GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

Biodiversity and **Conservation Science**

Bi-annual Program updates January-August 2020

September 2020

Animal Science Program

Key achievements for January-August 2020

Fauna translocations

- The first Shark Bay bandicoot born on Dirk Hartog Island was captured in March 2020, following their release in spring 2019, with juveniles also observed on camera. Population genomic analysis of wild and reintroduced populations of boodies is well-progressed and will inform the choice of source populations for reintroduction to the island.
- A camera trap array has been established on Barrow Island to survey source populations of rakali (water rats) preceding a planned translocation to the Montebello Islands.
- The Kalbarri National Park translocation of rock wallabies demonstrated that establishing founder populations from mixed Wheatbelt and Cape Range animals increased genetic diversity. Successful reproduction between Kalbarri animals and introduced animals was confirmed.
- An assessment of the survivorship and movements of western grey kangaroos relocated from an urban area to state forest near Jarrahdale was completed with a low rate of survival reported.
- Interbreeding of Barrow Island and Shark Bay boodies at Matuwa has been successful, resulting in high genetic diversity, with no impacts of introgression on survivorship and fecundity (outbreeding depression).
- Brushtail possums translocated from Barrow Island to Matuwa were shown to have relatively good genetic health although they are at risk of decline and loss of genetic diversity due to small population size.

Feral cat management

- Continued the refinement of feral cat control techniques regarding bait palatability, deployment, minimising non-target impacts and trapping.
- Results of a comparison of feral cat control techniques at Matuwa indicated that a combination of aerial baiting with *Eradicat* and trapping was the most effective method. Work completed for an offset funded project showed that landscape scale control of feral cats benefits the endangered northern quoll.
- Felixer feral cat grooming traps were demonstrated to be safe for use in the presence of northern quolls and numbats.

Researching threatened species

- A collaborative project with Kimberley Region, Environs Kimberley and Indigenous Rangers, funded by the NESP Northern Australia Environmental Resources Hub, is surveying the occupancy and abundance of bilby populations across a vast area of the Kimberley, where the status of bilbies is unknown.
- Investigations into the habitat used for denning by female northern quolls has provided guidance for the creation of suitable artificial habitat.
- Non-invasive genetic monitoring of ghost bats is providing insight into the species' ecology to inform potential impacts and responses to development.
- High-throughput SNP genotyping methods has enabled more rapid, cost-effective and reproducible screening of faecal DNA samples for monitoring.
- Radio-tracking male carpet pythons during the breeding season proved to be a successful technique for locating adult female pythons, the cohort most responsible for observed predation of Gilbert’s potoroos inside a fenced enclosure.
- Extensive surveys for Australasian bitterns were conducted and audio recording units were deployed as part of a collaboration with Birdlife Australia.
- Preparation for a translocation of western ground parrots to another mainland site is underway.

Plant Science and Herbarium Program

Key achievements for January-August 2020

The Western Australian Herbarium

- Continued to provide taxonomic and location information on WA's flora to underpin conservation and development planning decisions.
- 7,553 specimens were added to the Herbarium collection, increasing the total to 814,934 catalogued items, representing more than 18,500 taxa. 501 plant names (482 formally published and 19 informal names) were added to the WA Census.
- Completed the requirements analysis and assessment of collections management systems for a new implementation of WAHerb. The WA Seed Centre received funding and commenced two new conservation seed banking initiatives:
    - Australian Government Wildlife and Bushfire Recovery Program - seed-banking conservation significant species affected by 2019/2020 bushfires
    - Department of Primary Industries and Regional Development biosecurity program - seed banking of conservation significant species potentially susceptible to myrtle rust.

