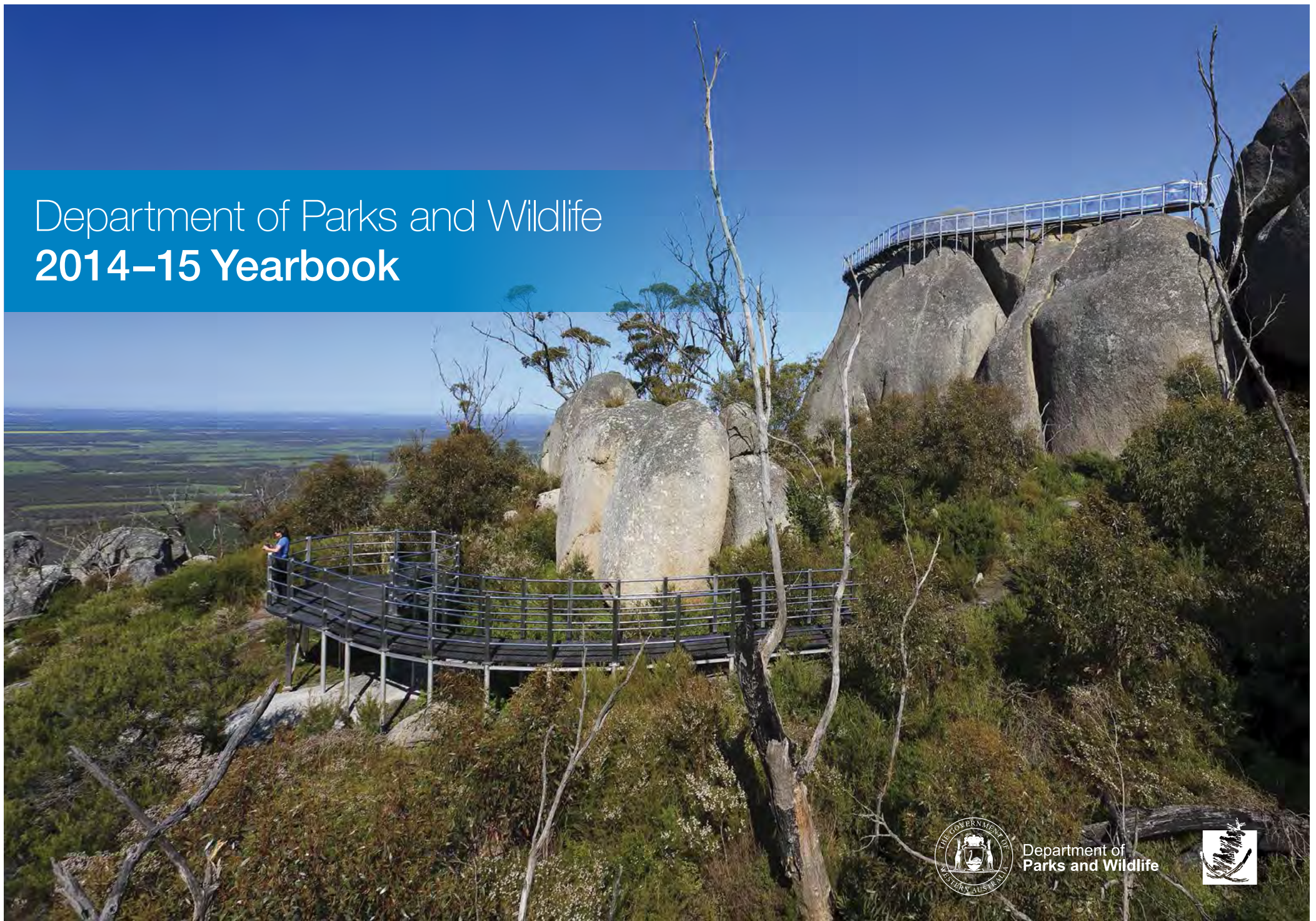


Department of Parks and Wildlife 2014–15 Yearbook



Department of
Parks and Wildlife



Acknowledgments

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About the Department's logo

The design is a stylised representation of a bottlebrush, or *Callistemon*, a group of native plants including some found only in Western Australia. The orange colour also references the WA Christmas tree, or *Nuytsia*.

WA's native flora supports our diverse fauna, is central to Aboriginal people's idea of country, and attracts visitors from around the world. The leaves have been exaggerated slightly to suggest a boomerang and ocean waves. The blue background also refers to our marine parks and wildlife. The design therefore symbolises key activities of the Department of Parks and Wildlife.

The logo was designed by the Department's senior graphic designer and production coordinator, Natalie Curtis.

Front cover: Granite Skywalk, Porongurup National Park. *Photo – Andrew Halsall*

Back cover: Spinifex. *Photo – Jennifer Eliot/Parks and Wildlife*



Yardie Creek, Cape Range National Park. *Photo – Jennifer Eliot/Parks and Wildlife*



Department of
Parks and Wildlife



A woman with blonde hair, wearing a wide-brimmed hat and a light-colored button-down shirt, is sitting on a rocky outcrop. She is holding a purple pen and writing in a black notebook. She is wearing brown cargo pants and brown boots. The background shows a dry, rocky landscape with sparse vegetation and a blue sky with light clouds.

Department of Parks and Wildlife 2014–15 Yearbook

Senior research scientist Juliet Wege. *Photo – Carol Wilkins/Parks and Wildlife*

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Glistening triggerplant. Photo – Parks and Wildlife

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Director General's year in review

“Never before has there been so much focus and investment on learning more about the natural wonders of this magnificent region, protecting and managing it in conjunction with traditional owners, and making it more accessible and attractive than ever to tourists.”

Garaanngaddim (Horizontal Falls). Photo – Todd Quartermaine/Parks and Wildlife

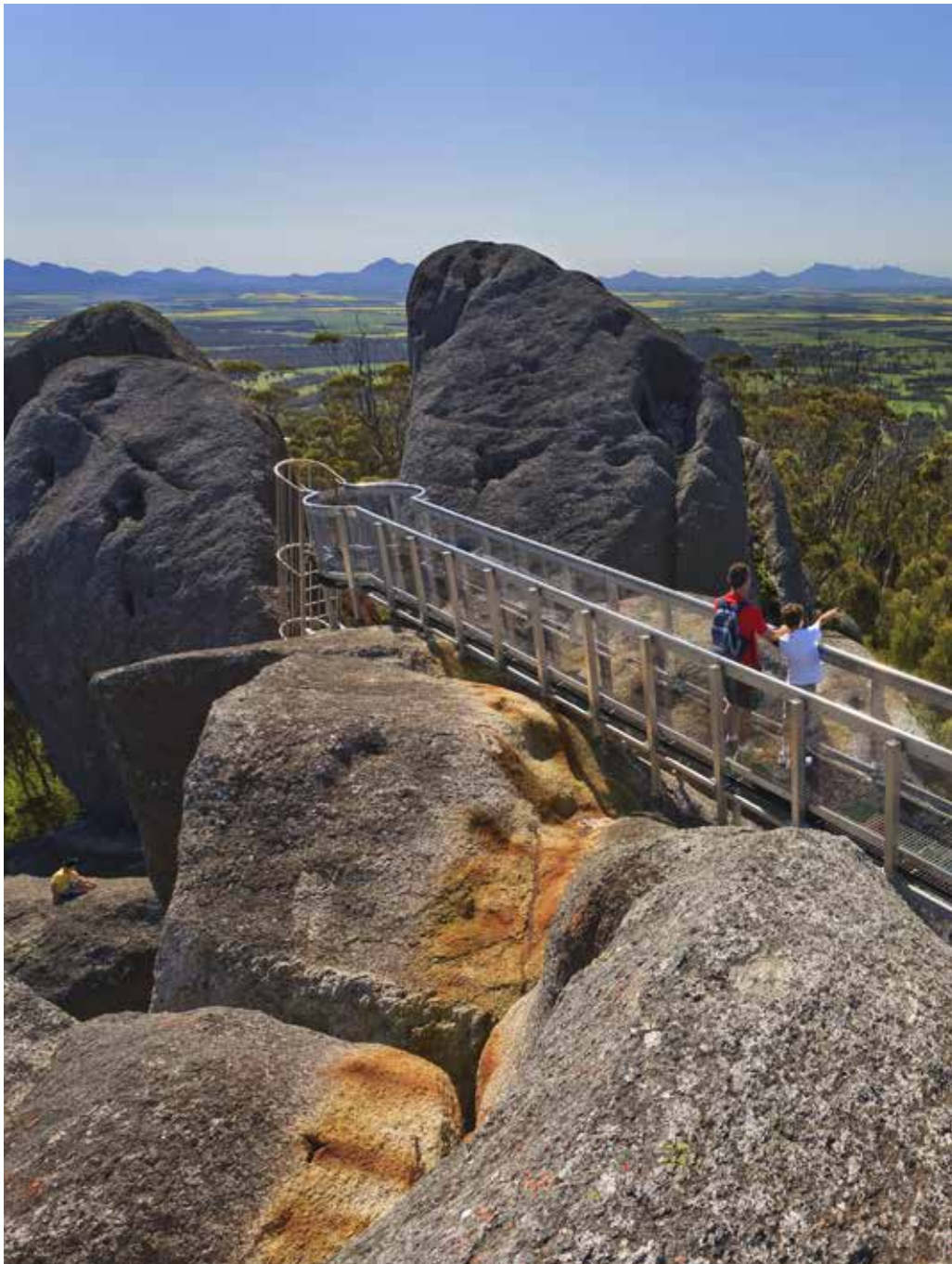


2014–15 was a successful year for the Department of Parks and Wildlife.

The challenge of conserving our unique and diverse native animals, plants and ecosystems and making the environment more accessible for people to enjoy and appreciate was the Department's key mission, and will continue to be.

Working with the community, our scientists, wildlife officers, rangers, planners, firefighters, conservation officers and all our 'behind-the-scenes' staff worked tirelessly to conserve the land and water we manage on behalf of the people of Western Australia.

In 2014–15, Parks and Wildlife managed 100 national parks, 13 marine parks and numerous conservation reserves – in all 28 million hectares of conservation estate. More people visited WA's parks and reserves than ever before, with 18.6 million visits.



Granite Skywalk at Castle Rock, Porongurup National Park. Photo – Andrew Halsall



Camping at Osprey Bay campground. Photo – Parks and Wildlife

To meet the growing demand for more affordable and high-quality camping experiences in WA, we created more than 250 new camp sites, new and improved campgrounds and world-class infrastructure under our four-year *Parks for People* initiative, funded by *Royalties for Regions*.

New campgrounds were created at Logue Brook Dam near Dwellingup, Gnaala Mia near Narrogin and Credo in the Goldfields. Existing campgrounds were upgraded, including Conto in Leeuwin-Naturaliste National Park, Osprey Bay in Cape Range National Park, Miners in Coalseam Conservation Park, Black Point in D'Entrecasteaux National Park and Nanga Brook in Lane Poole Reserve.

Partnering with the community and tourism industry was an integral part of *Parks for People*. We entered into a community partnership agreement at the new Logue Brook campground with a tourism operator, which provides on-ground management of the facility. This two-year trial partnership will help determine if this type of arrangement is suitable at other Parks and Wildlife campgrounds.

Another highlight during the past year was the progress made under the *Kimberley Science and Conservation Strategy*. The Department worked with several traditional owner groups to progress the development of new national and marine parks in the Kimberley, which will cover around five million hectares. The Environment Minister released the final management plan for Eighty Mile Beach Marine Park, draft management plan for Yawuru Birragun Conservation Park and indicative management plan for the Yawuru Nagulagun / Roebuck Bay Marine Park.

Never before has there been so much focus and investment on learning more about the natural wonders of this magnificent region, protecting and managing it in conjunction with traditional owners, and making it more accessible and attractive than ever to tourists.

We also forged new partnerships with our international counterparts, signing WA's first sister park relationship with China between Purnululu National Park and Danxiashan National Park. This agreement will help strengthen our relationship with China in tourism and park management as both



Parks and Wildlife technical officer Sean Garretson releasing a chuditch on Dolphin Island Nature Reserve. Photo – Judy Dunlop/Parks and Wildlife



Staff plan their response to the O'Sullivan bushfire in February 2015. Photo – Jennifer Eliot/Parks and Wildlife

World Heritage-listed parks are major attractions due to their striking landscapes and diversity of species.

The expertise of our scientists and conservation staff was instrumental in implementing strategies and programs to care for the environment.

The Department's flagship wildlife recovery program *Western Shield* was reinvigorated, with fox and cat baiting across 3.8 million hectares of WA. In a significant step forward in the fight against feral cats and after more than a decade of research by Parks and Wildlife, the *Eradicat*® feral cat bait was approved for operational use and was integrated into our broadscale baiting program – an exciting development for threatened species conservation in WA.

Through translocations, breeding programs, feral animal control and the maintenance of cat-free sanctuaries, we continued to implement recovery actions for our most at-risk species, such as woylies, numbats, Gilbert's potoroos and western ground parrots, and there were significant outcomes in the conservation of native plants and ecosystems.

Parks and Wildlife continued to perform its role as a lead fire management agency. Last financial year saw one of our most successful prescribed burning programs, achieving almost 75 per cent of the prescribed burning target in the south-west forest regions. In May, \$20 million of *Royalties for Regions* funding over four years was allocated to further enhance and expand prescribed burning, to help reduce the risk of damaging summer bushfires to the community and environment.

The Department was involved in the suppression of three major bushfires, including the O'Sullivan fire near Northcliffe. This 98,000ha fire was one of the worst in the State's history and involved almost half the total number of Parks and Wildlife staff, as well as multiple other agencies and volunteers.

The selfless and dedicated work of volunteers was invaluable in our parks, monitoring and surveying native species, and performing a myriad of roles to support Parks and Wildlife's operations throughout the State. In 2014–15, there were more than 12,500 volunteers registered with the department, with a contribution of more than 610,000 hours to projects across the State.

I would like to thank these volunteers and Parks and Wildlife staff for their valuable contribution towards protecting the environment. It has never been more important to work together with the community to achieve our goals. By doing this, we have achieved significant outcomes that are conserving our natural areas and making them places to be enjoyed and appreciated for many generations to come.

Jim Sharp
Director General
Department of Parks and Wildlife

Highlight

Big step towards the creation of a Kimberley National Park



Aerial view of Mitchell River. Photo – Tourism WA

Early in 2015 the Mitchell Plateau Joint Venture Partners in partnership with the State Government terminated the Alumina Refinery (Mitchell Plateau) Agreement 1971, paving the way for more than 175,000ha of land in the Mitchell Plateau to be included in the proposed Kimberley National Park.

This proposed park, together with the creation of five new marine parks, is the cornerstone of the *Kimberley Science and Conservation Strategy* aimed at protecting the outstanding natural values of the Kimberley and generating positive outcomes for local communities and businesses.

The spectacular and unique Mitchell Plateau and Mitchell Falls will be the crown of the new Kimberley National Park, which will be surrounded on its coastal boundary by new marine parks.

The proposed national park will encompass the existing Prince Regent, Mitchell River and Lawley River national parks and is set to become Australia's biggest national park at around two million hectares, rivalling Kakadu.

Parks and Wildlife is working with the traditional owners in the area, the Dambimangari, Wunambal Gaambera and Wilinggin, to create and jointly manage the proposed national park.

The \$81.5 million *Kimberley Science and Conservation Strategy* is a major investment in conserving one of the world's last great wilderness areas, creating the State's largest interconnected system of marine

and terrestrial parks and providing new opportunities for nature-based tourism and Aboriginal employment.

In the past four years Prince Regent National Park has been created and the Department is in the process of planning for new marine and terrestrial parks including the internationally renowned Horizontal Falls. Two new marine parks have been created at Lalang-garram / Camden Sound and Eighty Mile Beach, with three more in the planning process.

Partnerships and employment have been created for Aboriginal people for on-country management activities such as weed and feral animal control, biodiversity surveys and visitor infrastructure maintenance and construction, and three joint management agreements with traditional owners for marine parks in the Kimberley have been signed.

Creation of the proposed Kimberley National Park will encourage new tourism ventures in the region and facilitate development of associated visitor facilities, providing greater opportunities for people to visit this spectacular part of the world.



Kings Cascades, Prince Regent National Park. *Photo – Carolyn Thomson-Dans/Parks and Wildlife*



Premier Colin Barnett, Rio Tinto CEO Sam Walsh and Environment Minister Albert Jacob make the announcement. *Photo – Jennifer Eliot/Parks and Wildlife*



Mount Trafalgar looking south-west to Prince Regent National Park. *Photo – Ian Radford/Parks and Wildlife*



Rough-scaled python, one of the species that calls the Mitchell Plateau home. *Photo – Jennifer Eliot/Parks and Wildlife*



This page from 1 to 3:

1 Science and Conservation Director Margaret Byrne with Yin Yunlong.

2 Parks and Wildlife Director General Jim Sharp meets with Zhuang Yule, Director of the Institute of Botany, Jiangsu Province and Chinese Academy of Sciences, and Geng Maolin.

3 Senior research scientist Kelly Shepherd with Yin Yunlong, Xu Zenglai, Zhuang Yule and Geng Maolin.

Photos – Jennifer Eliot/Parks and Wildlife

Opposite page Danxiashan (left) and Purnululu (right). *Photo of Danxiashan – Alice Gillam*
Photo of Purnululu – Sallyanne Cousans

Highlight

Building ties with China



The Department of Parks and Wildlife is forging strong links with China which will benefit tourism, parks and plant conservation research into the future.

In late 2014 the Environment Minister Albert Jacob and Department's Director General Jim Sharp travelled to China to establish an historic sister park relationship between the World Heritage-listed Purnululu and Danxiashan national parks – a partnership offering significant cross-cultural tourism opportunities.

The parks are both major visitor attractions and their striking natural landscapes based on sandstone formations, together with plant and animal biodiversity, have inspired internationally-renowned artworks.

Danxiashan is renowned for its geology and sandstone formations as the inspiration for legends, poems and cliff and stone

inscriptions, while Purnululu's Bungle Bungle Range, with its magnificent orange and grey, beehive-shaped sandstone towers, contains hundreds of archaeological sites highlighting ancient rock art, stone quarries and burial places.

Another landmark cooperative agreement was signed between Parks and Wildlife's Plant Science and Herbarium program and the Institute of Botany and Chinese Academy of Sciences in Jiangsu Province.

These organisations are responsible for botanic studies and classification, along with vital plant research.

The institute and its associated Nanjing Botanical Garden Memorial Sun Yat-sen have a living collection of more than 5000 species of plants contained in 19 specialised gardens, and 700,000 sheets of herbarium specimens. The WA Herbarium houses more than 750,000 plant specimens and the Threatened Flora Seed Centre is the principal long-term seed bank for conservation of the State's significant species.

The aims of the agreement are to look at common research goals in plant taxonomy, resources and conservation, and promotion of research which increases plant conservation management effectiveness and awareness.

Parks and Wildlife hosted five scientists from the Institute of Botany and Chinese Academy of Sciences for a three-day visit to Western Australia in early 2015 to discuss collaboration ideas, tour Departmental facilities and receive briefings on the research carried out at WA's Threatened Flora Seed Centre, Herbarium and molecular laboratory.

Both the China–WA parks and plant science agreements have been signed for an initial period of five years and will see collaboration on joint activities and projects, sharing of information and staff training and development opportunities.

Highlight

Revitalised health and safety program rolled out

During 2014–15 the Department introduced its newly refined health and safety program to ensure all its staff, volunteers and contractors can safely carry out their many and varied roles.

A compulsory training program was progressively rolled out to improve the consistency of messaging received by long-serving and newer staff members. More than 1400 employees have now received a health and safety induction and about 800 have also completed more in-depth manual handling and health and safety courses.

The training covers roles and responsibilities, legal requirements, Department policies and guidelines, managing risks, reporting and workplace hazards.

A network of dedicated management-appointed safety officers throughout the Department's regional offices were coached to deliver the new induction program to other staff members.

The Department also approved a new policy on alcohol and other drugs to ensure a safe work environment where employees, contractors and volunteers of the Department are not exposed to hazards and risks associated with the use of alcohol and/or other drugs.

Parks and Wildlife considers safety to be the highest priority, and will continue to work to educate and empower its staff to achieve a safe work environment. Plans for 2015–16 include, among other things, the rollout of a new online hazard reporting system to facilitate greater reporting, management and incident investigation processes, as well as the introduction of a comprehensive audit procedure to ensure health and safety standards are maintained in a consistent manner across all work centres.

PPE – WEAR IT!
Personal protective equipment and clothing (PPE)

The department will provide you with the appropriate PPE that is suitable for your duties.
It is your responsibility to ensure the PPE you are provided:

- fits properly
- is used correctly
- is kept in good condition and repaired in-line with the manufacturers instructions
- is appropriate for the task

EVERY TIME EVERY JOB!

Talk to your supervisor if you are unsure how to use PPE you have been given.

WE ALWAYS HAVE TIME TO DO IT SAFELY

Health and Safety
It's everybody's business

Department of Parks and Wildlife



Conservation employee Paul Dunstan demonstrates the method and protective gear required to chainsaw safely. Photo – Peter Nicholas/Parks and Wildlife



Research scientist Fiona Carpenter dons the appropriate personal protective equipment and clothing for work in the Sid James Genetic Laboratory. *Photo – Karla Graham/Parks and Wildlife*



Director General Jim Sharp addresses the first group of employees to receive the general induction. *Photo – Parks and Wildlife*



Health and Safety Section officers Emma-Lee Finch and Catherine Ynema produced and participated in a training video for Departmental safety officers. *Image – Parks and Wildlife*



Mount Frankland North National Park.
Photo – Peter Nicholas/Parks and Wildlife



Salmon Holes, Torndirrup National Park. *Photo – Sally Bostwick/Parks and Wildlife*



Parks and Wildlife ranger Scott Thomson with campground hosts Bill and Rose Boucher, Osprey Bay campground, Cape Range National Park. *Photo – Jennifer Eliot/Parks and Wildlife*



Transporting building materials by helicopter.
Photos – Bill Dempsey/Parks and Wildlife



Purnululu National Park. Photo – Colin Ingram/
Parks and Wildlife

Operational highlights

Parks Management

Public involvement, visitation and appreciation of the natural environment on Parks and Wildlife-managed lands and waters is coordinated through the Department's Parks Management Service. The provision of parks and visitor services includes:

- preparing and implementing management plans in accordance with the *Conservation and Land Management Act 1984* (CALM Act)
- preparing and implementing recreation site development plans
- providing, managing and maintaining appropriate access, recreation opportunities and visitor facilities
- protecting natural areas, visitors and facilities from bushfire
- training Departmental staff and volunteers
- working with local visitor centres and commercial tour operators
- involving Aboriginal people in park management in order to protect the value of the land to the culture and heritage of Aboriginal people
- involving Aboriginal people in the provision of visitor facilities and services

- providing visitor information, and designing and initiating educational and interpretive activity programs that enrich visitor experience and help develop greater community awareness and support for parks, natural areas, astronomy, nature-based tourism, and recreation services and policies
- undertaking scientific, visitor and social research in cooperation with other research institutions
- providing services to the Conservation Commission and the Marine Parks and Reserves Authority.

