

CONTENTS

Acknowledgements.....	1
Introduction.....	2
The importance of wasps and bees	2
About this book.....	2
Classifications of wasps, bees and plants	2
Identification of bees, pollen wasps and wasps	3
Flower visiting records	3
Morphology and life history of wasps and bees.....	3
Morphology of the adult.....	3
Life history.....	5
References and further reading	7
SECTION I: Wasps and bees in the semi-arid to arid areas of southern Africa	9
1. Distribution of semi-arid to arid areas of southern Africa	9
References and further reading	15
2. Geographical affinities of wasps and bees in the semi-arid to arid areas of southern Africa	16
References and further reading	19
3. Plants as a direct and indirect energy resource for wasps and bees with comments on the payback services rendered to plants.....	20
Plants as a direct source of energy for wasps and bees	20
Diversity of plant taxa visited by wasps and bees for obtaining floral resources.....	24
Plant families and their wasp and bee visitors	24
Dicots.....	24
Monocots.....	66
Final remarks on pollinators and plants.....	68
Plants as an indirect source of energy for wasps	68
Hunting wasps	68
‘Parasitic’ wasps	82
References and further reading	82
4. Nesting and community structure.....	86
References and further reading	111
5. The impact of agricultural land use and coastal exploitation on the diversity of wasps and bees	113
References and further reading	119



SECTION II: A review of known nesting, provisioning and associates of bees, pollen wasps and hunting wasps in southern Africa	120
Chrysoidea	120
Family Chrysididae	120
Family Bethyidae	123
Family Dryinidae	123
Family Sclerogibbidae	123
Family Embolemidae	123
Family Plumariidae	123
Family Scolebythidae	123
References and further reading	123
Vespoidea	125
Family Vespidae	125
Family Pompilidae	162
Family Rhopalosomatidae	177
Family Tiphidae	177
Family Mutillidae	177
Family Bradynobaenidae	180
Family Scoliidae	180
Family Sapygidae	181
References and further reading	181
Apoidea: Spheciformes	186
Family Ampulicidae	186
Family Sphecidae	189
Family Crabronidae	206
References and further reading	236
Apoidea: Apiformes	240
Family Colletidae	240
Family Andrenidae	243
Family Halictidae	246
Family Melittidae	247
Family Megachilidae	251
Family Apidae	280
References and further reading	298
APPENDIX: Some references to literature useful for identifying southern African aculeate wasps and bees	303
INDEX	307