Taxonomic and conservation genetics / ecology research supporting flora conservation

- Plant taxonomy research continued to focus strategically on naming undescribed taxa with an emphasis on those of conservation significance together with major revisions of *Tephrosia* and *Stylideaceae*.
- Received funding from Bioplatforms Australia through the Genomics for Australian Plants initiative for two programs. The Phylogenomics Australian Angiosperm Tree of Life project to provide DNA for one exemplar species from 96 WA genera; and four conservation genomics projects focusing on resolving species complexes involving potentially new taxa of conservation concern.
- Completed an analysis of the spatial distribution of threatened and priority flora and major threatening processes in Southwest Australian Floristic Region to assist with conservation planning and management.
- Worked with South Coast Region to develop a plan for recovery of threatened flora and threatened ecological communities in the Stirling Range National Park following the 2018 and 2019 bushfires and received funding from the Australian Government to continue monitoring recovery and implement translocations for the most imperiled species.
- Began working with South Coast and Wheatbelt Regions on understanding causes and characteristics of flora decline in Fitzgerald River National Park and Wheatbelt nature reserves and how these might be addressed through threat and ecosystem management.
- To mark the 50th anniversary of the Western Australian Herbarium's journal *Nuytsia*, 50 new species from 50 different genera are being described on separate days throughout the year. Thirty-seven have been published to date (mostly plants but also two algae and one slime mould), many of which are rare or poorly known.
- Major taxonomic updates were published for the genera *Goodenia*, *Styphelia* and *Levenhookia*.
- The book by John Huisman (Curator Herbarium) *Algae of Australia: Marine Benthic Algae of North-western Australia, 2. Red Algae* received the Prescott Award from the Phycological Society of America.
- A paper combining the genomic analysis of the *Seringia exastia* species complex with subsequent taxonomic revisions has been published in *Taxon*.
- A genetic analysis of subspecies relationships in *Conospermum caeruleum* was undertaken to inform Main Roads and Water Corporation projects in the Busselton area.

Ecosystem Science Program

Key achievements for January-August 2020

Research to inform hydrological management of key wetlands

- A collaboration with the Australian Nuclear Science and Technology Organisation provided an independent dataset to help assess natural and pumping induced groundwater recharge in Toolibin Lake.
- Continued research on acidification, carbon and water balances in the Muir-Byenup System wetlands, with preliminary analyses published as progress reports.
- Research into the hydrological functioning of the Ashfield Flats area on the Swan River is progressing, with field work due to be completed in the next few months.

Biodiversity survey to provide insights for land management planning

- Participating in a European Union funded project to survey biodiversity in paired urban and natural sites at 100 locations across the globe that will increase our understanding of biodiversity within threatened *Banksia* woodlands of the Swan Coastal Plain. The sites are in Kings Park and Lowlands.
- A survey of the composition and condition of dune plant communities in the Fortescue Valley, funded from the Pilbara Environmental Offsets Fund, has contributed to decisions around fencing these PECs.
- A survey of wetlands in the Lake Carnegie salt lake system was undertaken in June. Samples are being processed, with at least one new species of aquatic plant already identified.
- Reports were produced on the aquatic invertebrate values of two significant wetlands in Swan Region: Lake McLarty in the Peel-Yalgorup Ramsar site and Little Darkin Swamp in the Perth Hills District.
- Contributed to a biological survey strategy being developed by WABSI.

Research to inform forest management

- ForestCheck continued its focus on flora and fauna responses to prescribed burns and wildfires, including a new paper on floristic responses to silvicultural treatments and fire.
- The long term effects of thinning on the growth and crown characteristics of jarrah have been published. Continued monitoring the effects of re-thinning on forest health and hydrology in the Yarrigil catchment continued and installed telemetry equipment.
- A new project to trial the use of metabarcoding and eDNA to investigate fire and silviculture effects on forest biodiversity commenced, starting with a fire chronosequence project in the northern Jarrah Forest.
- Studies of forest vulnerability to drought and the Yarloop wildfire continue.