This work is carried out by staff around the State, with the support of thousands of volunteers as well as local visitor centres, tourism operators and local community organisations.

Planning for management

During 2014–15, the Minister for Environment released the final management plans for Eighty Mile Beach Marine Park, Tuart Forest National Park, Leeuwin-Naturaliste capes area parks and reserves, and Barrow group nature reserves.

A further 11 terrestrial management plans were in preparation. These were for:

- Albany coastal reserves
- Esperance and Recherche parks and reserves

- proposed Horizontal Falls National Park
- Kalbarri National Park
- proposed Kimberley National Park
- Swan Coastal Plain South
- Walyarta, Kurriji Pa Yajula
- Eighty Mile Beach coastal reserves
- Wheatbelt Region
- Yawuru Birragun Conservation Park
- Yawuru Northern Intertidal Area
- Yoorrooyang Dawang proposed conservation parks.

Three marine park management plans were also in preparation:

- proposed Horizontal Falls marine park (which will contain the proposed Northern Lalang-garram / Camden Sound Marine Park)
- proposed Roebuck Bay Marine Park
- proposed North Kimberley Marine Park.

The public contributed to the content of management plans through public and stakeholder workshops and meetings, newsletters and invitations to comment. Aboriginal people were also engaged through the involvement of Aboriginal native title representative bodies and Aboriginal park councils.

Parks Management

Acquisition and administration of protected areas

Reserve acquisition

The formal process of adding land to the State's system of protected areas continued throughout the year. The Department purchased three parcels of freehold land of high conservation value covering 262.6ha for future addition to the conservation reserve system. Details of these acquisitions and how they were funded are recorded in the Department's 2014–15 Annual Report, which is available on the website: www.dpaw.wa.gov.au/about-us/annual-report-and-yearbook.

The Department's priorities for purchases were areas containing ecosystems not adequately represented in existing conservation reserves, areas containing threatened species and ecological communities, or additions to existing reserves that would greatly improve their diversity or facilitate their management. Other programs and processes led to the acquisition of lands suitable for inclusion in the conservation reserve system, including land ceded to the State as a condition of subdivision, land acquired from negotiated exchanges, and reserves no longer required by other agencies and organisations. Work continued on the implementation of tenure changes proposed in the Department's management plans.

The Department also continued to provide advice on land proposals referred from other organisations, such as the Department of Lands, and advised on issues including the use or disposal of unallocated Crown land and surplus Crown reserves.

Leasing activities

Lease arrangements are maintained for a wide range of purposes.

At 30 June 2015 there were 283 formal arrangements for various uses on Parks and Wildlife-managed lands including recreation, tourism accommodation, utilities and sawmills. The formal arrangements comprised 161 leases, 58 licences and 64 other types of arrangements such as sawmill site permits, written agreements and memoranda of understanding between the Department and various parties.

The Department entered into 16 formal agreements in 2014–15. Major achievements were:

- renewal of the Department's lease with Candrin Pty Ltd for the Matilda Bay Restaurant in Matilda Bay Reserve
- renewal of the Department's lease with the Perth Dinghy Sailing Club at Matilda Bay Reserve
- management and maintenance of the Department's cottages at Myalup and the village at Dryandra Woodland

- a new lease to Peel-based group Riding for the Disabled Association of Western Australia for Mead Farm in Leda.
- a new lease to Aspen Parks Property Management Ltd for Woodman Point Caravan Park
- the surrender of an existing lease to Australian Craftwood and Timbers Pty Ltd (ACT) at Palgarup to allow for the creation of a new reserve and the granting of a new lease over the reserve to ACT for the purpose of natural resource processing and ancillary uses
- a new lease issued to Crown Castle Australia Pty Ltd for the construction of a telecommunications tower at Pinjarra.

During the year, a number of other formal arrangements expired and, at 30 June, were at various stages of renewal.

Apiary site management

At 30 June 2015, there were 3295 apiary site permits. Of the 1645 on Parks and Wildlife-managed lands, 892 were located on State forest, 74 on timber reserves, 366 on national parks, 227 on nature reserves, 61 on conservation parks and 25 on other lands vested in the Conservation Commission of Western Australia.

During 2014–15, 640 apiary site permits were processed, comprising:

- 17 authorities transferred between beekeepers
- 23 site permits from applications to occupy new or previously cancelled sites
- 2 site permit relocations
- 583 site permit renewals
- 15 site permit cancellations.



Lions Dryandra Woodland Village accommodation. Photo – John Lawson



Gnaala Mia campground, Dryandra Woodland. Photo – Parks and Wildlife



Television presenter and motorbike enthusiast Charley Boorman joins Parks and Wildlife officer Ewen MacGregor for a ride at Pinjar Off-road Motorcycle Area. Photo – Peter Nicholas/Parks and Wildlife

Park presentation and resource protection

The Department aims to provide high-quality visitor services and facilities that are planned, designed, developed and managed in a sustainable way. During 2014–15, the Department coordinated the investment of \$14.1 million of capital funding in parks and reserves around WA.

Capital park improvements

The Parks and Visitor Services Division capital works program continued to improve and maintain recreation and tourism assets in national parks, conservation parks, State forest and other reserves across the State.

Works were typically associated with the construction, upgrade and maintenance of roads, trails and camping facilities. Works were also undertaken to ensure visitor safety and to protect environmental, social and landscape values at recreation sites.

During 2014–15, the Department's capital works program focused on the following key areas:

- addressing visitor risk management issues such as the Fortescue Falls walk trail upgrade, Monkey Mia boardwalk deck repairs and John Forrest Railway Heritage Trail repairs to bridges and upgrade of the trail

- continuing the remote parks housing improvement program in Cape Arid, Karijini and Cape Range national parks and at Steep Point
- upgrading visitor facilities in Porongurup, Mirima and Walpole-Nornalup national parks
- improvements to long trails such as the Bibbulmun Track and Munda Biddi Trail
- commencing design works to replace recreation assets lost or damaged through bushfires including a temporary bridge across the Murray River on the Bibbulmun Track
- flood recovery works to visitor facilities and park infrastructure in Cape Range National Park
- upgrade of visitor facilities in campgrounds in Karijini National Park, Dryandra Woodland, proposed Credo Conservation Park, and Coalseam Conservation Park
- developing partnership projects with mountain bike and four-wheel-drive groups
- continuing to develop the off-road vehicle area at Pinjar in the City of Wanneroo
- upgrade of visitor facilities at John Graham Reserve in Woodman Point Regional Park.

A description of projects undertaken in each of the Department's nine regions is provided in the *Regional activities* section (see pages 37 to 49).

Parks Management

Royalties for Regions park improvements

Work under the Department's two *Royalties for Regions*-funded initiatives continued to improve and expand recreation and tourism facilities in national parks, conservation parks, State forest and other reserves across the State.

The \$20 million *Conservation Parks Visitor Infrastructure and Roads* initiative commenced in 2010–11 and aims to improve facilities and road infrastructure at several parks across the State. The initiative is expected to be completed during 2015–16. Significant progress has been made on the construction of new lookouts at The Gap and Natural Bridge and other facilities in Torndirrup National Park with \$1.1 million spent this year. Works are scheduled to be completed by 2016. An additional \$1.2 million for the *Torndirrup National Park Visitor Infrastructure* initiative will ensure that all the works planned and designed for this site can be completed. This project will deliver two new world-class lookout structures, a new pathway network with full wheelchair access, new interpretation and upgrades to day-use and parking areas.

Significant progress has been made in 2014–15 implementing the \$21.05 million *Parks for People Caravan and Camping* initiative to improve and expand visitor experiences by providing more facilities and services, in particular establishing affordable camping and caravan accommodation, with more than 250 new camp sites now available.

New campgrounds have been developed at Logue Brook, Gnaala Mia (Dryandra Woodlands) and at the proposed Credo Conservation Park. Campgrounds have been expanded and upgraded at Black Point (D'Entrecasteaux National Park), Conto (Leeuwin-Naturaliste National Park), Miners (Coalseam Conservation Park), Osprey Bay (Cape Range National Park), and Nanga Brook (Lane Poole Reserve). Planning and design is well advanced on other campground projects including Lucky Bay campground (Cape Le Grand National Park), Baden Powell day-use area (Lane Poole Reserve), Big Lagoon campground (François Péron National Park) and Potters Gorge campground (Wellington National Park). During 2014–15, \$5.1 million was invested through the *Parks for People* initiative.

A description of projects undertaken under the *Royalties for Regions* initiatives in each Department region is provided in the *Regional activities* section (see pages 37 to 49).

Roads

During 2014–15, the Department's roads capital works program focused on two key areas – Cape Le Grand National Park access road rebuilding and Cape Range National Park flood repair works.

The Department continued to classify roads and undertake road inspections and condition assessments for its 37,000km road network.

During 2014–15, this work focused on the Swan and South Coast regions. The roads

project assists in identifying high priority road improvement works, planning strategic road requirements, managing road hazards, and identifying present and future funding requirements.

In collaboration with Landgate, the Department continued rectifying road data stored in databases from Landgate and Main Roads WA to ensure its accuracy. Collaborative work with local government authorities and Main Roads WA on inter-regional road construction and maintenance work across agency boundaries continued.

A \$1 million Main Roads WA grant was directed towards the annual road maintenance program in parks and reserves across the Department's nine regions.

A new initiative to repair or replace bridges in the south-west forest regions progressed in 2014–15. Many of the timber bridges on the Department's road network were constructed between the 1960s and 1980s and are reaching the end of their life span. In 2014–15, \$1.591 million was invested by the Department on replacing several timber bridges with modular, kit concrete bridges on Denny, Fisher, Big Tree, Randall, Gregory, Caldyanup and Shedick roads as well repairing watercourse crossings at Bobs Crossing, Stones Brook on Carey Road. The major refurbishment of the Bannister Road bridge was completed.

Recreation planning and design

The Department prepared visitor services plans, master plans, concept plans and site development plans for many projects across the State. These documents guide Government decision-making, assist with strategic planning decisions and funding applications, and enable capital works projects to be built to a high standard.

Many *Parks for People* initiative projects that were planned and designed in 2013–14 underwent construction during 2014–15, including Conto (Leeuwin-Naturaliste National Park), Osprey Bay (Cape Range National Park), Gnaala Mia (Dryandra Woodland), Nanga Brook (Lane Poole Reserve), a campground in the proposed Credo Conservation Park, Miners (Coalseam Conservation Park) and Logue Brook campground.

Preparation of construction tendering documentation for works is underway for Lucky Bay (Cape Le Grand National Park), Big Lagoon (François Péron National Park), Potters Gorge (Wellington National Park) and Baden Powell day-use area (Lane Poole Reserve). Planning is continuing for campgrounds at Miliyanha and Star Gazers (Millstream Chichester National Park), Shannon campground (Shannon National Park) and Boranup (Leeuwin-Naturaliste National Park). Construction of The Gap and Natural Bridge in Torndirrup National Park is underway and due for completion in 2016.

Site planning and construction drawings are also being prepared for the Swan Canning Riverpark Interpretation Nodes. Detailed design and documentation of small structures including toilets, camp shelters and stair and boardwalk access was also undertaken.

Significant site and master planning and stakeholder consultation was undertaken for Yawuru (Broome) in-town and out-of-town parks, Karara former pastoral leases, Wedge and Grey shack settlements and for recreation opportunities in de-proclaimed water catchments in the south-west. Planning for visitor facilities and park infrastructure in Cape Range National Park was undertaken as part of the flood recovery works and well as design of structures and site planning following the Lower Hotham and O'Sullivan fires.

Planning, training and design advice was provided on several leases, licences and projects associated with the Department, including projects dealing with implementing the Department's semi-permanent site guidelines. Staff represented the Department on working groups including the Coastwest technical assessment group.

Visual impact assessment, recommendations, guidelines and specialist advice were provided for a number of proposals throughout the year, including new communication towers in the South West and Midwest regions.



Wedge-tailed eagle. Photo – Jennifer Eliot/
Parks and Wildlife



Osprey Bay campground, Cape Range National Park. Photo – Sally Bostwick/Parks and Wildlife



The new public viewing platforms at The Gap, Torndirrup National Park, scheduled to open in 2016.
Image – Parks and Wildlife

Parks Management

Enriching the visitor experience

Interpretive planning and design

Work continued on providing information to visitors to help them interpret, understand and appreciate WA's parks and reserves. During 2014–15, interpretation project plans were prepared for major site developments with interpretive facilities including The Gap in Torndirrup National Park and Conto campground in Leeuwin-Naturaliste National Park.

Sign plans were developed for Logue Brook, Gnaala Mia, Conto, Credo, Nanga Brook and Osprey Bay campgrounds and Leschenault Peninsula Conservation Park.

The Department continued installing or updating signs and displays to enrich visitors' experiences to parks and reserves managed by the Department. In 2014–15, 2450 signs were developed to final production including 260 directional and identification signs, 362 visitor risk signs, 1521 management signs, nine fee signs and 298 interpretation signs.

Interpretive and sign projects of particular note included:

- Whalebone Creek and Point Ann in Fitzgerald River National Park
- Kalumburu Junction (stage 1) information and interpretive panels

- Valentine Spring, Molley Spring, Middle Spring and Black Rock panels in parks jointly managed with the Miriuwung Gajerrong Corporation
- Nanga Brook interpretive trail and shelter in Lane Poole Reserve
- Jurien Bay snorkel trail with the local community group
- Shark Bay airport panels
- Urchin Point and the Block Hut panels on Dirk Hartog Island
- Namelcatchem Well in Namelcatchem Nature Reserve Middle Island management and interpretation panels
- Belvidere and John Boyle O'Reilly interpretation panels in the Leschenault Peninsula Conservation Park
- Nilgen Nature Reserve shelter panels
- Sandford Rocks Bird Hide interpretive panels with the local bird group
- Millstream trailside interpretation in Millstream Chichester National Park.

Community liaison, consultation and advisory services

Consultation with special interest groups, agencies, individuals and Aboriginal communities is a key aspect of site developments and their interpretation on and off Parks and Wildlife-managed areas.

Advice was provided to local authorities, special interest groups and consultants on the planning, design and production of signs and displays.

Guided interpretive programs

Guided interpretive programs continued to be provided regularly in major areas throughout the State. These included the *Nearer to Nature* program provided in Perth's regional parks, at the Perth Hills Discovery Centre and Yanchep National Park. Educational programs are also run at Penguin Island and the Perth Observatory.



Students take a guided walk during a *Nearer to Nature* environmental activity. Photo – Parks and Wildlife

In the regions, guided tours and/or interactions were provided at: Geikie Gorge National Park in the Kimberley, Monkey Mia Reserve in the Shark Bay World Heritage area, Cape Range National Park in the Ningaloo Coast World Heritage area, marine parks around Broome, Valley of the Giants and Coalmine Beach near Walpole, Barna Mia in Dryandra Woodlands, and Perup – Nature's Guesthouse near Manjimup. Regional staff also continued to respond, where appropriate and available, to requests for specific presentations and guided experiences in local areas.



Trail marker at West Beach, Fitzgerald River National Park. Photo – John Watson



Dambimangari Rangers Aaron Mungulu and Ethan Jungine in Lalang-garram / Camden Sound Marine Park. Photo – Daniel Barrow/Parks and Wildlife

Aboriginal liaison, consultation and heritage

A high priority is placed on liaising, consulting and working with Aboriginal elders, traditional owners and other stakeholders to enhance management of Parks and Wildlife-managed lands and waters. During the year the Department, with the help of its Aboriginal Heritage Unit, undertook a wide range of work including:

- working with elders in local Aboriginal communities regarding traditional land use and protocols
- liaising with elders conducting Welcome to Country for Department events
- advice on traditional owners for Parks and Wildlife-managed lands and waters
- assisting inter-agency engagement in the regions to support heritage protection
 - organising and participating in NAIDOC community activities
 - advising on the use of Aboriginal images in Department marketing material
 - ensuring Aboriginal news, events and achievements were promoted in the Department and at external forums.

Planning and relationship building

Building relationships with Aboriginal and non-Aboriginal individuals and organisations both within and outside the Department remained a priority. In 2014–15, this included:

- providing ongoing cultural advice and assistance to Department staff regarding Aboriginal consultation and involvement on Parks and Wildlife-managed lands and waters
- providing links between regional and district staff and Aboriginal communities
- maintaining ongoing relationships with a range of agencies and organisations such as natural resource management groups
- participating and providing executive support to the Department's Aboriginal Employee Reference Group, Access and Diversity Committee and Reconciliation Action Plan Committee
- implementing *Reconciliation Action Plan* strategies by providing opportunities for Department staff to participate in key Aboriginal and Torres Strait Islander events and dates of significance including NAIDOC Week and National Reconciliation Week
- developing guidelines for the recruitment of Aboriginal staff to the Department
- participating in public sector forums focusing on Aboriginal employment.

Parks Management

Education and training

During the year the Department continued efforts to increase awareness of the culture, history and diversity of Aboriginal and Torres Strait Islander people. In 2014–15 this was done through:

- the *Nearer to Nature* program, which provided cross-cultural education programs to 206 schools and community groups totalling almost 9000 people
- training and assistance for Department staff organising Welcome to Country ceremonies for events and providing advice on protocols for acknowledgment of traditional owners at Department meetings and events
- delivering the Department's new Aboriginal cultural awareness training to more than 400 staff throughout the State, as well as to 50 commercial tour operators in Exmouth and Coral Bay
- exploring further learning and training opportunities for Department staff in the areas of heritage site training and native title
- supporting workplace opportunities for Aboriginal cadet and school-based trainees



Perth Hills Discovery Centre's Zac Walker with Mundaring Primary School student.
Photo – Jennifer Eliot/Parks and Wildlife

- contributing to the Department's community education strategy for customary activities regulations and developing and delivering training for regional staff on customary activities regulations
- presenting on the customary activities regulations to the Aboriginal community
- providing training to enhance community development skills.



A student learns about Aboriginal culture during a *Nearer to Nature* activity. *Photo – Parks and Wildlife*



Martu community members and Parks and Wildlife staff releasing a radio-collared golden bandicoot at Matuwa (Lorna Glen).
Photo – Jennifer Eliot/Parks and Wildlife

Business management

Providing accurate park information, promoting responsible behaviour by visitors and providing services to the tourism industry are important functions of the Department.

The Commercial Business Unit provided guidance and assistance in identifying new opportunities on Parks and Wildlife-managed lands. In 2014–15, a restricted 'E' class licence was allocated via a publicly advertised call for expressions of interest to conduct in-water whale shark interaction tours in Ningaloo Marine Park.

In January 2015, a commercial licence was allocated (via a public call for registrations of interest) to a helicopter operator for tours to Breaksea Island on the south coast to meet increased demand for cultural, adventure and eco-tourism experiences on the south coast.

Registrations of interest were also released to operate Wellington Dam Kiosk and Perup – Nature's Guesthouse. Discussions with potential proponents are continuing. The Commercial Business Unit also releases a registration of interest for commercial tourism leaseholders to improve or upgrade infrastructure and services within their leases. Submissions are currently being assessed.

Park passes and fees

National park passes are distributed at 84 locations around the State including 36 Departmental offices and selected national parks, and 48 independent retail outlets.

In 2014–15, the Department approved 410 requests for entry fee waivers. The value of foregone revenue was approximately \$261,346 based on estimated visitor numbers of 53,699 (see Table 2). The Department offers fee waivers to support aged and infirm visitors, groups with disability, carers, educational groups, community service groups and not-for-profit organisations.

Table 1: Breakdown of park pass distribution 2014–15

Type of park pass	Number distributed	Change from 2013–14
Holiday	8013	Increase 505 – 7%
Annual Local	4239	Decrease 2413 – 36%
Annual All	6372	Decrease 164 – 3%
Annual All Concession	4090	Increase 145 – 4%
Goldstar	737	Decrease 273 – 27%

Note: includes passes invoiced to retail outlets and distributed to Department offices that may not yet be sold.

Table 2: Fees waived – estimated visits by region

Region	Swan	Midwest	Pilbara	Kimberley	Warren	South Coast
Number of visitors	28,538	13,459	2771	332	5699	2900



Breaksea Island. Photo – Gary Wellstead

Parks Management



Humpback whale. Photo – Rick Dawson/
Parks and Wildlife

Commercial operations and events

Commercial operations licences

Commercial operations are licensed to monitor and manage the commercial use of Parks and Wildlife-managed lands and waters in accordance with the CALM Regulations.

At 30 June 2015, 322 commercial operations licences were current for activities in marine and terrestrial reserves, up from 308 licences at 30 June 2014. These comprised 283 general 'T' class licences, and 39 'E' class licences for operations where the numbers of licences granted are restricted.

During the year, 66 two-month licences were granted. Two-month licences are used by seasonal and interstate operators and for commercial sporting events.

Under the *Review of Nature Based Tourism* recommendations, there is a requirement for all licence holders to achieve recognised quality assurance accreditation. At 30 June 2015, all operators with licences of 12 months or more were accredited, or had applied for accreditation.

Several accreditation schemes were recognised by the Department. These were endorsed accreditation schemes that assessed businesses and operators to the highest level. Newly licensed operators are given six months from the issuing

of a licence to gain accreditation. Two-month licence holders are exempt from having to be accredited.

More information about commercial operations on Parks and Wildlife-managed lands and waters is available on the website: www.parks.dpaw.wa.gov.au/for-business/commercial-operations-licensing.

Filming permits

Commercial filming and photography on lands and waters managed by the Department can make a significant contribution towards raising awareness of conservation issues, and promoting the appreciation and use of parks and reserves.

The Department does not charge for commercial filming or photography applications considered to have a major tourism or other benefit to the State, or likely to increase appreciation, awareness and understanding of parks and reserves. In these cases, applicants are granted permits by the appropriate regional staff. Where it is deemed that a commercial filming or photography application has no such benefits, charges are applied on a set scale and a commercial filming licence is issued. In 2014–15, 64 commercial filming or photography applications were assessed and approved, of which 12 were filming licences.

Naturebank

The *Naturebank* program involves the identification and preparation of suitable sites on Parks and Wildlife-managed lands for sustainable ecotourism initiatives. This program is a partnership between Tourism WA and Parks and Wildlife.

In 2010, the State Government announced *Royalties for Regions* funding over four years to support the preparation of *Naturebank* sites. At 30 June 2015, nine sites had been identified as *Naturebank* or potential *Naturebank* sites. These were:

1. Purnululu National Park World Heritage area (Kimberley)
2. Windjana Gorge National Park (Kimberley)
3. François Péron National Park, Shark Bay World Heritage area (Midwest)
4. Wharnccliffe Mill, Bramley National Park (South West)
5. Cape Le Grand National Park (South Coast)
6. Millstream Chichester National Park (Pilbara)
7. Mount Hart Wilderness Lodge, King Leopold Ranges Conservation Park (Kimberley)
8. Ngamoowalem Conservation Park, Aboriginal land close to Kununurra (Kimberley)
9. Icy Creek, Lane Poole Reserve (Swan).

