Project Plan SP 2012-022

Conservation of south coast threatened birds

Animal Science

Project Core Team

Supervising Scientist	Allan Burbidge
Data Custodian	
Site Custodian	

Project status as of March 13, 2019, 12:51 p.m.

Approved and active

Document endorsements and approvals as of March 13, 2019, 12:51 p.m.

Project Team	granted
Program Leader	granted
Directorate	granted
Biometrician	required
Herbarium Curator	not required
Animal Ethics Committee	not required

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Biodiversity and Conservation Science Program

Animal Science

Departmental Service

Service 6: Conserving Habitats, Species and Communities

Project Staff

Role	Person	Time allocation (FTE)
Supervising Scientist	Allan Burbidge	0.3
Technical Officer	Alan Clarke	0.8
Research Scientist	Jim Lane	0.02

Related Science Projects

Part of this work relates to that part of Dave Algar's work on cat control, that is being conducted on the south coast. There is a steering committee including Science Division staff and South Coast Region staff, and there is also interaction with Western Shield staff through regional meetings run by Ashley Miller.

Proposed period of the project

None – None

Relevance and Outcomes

Background

The Western Ground Parrot (CR), Noisy Scrub-bird (VU), Western Bristlebird (VU) and Western Whipbird (VU/P4) are all in need of management action, and some of these actions require research, as specified in the South Coast Threatened Birds Recovery Plan (Gilfillan et al. 2009). Required research relates to the major threats that have been identified (uncontrolled/unmanaged fire, and introduced predators) and to the reduction of taxonomic uncertainty and assessment of genetic risk. Altered fire regimes have long been known to be a threat to a range of birds and other animals, and their habitats, and it is also clear that management actions often need to be species specific and site specific (eg Burbidge 2003, Woinarski et al. in press). Inapproriate fire is known to be a threat to south coast threatened birds, but our understanding of their responses to fire is inadequate to inform management across the range of these species. Cats are known to have potentially devastating effects on bird abundancies and avian communiity structure (eg Crooks and Soule 1999) and mesopredator release can have unintended and unpredicted consequences on vertebrate communities generally (Ritchie and Johnson 2009; Walsh et al. 2012) and it is suspected (Gilfillan et al. 2009) that cats may be a serious problem for Ground Parrots and other threatened vertebrates on the south coast. To date, attempts to control cat numbers at the landscape level in mesic areas of Western Australia have not been successful; there is a clear need to establish sound scientific principles to underpin our management of cats in mesic parts of Western Australia, particularly on those parts of the south coast, such as in Fitzgerald River National Park, that support internationally significant conservation values. Some taxonomic questions have lead to discrepancies in State and Commonwealth threatened species lists in relation to both whipbirds and ground parrots, and ground parrots appear to have gone through population botlenecks that may lead to significant problems in the management of genetic diversity in both wild and captive populations (Chan et al. 2008; Murphy et al. 2010; Toon et al. in press). Clear resolution of these issues is required to allow informed prioritisation of managment actions and to clarify options for genetic management of ground parrots.

Aims

1. Elucidate the response of Western Bristlebirds to fire, across a rainfall gradient.
2. Determine the impact of cat predation on populations of Western Ground Parrots and other threatened birds on the south coast.
3. Clarify the taxonomic status of the Western Ground Parrot and the various populations of Western Whipbird, and make recommendations for revised threatened species listings.
4. Determine the impact of historical and contemporary population bottlenecks on the genetic variability of Western Ground Parrots, and make recommendations for genetic management of both wild and captive populations.

Expected outcome

Development of an understanding of the biological and ecological factors that limit the distribution and numbers of Ground Parrots, Western Bristlebirds and Noisy Scrub-birds, and the creation of management prescriptions that will increase the survival chances of these species and the Western Whipbird, and increase their total population size.

Knowledge transfer

The main users of the knowledge will be the South Coast Threatened Birds Recovery Team, DEC South Coast Region staff, the Western Shield Program and the Friends of the Western Ground Parrot.

Technology transfer occurs via contributions to deliberations and decisions of the recovery team, interaction with departmental staff in relation to fire management planning and fire prescriptions, contributions to decisions made by the working group on predator management on the south coast, to meetings of the Western Shield Program and South Coast project and operations staff involved in the south coast predator control adaptive management project, to the working group on management of the captive ground parrots, and via publications in international and local journals, newsletters, etc and presentations to conferences, and departmental and community groups.