Understanding landscape scale genetics to inform restoration and rehabilitation

- A draft manuscript has been prepared discussing the analysis of genetic structure in *Taxandria linearifolia* and the association of genetic variation with climatic variables.
- A paper was published on the evolutionary history of C*orymbia hamersleyana* and *Acacia pruinocarpa* (Pilbara), and another on the genetic structure of *Banksia sessilis* (south-west) is in review.
- A paper was published on the variation in biomass and cineole traits, genetic parameters and potential gains from selection in *Eucalyptus loxophleba* subspecies *gratiae.*

Monitoring to understand ecological change and management effectiveness

- A project to monitor the condition of Ramsar wetlands is in development.
- Published results from two wetlands monitored for their biodiversity values under the Salinity Action Plan.
- Commenced an eDNA project to develop survey methods for rakali and a threatened freshwater mussel.
- Preliminary field work was undertaken with Pilbara Region staff to establish a program to monitor the effectiveness of fencing to protect Fortescue Marsh vegetation from stock grazing.

Marine Science Program

Key achievements for January-August 2020

Turtles

- Worked with the Commonwealth Government to develop National Light Pollution Guidelines that provide knowledge and practical solutions to stakeholders to reduce the impact of artificial light on wildlife.
- A PhD was completed (with three peer reviewed articles) on the impacts of artificial light on hatchlings at sea, including field and laboratory experiments that showed that the orientation of hatchlings at sea is influenced by light. This project showed quantitatively how coastal infrastructure such as jetties harbour fish predators that increase the predation rates of hatchlings when adjacent to rookeries.
- Partnered with Wirrpanda Foundation to undertake turtle field-based research and conservation on Thevenard Island with local Onslow school children and their families. Satellite tracking has recently shown the two-way migration paths of flatback turtles from their foraging grounds at Roebuck Bay to Dampier Archipelago Islands for nesting.

Monitoring

- Seagrass monitoring was completed at Jurien Bay and Ngari Capes marine parks with Regional staff. A presentation on Ngari Capes Marine Park monitoring was provided to Blackwood District staff.
- Field surveys were undertaken in the Shark Bay marine reserves to monitor fish, seagrass, coral and invertebrate communities; and at Ningaloo Marine Park to continue research on algae/fish dynamics and the ecology of cryptobenthic fishes in complex reef habitats
- The beach return camera system used to monitor little penguins on Penguin Island was upgraded.
- Conducted a participatory mapping workshop with Yawuru rangers and community members to help guide monitoring programs for turtles and seagrass within Roebuck Bay.
- Worked with Kimberley Region staff, AIMS, Parks Australia and Border Force to obtain quantitative information about a moderate coral bleaching event that occurred during April and May 2020 at the State managed Rowley Shoals Marine Park and Commonwealth managed Mermaid Reef Marine Park. The Rowley Shoals are of exceptional marine conservation significance and this is the most significant coral bleaching documented and follows minor events in 2005 and 2016.
- Field work using a combination of video surveys and small trawl samples was conducted at Shark Bay to investigate impacts of seagrass loss on fish assemblages and information will be used to assess how loss of seagrass following the 2011 marine heatwave may have effected fish diversity.

Research

- A paper co-authored by Jordan Goetze that examined the conservation status of sharks across >350 reefs and 58 nations was published in *Nature*. Results indicated that fishing has impacted shark abundance; however, sanctuaries, closed areas, and fisheries management have had a positive effect.
- A paper published in *Global Change Biology* documented the impact of the 2011 marine heatwave on seagrass cover across the Shark Bay World Heritage Area. Mapping before and after the heatwave indicated that >1,300km^2 of dense seagrass was lost between 2010 and 2014, which has been estimated to be the largest seagrass loss ever documented that is attributable to a single environmental event.
- Continued delivery of the final education and communication work of the WAMSI Kimberley Marine Research Program, including a review and update of protocols for scientists to engage with traditional owners in Kimberley saltwater country research.

Awards

- The Keiran McNamara Scholarship for 2020 was awarded to Molly Moustaka who will be undertaking a PhD on mangroves at Murujuga.