Naturebank sites in Purnululu National Park, King Leopold Ranges Conservation Park and Bramley National Park are fully operational. The François Péron National Park site was advertised via an expression of interest but this did not result in a preferred proponent being identified and direct discussions with potential developers in collaboration with Tourism WA were ongoing. The site prospectus for the Ngamooowalem Conservation Park site was released and discussions with potential developers are continuing. The proposed Windjana Gorge National Park and Cape Le Grand National Park sites were both discontinued due to environmental and cultural issues. The Millstream Chichester National Park and Icy Creek sites assessments were completed and the investment attraction process seeking potential developers are being developed.

Legislation and policy

Legislation

The *Conservation and Land Management Amendment Bill 2015* was introduced into the Legislative Assembly in March 2015. The Bill makes provision for a number of initiatives including extending the maximum allowable term of CALM Act leases for recreation, tourism and other purposes from the current 21-years, with a 21-year extension, to a maximum of 99 years, consistent with the periods available under the *Land Administration Act 1997*. The Bill also enables

joint vesting of national parks, nature reserves and conservation parks with native title parties, and zoning schemes in marine parks including special purpose and recreation zones that allow some forms of fishing to operate while imposing restrictions on other forms, as intended in approved marine park management plans.

During the year, there were a number of miscellaneous amendments made to the Conservation and Land Management Regulations 2002 to bring penalties up to date and better manage inappropriate behaviour in parks. New mooring regulations were also made to become consistent with other mooring regulations across the State.

Policy

During 2014–15, the development or review of policies continued in the following areas:

- moorings
- non-Aboriginal cultural heritage
- recreation, tourism and visitor services – Policy Statement 18 including updating information on the use of drones on CALM Act land.
- delegations of power under various legislation.

More information about legislation and policy is available on the website: www.dpaw.wa.gov.au/about-us/36-policies-and-legislation.



Purnululu National Park. Photo – Colin Ingram/Parks and Wildlife



Natural Bridge, Torndirrup National Park. Photo – Tourism WA

Parks Management

Recreation activities and trails

During 2014–15, the Department continued to coordinate the management of outdoor recreation activities consistent with the protection of natural and cultural values on the lands and waters it manages.

Work continued with the Department of Sport and Recreation, Outdoors WA, Trails WA, Westcycle, the Australian Trail Horse Riders Association and other key stakeholders on important recreation initiatives, including the *Outdoor Strategy for WA*, the Trails WA website, the *WA State Mountain Bike Strategy* and *State Horse Trail Strategy*.

Trails WA

The Department continued to support Trails WA, the not-for-profit peak trails body for the State. During the year, the Department assisted in the development of the Trails WA website, which was launched in October 2013. The website is a central, searchable portal for public trails information across the State.

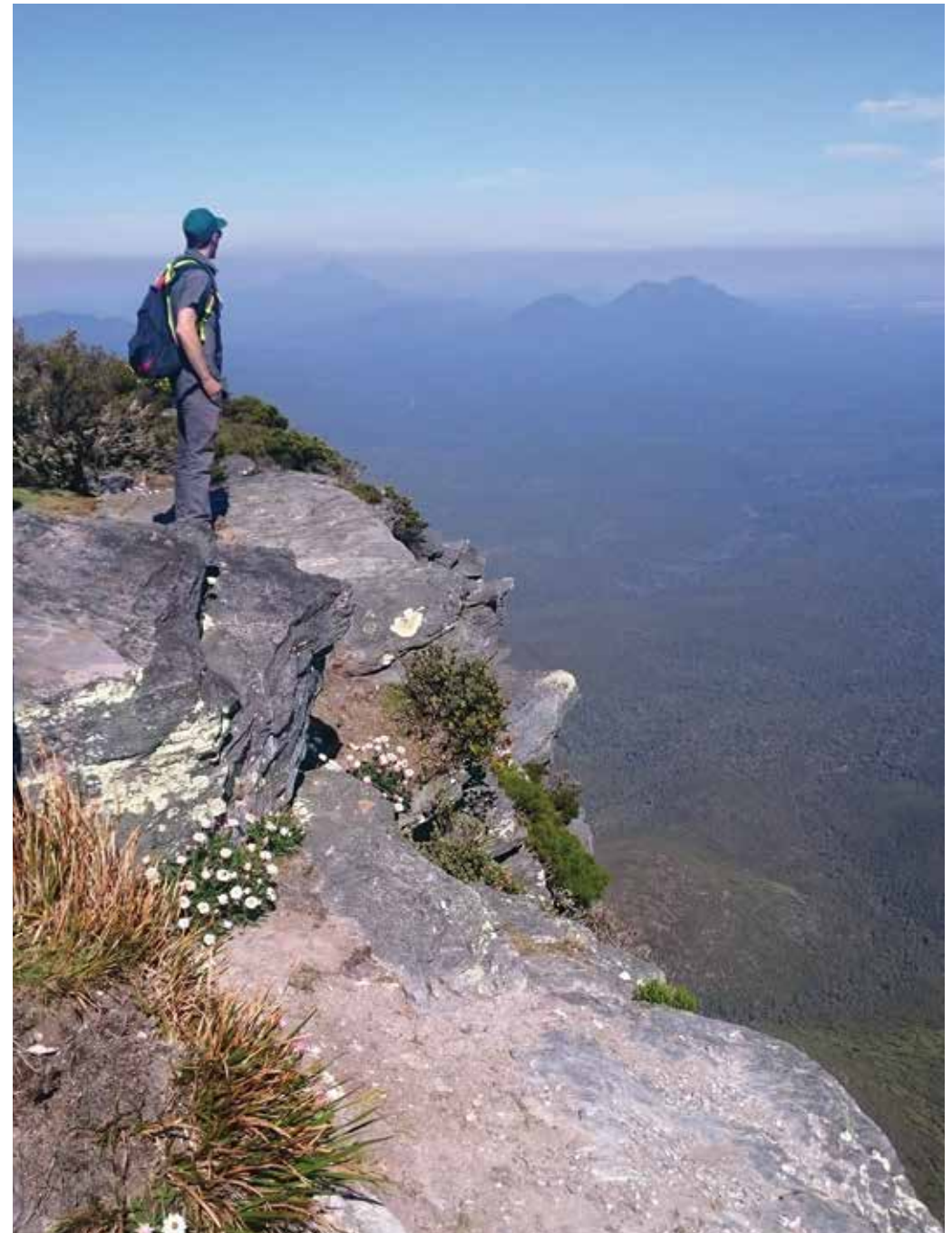
During 2014–15 the website has seen continued development and improvement, with Department and Trails WA staff training volunteers who are now assisting in researching and uploading additional trails onto the website. Of the 160 trails listed on the website, 70 are on Parks and Wildlife-managed land, with an additional 20 in the process of being listed.

Bibbulmun Track

The Department continued its strong partnership with the Bibbulmun Track Foundation during the year. Foundation volunteers continued to show their support for the much-loved Bibbulmun Track, contributing in excess of 21,100 hours to assist in the maintenance of the 1000km walk trail.

Unfortunately, lightning activity in late January 2015 resulted in the ignition of numerous fires in the south-west. Three of these fires severely impacted on the Bibbulmun Track, with more than 40km of trail burnt out, including the complete loss of four camp sites – Brookton, Possum Springs, Gardner and Dog Pool. Along with the camp sites, the historic Long Gully Bridge over the Murray River was also destroyed.

Since these devastating fires, staff have worked hard at installing temporary diversions to re-open the trail, while undertaking assessments and planning rebuilding works (see page 50–51). A new rammed earth shelter has been designed to replace the four camp sites that were lost, with construction planned for late 2015. A program for re-building the trail was developed and commenced, with works being undertaken by staff, contractors and community volunteers.



Summit of Bluff Knoll, Stirling Range National Park. Photo – Karla Graham/Parks and Wildlife

Staff and volunteers continued the collection of trail counter and survey data to allow the Department and the Foundation to gain a better understanding of usage and focus management and maintenance to improve the track. More information on the Bibbulmun Track is available on the website: www.parks.dpaw.wa.gov.au/know/bibbulmun-track.

Cape to Cape Track

The Department continued its long partnership with the Friends of the Cape to Cape Track, with the Friends volunteers contributing more than 1900 hours of trail maintenance during 2014–15.

An audit completed in 2013–14 has been used in the development of a works program to guide both Department staff and Friends of the Cape to Cape Track volunteer works programs.

Planning was completed and construction began on a permanent re-alignment of a section of the track near Joey's Nose to provide walkers a safer route away from a section of four-wheel-drive track previously used by both walkers and four-wheel-drivers.

Mountain biking

Parks and Wildlife staff have continued working closely with the Department of Sport and Recreation, Westcycle and the WA Mountain Bike Association in the management of mountain biking across the State. The *Western Australian Mountain Bike*

Strategy 2015–2020 was officially launched by the Ministers for Environment and Sport and Recreation in June.

The *South West Mountain Bike Master Plan* was completed, identifying and prioritising areas for future development of mountain bike opportunities. Detailed environmental assessments and trail planning have commenced in the high priority locations of Wellington and Bramley national parks.

Following on from the *South West Mountain Bike Master Plan*, a steering group was formed and consultants appointed for the preparation of the *Perth and Peel Mountain Bike Master Plan*, to identify and prioritise the future development of mountain bike trails in the Perth and Peel regions.

The Department's WA Mountain Bike Management Guidelines Working Group completed the development of the draft guidelines which will be released for public comment prior to finalisation. The guidelines will provide guidance to Parks and Wildlife's management of mountain bike activities, and will also be available for local government and other agencies.

The Department continued working in partnership with various mountain bike clubs and groups managing their local trail networks. Service agreements were developed with the Kalamunda Collective, Southern Hills Mountain Bikers, the Goat Farmers, Collie Mountain Bike Club, South

West Mountain Bike Club and the Margaret River Off Road Cycling Association to improve the maintenance and management of their local trail networks.

More information on mountain biking in parks is available on the Department's Explore Parks WA website: www.parks.dpaw.wa.gov.au/activity/mountain-biking.

Munda Biddi Trail

The large fires in January 2015 also impacted heavily on Munda Biddi Trail assets, with more than 70km of the trail burnt, damaging signage, trail marking, creek crossings and the Yirra Kartta camp site. The camp site was significantly damaged in the fire, but thankfully is repairable. Works immediately commenced post fire on the installation of temporary re-alignments and detailed planning for re-building the trail (see page 50–51).

The Department continued its strong partnership with the Munda Biddi Trail Foundation, assisting the Foundation in the development of a strategic plan to guide their operations and continued development.

The number of maintenance volunteers has been increased by 10 per cent. Several volunteer maintenance workshops were run to train volunteer and new sector leaders, with more than 90 per cent of the 108 trail maintenance sections now allocated with volunteers undertaking regular inspections and maintenance.



Environment Minister Albert Jacob tests out the mountain bike pump track at Logue Brook campground. Photo – Jennifer Eliot/Parks and Wildlife



A mountain biker rides through the forest. Photo – Kerry-Anne DeKlerk

Parks Management

Staff have also been liaising with the Foundation and working on the development of a smartphone application for the Munda Biddi Trail. The 'app' has been designed to assist riders to plan their rides, providing the ability for riders to view maps and log their rides, take and share photographs, access information on points of interest, and locate services such as accommodation and bike shops along the length of the trail.

More information on the Munda Biddi Trail is available on the website: www.parks.dpaw.wa.gov.au/know/munda-biddi-trail.

Motorised recreation

During the year, the Department continued working closely with the WA 4WD Association, Track Care WA, the Recreational Trailbike Riders' Association of WA and Motorcycling Western Australia in promoting responsible use of public lands by four-wheel drivers and trail bike riders.

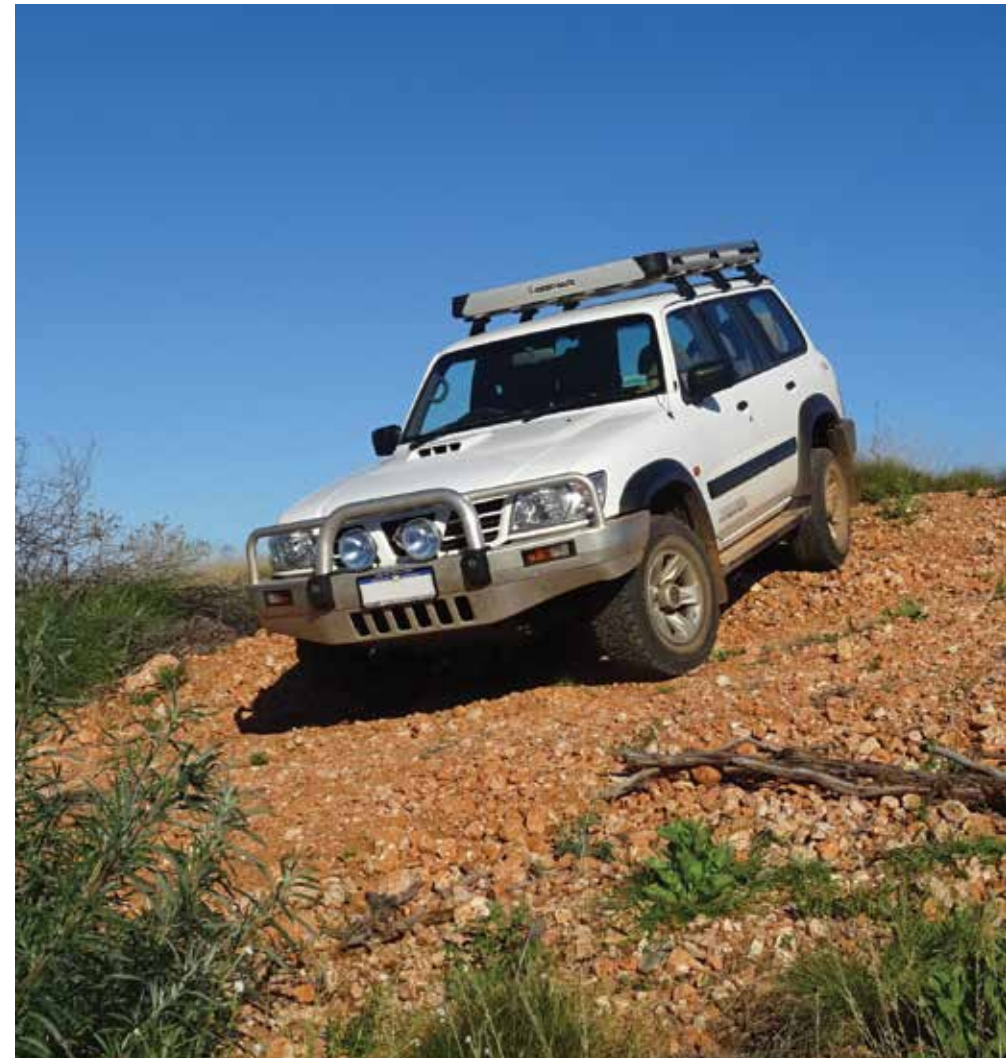
The *Track Adoption* program developed in partnership with Track Care WA and the WA 4WD Association has continued to see volunteers working alongside staff on projects across the State, including:

- a second clean-up on Dirk Hartog Island National Park undertaken by members of Track Care WA, the WA 4WD Association and Shark Bay District staff

- the completion of a project to construct replica stockyards at the Congelin campground in Dryandra Woodland by the Toyota Landcruiser Club of WA and the Great Southern District staff
- the continuation of track and facility improvement works on the Lennard Track in Wellington National Park by the South West 4WD Club and Wellington District staff
- maintenance of Yeagerup Beach Track by the Land Rover Owners Club and the Donnelly District staff
- the development of a maintenance program and improvements to the Fawcett Track in Lane Poole Reserve by the Armadale 4WD Club and Perth Hills District staff.

The Department continued to collaborate with the Recreational Trailbike Riders' Association, including the development of a service agreement for continued maintenance of the Metro Road Trail Bike Trail in Flint Block, Perth Hills District along with assisting the Swan Coastal District with maintenance in the gazetted off-road-vehicle areas at Pinjar and Gnangara.

More information on four-wheel driving in parks is available on the website: www.parks.dpaw.wa.gov.au/activity/4wd-adventure-motorcycling.



Four-wheel driving in Cape Range National Park. Photo – Jamie Campbell/Parks and Wildlife

Community involvement

Volunteers are highly valued by the Department because they build communication links and understanding between the Department and the community.

Volunteers continue to make a significant contribution to the management of parks and reserves and to a range of conservation programs throughout the State. During 2014–15, the Department recruited 1751 new volunteers to meaningful and interesting opportunities in conservation and recreation activities. A total of 4636 volunteers contributed 614,745 hours to projects across WA.

Volunteer awards and activities

An annual Volunteer of the Year and Outstanding Service awards function is held to acknowledge the important support provided by volunteers. There was one recipient of the Volunteer of the Year award in 2014, with a further 11 individuals and one volunteer group receiving Outstanding Service awards. 2014 marked the 25th year of the Department's formal volunteering program. To mark this milestone, Long Service awards were also presented to 29 volunteers who had provided more than 20 years continual service.

Table 3: Register of volunteer numbers and contribution

Year	Total number of volunteers registered since 1999	New volunteers	Volunteers active in previous three years	New projects	Number of volunteers contributing	Total number of hours worked	Average hours per volunteer
2004–05	7600	1500		28	4000	422,000	106
2005–06	8230	630		6	3882	470,600	121
2006–07	9726	1496		8	3250	406,000	125
2007–08	7784	-1942		9	3439	424,500	123
2008–09	9558	1774		7	4004	426,200	106
2009–10	11,082	1524		23	3038	451,040	148
2010–11	12,759	1677		27	3602	436,216	121
2011–12	14,604	1845		51	3838	457,557	119
2012–13	16,446	1842	7585	28	4717	564,350	120
2013–14	18,327	1881	8989	25	4345	506,285	117
2014–15	20,078	1751	9904	22	4636	614,475	133

Parks Management

Ongoing volunteer programs and projects such as the Campground Host program, Bibbulmun Track Foundation, *Reptile Removalists*, *Wildlife Rehabilitators*, Wildcare Helpline, Honorary CALM officers and the WA Herbarium continued to contribute to the conservation, protection and care of the environment and the Department's recreation goals. At 30 June 2015, the Department had more than 320 volunteer projects across the State.

The Campground Host program continued to attract volunteers in 2014–15, with 66 new hosts joining the Department. During the year, 221 campground hosts spent 148,819 volunteer hours, collecting site fees, welcoming visitors and helping to manage campgrounds around the State.

The Wildcare Helpline's 40 office and home-based volunteers fielded 11,100 calls in 2014–15 from members of the public to assist with sick, injured or orphaned wildlife. The Helpline greatly assists the Department's Nature Protection Branch by filtering and responding to wildlife-related calls, thereby vastly reducing overall calls to the branch and allowing staff to focus on other areas of their work.

In addition to calls, the Wildcare Helpline web page – www.dpaw.wa.gov.au/about-us/contact-us/wildcare-helpline – which contains basic first aid for wildlife and other wildlife-related information, received 8885 individual page visits in the same period.

The quarterly community involvement newsletter continued to be well received and has assisted in recruiting volunteers by offering cross-promotion of volunteering opportunities, advertising new projects and highlighting volunteer achievements.

The newsletter's look has been updated and is now available to view or download online. Circulation through the volunteer database is about 8000 each quarter.

Across the State, 22 new projects were registered with the Community Involvement Unit during 2014–15. New projects included:

- Pilbara Islands Nature Reserve Wheatstone Project
- Perth Trail Series, across John Forrest, Serpentine and Walyunga national parks
- Donnelly Weed Management Program
- Rehabilitation of peat wetland in the Walpole Wilderness.

During 2014–15, the Department provided face-to-face training for more than 376 volunteers and online training programs for 194 volunteers, with support from specialist services within the Department and external agencies. Training included the Campground Host Forum; safe work practices as part of the Department's corporate induction; risk management; basic fire awareness; first aid; cross-



Perth Observatory Volunteer Group Secretary Christine Coulstock and Chairperson Diana Rosman with Parks and Wildlife Director General Jim Sharp and Science and Conservation Director Margaret Byrne. Photo – Karla Graham/Parks and Wildlife

cultural awareness; metropolitan and regional basic courses in wildlife rehabilitation; and advanced and special topics for wildlife rehabilitation.



Chuditch release. Photo – Kimberley Page/Parks and Wildlife

Tourism and marketing

Key tourism and marketing activities focused on the *Parks for People* initiative. This included:

- working closely with Tourism Western Australia to support tourism marketing partnerships such as Bauer Media, Britz and Driveaway Holidays
- supporting the Caravan Industry Association of Western Australia with online marketing activities
- attending the annual Caravan and Camping Show at Claremont Showgrounds
- working in partnership with Koomal Dreaming to deliver a Noongar Bush Barbeque at the newly completed Martins Tank campground in Yalgorup National Park
- supporting a community partnership with Pemberton Discovery Tours to establish WA Wilderness Glamping at Warren National Park.

In partnership with Nature Play WA, Parks and Wildlife ran a 'free entry to national parks' promotion over the July 2014 school holidays, for children who held Nature Play passports, to encourage families to get outdoors and enjoy nature.

During 2014–15, camping events for first-time campers were held at Yanchep and Warren national parks. The events, conducted by

Parks and Wildlife in partnership with Nature Play WA and Outdoors WA, provided people with an opportunity to camp with the support of staff. More than 100 adults and children took part in the event at Yanchep.

The Department distributed about 20,000 copies of the free booklet *National, marine and regional parks in Western Australia – a visitor's guide to the State* during the year. The Department continued to support and engage the recreation and tourism industries through a variety of activities, including:

- regular meetings with the Tourism Industry Reference Group to assist with communication between the Department and the nature-based tourism industry
- expanding the publication of *Touring WA*, an electronic newsletter featuring articles, information and opportunities for visitors to enjoy parks

The new ParkFinder WA smartphone application was launched, making it easier for visitors to plan their next trip to parks and reserves. Work also started on a Munda Bidji Trail application, plant and animal guides and a camping checklist application.

The Department continued to assist with improvements to the Trails WA website, a central, searchable portal for trail information. Of the 160 trail listed, 70 are in parks and reserves managed by Parks and Wildlife, with an additional 20 trails in the process of being listed.

Campground booking and information system

The campground booking and information system continued to be upgraded and improved. During 2014–15, 8873 bookings were made through the system.