Tasks and Milestones

1. Write up existing data on fire response
2. Continue population monitoring associated with predator control work, estimated 4-5 years required before resolution, given expected time required for population response in Ground Parrots.
3. Finalise analysis of whipbird samples, write up with co-investigators.
4. Investigate genetic markers in Ground Parrots and use results to make recommendations for pairing of captive birds, and for possible translocations of wild birds.

References

Refer also to references in the following key documents:

Burbidge, A. H. (2003). Birds and fire in the Mediterranean climate of south-west Western Australia. In ‘Fire in Ecosystems of south-west Western Australia: Impacts and Management’. (Eds I. Abbott and N. Burrows) pp. 321-347. (Backhuys: Leiden.)

Chan, K., Glover, D. R., Ramage, C. M., and Harrison, D. K. (2008). Low genetic diversity in the ground parrot (*Pezoporus wallicus*) revealed by randomly amplified DNA fingerprinting. Annales Zoologici Fennici 45, 211-216.

Crooks, K. R., and Soule, M. E. (1999). Mesopredator release and avifaunal extinctions in a fragmented system. *Nature***400**, 563-566.

Gilfillan, S., Comer, S., Burbidge, A. H., Blyth, J., Danks, A., and Newell, J. (2009). ‘South Coast Threatened Birds Recovery Plan 2009-2018: Western Ground Parrot Pezoporus wallicus flaviventris, Western Bristlebird Dasyornis longirostris, Noisy Scrub-bird Atrichornis clamosus, Western Whipbird (western heath subspecies) Psophodes nigrogularis nigrogularis, Western Whipbird (western mallee subspecies) Psophodes nigrogularis oberon and Rufous Bristlebird (western subspecies) Dasyornis broadbenti litoralis.’ Western Australian Wildlife Management Program No. 44, WA Department of Environment and Conservation, Perth.

Murphy, S. A., Joseph, L., Burbidge, A. H., and Austin, J. (2010). A cryptic and critically endangered species revealed by mitochondrial DNA analyses: the Western Ground Parrot. Conservation Genetics 12, 595-600.

Ritchie, E. G., and Johnson, C. N. (2009). Predator interactions, mesopredator release and biodiversity conservation. Ecology Letters 12.

Toon, A., Joseph, L. and Burbidge, A.H. (in press) Genetic analysis of the Australian whipbirds and wedgebills illuminates the evolution of their plumage and vocal diversity. *Emu Austral Ornithology*

Walsh, J. C., Wilson, K. A., Benshemesh, J., and Possingham, H. P. (2012). Unexpected outcomes of invasive predator control: the importance of evaluating conservation management actions. *Animal Conservation*.

Woinarski, J.C.Z., Burbidge, A.H., Comer, S., Harley, D., Legge, S., Lindenmayer, D.B. and Partridge, T. (in press) Fire and biodiversity in Australia. Ch xx in N. Maclean and A. Stow (eds) Austral Ark: The State of Wildlife in Australasia. Cambridge University Press.

Study design

Methodology

Fire: survey of bird populations to determine spatial distribution in relation to contemporary and historical fires to determine response to fire.

Predators: integrated with Dave Algar's cat management project; bird population trends detrmined by aural survey and analysis of ARU files.

Genetics: Collaboration with experienced avian geneticists utilising mitochondrial DNA for phylogenetic questions and microsatellites for population level questions.

Biometrician's Endorsement

required

Data management

No. specimens

No further specimens expected.

Herbarium Curator's Endorsement

not required

Animal Ethics Committee's Endorsement

not required

Data management

Occurrence and survey data held collaboratively between SD and South Coast Region; mostly held in relational databases in MS Access.

Budget

Consolidated Funds

Source	Year 1	Year 2	Year 3
FTE Scientist			
FTE Technical			

Source	Year 1	Year 2	Year 3
Equipment			
Vehicle			
Travel			
Other			
Total			

External Funds

Source	Year 1	Year 2	Year 3
Salaries, Wages, OVertime			
Overheads			
Equipment			
Vehicle			
Travel			
Other			
Total			