Fire Science Program

Key achievements for January-August 2020

Research

- Continued the long-term monitoring of Kimberley threatened fauna response to fire mosaics created through savannah management.
- Pre-and post-fire in *Banksia* woodlands survey continued, in research examining plant community responses to variable fire intervals and time since fire, as well as weed invasion and management treatments.
- Fire severity was surveyed in ~700 sites in Jarrah and other forests to refine fire severity mapping and reporting protocols and research will expand in 2020-21 to examine longer term effects of varying severity.
- A collaboration with South Coast Region examining fire return intervals for sensitive plant species across a rainfall gradient is continuing, with new research investigating causes of post-fire recruitment failure.
- A four year national collaborative project examining fire seasonality impacts on ecosystems and threatened species commenced, with south-west forests identified as a focal system. A research scientist position funded from this project has commenced.
- Relationships between lightning ignition in south-west forests and major climate variability models have been investigated in a collaborative study with CSIRO and the Bureau of Meteorology.
- Post-fire assessments were undertaken to quantify consumption of fine and woody fuels, and fire-induced tree loss at forest monitoring sites burnt in the December 2019 Yourdamung bushfire.
- Contributed to evaluation and verification of the prototype Australian Fire Danger Rating System.

Student supervision

- Three Honours student and seven PhD candidates have been supervised during 2020, with one PhD completed.

Publication highlights

- Lachie McCaw co-edited a special issue of the *International Journal of Wildland Fire* that provided an overview of the context, status and challenges for contemporary prescribed burning in Australia, with 11 papers illustrating the diversity of approaches currently being undertaken in different regions to address complex adaptive management and monitoring challenges. Staff from BCS contributed as co-authors on two papers. Dr McCaw also contributed to a chapter within a new book *Prescribed Burning in Australia* published by the Bushfire and Natural Hazards CRC published in 2020.
- Researchers published papers on diverse subjects, including:
    - role of cane toads on recent critical weight range mammal collapses across northern Australia
    - fire severity impacts on tree mortality and post-fire recruitment in Karri forests
    - how seed traits determine species responses to fire under varying soil heating scenarios
    - den tree selection by arboreal mammal species in tropical savanna
    - how prescribed burning benefits threatened mammals in northern Australia
    - how fire drives habitat changes for birds in the Great Western Woodlands
    - comparing the performance of daily forest fire danger summary metrics for estimating fire activity in southern Australian forests. This study was done in collaboration with CSIRO and utilised fire occurrence data from three study areas in south-west WA and three areas in Victoria.
    - the (lack of) effects on jarrah forest flowering assemblages due to interactions between historic silviculture and wildfire
    - effects of wildfire and fire mosaics on bird assemblages in the Walpole small grain fire mosaic.

Kings Park Science Program

Key achievements for January-August 2020

Restoration science

- Commenced collaboration with the new Co-operative Research Centre (Transformation in Mining Economies).
- Commencement of a collaborative program to examine the potential for native grazing systems in the Kimberley with the Department of Primary Industries and Regional Development.
- Completed the research component of a collaborative project with Metals X Limited in understanding the limitations of various mine waste substrates to support vegetation restoration at its Nifty copper operations in the Great Sandy Desert. The project is now developing a restoration manual underpinned by this research.

Rare species

- Continuation of a five-year collaborative project with Mineral Resources to provide the science to underpin the translocation of the threatened flora species, *Tetratheca erubescens,* by understanding seed biology and plant propagation for use in future translocation programs.
- Continued the propagation of threatened orchid species with *Caladenia busselliana* and *C. lodgeana* seedlings transferred to the glasshouse.
- Additions to the living orchid collection included the nationally listed and critically endangered *Caladenia viridescens* and *C. procera*. The seed and fungal cryostorage collections increased with 101 seed accessions made in early 2020 and 340 fungal accessions.

Conservation genetics

- In collaboration with The University of Western Australia (UWA), research results provided an ecological genetic understanding of the importance of nectar-feeding birds as pollinators for a range of native flora.
- An assessment of the potential impact of introduced honeybees on native flora has been undertaken, with a view to working towards a predictive framework to manage impacts for threatened flora species.
- Continued the assessment of adaptation and resilience to climate change in seagrass.