Visitor research

During 2014–15 a number of visitor research projects were undertaken, including:

- ongoing involvement and support of the Kimberley Marine Research program in investigating human use, values and aspirations for Kimberley coastal waters
- ongoing involvement in a study at Penguin Island to investigate why visitors use the sandbar rather than other transport options
- the completion of an online survey to determine the effectiveness of the Department's volunteer program and the expectations, motivations and satisfaction of volunteers, the results of which will assist in the future development of volunteer programs
- ongoing camper visitor satisfaction monitoring in association with *Royalties for Regions*
- ongoing involvement in long trail use monitoring, with data being collected for the Bibbulmun Track
- ongoing review of the visitor survey and visitor use program

- the completion of a survey of John Forrest National Park to determine visitor use, satisfaction and suggestions for changes and improvements for the park
- ongoing involvement with Murujuga National Park assisting with the selection and implementation of visitor monitoring equipment (e.g. vehicle classifiers) and a survey tool to determine visitor characteristics
- involvement in the development of a survey tool for use in the proposed Kalbarri development
- the completion of an online survey for feedback about the 'Great Aussie Camp Out' at Yanchep National Park.

Visitor use monitoring

In 2014–15, visitor use was monitored at 396 sites using a variety of methods including traffic classifiers and counters, pedestrian counters, observation surveys and ticket sales in national parks, State forest and other reserves throughout the State. The total reportable visitation to Parks and Wildlife-managed lands and waters during the year was 18.67 million increased from 16.88 million last year (visits reported during 2013–14 (see Figure 1).

Parks Management

Visitor survey program

Steady progress was made to transition the Department's visitor survey program from paper-based surveys to online data collection methods.

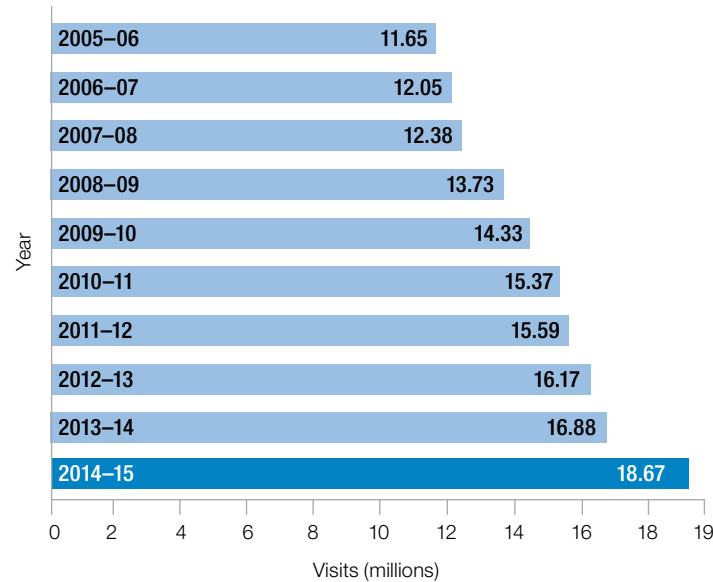
As part of the visitor survey program, a benchmark visitor satisfaction index has been adopted to compare visitor satisfaction levels each year. This benchmark has been set at 85 per cent.

The 2014–15 visitor satisfaction index, averaged from visitor responses to surveys at selected parks, reserves and forest areas around the State, was 87.9 per cent. This outcome, with results from previous years of the survey program, is illustrated in Figure 2.

Astronomy

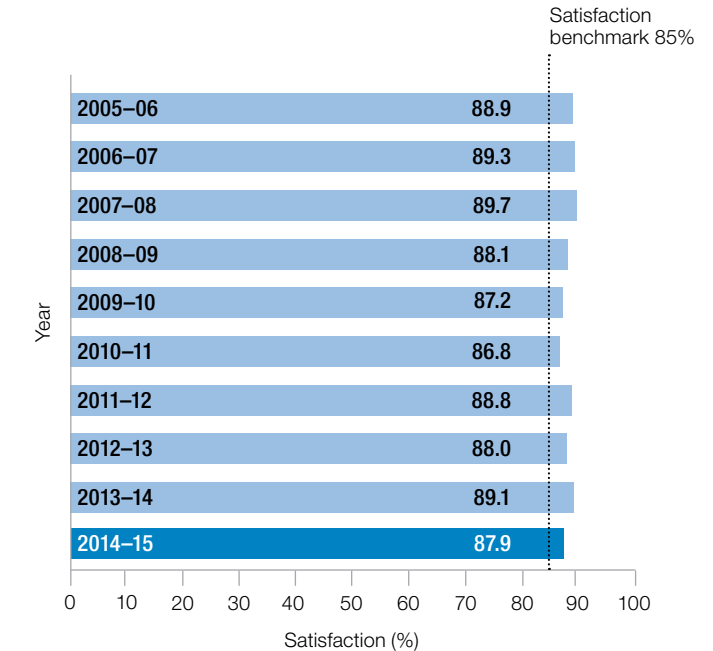
In June 2015, the Department signed a community partnership agreement with the Perth Observatory Volunteer Group Inc. (POVG) to manage the operations at the Perth Observatory in Bickley. Seed funding was provided to enable POVG to continue running the public education and outreach program for the community to learn and experience optical astronomy, space science and astrophotography. The group will also catalogue and maintain the historically valuable equipment and buildings at the observatory site.

Figure 1. Total visits to Parks and Wildlife-managed lands and waters



Note: Data in this graph is taken from the Department's VISTAT (Visitor Statistics) database and is a true and correct record of best available data from the VISTAT database at the time of preparing the visitation figure for the annual report. The VISTAT database is the true source of visitation. As the database is a live database, corrections and amendments are made in the database on an ongoing basis so figures presented here may differ from those presented in previous reports.

Figure 2. A comparison of annual visitor satisfaction levels within Parks and Wildlife-managed lands and waters



Formal management arrangements with Aboriginal people

The Department made significant progress negotiating and creating new joint management arrangements under the provisions of the CALM Act, as well as implementing existing agreements.

Ngarla

In August 2014 the second Indigenous Land Use Agreement (ILUA) for Eighty Mile Beach was signed with the Ngarla people, marking significant progress in building and formalising partnerships with traditional owners in the Kimberley. The ILUA provides for the creation and management of the Ngarla parts of Eighty Mile Beach and the Jarrkumpang Nature Reserve. The agreement also allows for the employment of two members of the Ngarla native title group in full-time equivalent positions in the day-to-day management of the Eighty Mile Beach Marine Park and associated reserves.

Nyangumarta

The Department continues to implement the new joint management arrangement with the Nyangumarta people arising out of the ILUA reached between the State and Nyangumarta in May 2014 enabling the creation and joint management of the Nyagumarta parts of Eighty Mile Beach Marine Park and Walyarta and Kujungurru Warrarn conservation reserves within Nyangumarta country.

This was the first ILUA for a marine park in WA and includes the important intertidal area at Eighty Mile Beach.

The Department had already established good working relationships with Nyangumarta people through the marine planning process and ongoing on-ground works such as turtle monitoring, fencing, conservation and cultural interpretive signage works. The agreement formalises this partnership and provides for the employment of Nyangumarta Rangers.

Karajarri

Negotiations have progressed with the Karajarri native title holders throughout 2014–15 and have now concluded. The ILUA will provide for the creation and joint management of the Karajarri parts of the Eighty Mile Beach Marine Park, the Walyarta Conservation Park, the Jinmarnkur Conservation Park and the Jinmarnkur Kulja Nature Reserve. The Department will work with the Karajarri people and the Karajarri Ranger program to deliver on-ground management operations.

Dambimangari

Joint management arrangements with the Dambimangari Aboriginal Corporation over the Lalang-garram / Camden Sound Marine Park, which commenced in November 2013, entered their second year. This is the first joint management agreement for a marine park in WA. The park will ultimately cover more than 7000km² and protect the



Dambimangari Traditional Owner and Parks and Wildlife employee Adrian Lane.
Photo – Peter Dans Parks and Wildlife

southern hemisphere's largest humpback whale calving ground, and conserve habitats for flatback and green turtles, snubfin and Indo-Pacific humpback dolphins, dugongs, saltwater crocodiles and several species of sawfish. The State Government is also negotiating an ILUA with the Dambimangari Aboriginal Corporation in relation to the joint management of the proposed Horizontal Falls national and marine parks and proposed Great Kimberley National Park.

Miriuwung-Gajerrong

The Department has a central role in implementing the Ord Final Agreement ILUA, in partnership with the Yawoorroong Miriuwung Gajerrong Yirrgbe Noong Dawang Aboriginal Corporation (Miriuwung Gajerrong Corporation) and other partners. Both the Department and the Miriuwung Gajerrong Corporation have joint responsibility for developing management arrangements for six new conservation reserves (totalling 150,000ha) in the east Kimberley.

Parks Management

Yawuru

An ILUA was signed on 25 February 2010 with Yawuru native title holders over 5297km² of land in and around Broome. The agreement enabled the creation of terrestrial and marine conservation reserves, to be jointly managed by Yawuru people, Parks and Wildlife and, within the Broome town site, the Shire of Broome. These areas include terrestrial reserves around Broome and its north, and a marine park from Gantheaume Point to Cape Villaret.

Burrup (Murujuga)

In January 2013, Murujuga National Park was created, covering 4913ha which comprises about 86 per cent of the Dampier Archipelago National Heritage place that has been gazetted on the Burrup Peninsula. The Murujuga National Park is held freehold by the Murujuga Aboriginal Corporation (MAC), leased to the State and jointly managed with Parks and Wildlife as a national park. The Murujuga Park Council, the joint management body, comprises representatives from MAC, Parks and Wildlife, and the Minister for Aboriginal Affairs.

Work continued with MAC and the Murujuga Ranger team, which undertakes on-ground land management activities. During the year, the Department worked with MAC to support training, capacity building and authorisation of Murujuga Rangers to strengthen their operational management function in the park.

In July 2014, the Department participated in strategic planning for the park and the broader National Heritage-listed place with MAC, the Federal Government, Woodside, Rio Tinto, The University of Western Australia, Murdoch University and other stakeholders.

South West Native Title Settlement

In 2015 the State and Noongar native title parties concluded the South West Native Title Settlement ILUA negotiations and the Government will now move towards implementation of the settlement. The South West Native Title Settlement is a comprehensive settlement with the six key native title groups covering the south-west, and includes the establishment of a 'future fund' for the Noongar community, creation of a Noongar land base, a community development and economic development framework and funding support, a capital works program for a cultural centre and office accommodation and a standard heritage protection regime.

The Department will play a key role in the settlement through the provision of joint and cooperative management agreements over the conservation estate. The joint management framework will involve two tiers of formal engagement with Noongar Regional Corporations:



Parks and Wildlife planning officer Matt Fossey joins Karajarri elders and rangers at Salt Creek in the proposed Walyarta Conservation Park. *Photo – Parks and Wildlife*

1. Cooperative Management Committees: providing general advice for each Regional Corporation area; and
2. Joint Management Bodies: formal joint management bodies under the CALM Act.

The ILUA commits to establishing six regional Cooperative Management Committees and at least one joint management agreement in each claim area within the first five years, and a further joint management agreement in each claim area within 10 years of the commencement date.

Other joint management arrangements currently in negotiation

The Department continued to engage with traditional owner groups across the State to implement formal joint management agreements. These included negotiations with native title holders in the Kimberley to achieve joint management outcomes under the *Kimberley Science and Conservation Strategy*, and with the Gnulli native title claimants in relation to the creation of conservation estate and joint management outcomes along the Ningaloo Coast.



Cave Point lookout, Fitzgerald River National Park. Photo – Peter Hartley/Parks and Wildlife

Support to the Conservation Commission and Marine Parks and Reserves Authority

The Department of Parks and Wildlife provides support to the Conservation Commission of Western Australia in accordance with the CALM Act and the 2011 *Operational Relationship Agreement*.

During 2014–15 this support included provision of corporate services to the Conservation Commission Service Unit. This helped the Conservation Commission to achieve:

- the delivery of the Commission’s statutory responsibilities in management planning under the CALM Act, through the Management Plan Review Committee
- finalisation of management plans for the Barrow Group Nature Reserves, Leeuwin-Naturaliste capes area parks and reserves and Tuart Forest National Park
- the preparation of two new position statements in accordance with its policy functions under the CALM Act, namely: *The protection of surface and groundwater biodiversity values of lands vested in the Conservation Commission of Western Australia* and *Monitoring strategy for assessing the implementation of management plans prepared under the CALM Act 1984*.

- the completion of a management plan performance assessment for Nambung National Park and progress towards a performance assessment for Karijini National Park
- statutory functions in relation to leases, licences and permits, land tenure, mining proposals and ecologically sustainable forest management.

Support is provided to the Marine Parks and Reserves Authority (MPRA) in accordance with the CALM Act and a memorandum of understanding. During 2014–15, the Department assisted the MPRA by providing policy advice, developing indicative and final management plans for proposed marine parks and reserves and executive support services.

Highlights for the year included:

- the release of the final management plan for the Eighty Mile Beach Marine Park
- a periodic audit of the implementation of the management plan for the Rowley Shoals Marine Park
- an annual performance assessment workshop for WA marine parks and reserves.

Parks Management

Other initiatives

Memoranda of understanding

A number of significant partnerships that are formalised through a memorandum of understanding (MOU) continued to be maintained.

In 2014–15 negotiations were held with pastoral lessees throughout the State in regard to areas to be excluded from their leases for conservation purposes when the leases are to be renewed on 1 July 2015.

As a result of these negotiations, 11 pastoral lessees agreed to negotiate MOUs with Parks and Wildlife so the areas proposed for exclusion could remain in their leases and be jointly managed with the Department for conservation purposes. Eight MOUs were successfully negotiated and signed by the lessees. Three MOUs were progressed and are currently awaiting execution by the lessees. A further memorandum is currently being developed and negotiations with the lessee continue over its execution. The memorandums address on-ground management activities such as fencing and fence maintenance, visitor signage, and conduct of conservation-related activities such as flora and fauna surveys.

A longstanding MOU continued with the Department of Corrective Services, allowing prisoners to make a valuable contribution to Departmental projects and the community.

The MOU between the Department and Leave No Trace Australia is also ongoing, with further projects to promote visitor behaviour that has minimal environmental impact.

During 2014–15, the successful partnership between Parks and Wildlife, Conservation Volunteers Australia, the Department of Education and Rio Tinto continued with Rio Tinto's *Earth Assist* program which won a 2015 Premier's Award for Excellence in Public Sector Management.

The partnership between the Department and Fairbridge Western Australia Inc. continued to provide opportunities for cooperation between the two organisations on employment and training outcomes for young Aboriginal people. Projects involving Fairbridge Aboriginal trainees were undertaken at Wellington National Park, Dryandra Woodland and other areas.

World and national heritage

Day-to-day management of three World Heritage areas – Shark Bay, the Ningaloo Coast and Purnululu National Park – continued.

The Ningaloo Coast World Heritage Advisory Committee established in February 2014 has now had four meetings, and existing programs to manage the World Heritage area continue, in addition to promotion and presentation projects to communicate World Heritage listing and the values of the area.

The establishment of the Purnululu World Heritage Area Advisory Committee was endorsed by Cabinet in December 2014, with the inaugural meeting to take place in August 2015.

The implementation of the *Shark Bay World Heritage Property Strategic Plan 2008–2020* continued, and six vacancies on the Shark Bay World Heritage Advisory Committee were endorsed.

Several projects were completed under the *Caring for our Country*-funded *Shark Bay World Heritage Area Communication Strategy*. These included the installation of interpretive and orientation signs and shelters at various sites in Monkey Mia Conservation Park and the proposed Edel Land National Park.

A series of World Heritage interpretive and orientation signs were designed for Charlie Sappie Park for the Shire of Shark Bay.

The State Government established Western Australia's first sister park relationship – between China's Danxiashan National Park and Purnululu National Park, both World Heritage areas.

The Department provided information to inform the State's response to the proposed National Heritage listing and assessment of the Lesueur-Coomallo and Fitzgerald River-Ravensthorpe areas.



Soft corals at Ningaloo World Heritage Area. Photo – Tourism WA



Matuwa (Lorna Glen former pastoral station).
Photo – Jennifer Eliot/Parks and Wildlife

Regional activities

Goldfields Region

- The joint management project with the Wiluna Martu and the local community continued at Matuwa (Lorna Glen) and Kurrara Kurrara (Earaheedy), and included flora and fauna management, research, fence maintenance, erosion control, road maintenance and fire management contract work. Additional work was undertaken in the adjacent Birriliburu native title determined area and Indigenous Protected Area (IPA). Considerable work was done to progress the creation of an IPA over Matuwa and Kurrara Kurrara with development of a management plan.
- Joint management activities with the Tjuntjuntjara Aboriginal community in the Great Victoria Desert and Spinifex native title determined area included the repair and maintenance to two existing shed tanks, weed control and reserve management.
- The land management officer position and project officer within the Goldfields Land and Sea Council (GLSC) facilitated consultation, monitoring and clearance work relating to fire management with the various Aboriginal groups in the Goldfields. The positions were funded through the *Great Western Woodlands Strategy*. This project is now complete and has led to ongoing ranger programs

and Aboriginal involvement in the *Great Western Woodlands Strategy*.

- Joint management for conservation and multiple-use of the Adelong pastoral lease adjacent to Goongarrie was progressed with the Menzies Aboriginal Corporation.
- The Credo Working Group was established with assistance from the GLSC to progress Aboriginal involvement and joint management of Credo. Several meetings were held.
- Work on the new *Parks for People* campground at Credo continued, in consultation with local Aboriginal groups through the GLSC. Local Aboriginal workers have been employed by the Department on a contract basis to work on the campground development. The camp sites and access roads have been cleared and constructed. Key infrastructure has been installed including fire rings, tables and toilets.
- A joint management training project with the Wiluna Martu, GLSC and Spinifex ranger groups and Parks and Wildlife staff took place during April, with 35 rangers taking part in the four-day training program at Credo. The rangers were trained in first aid and AusChem weed spraying with a practical assessment.
- Campground hosts and volunteer caretakers contributed more than 5000 volunteer hours at Matuwa, 5000 hours at Credo, 2000 hours at Lake Mason and 2000 hours at Goongarrie former pastoral stations.
- Work continued on the Credo homestead recreation site, including ongoing maintenance work and improvements to the homestead and upgrades to the shearer's quarters. The work involved painting and repairs, installation of a shed, new air-conditioning systems, electrical work and water supply.
- The multi-use field study centre at Credo was completed and is being used by the CSIRO for conducting research and by other organisations for training purposes.
- Two *Remote Regions Nature Conservation Program* projects were conducted in the region at Credo and Matuwa and included:
 - Parks and visitor services work and roadworks at the homestead sites. At Matuwa flood mitigation work was undertaken on the predator-proof enclosure and around the homestead complex.
 - At Credo erosion mitigation works were completed and more than 2000 tyres were removed from water courses and disposed of according to Department of Environment Regulation guidelines.
 - The caretaker's house at Matuwa was renovated and a new deck area added to the office.

Parks Management

- The bunkhouse at Matuwa was painted and upgraded, including the addition of partitioning to allow for additional accommodation space.
- The rubbish tip area at Goongarrie was consolidated and tidied up.
- The access roads to Goongarrie station and Cave Hill recreation site were upgraded after a severe rain event.
- Inspections were undertaken at all recreation sites to assess visitor risk. Quarterly and annual reviews were carried out to monitor progress on actions taken to mitigate hazards.
- Data on the number of visitors to recreation sites was gathered and uploaded to the Department's VISTAT database.

Kimberley Region

- Engagement and negotiations continued with native title and other Aboriginal groups to facilitate the implementation of the *Kimberley Science and Conservation Strategy*.
- Negotiations continued with the Bunuba Dawangarri, Williggin and Balangarra Aboriginal corporations in relation to an ILUA and joint management agreement for native title-determined lands.
- Under the *Kimberley Science and Conservation Strategy* the Bunuba Ranger program continued to grow. Rangers started their training for Certificate II and III in Conservation and Land Management

and continued to undertake weed and feral animal control, biodiversity surveys and visitor services-related projects in West Kimberley parks.

- The Armbangardi Ranger group has been established on Carson River Station to undertake fire, weed and maintenance duties required by the Pastoral Lands Board.
- A rock art conservation training course was undertaken with five traditional owner groups throughout the Kimberley. The groups were shown conservation techniques and supplied with conservation toolkits.
- A fit-for-purpose 20m vessel for the northern Kimberley marine parks was commissioned, allowing regional staff to undertake joint management operations with traditional owners on sea country.
- Work continued on developing four management plans for the Yawuru conservation estate, two of which were released for public comment on 19 June 2015.
- Four trainee Yawuru Rangers employed within the Yawuru joint management team continued their training for Certificate II and III in Conservation and Land Management. One trainee completed Certificate III with another completing Certificate II. The studies included cultural components such as formal language lessons and informal training opportunities with senior Yawuru people.

- The Yawuru Rangers have completed significant track and trail management projects within the Minyirr Park Conservation Reserve. A major capital works project constructing steps and boardwalks over Cable Beach dunes began by contractors supervised by the Yawuru Rangers.
- A school holiday program and community events were conducted to focus on marine and terrestrial reserves within Yawuru conservation estate.
- A school holiday program was conducted at Eighty Mile Beach Caravan Park in July 2014 and April 2015 focusing on the marine environment in the local area.
- Remedial road works on Crab Creek Road to reduce soil erosion and management of water drainage.
- A guided walk entitled 'Unlocking Mirima' was hosted twice weekly during the peak tourist season in Mirima National Park.
- Extensive upgrades were made to tourist facilities within Mirima National Park including new hybrid toilet, cement pathways, interpretive shelter upgrade, new bollards and rest area seating.
- A new hybrid toilet was installed at Molly Springs, along with upgrades to existing carpark, visitor facilities and access road.
- A new road was constructed and the car park upgraded at Black Rock in Ngamoowalem Conservation Park.



Yawuru Ranger Jason Fong measures a shorebird at the proposed Yawuru Nagulagun / Roebuck Bay Marine Park. *Photo – Parks and Wildlife*



Kimberley bauhinia or jigily tree (*Bauhinia cunninghamii*). *Photo – Greg Keighery/ Parks and Wildlife*

- New visitor picnic facilities were installed in Ngamoowalem along the spring creek access track
- A new boardwalk and viewing platform at Mini Palms, Purnululu was constructed replacing the old infrastructure that was closed to public access in March 2014.
- Airstrips at Bellburn Purnululu, Mount Hart and Windjana (King Leopold Ranges Conservation Park) were upgraded.

Midwest Region

- Public comment on the draft management plan for Kalbarri National Park was received and the plan revised. A final plan was approved by the Conservation Commission of WA in April 2015 and was forwarded to the Minister for Environment for approval.
- A *Royalties for Regions* business case was submitted for the Kalbarri Skywalk and National Park Tourist Road and Infrastructure project, in collaboration with the Mid West Development Commission, Tourism WA, Department of Commerce and Telstra. The project includes completing the sealing of the Loop / Z Bend Road, construction of a cantilevered lookout over the Murchison Gorge and the establishment of mobile broadband communications in the gorge area.
- At Kalbarri National Park, new walk trails were built at Red Bluff (Bluff to Beach Trail) and Z Bend (4 Ways Trail).

