesting locations	65
Nesting innovations – type of nest	69
Building a bower	73
6 Play behaviour	77
What to make of play behaviour	77
Who plays and with whom?	78
Solitary play	82
Object manipulation as play	83
Social play	85
7 Mimicry and imitation – the cognitive dimensions	93
Vocal mimicry	93
Mimicry and cognitive complexity	99
Deception	102
Mimicry of movement	103
Cultural transmission via movement imitation	104

8	Social and vocal learning	107
	Ways of learning	107
	Aural discrimination	109
	Vocal learning	110
	Song learning models and their inadequacy for some	
	Australian species	114
	Monomorphism, social brains and complex cognition?	116
9	Emotions, communication and cognition	121
	Study of emotions	122
	Methods of studying emotions	124
	Emotions and the 'face'	128
	Agonistic and affiliative signals	131
	Body postures as intentional communication	137
10	Communicating intentionally	141
	General features of vocalisations	142
	Duetting	143
	Alarm calls, mobbing in territorial and nest defence	146
	Mobbing behaviour	147
	Intentionality	149
	Deceptions and cheats	150
	Signals for enticement and trickery – the luring game	152
	Awareness of intentions of others	154
11	Abstract concepts and states of mind	157
	Brain lateralisation and survival	159
	Systems of knowledge	162
	Eye gaze following	166
	Pointing	167
	'Time travel'	170
	Forming abstract concepts	172
12	Which native birds are smart?	175
	The non-songbirds	178
	The passerines	186
	Epilogue	193
	Glossary	198
	References	201
	Appendices	239
	Index	259