Seed science

- Commenced the final year of a collaborative research project to develop seed enhancement technologies and design, and construct new seed processing equipment and direct seeding machinery.
- A project in partnership with the University of NSW examined the inoculation of soils with pelletised cyanobacteria strains to determine the capacity for pellets to improve soil quality and support seedling growth in mine site restoration.
- Completion of an ARC Linkage Grant with UWA and Curtin University to quantify patterns of metabolic rates in seeds to develop new techniques for viability monitoring and assessment during storage.
- Completion of a project supported by Rio Tinto to develop seed germination protocols for the threatened flora species *Aluta quadrata* to support future research into the management of this species and address potential impacts of mining activities.
- Completed two collaborative PhD research projects: on the impacts of soil amendments for the restoration of mine sites in the Pilbara; and dormancy and germination of a range of grasses and woody shrubs native to the Pilbara.

Perth Zoo Science Program

Key achievements for January-August 2020

Western swamp tortoise

- A record 100 eggs were laid with 57 hatchlings produced, 55 of which survived.
- No western swamp tortoises were released this year due to the very low rainfall in the Moore River area.

Dibbler

- Ten pairs of dibblers were bred this year, producing 32 young, 25 of which survived to weaning. Most of these young and six adults will be released onto Dirk Hartog Island National Park in October 2020.

Numbats

- Eleven numbats bred with a further three numbat joeys rescued from the wild after their mother was predated by a bird of prey within the Dryandra Woodland sanctuary in early September. Most of the young bred at Perth Zoo will be sent to Mallee Cliffs National Park, NSW in early December 2020 as part of the NSW Save Our Species program. No decision has been made on where the three rescued numbats will be released.

Geocrinia frog species

- *Geocrinia alba* and *G. vitellina* metamorphs have been raised with 103 juvenile *G. alba* to be released at sites east of Margaret River in September 2020 and 76 juvenile *G. vitellina* to be released at two sites east of Margaret River in September 2020. One of those sites is located south of the Blackwood River, making this the second attempt to establish a population of this species outside of its natural range (i.e. a conservation introduction).

Hairy marron

- The seven hairy marron in the breeding colony are in good health.
- A third male (DNA confirmed), sourced from the Margaret River in August 2020 was added to the colony on 4 September, but will not participate in the breeding season for 2020 due to quarantine requirements.
- Some behaviour consistent with courting has already been observed between two of the marron, but breeding is not expected to occur until water temperatures start to increase in mid to late-spring.

Black cockatoo conservation

- A field survey was undertaken in June to revisit Carnaby's cockatoo nest trees located along linear corridors (road and rail) in the northern wheatbelt and identified during a 1996-1998 study. Initial rates of attrition of nest trees indicate nest hollows are being lost at a rate 2-3 times that recorded in larger woodlands on private property. The remainder of the area to be surveyed will be visited in late spring.
- The 700th rehabilitated black cockatoo (from three species) was released to the wild in August 2020.

Research outputs

- Nine peer-reviewed scientific papers were published.
- One conference presentation was delivered.
- One Masters of Environmental Science thesis was completed.
- Four lectures were presented as part of accredited tertiary degree units.

Rivers and Estuaries Science Program

Key achievements for January-August 2020

Swan Canning monitoring and reporting

- A dedicated Eyes on the Swan Canning Riverpark webpage has been developed for reporting on water quality conditions. Weekly monitoring of the estuary and fortnightly monitoring of the catchment progressed, with more than 2,500 samples collected, analysed and reported with results shared on webpages and in the West Australian newspaper.
- Water quality monitoring sampling plans and methodologies were updated to improve efficiencies and reduce human error.
- Oxygen levels within the Upper Swan Estuary and CEanning River were being maintained at appropriate levels, meeting key performance indicator targets to support healthy ecosystem functioning.
- The 2019 report on fish communities in the Swan Canning Riverpark has been released. The Fish Community Index provides an ecological indicator of estuary condition that complements existing water quality monitoring and evaluation and is undertaken annually as part of an on-going monitoring and reporting framework.
- Annual seagrass monitoring was completed and a seagrass habitat map was updated in interim form. A collaborative arrangement with UWA was established for a student project on using molecular biomarkers to assess seagrass health.
- Collaborative arrangements with Fremantle Ports and Chem Centre were established.