- A geotechnical and structural assessment of lookout facilities was conducted in Coalseam Conservation Park.
- Under the *Parks for People* initiative, planning progressed to create opportunities for camping and recreation at the Karara group of six former pastoral properties, Coalseam Conservation Park and Big Lagoon campground in François Péron National Park. At Coalseam, roadworks have been undertaken and new visitor infrastructure constructed to expand Miners campground. Plans for a new campground at Big Lagoon were made available for public comment.
- In the Shark Bay area, the hot tub was refurbished and 24-hour power installed at the Peron Homestead precinct in François Péron National Park and remedial works were undertaken on the Monkey Mia boardwalk.
- Construction commenced on sheds at Steep Point and Dirk Hartog Island to provide accommodation for staff in these remote locations.
- Road and building repairs were undertaken following Tropical Cyclone Olwyn.



Sunset over Dirk Hartog Island. *Photo – Carolyn Thomson-Dans/Parks and Wildlife*



Looking out across the Murchison River, Kalbarri National Park. *Photo – Parks and Wildlife*

Parks Management

- A community engagement strategy was reviewed and continued to be implemented for the *Dirk Hartog Island National Park Ecological Restoration Project (Return to 1616)*. Work implemented included a second Dirk Hartog Island National Park community open day, facilitating an island clean-up with community involvement, presentations to the Malgana Native Title Working Group, development of a photo book about the project for guests at Dirk Hartog Island Lodge, development of a new brochure on island protection and biosecurity and design of three new pages for the World Heritage website www.sharkbay.org.
- Regional staff supported *Return to 1616* through the planning and design of temporary accommodation for the cat eradication team at Sandy Point.
- Operations continued to be refined to improve efficiency at the Pinnacles Desert Discovery Centre in Nambung National Park and the Monkey Mia Dolphin Experience in the Shark Bay World Heritage area. At Monkey Mia the shop and theatrette were relocated and refurbished. At the Pinnacles new directional signage was installed to encourage use of the discovery centre and a billboard was installed on Indian Ocean Drive to promote visitation.
- National park ranger talks began at the Pinnacles Desert Discovery Centre during school holidays and long weekends.
- In the Moora District, an increase in visitor numbers, illegal camping and unlicensed off-road vehicles, particularly in the vicinity of the shack communities of Wedge and Grey, required significant management in coastal reserve areas. Staff attended meetings with the Wedge and Grey community associations and other key stakeholders to discuss a range of management issues. Parks and Wildlife took possession of seven shacks due to non-renewal of licences.
- The State Government endorsed a preliminary planning report on the future management of Wedge and Grey. The implementation of the preliminary plan and the development of a final plan are ongoing.
- Dieback interpreters and Yued community members assessed the proposed alignment for the Mount Peron walk trail in Lesueur National Park. A survey of declared rare flora is in progress.
- New picnic tables were constructed for the Stockyard Gully recreation site and picnic facilities were refurbished at Kangaroo Point in Nambung National Park.
- Visitor interpretation panels were installed at the Nilgen Nature Reserve lookout and boot cleaning stations were installed at trailheads in Lesueur and Badgingarra national parks to mitigate the risk of introducing dieback.



The wheelchair-accessible lookout over the Pinnacles Desert in Nambung National Park.
Photo – Parks and Wildlife

Pilbara Region

- The *Parks and Wildlife Strategic Directions 2014–17* document and the *Parks and Wildlife Pilbara Specific Priorities Business Plan* were presented to Shire of Ashburton, City of Karratha and the Pilbara Development Commission to provide dialogue and open discussion regarding the future of the area, build relationships and promote the *Parks for People* initiative.
- Stage 2 of Milyering Discovery Centre improvements began with new interpretive conceptual displays and designs developed.
- Staff provided displays, information and a tour of the marine park vessel *Cetea* during the annual Exmouth Whale Shark Festival in May 2015.
- School holiday activity programs were undertaken, with activities ranging from World Heritage talks to sandcastle competitions.
- Significant staff involvement with all aspects of the whale shark industry and commercial tour operator industry was ongoing.
- A custom-designed Aboriginal cultural awareness training course was delivered to all whale shark operators and staff providing a better understanding and appreciation for the cultural significance of the area to Aboriginal people.

- In 2014–15, about \$1.14 million was invested in the repair of damage to visitor infrastructure by severe flooding in Cape Range National Park as a result of ex-tropical cyclone Jack. Damaged assets included the Milyering Discovery Centre, accommodation, roads, campgrounds and other visitor facilities.
- Under the *Parks for People* initiative, the redevelopment of Osprey Bay campground in Cape Range National Park was completed, delivering 30 new camp sites, with three new two-cubicle toilets, picnic tables, shelters in a new sunset viewing area, upgraded access roads and a 3km connecting walk trail to the neighbouring Sandy Bay.
- Concept plans and designs were completed for the upgrades at Miliyana and Star Gazers campgrounds in Cape Range National Park, as part of the *Parks for People* initiative. Ready-for-tender drawings and construction details were finalised.
- Rationalisation and standardisation of moorings at the Tantabiddi boat ramp has begun with three additional public moorings installed.
- Joint management of Murujuga National Park on the Burrup Peninsula continued with the Murujuga Aboriginal Corporation under a formal joint management agreement. The Murujuga Park Council met several times to progress park planning and management.
- Concept design style and drawings were completed and presented to the Murujuga Park Council for the establishment of a viewing platform and boardwalk at Deep Gorge to protect culturally sensitive sites and to raise education and awareness of the cultural significance of the Burrup for Aboriginal people.
- Main Roads signs for Murujuga National Park were created and installed along the North West Coastal Highway.
- In Karijini National Park, further important structural and safety improvements were made to Oxers Lookout walkway and lookout as well as an extension to the Fortescue Falls walk trail.
- Upgrades to Weano Gorge recreational area began with the replacement of old bollards and car park furniture being replaced – minimising visual impact on the natural beauty of the site.
- Upgrades and replacement to the Mount Bruce recreational area began with the repair and replacement of walk trail markers, toilet, directional signage and other car park infrastructure.
- Work started on replacing the Joffre and Kalimina lookouts in Karijini National Park incorporating the new design developed in consultation with structural engineers and stakeholders.



Conzinc Bay, Murujuga National Park. *Photo – Parks and Wildlife*



Parks and Wildlife ranger Scott Thomson welcomes Jonathon Scott-Lee to Osprey Bay, Cape Range National Park. *Photo – Jennifer Eliot/Parks and Wildlife*

Parks Management

- Significant road damage to remaining unsealed roads within Karijini National Park were repaired (made accessible to four-wheel-drive vehicles only) as a result of flooding. Plans to undertake sealing of the remaining roads commenced.
- The Shire of Ashburton, in consultation with Parks and Wildlife, completed the sealed section of road between Joffre Gorge and the western entry point into Karijini National Park.
- Parks and Wildlife and the Shire of Roebourne continued to oversee improvements to recreational shacks on the Dampier Archipelago. These included structural improvements to meet Australian standards and waste water treatment system improvements.
- Improvements to staff housing in Millstream Chichester National Park were completed, with fencing, sheds and other basic living structures built.
- Boardwalks and platforms at Jimdawurrunha pools were replaced, providing safer pedestrian access to this part of the park.
- New interpretive and directional signage was completed and installed throughout most locations within Millstream Chichester National Park. Extensive consultation on interpretive artwork and Aboriginal significance and translation was undertaken to maximise visitor experience and appreciation.
- Significant erosion stabilisation works were undertaken within the Delta of Millstream in an effort to minimise the potential impact that erosion of the bank may have on visitor facilities and camping experience – particularly at Deep Reach and Jimdawurrunha pools.
- Ngurrawaana Aboriginal Rangers completed a number of projects in Millstream Chichester National Park, such as facility maintenance, erosion control works and various other fee-for-service arrangements.
- The replacement of toilets at Dales campground in Karijini National Park continued with seven toilets being completed to a new and higher standard compared to the design and style used previously.
- The canyoning guide for Karijini National Park for Class 6 sections of Karijini gorges was reviewed by the State's Visitor Risk Management committee, with input from Outdoors WA, and endorsed for use as a guide for non-commercial applicants wishing to undertake the Class 6 sections.
- Staff continued to be actively involved with the management and oversight of commercial tourism lease areas, including measures to mitigate bushfire risk to visitors at Sal Salis in Cape Range National Park and Karijini Eco Retreat in Karijini National Park.



Hamersley Gorge, Karijini National Park. Photo – Parks and Wildlife

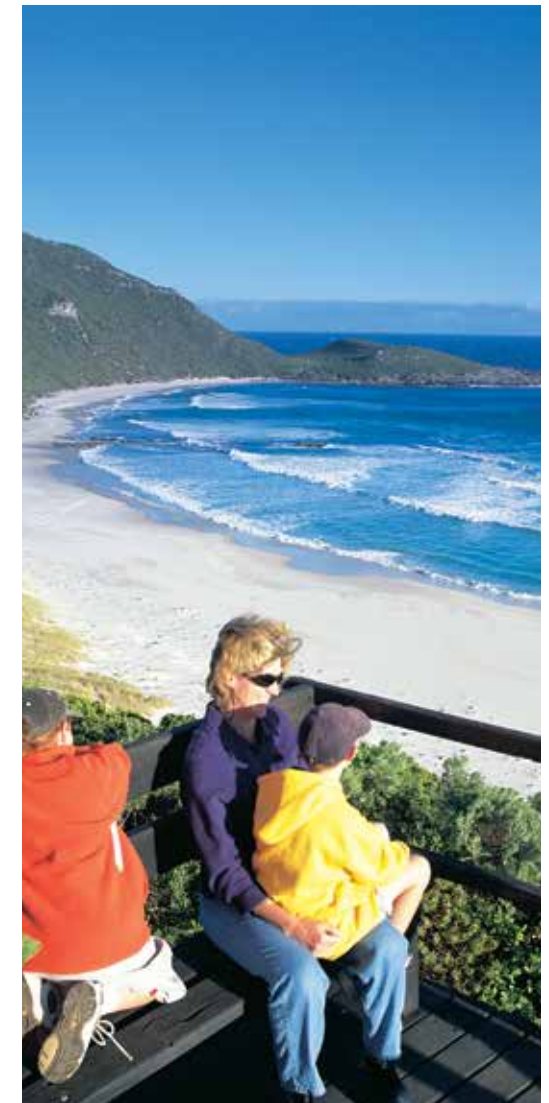
- Capital asset maintenance was carried out across all parks and reserves, and progress was made on capital works projects in Cape Range, Millstream Chichester and Karijini national parks.
- Support for community involvement in the management of parks continued, with the placement of campground hosts and volunteers in key national parks such as Cape Range and Karijini.

South Coast Region

- The *Royalties for Regions*-funded improvement project at The Gap and Natural Bridge in Torndirrup National Park was put to tender and awarded in October 2014. Site preparation and procurement of materials has delayed on-ground construction but works are well advanced with an expected completion date in 2016.
- A memorial lookout at Two Peoples Bay Nature Reserve has been built to commemorate Parks and Wildlife firefighter Wendy Bearfoot who lost her life as a result of a bushfire at Black Cat Creek near Two Peoples Bay in 2012. The Department is continuing to liaise with Wendy's family to finalise the lookout.
- Work was finalised on the Castle Rock picnic area upgrade in Porongurup National Park, including the development of an improved visitor meeting area and interpretation node.
- As part of the State Government rock fishing safety initiative, a collaborative safety campaign including staff from Parks and Wildlife, the Department of Fisheries, Recfishwest and volunteers, was put in place to manage the annual influx of visitors over the Easter weekend at Salmon Holes in Torndirrup National Park. The campaign includes the installation of anchor points at key areas along the south coast for use by rock fishers, as well as multi-lingual signage, information material

and advertising. Unfortunately despite the efforts two men were washed in and drowned at Salmon Holes on 18 April 2015. Just over a week later another rock fishing-related drowning took place at Gull Rock National Park on 26 April 2015.

- The annual Art in the Park event run by the Friends of the Porongurup Range was held in April 2015 at the Castle Rock picnic area.
- Engagement with traditional owners continued on a range of matters in Esperance and Albany, which resulted in visits to parks across the South Coast to undertake customary activities.
- The Albany District held three family information days at Two Peoples Bay Nature Reserve to provide information on conservation and encourage discussion about Aboriginal connection to country.
- Further work on the *Albany coastal reserves management plan* was undertaken with the South West Aboriginal Land and Sea Council to bring the plan to final draft stage, with additional consultation done to facilitate local Noongar representation at a community engagement session.
- Campground hosts continued to assist staff at key parks in the region with positive results including improved visitor satisfaction.
- Visitor numbers continued to increase in all major national parks during peak and off-peak periods.
- During the centenary celebrations of the departure of the ANZAC fleet from Albany, a focus was put on park management and the provision of world-class park facilities in the parks around Albany. Parks and Wildlife staff from neighbouring regions provided assistance to cope with the surge in visitor numbers over that weekend.
- A staff housing refurbishment project at Cape Arid National Park was completed, with the upgrade of the senior ranger's house and an upgrade to the power supply for the ranger's station.
- Under the *Parks for People* initiative, the civil works for the Lucky Bay picnic area and campground redevelopment was put to tender and completed. The project is due to be finalised in the 2015–16 financial year. The upgrade to the campground will provide additional camp sites and new facilities including an ablution block and barbecue shelters, along with a separation of day-use and overnight camping.
- Three electronic fee entry stations were installed on the South Coast, at Bluff Knoll in Stirling Range National Park, East Mount Barren in Fitzgerald River National Park and at the main entrance to Cape Le Grand National Park.
- Three kilometres of the entrance road in Cape Le Grand National Park was upgraded through the Department's capital works program.



Torndirrup National Park. Photo – Tourism WA

Parks Management

South West Region

- The upgrade of Falcon Road in Wellington National Park was completed, with the widening and sealing of the final 1.2km of road.
- Under the *Parks for People* initiative:
 - The new \$3 million campground and associated visitor facilities at Logue Brook Dam were completed. This project has provides five camping loops providing 126 new camp sites, each with a fire pit and picnic table. The new facilities also include nine toilet blocks, five barbecue shelters, a mountain bike pump track, a new waste dump station and improvements to roads and paths. The campground is being managed by the Lake Brockman Tourist Park under a community partnership agreement.
 - Planning for the development of a new campground and upgrade of day-use facilities at Potters Gorge in Wellington National Park was completed and works commenced. This project will provide about 50 camp sites, five toilet blocks and three barbecue shelters.
 - The \$1.1 million expansion of the Conto campground in Leeuwin-Naturaliste National Park was completed. This project provides 29 new camp sites, three toilet blocks and two camp kitchens along with improved access roads and information signs.
- Planning for a new campground at Boranup in Leeuwin-Naturaliste National Park is ongoing.
- Facilities were improved at the Mount Lennard Mountain Bike Trail network in the Wellington National Park with the completion of a new toilet block, improved access to the car park and a second trailhead. In consultation with mountain bike clubs, planning for additional trails at Lennard and near Collie is progressing.
- At Leschenault Peninsula Conservation Park, Belvidere campground was expanded, with 14 new camp sites constructed. Information and directional signs throughout the park were updated and replaced.
- Working with local staff, the Margaret River Off Road Cycling Association completed a concept plan for the development of a further 16km of trails in Bramley National Park and adjoining State forest. Detailed trail design is underway and construction will begin in September 2015.
- The Crooked Brook Forest celebrated 20 years of dedicated work by community volunteers and Wellington District staff that has seen the development of a very popular recreation facility with universally accessible trails, picnic facilities and interpretation. The original toilet block that had become severely damaged by termites was also replaced.



Caravanning on the banks of Lake Brockman, Logue Brook Dam campground.
Photo – Parks and Wildlife



One of the new camp sites at Conto campground, Leeuwin-Naturaliste National Park.
Photo – Ryan Scott/Parks and Wildlife

- Working partnerships continued with the South West 4WD Club and Wellington Region 4WD Care Group. Under the Department's *Track Adoption* program, the clubs worked with park rangers to repair erosion, rehabilitate damaged areas and remove car bodies and other rubbish along Lennard Track in Wellington National Park and at Bob's Hill in Brunswick Plantation.
- *Nearer to Nature* school programs continued to be delivered at Wellington Discovery Forest and Wharnccliffe Mill near Margaret River. Sustainable forestry and fire excursions were also conducted at the Dwellingup Forest Heritage Centre and incursions were conducted in schools. A total of 3647 students participated in 123 *Nearer to Nature – South West* excursions and incursions, a significant increase from the previous year.
- The *Nearer to Nature* activity 'Monitoring marsupials', which contributes to *Western Shield* research, continued to be popular. Five out of eight available trapping nights were booked by schools, including one home school cooperative. Infrared cameras filmed a feral cat in September 2014 however in May 2015, in addition to several mardo, a large male chuditch was trapped.
- Displays and activities were organised at a range of events to promote the *Nearer to Nature* and *Western Shield* programs and to raise awareness of the role of the Department. These included professional learning events at Eaton and Dunsborough primary schools and the Geography Association of WA conference, displays at the South West Science Spectacular and Eaton Foreshore Festival, a school holiday *Western Shield* program at local libraries and participation in the Dunsborough Primary School 'Bay OK Day'. An excursion to Bunbury Opal Gardens, an aged care facility, also reached out to an audience beyond the region's usual spectrum.
- Fifty-one rock fishing anchors and 35 abseiling anchors in Leeuwin-Naturaliste and Wellington national parks were load tested. A consultant geotechnical engineer was engaged to conduct risk assessments at the cliff sites at Huzzas, Hamelin Bay and Bunker Bay.
- Tree pruning was undertaken at major recreation sites to minimise risk to visitors. Sites included Honeymoon Pool, Potters Gorge, Chapman Pool, Sues Bridge, Conto, Boranup and Point Road campgrounds, Hoffman Mill, Leschenault Peninsula, Wellington Discovery Forest, Wharnccliffe Mill, Lake Brockman Tourist Park and Crooked Brook Forest.

Swan Region

- Lane Poole Reserve has seen considerable redevelopment largely funded through *Royalties for Regions* and *Parks for People*. The Nanga Brook campground redevelopment was opened to the public, with minor works still being undertaken. The tender for the construction of the Baden Powell day-use development was advertised.
- Six historic railway bridges in John Forrest National Park were restored, including Jane Brook Bridge on the Railway Heritage Trail. The bridges were replaced with special pre-cast concrete decks containing an imprint of the original timber decking as an interpretive historical link.
- The toilet block at John Graham Reserve in Woodman Point Regional Park was refurbished.
- A major signage refurbishment project was rolled out at Yellagonga, Herdsman Lake, Woodman Point, Beeliar and Rockingham Lakes regional parks.
- The Pinjar Off-road Motorcycle Area was further developed with the completion of the 'Short and Curly' advanced skills area. Other developments included track grading and the improvement of signs, car parks and paths.
- At the Metro Road Off-road Vehicle Area, further interim trail works and demonstration trails were developed, including a Recreational Trail Bike Riders' Association stakeholder clean-up event.
- The Swan Region and the Recreational Trail Bike Riders' Association *Track Adoption* program MOU continued for the Pinjar Off-road Motorcycle Area, including monthly maintenance and clean-up programs.
- In partnership with Nature Play WA, Outdoors WA and the Caravan Industry Association, Parks and Wildlife held the first Great Aussie Camp Out event at Yanchep National Park during Outdoors October 2014. Families shared camp cooking, guided walks and cultural storytelling around the camp fire. An introductory camping event was also held at Martins Tank in Yalgorup National Park. Participant feedback was extremely positive for these events with the Swan Region planning to expand to three similar events in 2015–16.
- The staff at Yanchep National Park have worked hard to develop partnerships with local land developers with one local developer funding free local park passes for Yanchep National Park for all new residents.
- During the year volunteers continued to participate in a wide range of activities in the Swan Region and provided many thousands of hours support. Two new campground hosting locations were introduced at Penguin Island and Walyunga National Park. The 2014 Volunteer of the Year awards resulted in Swan

Parks Management

Region volunteers being awarded with two Outstanding Service Awards, one Long Service Award and the prestigious Volunteer of the Year award.

- Eight community advisory committees for regional parks were convened on 32 occasions during 2014–15.
- The Swan Region continued to work closely with key regional stakeholder organisations including the Peel Development Commission, Alcoa of Australia, the cities of Wanneroo and Swan, the WA Planning Commission, Outdoors WA, the WA 4WD Association, TrackCare, the WA Mountain Bike Association, the Recreational Trail Bike Riders' Association of WA, Canoeing WA and Motorcycling WA.
- Mountain biking continued to be a major focus with planning commencing on the *Perth–Peel Mountain Bike Master Plan* and upgrade works continuing at Langford Park in Jarrahdale and other mountain bike circuits.
- The Swan Region continued to manage more than 250 recreational events including the Oxfam TrailWalker at Mundaring, Hot Rods in the Park at Yanchep National Park and the Dwellingup 100 mountain bike event.
- The Bibbulmun Track and Munda Bididi Trail were severely impacted by significant bushfires in February 2015. Urgent work to assess damage for insurance claims was undertaken and significant work to

re-align and re-open prior to the busy winter season began.

- Visitor Risk Management (VRM) continued to be a key focus for the region with both VRM refresher training and full VRM courses being conducted during the year.
- Implementation of the coastal risk assessment report recommendations at Penguin Island began and geotechnical surveys were done to assess cave and cliff risks on the island and the surrounding Shoalwater Islands Marine Park. Structural engineering reports were obtained for a range of structures and arboricultural inspections assessed tree hazards at a range of sites across the region.
- Extensive planning for improved parks and visitor services began across the Swan Region including:
 - Master planning and comprehensive visitor surveying at John Forrest National Park
 - Review of the Gngangara Park Concept Plan planning for future activities
 - Development of concept plans to offer camping and short-term RV camping at Henry White Oval in Yanchep National Park.



Penguin Island. Photo – Michael Clitheroe



Young riders receive technique tips from an experienced trail rider at Pinjar Off-road Motorcycle Area. Photo – Parks and Wildlife/RTRA



Valley of the Giants. Photo – Tourism WA

Warren Region

- Under the *Parks for People* initiative, initial recreation master planning for the expansion and upgrade of Shannon campground is close to completion. This project will provide new camp sites for tents, camper trailers, caravans and campervans, and additional amenities including toilets and shelters.
- The *Parks for People* redevelopment of Black Point campground in D'Entrecasteaux National Park was completed, providing 13 new camp sites, upgraded access roads and new toilets.
- Parks and Wildlife continued planning for the *Tree Top Walk Revitalisation Project*, with new commercial and visitor experience opportunities being investigated and concept designs prepared. This is an initiative that is identified in the *Great Southern Development Commission Blueprint* for future development in the region.
- Construction was completed on the new floating jetty at the Walpole town boat launch site within Walpole and Nornalup Inlets Marine Park. This is a joint Parks and Wildlife and Department of Transport *Recreational Boating Facility Scheme* project.
- Planning and design work continued for proposed new canoe launch area near Walpole-Nornalup National Park. This work will be jointly funded by the Department and the Shire of Denmark.
- More than 150 recreation sites were formally inspected for risks and hazards and treatments carried out on a priority basis.
- Refurbishment of Moores Hut within D'Entrecasteaux National Park began, including the replacement of flooring and relining of walls.
- Maintenance grading was completed on about 400km of recreation site access roads.
- Coastal stabilisation work was undertaken on the Banksia camp access track, beach car park and along tracks in Walpole-Nornalup and D'Entrecasteaux national parks.
- Trail maintenance work was carried out on the Bibbulmun Track and included the oiling of timber infrastructure and installation of and repairs to steps, small bridges, shelters and toilets.
- Several bridge refurbishment projects were completed. Maintenance work including decking repairs, termite control, addition of running boards and kerbing, improved signage and vegetation management.
- The management of horse riding and the provision of trails within the Warren Region were reviewed in conjunction with the Department of Water. Consultation also took place with several horse riding groups to explore riding opportunities within Shannon National Park.
- Warren Region approved and monitored nine events including surfing, motorised recreation, yachting, camping and cycling events.
- *Nearer to Nature* and several tailored educational programs were delivered to more than 360 school children in Frankland District.
- More than 1000 students participated in Outward Bound recreation-based camping activities within the Walpole-Nornalup and D'Entrecasteaux national parks.
- Parks and Wildlife staff conducted site interpretive tours of the Valley of the Giants three times a day, seven days a week throughout the year.
- More than 20 interpretive projects were completed, including site interpretive and management signage projects, park notes and publications, displays for community events, a community information day and updates to web based information.

Parks Management

Wheatbelt Region

- Now in its 12th year, Barna Mia nocturnal tours continued to provide a distinctive wildlife encounter experience to visitors to Dryandra Woodland. It also provided an opportunity for visitors to learn more about the Department's *Western Shield* program.
- Under the *Parks for People* initiative, work continued on a new campground in Dryandra Woodland that will provide 30 camp sites, a new access road, toilets and a barbecue shelter. The name is Gnaala Mia, a Noongar word for 'Our home'.
- The Toyota Land Cruiser Club of WA continued to assist with volunteer maintenance work in Dryandra Woodland. In addition, an historic stockyard on the old Dwarda-Narrogin railway line at the Congelin town site was rebuilt.
- The Lions Club of Narrogin installed two short walk trails at the Contine Hill day-use site to link with the interpretive shelter installed in the previous year.
- The Great Southern District provided representation on a local tourism and development committee to progress a cultural walking trail on a nature reserve near Pingelly, in partnership with the community.
- A cover for the historic well at Namelcatchem Nature Reserve in the Shire of Dowerin was installed and interpretation provided to describe the history of the feature. The project has enhanced the

visitor experience by providing a safe viewing platform, picnic facilities and redevelopment of the parking area to minimise impacts of visitation.

- In Wongan Hills Nature Reserve, the Wongan Hills Bushcare Group continued to assist the Department with maintenance on the Mount Matilda walk trail.
- The access road into Totadgin Conservation Park was gravelled, allowing for better access for all types of vehicles.
- The Central Wheatbelt District assisted the Shire of Westonia to install a bird hide and relevant interpretative material at Sandford Rocks Nature reserve. The Department also assisted with the production of an updated trail brochure which guides the public through the nature reserves walk trail.

Regional parks

- Regional Parks Branch continued to liaise with the Department of Planning and WA Planning Commission regarding the establishment of the proposed Peel, Preston River to Ocean and Northern Leschenault regional parks.
- Liaison with the Department of Lands and the City of Canning was undertaken to progress the land assembly for Canning River Regional Park. Land assembly tasks are underway for Herdsman Lake Regional Park to enable the creation of the proposed Herdsman Lake Nature Reserve and Herdsman Lake Conservation Park.



Visitors enjoy an animal encounter at Barna Mia Nocturnal Animal Sanctuary, Dryandra Woodland. Photo – Gary Tate

- Work continued on riparian rehabilitation works at Greenfields and Masons Landing in the Canning River Regional Park, in partnership with the Swan River Trust.
- Post-fire weed control works, rehabilitation and repair of damaged infrastructure was undertaken at the Taylor-Gibbs block and Shirley Balla Swamp in Jandakot Regional Park following the Banjup fire of February 2013.
- Work continued on the rehabilitation of land in Beeliar Regional Park associated with the Fiona Stanley Hospital and Health Precinct.
- Work continued on rehabilitating large areas of Yellagonga Regional Park as part of an offset package for the Eglinton Estate project.
- The water supplementation program continued at Thomsons Lake Nature Reserve in Beeliar Regional Park. The program is being undertaken in conjunction with the Water Corporation to maintain water levels and improve waterbird habitat.

- Twenty-six cygnets were released from Thomsons Lake into Lake Kogolup in Beelihar Regional Park. Thomsons Lake often dries up before the cygnets have fledged and so they need assistance to find another water source.
- Work was undertaken to manage the impacts of coastal erosion at Cape Peron in Rockingham Lakes Regional Park.
- The 2010–15 midge management partnership for Yellagonga Regional Park continued to be implemented in conjunction with the cities of Joondalup and Wanneroo. During the past year a new partnership agreement for 2015–20 was developed.

Marine operations

The Department continued to implement its operational functions throughout the State's marine parks and reserves system, including boating and diving activities.

In 2014–15 Parks and Wildlife worked with the Department of Fisheries to sign off on standardised templates for collaborative operations plans (COP) and associated reporting. The purpose of a COP is to deliver more effective and efficient management of the State's marine reserves through greater cooperation and integration between the two departments where they have joint responsibilities or an overlap of responsibilities. Annual COPs were jointly

developed for each of the State's marine parks in accordance with the relevant management plans for those areas. The COPs aim to maximise efficiency and achieve a whole-of-Government approach to effectively managing education and interpretation, patrol and enforcement, and research and monitoring services.

Parks and Wildlife's marine program took a significant step forward in the past 12 months with the delivery of its first vessel suitable for staff to stay on overnight, *Warndoom*. The vessel delivers on a commitment by the State Government to jointly manage the Kimberley marine parks and reserves with the respective traditional owners. The vessel type was chosen for its suitability to conduct joint management activities with traditional owners and indigenous rangers. Safety, navigation and communications equipment are incorporated into the work platform to meet stringent safety standards. A dedicated vessel crew of master, engineer and first mate have been employed to meet the requirements for manning a vessel of this size and are the first permanent vessel crew to join the Department's marine program.

The Department also added a new vessel to the Ngari Capes Marine Park in the south-west. The *Ngari* is a purpose-built vessel which has the range and capacity to work the coastline from Busselton to Augusta. It will be the primary marine park management vessel in the region.



The *Ngari* vessel at Ngari Capes Marine Park. Photo – Matt Dasey/Parks and Wildlife

Both *Warndoom* and *Ngari* were secured with the assistance of *Royalties for Regions* funding.

Replacement vessels were constructed for use in the Walpole Nornalup Inlet and Jurien Bay marine parks. They will provide safe and effective work platforms for education and compliance activities as well as marine research and monitoring programs.



Yawuru Rangers on board the *Jangabbari*. Photo – Jennifer Eliot/Parks and Wildlife

Highlight

Back on track: repairing the Bibbulmun Track and Munda Biddi Trail



Volunteers begin the big task of clearing up the remains of Long Gully Bridge. Photo – Parks and Wildlife

The O’Sullivan, Helena and Lower Hotham fires in February caused significant damage to the Munda Biddi Trail and Bibbulmun Track but as soon as the smoke cleared a concerted effort to re-open the popular trails began, with volunteers at the heart of it.

The image of the Lower Hotham fire destroying the historic Long Gully Bridge over the Murray River this year sent shudders down the spines of a dedicated community of people focused on creating world-class hiking and mountain bike tracks in the south-west.

It was a sign of the devastating impact that these bushfires would ultimately have; a trail of destruction that included two bridges, 40km of track and four camp sites along the Bibbulmun Track.

There was similar devastation on the Munda Biddi Trail, where 70km of trail between Northcliffe and Walpole was burnt and the Yirra Kartta camp site was significantly

damaged. Both tracks suffered significant damage to signage, trail markings and creek crossings.

Parks and Wildlife staff, the Bibbulmun Track and Munda Biddi Trail foundations and their volunteers have worked hard to repair the damage caused by the fires.

On the Munda Biddi Trail, the number of volunteers increased by 10 per cent and several volunteer maintenance workshops were run and now more than 90 per cent of the 108 trail maintenance sections have allocated volunteers undertaking regular inspections and maintenance.

Within weeks of the fire, a diversion was created to allow the 2015 *Epic End-to-End* ride to go ahead as planned in April and now the majority of trail sections have been re-opened on the original alignment. Works on the Yirra Kartta camp site are ongoing.

A new approach was taken to fix the Bibbulmun Track, and the newly created Maintenance Support Volunteer Program, developed in partnership with the Bibbulmun Track Foundation, has led the charge with Parks and Wildlife.

This program’s new approach to track maintenance has focused on increased community engagement and ownership, and it saw staff and volunteers re-mark burnt sections south of Northcliffe, allowing that section of track to be opened on its original alignment on 8 May.

On 19 June, the track was re-opened in its entirety, making end-to-end walks possible again for the first time since the fires started in late February 2015.



The remains of the Brookton camp site along the Bibbulmun Track.
Photo – Parks and Wildlife



Fire destroys the historic Long Gully Bridge. *Photo – Leigh Sage/
Parks and Wildlife*



Volunteers receive training at Gringer camp site. *Photo – Parks and Wildlife*



Volunteers from the *Maintenance Support Volunteer Program* take a break from repairing Gardner camp site.
Photo – Parks and Wildlife



Humpback whale. *Photo – Rick Dawson/Parks and Wildlife*



Terns. *Photo – Holger Woyt/Parks and Wildlife*



Western ground parrot.
Photo – Alan Danks/Parks and Wildlife



Numbat. *Photo – John Lawson*



Boab flower. Photo – Greg Keighery/
Parks and Wildlife



Operational highlights

Wildlife Management

The conservation, protection and management of WA's rich biodiversity is strategically coordinated through the Wildlife Management Service, which oversees a range of programs and activities. This service is built on scientific and technical knowledge accumulated over many decades, which continues to develop and grow.

Ongoing processes of biological survey, specimen collection and classification are complemented by developing and implementing recovery plans for species and ecological communities under threat, identifying and acquiring land that supports representative ecosystems, managing areas for their conservation values, managing broadscale threats to conservation, ensuring native plants and animals are used sustainably, and continuing to promote public awareness of the value and vulnerability of WA's natural assets.

The Wildlife Management Service is divided into the following areas:

- development and implementation of legislation, key policies and strategic plans
- establishment and effective management of the terrestrial and marine conservation reserve system
- maintenance of intact and healthy ecological communities, including wetlands, and viable populations of species, especially those that are

threatened or iconic, while allowing the sustainable use of flora and fauna

- reducing impacts of key threatening processes
- effectively targeting scientific investigations to improve biodiversity knowledge and integrating scientific discoveries into improved wildlife management
- effective collection, storage, custodianship and long-term management of information and data
- promoting public and stakeholder awareness and understanding of wildlife conservation issues, and engaging and encouraging people to be involved in the conservation and management of wildlife.

Legislation, policy and plans

Biodiversity conservation legislation

The Department gave a high priority to the drafting of the proposed Biodiversity Conservation Bill throughout the year in keeping with the Premier's commitment, made in his address to Parliament on 17 February 2015 for the Bill to be introduced into Parliament in the forthcoming year. The Bill is being drafted to replace the *Wildlife Conservation Act 1950* with modern conservation provisions and will include greatly increased penalties for persons having significant impacts on high-priority native plants and animals, including threatened species, whales and dolphins.

The Bill will also include provisions for greater flexibility and certainty for private landowner conservation initiatives with a focus on encouragement, while removing unnecessary regulatory barriers.

The *Conservation and Land Management Act Amendment Bill 2015* was introduced into the Legislative Assembly on 12 March 2015. This Bill makes provision for a number of proposed initiatives, including:

- combining the Conservation Commission with the Marine Parks and Reserves Authority into a single Conservation and Parks Commission
- enabling joint vesting of national parks, nature reserves and conservation parks between the Conservation and Parks Commission and native title parties
- zoning schemes in marine parks, including special-purpose and recreation zones, that allow some forms of fishing to operate while imposing restrictions on others, as intended in approved marine park management plans
- the roles of regional park coordination, management planning and management to be legislated functions of the Conservation and Land Management Act (CALM Act) Chief Executive Officer (CEO)
- legislated recognition that fire management, including prescribed burns, is an integral part of the land management functions of the CALM Act CEO

Wildlife Management

- extending the maximum term of CALM Act leases for recreation, tourism and other purposes from the current 21 years, with a 21-year extension, to a maximum of 99 years, consistent with the periods available under the *Land Administration Act 1997*
- miscellaneous amendments to address several minor anomalies and omissions in the CALM Act.

Regional nature conservation plans

Each of the nine Parks and Wildlife regions operates under a five-year nature conservation regional plan. This collectively provides the basis for improved integration and coherence of Departmental activities and functions aimed at conserving WA's biodiversity at a regional scale. These plans provide guidance on priority areas for biodiversity conservation. Substantial progress was made in 2014–15 on developing plans for 2015–19 for each region.

Kimberley Science and Conservation Strategy

The State Government's *Kimberley Science and Conservation Strategy* was released in June 2011, with an implementation budget of \$63 million over five years and a commitment to ongoing funding for key initiatives. An additional \$18.5 million was committed in 2013 to create the proposed Kimberley National Park, marine and national parks at Horizontal Falls and to extend the proposed North Kimberley Marine Park to the Western Australian/Northern Territory border.

The strategy provides the framework for the conservation of the Kimberley's spectacular natural values and opportunities for Aboriginal employment and nature-based tourism. It is being delivered through partnerships with traditional owners, landholders, industry and non-government organisations.

The strategy takes a landscape-scale approach to conservation, and delivers increased resources to manage threats caused by fires, feral animals and weeds irrespective of land tenure through the *Landscape Conservation Initiative*. A dedicated monitoring program reports on conservation resource condition, principally in the North Kimberley bioregion. Better management of fire has reduced both the intensity and size of fire and shifted the majority of fires from late to early dry season. Almost 20,000 cattle have been removed with reductions of up to 44 per cent in some areas, and the size of high priority weed infestations has more than halved. This initiative has also been successful in bringing back threatened mammals to parts of the Mitchell Plateau. Mammals detected during annual monitoring included the northern quoll (*Dasyurus hallucatus*), golden bandicoot (*Isoodon auratus*), golden-backed tree rat (*Mesembriomys macrurus*), brush-tailed rabbit rat (*Conilurus penicillatus*), scaly tailed possum (*Wyulda squamicaudata*) and monjon rock wallaby (*Petrogale burbidgei*).



Yawuru Rangers collect benthic samples at *Man-galagun/Crab Creek* as part of a study into mudflats and shorebirds. Photo – Jennifer Eliot/Parks and Wildlife

More information on the *Kimberley Science and Conservation Strategy* is available on the website: www.dpaw.wa.gov.au/management/kimberley-strategy.



Indopacific bottlenose dolphin. Photo – Simon Allen

Establishment of the terrestrial and marine conservation reserve system

The formal conservation reserve system comprises national parks, nature reserves, conservation parks, marine parks, marine nature reserves, marine management areas and miscellaneous conservation reserves referred to in the CALM Act.

In 2014–15, the Government continued to progress the establishment of parks and reserves under the *Kimberley Science and Conservation Strategy*. As a first step towards creating the proposed Kimberley National Park, the Government reached agreement with Rio Tinto and Alcoa of Australia to terminate the *Alumina Refinery (Mitchell Plateau) Agreement 1971* for bauxite mining at the Mitchell Plateau (see page 8). A ratifying Bill was introduced to Parliament on 25 March 2015, which will enable about 175,900ha of the Mitchell Plateau to be included in the Kimberley National Park. The Government also progressed marine and terrestrial reserve proposals at Eighty Mile Beach with the signing of Indigenous land use agreements with Nyangumarta, Ngarla and Karajarri traditional owners in 2014–15.

Work continued to implement tenure proposals outlined in the *Dryandra Woodland Management Plan 2011, Lane Poole Reserve and Proposed Reserve Additions*

Management Plan 2011, Parks and Reserves of Yanchep and Neerabup Management Plan 2012 and the *Forest Management Plan 2014–2023*.

More information about lands and waters managed by the Department is available in the *2014–15 Annual Report*: www.dpaw.wa.gov.au/about-us/annual-report-and-yearbook.

Effective management of the conservation reserve system

Management planning

During 2014–15, one final marine management plan and three terrestrial management plans were released, while a further 13 were in preparation. See page 15 for details.

A five-year periodic audit of the implementation of the *Rowley Shoals Marine Park Management Plan 2007–17* was completed by the Marine Parks and Reserves Authority, with assistance from the Department.

A list of approved management plans is available on the website: www.dpaw.wa.gov.au/parks/management-plans/approved-management-plans.

Management action

The Department undertook a wide range of management actions across the State to protect biodiversity, some of which included:

- Intensive management work at Matuwa in conjunction with the Wiluna Martu Ranger team, including prescribed burning, mammal reintroduction, predator control, tracks and firebreaks and general reserve management.
- Continuation of the *Tutanning Adaptive Management Project* to maintain at least 90 per cent of the alpha and beta flora diversity of the kwongan by establishing an appropriate fire regime and controlling the encroachment of sheoak.
- Development of a tool to assist with long-term prescribed burn planning. Initially for use at Tutanning Nature Reserve, the tool is now being trialled for other important conservation lands.
- Completion of a prescribed burn at Dryandra Woodland to gather data to refine and improve the processes for the restoration of *Gastrolobium* thickets, which are important for the persistence of healthy populations of native animals in this area.
- Continued senescence monitoring of kwongan heath in Wheatbelt reserves and implementation of recovery activities in the Wongan Hills to prevent further loss of diversity in the short term, as well as ensuring the long-term health and resilience of the ecosystem.
- Aerial goat control operations at Kalbarri National Park and Watheroo National Park to reduce impacts from grazing on sensitive vegetation.
- Removal of African boxthorn on Beagle Islands Nature Reserve, a breeding site for the Australian sea lion, working in conjunction with a local volunteer group.
- Erosion control work below Deep Reach Pool in Millstream Chichester National Park, to prevent erosion gullies from breaching the toe of the pool and leading to significant lowering of the water level, as well as possibly the cessation of flow in Chinderwarriner Pool. Both Deep Reach and Chinderwarriner pools are integral parts of Yindjibarndi country and mythology, and key visitor nodes within the park. The erosion control project is a collaborative effort between Parks and Wildlife, the Department of Water, NRM Rangelands Pilbara Corridors, Ngurrawaana Rangers, Yindjibarndi Aboriginal Corporation and traditional owners.
- Continuing trials to integrate the newly registered *Eradicat*[®] feral cat bait with fox baiting to develop improved baiting regimes to protect native animals from feral cat and fox predation in different environments.

Wildlife Management

- Strong engagement with the community, including Indigenous ranger groups, and collaboration with scientists to survey biodiversity ahead of the cane toad frontline and investigate mechanisms to mitigate their impact on native wildlife.
- Collaboration with natural resource management and community groups and Indigenous rangers to control weeds and pest animals across the State, to reduce their impacts on threatened plants and animals.

Good Neighbour policy

The implementation of the Department's *Good Neighbour* policy continued during 2014–15, including weed control, introduced animal control programs and fire management.

In the Kimberley Region, work continued with traditional owners, pastoral lease holders and non-government organisations to implement prescribed burning, feral animal and weed management programs across property boundaries.

A grant agreement was signed with the Australian Wildlife Conservancy under the *Kimberley Science and Conservation Strategy* to provide funding for the *Ecofire* fire management program and the *Tableland Conservation Partnership Project*. Under the agreement, the Department also authorised feral animal and weed control activities and biological survey to be undertaken at the

former Charnley River pastoral lease subject to traditional owner approval.

Approximately 25km of cattle-proof fence was constructed between the Parks and Wildlife-managed ex-Nanutarra pastoral lease (part of the Cane River conservation reserve cluster) and the Minderoo pastoral lease, to prevent cattle from straying onto the conservation area.

Recovery and management of threatened species and ecological communities, significant species and ecosystems

Recovery of threatened species

The Threatened Species Scientific Committee's recommendations from 2014 for changes to the State lists of threatened native plants and animals under the WC Act were gazetted on 2 December 2014.

The Department participated in a national working group to develop a common assessment method for listing threatened species, with the objective of establishing a single national threatened species list to align the threatened species lists under the *Federal Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) with the State lists under the WC Act. The implementation of the single national threatened species list will be through a

Memorandum of Understanding between the Federal Minister for the Environment and the responsible state and territory ministers.

The common assessment method is based on the International Union for Conservation of Nature Red List categories and criteria, with assessments being undertaken at the national scale. These categories and criteria are already applied in WA so the common assessment method will reflect current practice in this State.

Native plants

Eight species were added to the State list of extant threatened flora: *Androcalva bivillosa*, *Austrostipa bronwenae*, *Austrostipa jacobsiana*, *Caladenia granitora*, *Eremophila microtheca*, subsp. narrow leaves, *Leucopogon nitidus*, *Leucopogon* sp. Ongerup and *Stylidium applanatum* and one (*Scholtzia* sp. Bickley) was added as a presumed extinct species. One species (*Stachystemon nematophorus*) was removed from the list of threatened flora as it was determined to be more common and secure than previously thought. *Banksia verticillata* was upgraded from vulnerable to critically endangered as it is severely impacted by a range of threatening processes. Four nomenclature changes were also endorsed.

A further 60 taxa were added to the Department's priority flora list, and 21 taxa were deleted from the list after more survey

and taxonomic review demonstrated their adequate conservation status.

At 30 June 2015, there were 422 extant threatened flora species listed, with 15 listed as presumed to be extinct, and 3038 taxa listed on the Department's priority flora list.

During 2014–15, 695 new records were added to the *Threatened and Priority Flora* database, of which 324 were records of new populations.

Recovery actions were implemented for a suite of threatened flora. Highlights included:

- A total of 283 species of threatened and priority flora comprising 883 populations were surveyed or monitored and 53 new populations of threatened flora and 129 new populations of priority flora were located. Of particular note was the discovery of new populations of the critically endangered ironstone brachyscias (*Brachyscias verecundus*), many-flowered commersonia (*Commersonia apella*), Stirling Range daviesia (*Daviesia pseudaphylla*) and Guichenotia seorsiflora. In addition, new populations of the endangered spiky adenanthos (*Adenanthos pungens* subsp. *pungens*), Bremer boronia (*Boronia clavata*), column hakea (*Hakea aculeata*) and reedia (*Reedia spathacea*) were located.