Management support; advice and incident response

- Supported Rivers and Estuaries Branch to transition the oxygenation program from DWER to DBCA.
- Continued to facilitate water quality testing in drains following the Cleanaway fire event in late 2019 and provide advice on levels of contamination.
- Additional monitoring of algae, mussels and crabs was undertaken to inform an Incident Response Team for a harmful algal bloom (*Alexandrium* spp). An options paper was developed to support revised approaches to bloom management in the likelihood that it will recur. An algal bloom response monitoring meeting was held with stakeholders and protocols were updated.

Research into understanding and mitigating threats to values of the Swan Canning

- A PFAS contaminants report was finalised and an investigation into PFAS containment within Ellen Brook wetland commenced.
- A collaborative arrangement with the Department of Water and Environmental Regulation was established to investigate plastic pollution in the Swan Canning.

Developing decision support tools and trialling new technologies

- Acoustic receivers provided evidence of fish movement through Kent St weir fishway.
- Swan Canning Estuarine Response models were used to derive data for assessment of prawn, dolphin and fish distribution.
- Three reports on acoustic technologies to describe fish communities and habitat are in review.

Remote Sensing and Spatial Analysis Program

Key achievements for January-August 2020

Remote piloted aircraft guide for image analysis

- Developed a technical guide for different environments in Western Australia to capture imagery from drones for image analysis. This document provides details on how to capture and process imagery to enable field measures of vegetation cover, height and other land covers to be derived and utilised in monitoring and extended to satellite remote sensing.

Spatial multi criteria analysis of wetland ecological value

- As part of a collaborative project with the Department of Water and Environmental Regulation, criteria were identified relating to the ecological value of wetlands on the Swan Coastal Plain and spatial modelling was undertaken to represent and combine these criteria to create a scaled map of ecological values. This will provide supporting information in decision making regarding wetlands across government.

North Kimberley marine park mangrove monitoring

- Using innovative drone imagery techniques to provide field data in difficult and dangerous to access locations, algorithms were developed to calibrate satellite imagery to mangrove canopy cover. This will enable accurate monitoring across the North Kimberley marine park mangrove occurrence using satellite imagery and provide reporting measures.

Fire metrics and mapping

- Development of ‘R’ scripts to automate and speed processing for fire metric analysis from current spatial fire history information to provide fire intervals and frequency, informing an understanding of fire regimes.
- A comparison between different sources of fire scar mapping has been undertaken across the Great Victoria Desert. Modis satellite based 250m resolution fire scars were compared with Landsat based 30m fire scar mapping and found the Modis data informative at a cross regional scale but at an operational scale Landsat data is required. A journal paper is in preparation explaining the findings.

monitoR – r package for river and estuarine monitoring data

- Published a ‘R’ package containing reporting and visualisation functions along with documentation required for Rivers and Estuaries Science monitoring data. This brings in-house functionality to provide rapid visualisation of monitoring data in context with previous observations in publishable formats.

Remote sensing for duty officer development

- Developed and undertook training to inform duty officers of appropriate remote sensing products and their application at fire incidents, which is the first time this training has been included in duty officer development.

Species and Communities Program

Key achievements for January-August 2020

Biodiversity information

- Work is progressing to integrate the Threatened and Priority Flora List, Fauna and Threatened Ecological Communities databases, as well as sharing this information with other parties through SLIP or targeted searches. A dedicated resource has been identified to expedite this important work.

Listing process

- The first listing of threatened ecological communities (TECs) under the *Biodiversity Conservation Act 2016* will be made using the IUCN Red List of Ecosystems criteria and categories. All of the current 65 TECs have been assessed against the IUCN categories and the approach tested with the Threatened Ecological Communities Scientific Committee over two meetings in March and June. The formal evaluation of nominations will follow six weeks of public consultation.
- One hundred and three species have been identified for listing review to ensure that all listings are consistent with IUCN criteria.