- Volunteers from the Department and the WA Native Orchid Study and Conservation Group collaborated on the *Adopt an Orchid* project to survey and monitor 26 threatened and priority orchid species, with 78 populations monitored and 18 new populations discovered. Other volunteers assisted Departmental staff in conducting a survey during which an historical population of the critically endangered *Grevillea acropogon* was relocated. Volunteers in the Albany and Great Southern districts assisted in conducting surveys for many threatened flora species.
- Phosphite applications were carried out to control *Phytophthora* dieback, targeting 13 threatened flora species including seven critically endangered taxa in Stirling Range National Park and Albany coastal area and populations of *Lambertia echinata* subsp. *echinata* in Cape Le Grand National Park near Esperance. A study was completed investigating the effects of long-term phosphite application on the health of cactus banksia (*Banksia anaton*) habitat with no adverse impacts observed on plant health and community composition.
- Aerial canker monitoring continued for Albany banksia (*Banksia verticillata*) and round-leaf honeysuckle (*Lambertia orbifolia*) populations, as part of a larger south coast aerial canker research project.
- Fencing to protect plants from grazing and trampling was constructed for 26

threatened flora species, including the critically endangered *Acacia unguicula*, giant andersonia (*Andersonia axilliflora*), yellow mountain bell (*Darwinia collina*), wing-fruited lasiopetalum (*Lasiopetalum pterocarpum*), Stirling Range beard heath (*Leucopogon gnaphalioides*), *Pityrodia scabra* subsp. *scabra* and granite tetratheca (*Tetratheca deltoidea*). Fencing has enabled previously heavily grazed plants to regrow and set seed.

- Rabbit control was undertaken to protect many threatened flora species, including the critically endangered Aldersyde banksia (*Banksia ionthocarpa* subsp. *chrysophoenix*), western woolly cyphanthera (*Cyphanthera odgersii* subsp. *occidentalis*), yellow mountain bell, Cunderdin davisia (*Daviesia cunderdin*) and white-flowered philotheca (*Philotheca basistyla*). Rabbit control included the fumigation of rabbit warrens and baiting of threatened flora habitat.
- Weed control was undertaken for 29 threatened flora species over 461ha, including *Acacia volubilis*, grass conostylis (*Conostylis misera*), blue tinsel lily (*Calectasia cyanea*), majestic spider orchid (*Caladenia winfieldii*), *Grevillea althoferorum* subsp. *fragilis*, *Grevillea bracteosa* subsp. *howatharra*, wing-fruited lasiopetalum, round-leaf lasiopetalum (*Lasiopetalum rotundifolium*), white-flowered philotheca, Northampton midget greenhood (*Pterostylis sinuata*) and granite tetratheca.



Marble gum. Photo – Judy Dunlop/Parks and Wildlife

- Fire management protocols and procedures were developed for 42 threatened flora species.
- Recruitment burns were carried out to stimulate new growth of populations of the critically endangered Yornaning wattle (*Acacia insolita* subsp. *recurva*), *Acacia pharangites*, native foxglove (*Dasymalla axillaris*), Wongan cactus (*Daviesia euphorbioides*), hookpoint poison (*Gastrolobium hamulosum*), the endangered *Acacia chapmanii* subsp. *australis*, majestic spider orchid and scarp darwinia (*Darwinia apiculata*) and the vulnerable *Gastrolobium graniticum*. A scientifically based prescribed burn in Gunyidi Nature Reserve in the Midwest Region investigated the seed germination response of *Acacia cochlocarpa* to fire.
- Post fire monitoring was carried out for seven threatened flora species: Wundowlin wattle (*Acacia sciophanes*),

- Tutanning boronia (*Boronia capitata* subsp. *capitata*), stilted tinsel lily (*Calectasia pignattiana*), Drummond's conostylis (*Conostylis drummondii*), native foxglove, Wongan cactus and Norseman pea (*Daviesia microcarpa*). Three new translocation sites were established for the critically endangered Mingenew everlasting (*Schoenia filifolia* subsp. *subulifolia*) and one new site each for mallee box (*Eucalyptus cuprea*) and beaked eremophila (*Eremophila rostrata* subsp. *trifida*) in 2014–15 (Table 4). Infill planting at 17 translocation sites previously established for 12 critically endangered taxa was also undertaken. Additionally, 51 established plant translocation sites containing 32 taxa were monitored.
- Environmental impact assessment advice was provided for 112 projects with the potential to affect threatened or priority flora across WA.

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Table 4: Flora translocations undertaken as part of the implementation of recovery and interim recovery plans in 2014–15

Species	Activity	Number of translocations
<i>Schoenia filifolia</i> subsp. <i>subulifolia</i>	Established new translocation sites	3
<i>Eremophila rostrata</i> subsp. <i>trifida</i>	Established new translocation site	1
<i>Eucalyptus cuprea</i>	Established new translocation site	1
<i>Acacia cochlocarpa</i> subsp. <i>cochlocarpa</i>	Infill planting	1
<i>Acacia unguicula</i>	Infill planting	1
<i>Darwinia whicherensis</i>	Infill planting	2
<i>Daviesia cunderdin</i>	Infill planting	1
<i>Daviesia ovata</i>	Infill planting	1
<i>Eremophila nivea</i>	Infill planting	1
<i>Gastrolobium papilio</i>	Infill planting	2
<i>Grevillea maccutcheonii</i>	Infill planting	2
<i>Grevillea maxwellii</i>	Infill planting	1
<i>Lambertia echinata</i> subsp. <i>occidentalis</i>	Infill planting	2
<i>Lysiosepalum abollatum</i>	Infill planting	1
<i>Petrophile latericola</i>	Infill planting	2

Threatened Flora Seed Centre

The Department's Threatened Flora Seed Centre is an active member of the Australian Seed Bank Partnership, a national network of conservation seed banks working towards conserving Australia's plant species and building and sharing knowledge to support restoration.

A total of 215 seed collections representing 121 species were banked at the seed centre during 2014–15. One hundred and forty-five collections were from threatened flora, with 89 of these from critically endangered taxa. Twenty-seven collections (22 taxa) were made under the Millennium Seed Bank fieldwork fund and 18 collections made for the *Global Trees Project*, through funding obtained through the Australian Seed Bank Partnership from the Garfield Weston Foundation, in collaboration with the Royal Botanic Gardens, Kew. Eight collections were made through funding from Main Roads WA, while Departmental flora conservation officers were responsible for making 90 collections. Nine collections (five critically endangered taxa) were made for translocations, and collections of a further 21 critically endangered taxa were withdrawn from the seed bank and germinated for use in Departmental translocation projects.

Assistance continued to be provided to the Swan Region's *Banksia Woodland Restoration Project* for processing, germinating and

researching seed from a range of species for use in direct seeding and nursery propagation. Four hundred and thirty-nine batches of seed were processed for 90 species, with 102 sent to nurseries and 155 used for direct seeding. Data relevant to more than 830 seed collections made for this project have been accessioned and all remaining seed not used in restoration will be banked by the end of the year.

Native animals

At 30 June 2015, there were 247 extant threatened fauna species, 19 presumed to be extinct and 13 listed as otherwise specially protected, with a further 189 species on the Department's priority native animals list.

One species, Carter's freshwater mussel (*Westralunio carteri*), was added to the WC Act list of specially protected (threatened) fauna. The western ringtail possum (*Pseudocheirus occidentalis*) was upgraded from vulnerable to endangered following a review of its conservation status that demonstrated the ongoing decline in this species. Four nomenclature changes were also endorsed.

During 2014–15, 169,430 new records were added to the *Threatened and Priority Native Animal* database and/or the *Fauna Survey Returns* system, with 33,775 of those for threatened or priority fauna species.

Recovery actions were implemented for many threatened native animal species during the year. Highlights included:

- *The Dirk Hartog Island National Park Ecological Restoration Project (Return to 1616)* is supporting the progressive removal of pest animals including goats, sheep and feral cats and invasive plant species before reintroducing native animals. The ambitious and groundbreaking project to restore Dirk Hartog Island to its former state is supported by \$11.54 million from the *Gorgon Barrow Island Net Conservation Benefits* (NCB) program. During 2014–15, a significant project milestone was achieved with completion of a cat-proof fence across the island to assist with cat eradication. Following baiting south of the fence in May 2014 and subsequent trapping, no cats have been seen in the area since October 2014. Efforts moved to development of essential project infrastructure north of the fence, with a temporary accommodation base established at Sandy Point and more than 100km of low-impact access track established to assist with detection and monitoring of cat activity in the northern part of the island. An aerial cat baiting program was conducted during May 2015. Since 2010 the Department has conducted 13 aerial shooting campaigns on the island with a total of 7440 goats and straggler sheep removed, including 24 goats

removed in 2014–15. As part of island biosecurity, surveys for introduced black rats were conducted which have so far not detected any black rats on the island or in the communities of Denham, Useless Loop and Monkey Mia. Other activities included vegetation monitoring using remote sensing, annual weed control/eradication works and monitoring of weed surveillance areas. There was also continued work in community engagement and provision of information, including finalisation and distribution/installation of biosecurity brochures and signs.

Surveys were conducted for three threatened bird subspecies endemic to Dirk Hartog Island: rufous fieldwren (*Calamanthus campestris hartogi*), southern emu-wren (*Stipiturus malachurus hartogi*), white-winged fairy-wren (black and white subspecies) (*Malurus leucopterus leucopterus*) and one threatened reptile, the western spiny-tailed skink (*Egernia stokesii badia*). Monitoring programs are being established for these species.

Three environmentally sensitive moorings were established at Dirk Hartog Island for mooring the project's purpose-built landing vessel *Wirruwana* and an engineer-designed cyclone tie-down point was established in Denham for the vessel.

- Another NCB-funded project is developing a tool for prioritising and implementing

biosecurity actions on Pilbara islands. This five-year project is a collaboration with James Cook University (JCU), Townsville and commenced in 2012. A database containing information on the biophysical attributes, biodiversity values, levels of use, and threats on more than 600 islands has been compiled and new data continues to be collected and added to the database as it becomes available. Pilbara island habitat maps are being developed, biosecurity risks are being calculated for each island, and estimates of implementation costs are being determined. The model to assist decision-making is being developed by JCU researchers and is currently being tested and refined. Ultimately, it will be used to identify the most cost-effective biosecurity actions for high priority islands. Once released publicly, the model can be used for other island groups or mainland areas to help prioritise management actions. A second database containing information on introduced plants on all of WA's island has also been compiled.

- The Barna Mia Nocturnal Animal Sanctuary, located in Dryandra Woodland near Narrogin, opened its second enclosure and has been successfully running tours in both enclosures showcasing several nocturnal native animals being protected under the Department's *Western Shield* wildlife recovery program.



Ta ta lizard. Photo – Matt Swan/Parks and Wildlife



Australian sea lions. Photo – Peter Nicholas/Parks and Wildlife

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- The *Operation Rangelands Restoration* project continued at Matuwa (Lorna Glen), as part of an environmental offset funded by the Gorgon Project. Reintroduced populations of bilbies (*Macrotis lagotis*), brushtail possums (*Trichosurus vulpecular*), mala (*Lagorchestes hirsutus*), golden bandicoots (*Isodon auratus*) and boodies (*Bettongia lesueur*) were monitored and all are persisting and breeding well. Baiting for feral cats in 2014 was shown to be 30–60 per cent effective and also reduced wild dogs by 25 per cent. A PhD project studying the interactions of dingoes and feral cats continued as did a study on the density, movement patterns and interactions of wedge-tailed eagles (*Aquila audax*) with reintroduced fauna. Studies into the effect of burrowing activity on soil nutrients and plant composition have continued, and investigations into the importance of bilby burrows to other species begun in 2015. Native title (exclusive possession) was declared over Matuwa and adjacent Karrara Karrara (Earaheedy) properties in 2014 and an Indigenous Protected Area (IPA) agreement and management plan was finalised in 2015 to allow the dedication of the IPA. Martu Traditional Owners and Parks and Wildlife will continue to manage this rangeland property together for conservation and cultural purposes.
- Monitoring continued of translocated populations of western barred bandicoots

(*Perameles bougainville bougainville*), banded hare-wallabies (*Lagostrophus fasciatus fasciatus*) and burrowing bettongs at Wadderin Sanctuary and the privately managed Faure Island Wildlife Sanctuary (Australian Wildlife Conservancy). Trimouille Island, the location of a mala translocation in 1998, was resurveyed in 2014 for the first time since 2003, with more than 200 animals sighted indicating a healthy population has established.

- Offset funding from Pilbara resources projects was used to progress the implementation of recovery actions for several Pilbara threatened species. The is working to improve understanding of the abundance and distribution of this endangered species throughout Pilbara habitat, where it faces threats such as industrial development, pastoralism, altered fire regimes and introduced predators. Elsewhere in Australia, northern quolls are threatened by cane toads, so research has also focused on modelling the priority habitat for quolls with respect to the likely occurrence of cane toads in the next 10–20 years. Work undertaken in 2014–15 included standardised monitoring of northern quoll populations across the Pilbara, focusing on Departmental tenure and pastoral land that is historically under-surveyed. A further 650 northern quoll records have been added to the *NatureMap* database from historical records, literature and surveys undertaken

during the year. A collaborative research project between the Department and Edith Cowan University has produced likely species distribution models based on these records. Efforts to obtain additional northern quoll data are continuing via partnerships with consulting ecologists, industry, pastoralists and traditional owners in the Pilbara.

- Offset funding was also used to progress the implementation of recovery actions for the bilby. These include establishing a Pilbara-wide regional monitoring program to enable mining lease monitoring programs to compare population trends, and to examine the impact of mining infrastructure on survivorship and population viability.
- Dibbler (*Parantechinus apicalis*) recovery continued to progress in 2014–15 through the establishment of new wild populations, with 55 dibblers from the breeding program at Perth Zoo released into a 150ha introduced predator-free enclosure at Whiteman Park north of Perth. Additionally, 22 dibblers from the breeding colony were released at Peniup reserve, west of Fitzgerald River National Park, to continue to build that population. Numbers of dibblers on Whitlock Island, Jurien Bay have increased, however capture numbers remain low for all other locations.
- The Gilbert's potoroo recovery team held a function to celebrate the 20th anniversary

of the rediscovery of Gilbert's potoroo (*Potorous gilbertii*), which was attended by the Australian Government's Threatened Species Commissioner, Gregory Andrews. The annual census of this critically endangered animal continued in natural and established populations on the south coast. Potoroo numbers have decreased in the enclosure populations at Two Peoples Bay Nature Reserve and Waychinicup National Park, with research showing that carpet pythons are a significant predator of potoroos at both sites. Growth in the Bald Island population has slowed, as it reaches the limits of the island's resources. Community support through the Gilbert's Potoroo Action Group provided funding to Parks and Wildlife for field cameras and two GPS pods for tracking potoroos.



Looking for signs of native animals in Matuwa (Lorna Glen). Photo – Jennifer Eliot/Parks and Wildlife



Parks and Wildlife scientists Kym Ottewell, Tara Hopley and Craig Pentland release a black-flanked rock wallaby at Mount Caroline in the Wheatbelt. Photo – Parks and Wildlife



Golden bandicoot. Photo – Jennifer Eliot/Parks and Wildlife

- Seventeen numbats (*Myrmecobius fasciatus*) from the Perth Zoo breeding program were released into Dryandra Woodland in 2014 to reinforce the declining wild population. Community support through *Project Numbat* provided funding to Parks and Wildlife for 15 radio collars and several radio tracking flights following the release. Initial survival rates were high with only four reported mortalities, all due to native predators. Surveys by *Project Numbat* volunteers of numbat diggings found that diggings were widespread at Boyagin Nature Reserve and were observed at several sites within Dryandra's Montague Block. Numbat sightings from members of the public have indicated a significant range expansion for the Perup/Kingston population.
- An intensive camera trapping trial has been underway at Dryandra Woodland to refine and improve the use of this technology for mammal surveys, for both native and introduced animals. This work has broad application for biological survey, establishment of baseline monitoring data, assessing the effectiveness of introduced predator control and could be used in programs such as *Western Shield* or *FORESTCHECK*.
- Work to conserve and maximise the genetic diversity of the remaining wild woylie (*Bettongia penicillata ogilbyi*) populations continued, with 182 animals

translocated out of Perup Sanctuary to Kingston forest sites to help boost the unfenced Upper Warren population. A workshop found that introduced predators played a key role in woylie decline and that it was difficult to determine the extent of disease as an additional factor. Murdoch University and partners continued research on the possible link between trypanosome parasites and woylie declines, resulting in multiple scientific publications during 2014. Annual monitoring of woylies at key sites under the *Western Shield* program continues.

- The predator-proof sanctuary for black-flanked rock wallabies (*Petrogale lateralis lateralis*) at Nangeen Hill Nature Reserve in the central Wheatbelt has allowed the local population to increase from 22 to 45 within two years in the absence of introduced predators. With the assistance of WWF Australia, intensive monitoring of local populations indicated that the Nangeen Hill population has several age groups that are absent from nearby populations where fox control is conducted but cat control is not. A study of the role of feral cats in eliminating these younger age classes in the Wheatbelt is ongoing. Revegetation and weed control is also ongoing to improve the species' habitat. Parks and Wildlife and WWF provided funding to conduct genetic analysis of rock wallaby samples to better understand the genetic

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structure and inform future translocations. Community support through WWF also provided funding for a complete census of all Wheatbelt populations of rock wallabies.

Parks and Wildlife staff from Karratha and Kanyirninpa Jukurrpa Rangers located several new populations of black-flanked rock-wallabies in the Little Sandy Desert through camera monitoring and scat surveys in 2014–15. Monitoring of other rock-wallaby populations indicated that the translocated population at Jilikurru is persisting and has expanded beyond their 2013 release site.

Long-term monitoring by the Department in Cape Range National Park in the Pilbara has identified rock wallabies in numerous gorges and gullies through the western side of the park, with several groups showing evidence of active breeding.

In the Esperance District, a survey was conducted of the translocated rock-wallaby population at Cape Le Grand National Park and genetic material collected from black-flanked rock-wallabies and Recherche rock-wallabies (*Petrogale lateralis hackettii*) from Salisbury and Mondrain islands in the Recherche Archipelago.

- The South Australian Department of Environment, Water and Natural Resources, with assistance from Parks and Wildlife and funding from the Foundation for Australia's Most Endangered Species Ltd (FAME) undertook a second translocation of chuditch (*Dasyurus geoffroii*) from WA sites to the Flinders Range in South Australia. In total, 76 individuals have been sourced from Fitzgerald River National Park, Julimar and Perup forests for the two translocations. Follow-up monitoring of the original translocated population showed that most founder animals survived and were successfully reproducing. Monitoring of chuditch populations continued as part of the *Western Shield* program at multiple sites across the south-west. An assessment of the conservation status of the species has been initiated.
- In collaboration with the Great Victoria Desert Biodiversity Trust, workshops to review the status and gaps in knowledge for the sandhill dunnart (*Sminthopsis psammophila*), malleefowl (*Leipoa ocellata*) and southern marsupial mole (*Notoryctes typhlops*) were undertaken. The principal output from each workshop was the clarification of research priorities to inform the management of each species in the Great Victoria Desert. This information is being used to draft species research plans and guide the investment of offset funds and corporate sponsorship contributions in the Great Victoria Desert.
- The South Coast Threatened Birds Recovery Plan was nationally adopted in 2014. This incorporates recovery actions for five threatened south coast birds; western ground parrot (*Pezoporus flaviventris*), western bristlebird (*Dasyornis longirostris*), noisy scrub-bird (*Atrichornis clamosus*), western whipbird (western heath) (*Psophodes nigrogularis nigrogularis*), western whipbird (western mallee) (*Psophodes nigrogularis oberon*), and one presumed extinct species, rufous bristlebird (western) (*Dasyornis broadbenti litoralis*).
- Western ground parrot recovery efforts continued, with no further decline being detected in the Cape Arid National Park population on the south coast and good numbers of parrots heard calling in 2014. Monitoring and threat management of the wild populations continues with substantial volunteer participation, and community support via Friends of the Western Ground Parrot Inc. A small captive population of ground parrots previously held on the south coast has been transferred to Perth Zoo to expand knowledge of captive breeding this species. Cat baiting trials continued in Cape Arid and Fitzgerald River national parks, with support from State NRM and the Federal Government's Biodiversity Fund. Results to date are encouraging, with a significant decrease in cat activity recorded.
- Census surveys were undertaken for the noisy scrub-bird across the Albany management zone, which includes Two Peoples Bay and Mount Manypeaks nature reserves, Waychinicup National Park and Angove River. The Bald Island sub-population is continuing to grow with a higher number of territorial males heard calling in 2014. Monitoring of the western bristlebird also occurred on Mount Gardner. Further survey and monitoring occurred for Australasian bittern (*Botaurus poiciloptilus*) in freshwater wetlands across the south coast using remote cameras and listening devices.
- Efforts to recover Carnaby's cockatoo (*Calyptorhynchus latirostris*) continued with the completion of research projects tracking the movement of rehabilitated birds, six land purchases using offset funds incorporating 2600ha of Carnaby's cockatoo habitat into the conservation estate, and several projects targeted at improving habitat quality. Long-term monitoring of breeding sites in the Wheatbelt continued and the use of artificial nest hollows has been shown to be effective. As part of a *Strategic Assessment of the Perth and Peel Regions*, Parks and Wildlife carried out a revision of Carnaby's cockatoo feeding and roosting habitat and remnant vegetation using remote sensing techniques and completed a population viability analysis (PVA) for Carnaby's cockatoo.

- The Department and BirdLife Australia continued to band Carnaby's cockatoos and encouraged people to report and photograph banded birds. The sixth Great Cocky Count was held in April 2014, with 290 sites surveyed by more than 600 volunteers. Results were released in August 2014. Minimum population estimates from the greater Perth-Peel region were 7154 birds, while 4227 white-tailed black cockatoos were counted outside this area. The 2014 Count was the first focused roost count survey for forest red-tailed black cockatoos (*Calyptorhynchus banksii naso*) across the south-west of WA and confirmed the presence of this species throughout the inner metropolitan suburbs of Perth. The seventh Great Cocky Count was held on 12 April 2015. Birdlife Australia, with assistance from Parks and Wildlife, coordinated and hosted a symposium for Baudin's cockatoo (*Calyptorhynchus baudinii*) and forest red-tailed black cockatoos. Offset funding was sourced by the Murdoch University research team lead by Dr Kris Warren to track black cockatoos across forested areas in the Swan Region.
- The Jandakot *Banksia Woodland Restoration Project* established 50ha of banksia woodland through topsoil transfer, planting and direct seeding to provide new Carnaby's feeding habitat. The project also funded weed control across an area of more than 600ha and fencing for approximately 1000ha of feeding habitat.

In winter 2014, Birdlife Australia volunteers assisted in planting banksia seedlings and other native plants at Anketell Road in Jandakot Regional Park.