Recovery planning

- Two interim recovery plans for critically endangered plants have been prepared under the *Biodiversity Conservation Act 2016*: *Conospermum galeatum* is known from two locations in the Wheatbelt; and *Gastrolobium vestitum* is known from two subpopulations within Stirling Range National Park.
- A new project has been identified to examine options around planning for recovery and evaluating the efficiency and effectiveness of both recovery plans and recovery teams. This work is being overseen by the Executive Directors of Biodiversity and Conservation Science, Regional and Fire Management Services, Conservation and Ecosystem Management and Perth Zoo.

Wetlands

- Significant progress has been made on the new wetlands mapping layer for the Swan Coastal Plain. The final geodatabase is due for completion in September 2020 and will be distributed to external reviewers.
- A biological survey was completed at Lake Carnegie with Goldfields Region staff and several of the Tarlpa Matuwa Piarku Aboriginal Corporation Rangers to support a potential nomination under the Ramsar Convention. Fourteen sites were surveyed, including two points on the main lake and 12 other wetlands (claypans, channel systems and river pools), for aquatic invertebrates, water quality and sediment. Eighteen flora quadrats were sampled as well as numerous opportunistic collections. Results will inform a description of the ecological character, threats and management options.

Flora and fauna authorisations

- In the 2019-20 financial year, there were 220 threatened fauna and 192 threatened flora authorisations issued. Five TEC modification assessments were conducted. Since 1 July 2020, there have been 28 threatened fauna and 17 threatened flora authorisations.

Advice

- The flora team is working with the Department of Primary Industries and Regional Development to undertake a strategic project to secure the long term survival of *Typhonium* sp. Kununurra and de-risk future agricultural and associated infrastructure development in the Ord River district.
- BCS and RFMS have provided advice and support to RIA for relocation of quokkas from the golf course following fencing.

BCS achievements

- The Premier announced $7.7 million funding for the Biodiversity Information Office (BIO) as part of the larger Environment Online Initiative, with additional investment from the Commonwealth Digital Environmental Assessment Project. BIO has the goal of capturing, storing, and making available biodiversity data to support streamlining of environmental assessments. BIO is hosted in BCS and will work closely with OIM. Three positions will be established in the first year, a manager, a business analyst, and a technical lead.
- BCS staff have led DBCA contributions to revision or development of State policies being led by DWER: State Climate Policy Roadmap and the Native Vegetation Policy.
- BCS staff coordinated contribution to Australia's 6th report to the Convention on Biological Diversity.
- The Department of Agriculture, Water and the Environment have established an Expert Panel to provide advice on the national response to the bushfires for biodiversity chaired by the Threatened Species Commissioner. Dr Juanita Renwick and Dr Simone Vitali are representing DBCA as advisors to the Panel. The Commonwealth have partnered with States to provide funding to support bushfire recovery actions. DBCA will use this funding to support recovery actions for western ground parrot, threatened plants and invertebrates in the Stirling Ranges and increased capacity for wildlife response at Perth Zoo.
- BCS staff contributed data to the Threatened Mammal Index and Threatened Plant Index (NESP Threatened Species Recovery Hub). The index will provide measures of population trends across Australia's threatened mammal species.
- The Dirk Hartog Island National Park Ecological Restoration project continued to make steady progress towards its Stage II goals. Four animal species of the 13 species planned as part of the fauna reconstruction element have been translocated (see Animal Science Program). Biosecurity measures and control of high priority environmental weeds continued along with community engagement activities and substantial progress in the construction of an additional airstrip at Herald Bay.
- BCS staff have been working with RFMS on the regional conservation planning process. Dr. Megan Barnes has been providing decision science support through this process to embed benefit cost analysis into the selection of targeted actions for declining taxa to enhance transparency and cost-effectiveness of management. A working group has been formed to guide the planning process.