- Western swamp tortoise (*Pseudemydura umbrina*) populations at Ellen Brook, Twin Swamps, Mogumber and Moore River nature reserves were stable in 2014 with monitoring demonstrating that the number of adult tortoises in the wild has been above 50 individuals for three years. This represents significant progress towards a key recovery plan objective. The captive breeding program at Perth Zoo continued to provide juveniles for translocation, with a further 68 juveniles released into Twin Swamps and Moore River nature reserves throughout the year. The 500th juvenile tortoise was released at an event attended by the Environment Minister. A new facility at Perth Zoo was completed.
- A collaborative project between the Department and Murdoch University examined genetic variation between the threatened Pilbara olive python (*Liasis olivaceus barroni*) and the northern subspecies of olive python (*L. o. olivaceus*). This work, which was funded by BHP Billiton Iron Ore, demonstrated that the two olive pythons are genetically distinct.



Environment Minister Albert Jacob and school student Jade release western swamp tortoises into Twin Swamps Nature Reserve. Photo – Parks and Wildlife



Five-day-old nestling Carnaby's cockatoo in tree hollow. Photo – Rick Dawson/Parks and Wildlife

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- A number of projects on marine turtles were undertaken in 2014–15, including:
 - Further work on a project focusing on the composition, distribution and seasonality of marine turtle nesting in the Kimberley that began in 2013 as part of the Kimberley Node of the Western Australian Marine Science Institution (WAMSI). This project is led by Parks and Wildlife and is being undertaken by a consortium of researchers and Aboriginal groups.
 - In the Kimberley, flatback turtle (*Natator depressus*) nest monitoring continued on Eighty Mile Beach in partnership with traditional owners, pastoralists and volunteers. Flatback turtle populations were also monitored at Cape Domett to determine population viability in conjunction with Miriuwung-Gajerrong and Balangarra traditional owners.
 - At Dirk Hartog Island National Park, ongoing monitoring of nesting loggerhead turtles (*Caretta caretta*) continued, assisted by a remote camera system. The extended monitoring period showed that Dirk Hartog Island supports one of the world's largest nesting loggerhead turtle populations.
 - The *Ningaloo Turtle Program* funded by Parks and Wildlife, Woodside and BHP Billiton continued, with 47 volunteers contributing 3470 hours in identifying nests by the track count method along

key Ningaloo coast beaches. A lower-than-average nesting season was recorded during 2014–15, with 1174 nests identified. Of these nests, 53 per cent were from green turtles (*Chelonia mydas*), 37 per cent from loggerheads and eight per cent from hawksbill turtles (*Eretmochelys imbricata*). A nest predation study was undertaken for the first time to gain more accurate data on the impact of introduced predators on turtle nests. Twenty green turtle nests were monitored daily throughout incubation (58–75 days), with between zero and five per cent predation by introduced predators recorded. One incidence of suspected fox predation was captured on camera. Sixteen of the nests (and an additional 12 unmonitored nests) were exhumed after hatching, with 38 per cent showing low levels of egg damage, mostly attributed to ghost crabs and other natural causes. The average hatching and emergence success rates were 81 per cent and 77 per cent, respectively.

- The Dampier Archipelago supports the largest hawksbill turtle rookery in the Indo-Pacific and one of the biggest in the world. Turtle monitoring on Rosemary Island, which lies within the archipelago, primarily focused on hawksbill turtles and continued to add to knowledge of spatial trends, turtle mortality and growth rates. Rosemary



Green turtle. Photo – Adam Williams/Parks and Wildlife

Island has been a focus for hawksbill turtle tagging and monitoring research since the mid-1980s. The project is undertaken by Parks and Wildlife staff and volunteers.

- The *West Pilbara Turtle Program*, funded by Rio Tinto, is a cooperatively managed, community-based program that monitors flatback turtles at Wickham beaches. Volunteers from Karratha and Wickham monitored nesting, false crawls, hatching and nest interference by predators and humans. Volunteer numbers continued to increase, reflecting the value of this program to the local community.
- In response to a pilot study undertaken in 2013 on Mundabullangana Station in the Pilbara, flatback turtle rookery monitoring continued in 2014–15 to determine the impacts of predation by feral cats and foxes. Sixty-nine monitoring sites were installed, 31 of which were monitored using remote cameras while the other 38 were physically monitored from egg laying until after hatching. Eggs on all monitored nests were counted and recorded at the time of laying and exhumed after hatching to determine nesting success. Early data indicate that foxes are the primary nest predator with the majority of nest incursions occurring in the week leading up to hatching.

- With funding assistance from South West Catchments Council, Parks and Wildlife undertook surveys at 66 sites containing white- and orange-bellied frogs (*Geocrinia alba* and *G. vitellina*, respectively) in 2014. One hundred and forty seven captive-reared white-bellied frogs from the Perth Zoo were released at a new location in Witchcliffe forest, while 111 captive-reared orange-bellied frogs from Perth Zoo were released at two new sites south of the Blackwood River. Monitoring of Witchcliffe sites where translocations have previously occurred has provided the first conclusive evidence that captive-reared white-bellied frogs are mating and reproducing in the wild.
- The proportion of hairy marron (*Cherax tenuimanus*) to smooth increased at a trial site that had smooth and hybrid marron intensively removed. The captive breeding program for hairy marron continued in 2014 at the Pemberton Freshwater Research Centre.
- A survey of the only known population of the critically endangered arid bronze azure butterfly (*Ogyris subterrestris petrina*) in Barbalin Nature Reserve in the Wheatbelt has shown a significant increase in range and adult males were also spotted in the nearby Wundowlin Nature Reserve. The yearly monitoring transects have now been extended to record this expansion over time. Surveys into remnant vegetation on private land and mark-recapture studies



Flatback turtle heading back out to sea after nesting. Photo – Alison McCarthy/Parks and Wildlife

are planned for September 2015. Central Wheatbelt District staff played a critical role in realigning a proposed shire road to avoid Barbalin Nature Reserve and butterfly habitat.



Arid bronze azure butterfly. Photo – Hayden Cannon/Parks and Wildlife

Wildlife Management

Table 5: Native animal translocations undertaken as part of the implementation of recovery and interim recovery plans, and other conservation initiatives in 2014–15

Species	Translocated from	Translocated to
Chuditch (<i>Dasyurus geoffroii</i>)	Upper Warren, Julimar Forest, Fitzgerald River National Park	Flinders Range, South Australia
Dibbler (<i>Parantechinus apicalis</i>)	Perth Zoo	Whiteman Park, Peniup Reserve
Numbat (<i>Myrmecobius fasciatus</i>)	Perth Zoo	Dryandra Woodland, Karakamia Sanctuary
Orange-bellied frog (<i>Geocrinia vitellina</i>)	Perth Zoo	Blackwood River area
Tammar wallaby (<i>Macropus eugenii derbianus</i>)	Karakamia Sanctuary	Whiteman Park Woodland Reserve, Paruna Wildlife Sanctuary
Western ground parrot (<i>Pezoporus flaviventris</i>)	Captive facility on South Coast	Perth Zoo
Western swamp tortoises (<i>Pseudemydura umbrina</i>)	Perth Zoo	Twin Swamps Nature Reserve, Moore River Nature Reserve
White-bellied frog (<i>Geocrinia alba</i>)	Perth Zoo	Witchcliffe forest
Woylie (<i>Bettongia penicillata ogilbyi</i>)	Perup Sanctuary	Greater Kingston National Park
Woylie (<i>Bettongia penicillata ogilbyi</i>)	Kanyana	Perup Sanctuary

Recovery of threatened ecological communities

The Threatened Ecological Communities Scientific Committee met twice during the year and considered 36 nominations for changes to the lists of threatened ecological communities (TECs) and priority ecological communities (PECs). At 30 June 2015, there were 66 extant TECs, three listed as ‘totally destroyed’, and 339 PECs listed by the Department.

Highlights of work done to protect TECs and PECs are outlined below. Some activities, such as weed control, fencing, surveys and data analysis were completed with assistance from non-government organisations, volunteers and externally sourced funds.

- A total of 181 occurrences of TECs or PECs were added to the Department’s Threatened and Priority Ecological Community database. New occurrence information was added or boundary mapping revised for six TECs and 15 PECs, assisting in resolving their status and providing improved information for land-use planning. This included 57 occurrences of two PECs in the Kimberley Region, 61 occurrences of a PEC in the Pilbara Region, and 31 occurrences of the ‘Subtropical and temperate coastal saltmarsh’ PEC.

- Site visits were made to 104 occurrences of TECs and PECs and data was collected about habitat, composition, condition and threats leading to the development or improvement of recommended recovery actions.
- Environmental impact assessment advice was provided for 108 projects, with the potential to affect TECs or PECs across WA.
- At Lake Cooloongup and Walyungup near Rockingham, the Department’s Regional Parks Unit continued a project to control weeds including sharp rush (*Juncus acutus*), giant reed (*Arundo donax*) and cotton bush (*Gomphocarpus fruticosus*) and began a new project targeting pampas grass (*Cortaderia selloana*), Geraldton carnation weed (*Euphorbia terracina*) and dune onion weed (*Trachyandra divericata*). This weed control, and major works targeting impacts from off-road vehicles at Port Kennedy Scientific Park, were undertaken to benefit the ‘Sedgeland in holocene dune swales’ TEC.
- In the Swan Region, works were undertaken in 27 reserves to benefit 23 TECs and six PECs, including weed mapping and control, installation and repair of fences and gates, improvement and installation of reserve signage, rubbish removal and revegetation of degraded areas. The effectiveness of up to 10 years of *Watsonia* management in two woodland TECs and two claypan TECs was

determined through mapping and quadrat scoring. Ten floristic quadrats established in claypan TECs in 1997 were relocated and rescored to assess threats and management effectiveness. Six quadrats were established to clarify the presence of TECs, and a further six quadrats installed to monitor post-fire recovery in the fire-sensitive *Callitris preissii*-dominated TEC. A plan to manage *Phytophthora* dieback disease was completed, signage installed and tracks closed in a banksia TEC and two PECs in the Gingin area. Monthly bore monitoring was completed, pig traps installed, and a series of small fences constructed to control the impacts of surface water and associated weed invasion in a claypan TEC. Hydrological monitoring was continued in a mound spring TEC to track water quality and falling groundwater levels. Dieback mapping, a dieback plan and construction of four wash-down points were completed in Lowlands Reserve to benefit a wetland and banksia woodland PEC.

- In the South West Region, annual phosphite spraying of the Busselton ironstone TEC was completed to control dieback disease. An extensive Typha and *Watsonia* control program was commenced in Byrd Nature Reserve to improve the condition of a claypan TEC. An ongoing bulbous weed control program in Waterloo Nature Reserve that contains two claypan and woodland TECs was

continued and weed control was also completed in a nature reserve to benefit the Blackwood alluvial flats PEC. Six quadrats were established to clarify the presence of TECs.

- A prescribed burn was conducted in the south-west coastal grasslands PEC and quadrats monitored to determine fire response as part of the Warren Region's Quarram Adaptive Management Fire Project. Sensor cameras were also installed to monitor illegal access into this PEC. Media promotions highlighted the damage caused by motorbikes through the Mount Lindesay TEC. Monitoring was completed in the 'Reedia swamps of the Warren Region' PEC following bushfires to determine its recovery. Water monitoring was also completed every two months in seven occurrences of this PEC, and grant funds utilised to initiate chemical analysis of soil and water, and peat rehabilitation through mulching and furrowing. The fire response of the 'Sphagnum communities of the Tingle Forest' PEC was monitored following a prescribed burn. A new occurrence of the Frankland Augusta microbial PEC was located.
- In the South Coast Region, fencing of 5km², including eight enclosures, was completed on Bluff Knoll within the montane heath and thicket TEC. Monitoring established to compare floristics, structure, growth and reproduction of critically endangered

flora inside and outside enclosures has so far indicated that fencing enabled heavily grazed plants to reproduce and set seed. Seed has been collected from critically endangered flora (e.g. *Latrobea colophona*) within enclosures that have recovered from grazing. Rabbit baiting was implemented to protect 25ha of the montane TEC and signage was installed to inform the public about the research and fencing installed to protect the area and deter visitors from trampling vegetation.

- In the Wheatbelt Region, work continued on a revised recovery plan for the Toolibin Lake TEC Recovery Catchment and a groundwater monitoring and rationalisation report was completed. Photo point monitoring was also established and periodic survey, rabbit control and culling of kangaroos completed on the floor of Toolibin Lake. Infill planting on land purchased by the Department (Miller's Block) was completed to help improve catchment health for the Lake Toolibin TEC. Monitoring of groundwater in 200 bores in the catchment continued, with improved efficiency in collecting data through an upgraded telemetry system. In partnership with a community group, unnecessary tracks were closed, bollards, signs and a new parking bay installed, and a walk trail constructed with boot hygiene stations at Birdwood Nature Reserve to protect a claypan TEC and component threatened flora. At the Lake Bryde TEC,

vegetation condition was monitored, and rabbit control completed, together with a review of groundwater monitoring.

- In the Midwest Region, goat control was completed at Watheroo National Park and Pinjarrega Nature Reserve to reduce grazing and provide habitat protection for the bentonite lakes TEC. Control of *Juncus acutus* was completed at Lake Thetis to help protect the lake's stromatolite TEC. Reserve inspections were completed to assess management effectiveness for three TECs in nature reserves, and four occurrences of PECs were surveyed. Significant liaison with a research institute was completed regarding mapping the *Posidonia australis* complex seagrass meadows assemblage, and liaison was undertaken with a mining company, conservation groups, other government agencies and land managers about conservation management of the Mount Gibson banded ironstone formation PEC.
- In the Pilbara Region, a broadscale program to reduce the impact of donkeys, horses and camels on the fragile vegetation of the Fortescue Marsh PEC continued. This was complemented by a collaborative partnership between Parks and Wildlife, the Pilbara Mesquite Management Committee, Roy Hill Iron Ore, Fortescue and Roy Hill Station, in which 20,679 *Parkinsonia aculeata* plants were removed upstream of the marsh.

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Monitoring of the potential impacts of mine dewatering on the Coolibah-lignum flats: *Eucalyptus victrix* over *Muehlenbeckia* PEC in Karijini National Park continued, with no threshold criteria being exceeded.

- In the Kimberley Region, significant industry sponsorship was secured for a project in the Roebuck Bay TEC under the Eighty Mile Beach and Walyarta Conservation program. The project is focusing on invertebrate fauna as a descriptor of life in the sediments and as a food source for shorebirds. Mud sampling for benthic invertebrates was continued in the Roebuck Bay TEC.
- In the Goldfields Region, the PEC 'Yellow sandplain vegetation of the Great Victoria Desert with diverse vertebrate fauna' was inspected.
- Two papers assessing the level of risk to two TECs using new international criteria developed for ecosystems were published in peer-reviewed scientific journals.

More information on threatened flora, native animals and ecological communities is available on the website: www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities.

Restoration

The *Banksia Woodland Restoration Project* is undertaking restoration of natural habitats in the Perth metropolitan region as an offset for vegetation clearing at Jandakot Airport. This project aims to create and restore habitat for the Carnaby's cockatoo and grand spider orchid. New banksia woodland has been established through topsoil transfer and planting (40ha) and direct seeding (12ha) at Forrestdale Lake and along Anketell Road in Jandakot Regional Park. So far, more than 150 species of native plants are growing in these areas. The project has also funded more than 600ha of weed control and fencing of more than 1000ha. Restoration of banksia woodland took place at 20 sites with funding from a community grants program.

Recovery planning

The implementation of the existing recovery plan for the Scott Ironstone Association was reviewed, and plan was updated.

The South Coast Threatened Birds Recovery Plan was adopted by the Australian Government under the EPBC Act. This incorporates recovery actions for five threatened south coast birds: western ground parrot (*Pezoporus flaviventris*), western bristlebird (*Dasyornis longirostris*), noisy scrub-bird (*Atrichornis clamosus*), western whipbird (western heath) (*Psophodes nigrogularis nigrogularis*), western whipbird (western mallee) (*Psophodes nigrogularis oregon*), and one presumed extinct species,

rufous bristlebird (western) (*Dasyornis broadbenti litoralis*). Recovery plans for the western ringtail possum and the white-bellied and orange-bellied frogs (*Geocrinia alba* and *G. vitellina*) were submitted to the Australian Government for adoption following public review periods.

More information on recovery planning is available on the website: www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities.

Wetland conservation

Ramsar and nationally significant wetlands

Twelve WA wetlands are listed under the International Convention on Wetlands (Ramsar Convention). The work of completing State and Federal government approvals for updated Ramsar information sheets (RIS) for all 12 Ramsar sites continued (Table 6). During the 2014–15 period, the revised RISs for Becher Point and Vasse-Wonnerup Ramsar sites were endorsed by the State and Federal governments and provided to the Ramsar Convention Secretariat for uploading onto the convention's website. A final draft of the revised Ord River Floodplain RIS has been completed using the new online template and was submitted to the Federal government for forwarding to the Ramsar Secretariat for comment. Western Australia is the first Australian jurisdiction to review a RIS using the Convention's new online format. Eleven

of WA's 12 Ramsar sites now have endorsed ecological character descriptions (ECD). A draft of the final ECD, Becher Point Wetlands, is complete and endorsement is being sought.

The Department provided logistic and technical support for research by Murdoch University's Marine and Freshwater Research Laboratory into the submerged aquatic plant communities, nutrient status and ecological health of the Vasse and Wonnerup estuaries.

Biannual monitoring of waterbirds across the Lake Warden and Lake Gore Ramsar sites at Esperance continued and confirmed the success of managing water levels to maintain a variety of waterbird habitats.

In the Muir-Byenup Ramsar wetlands, a project commenced to investigate the hydrogeochemistry of peat wetlands to assess the risks of further acidification, particularly in light of continued declines in rainfall and increased fire vulnerability. Field investigations began in 2014, involving collection of peat cores and analysis of physical and chemical properties. This work will also inform fire management around peat wetlands and contribute to a better understanding of the hydrology of this important wetland suite and other similar wetland areas. Also within this wetland suite, wetlands previously sampled for aquatic invertebrates 10 and 20 years ago were resampled to determine the effects of declining rainfall and groundwater tables on this element of the Muir-Byenup wetlands.

The Department continued to be responsible for coordinating proposals for the possible nomination of nine wetlands for Ramsar listing. Candidate areas are:

- Lake MacLeod
- Lake Gregory
- Cape Range subterranean waterways
- Lake Ballard
- Millstream pools
- east Hamelin Pool in the Shark Bay World Heritage area
- Ellen Brook swamps system
- tributaries of the Lower Blackwood River (formerly Spearwood Creek)
- Fortescue Marshes.

The Department continued to work with other states and the Federal Government in developing a national wetlands policy regarding the implementation of international agreements. Toolkits for identifying, classifying and managing high ecological value aquatic ecosystems were finalised and made publicly available.

More information on internationally and nationally significant wetlands is available on the website: www.dpaw.wa.gov.au/management/wetlands.

Table 6: Management plans for Ramsar wetlands in WA

Ramsar site	Ramsar information sheet	Ecological character description	Management plan
Ord River Floodplain	2015 (in progress)	2008	<i>Ord River and Parry Lagoons nature reserves management plan 2012</i>
Lakes Argyle and Kununurra	2015 (in progress)	2010	
Roebuck Bay	2009	2009	Draft for review by Yawuru Park Council: <i>Roebuck Bay Intertidal Reserve-Joint draft management plan 2013</i> <i>Roebuck Bay Ramsar Site management plan</i> (Roebuck Bay Working Group 2009)
Eighty Mile Beach	2009	2009	<i>Eighty Mile Beach Marine Park management plan 2014–24</i> <i>Eighty Mile Beach Ramsar Site management plan</i> (in preparation)
Forrestdale and Thomsons lakes	2009	2009	<i>Thomsons Lake Nature Reserve management plan 2005</i> <i>Forrestdale Lake Nature Reserve management plan 2005</i>
Peel–Yalgorup System	2015 (in progress)	2007	<i>Peel–Yalgorup System Ramsar Site management lan, Peel–Harvey Catchment Council 2009</i> <i>Yalgorup National Park management plan 1995-2005</i> Final in preparation, <i>Swan Coastal Plain South draft management plan 2014</i>
Toolibin Lake	2014	2006	<i>Recovery plan for Toolibin Lake, Toolibin Lake Recovery Team and Technical Advisory Group 1994</i> Final draft: <i>Toolibin Lake recovery plan 2013 review</i> , Toolibin Lake Recovery Team and Technical Advisory Group 2013
Vasse–Wonnerup System	2014	2007	<i>Busselton Wetlands Conservation Strategy, WAPC 2005</i> Final in preparation, <i>Swan Coastal Plain south draft management plan 2013</i> <i>Tuart Forest National Park management plan 2014</i>
Lake Warden System	2009	2009	Final in preparation, <i>Esperance and Recherche parks and reserves draft management plan 2012</i>
Becher Point Wetlands	2014	Draft 2014	<i>Rockingham Lakes Regional Park management plan 2010</i>
Lake Gore	2009	2009	Final in preparation, <i>Esperance and Recherche parks and reserves draft management plan 2012</i>
Muir–Byenup System	2009	2009	<i>Perup management plan 2012</i>

Wildlife Management

Wetlands mapping and evaluation projects

During the year, the Department maintained and added data to the corporate and publically available wetlands mapping layer, the Geomorphic Wetlands Swan Coastal Plain dataset which covers an area of 364,960ha from Moore River in the north to Dunsborough in the south and east to the base of the Darling escarpment. Statistics have been updated for wetland extent and values including management categories and wetland type. The Department finalised and released a draft document 'A methodology for the evaluation of specific wetland types on the Swan Coastal Plain, Western Australia' and received requests from stakeholders, including environmental consultants, landholders and State and local government agencies, to modify wetland mapping in the dataset (management category, classification or boundary reviews).

Mapping layers are also available for Cervantes to Coolimba Coast, Cervantes to Eneabba, Cervantes South, Wheatbelt, Darkan to Duranillin and Augusta to Walpole, while other wetland mapping layers where endorsement of methodology is yet to occur include the Leeuwin-Naturaliste Ridge, Donnybrook to Nannup, Manjimup to Northcliffe, Cottesloe Coastal Plain and Margaret River East.

More information on wetland management and mapping is available on the website: www.dpaw.wa.gov.au/management/wetlands.

Parks and Wildlife continued to monitor groundwater and the biological responses of fringing and wetland vegetation at a selection of Wheatbelt wetlands to threats such as salinisation and climate change for the *State Salinity Strategy*, with the focus on higher conservation value wetlands, including those in recovery catchments. Summary analyses of aquatic invertebrates and waterbirds from the fauna component of this program have begun.

The 1977–2013 report on depth, salinity and pH status and trends of 103 wetlands included in the *South West Wetlands Monitoring Program*, also conducted by the Department under the *State Salinity Strategy*, was completed. This report highlighted wetlands in national parks and nature reserves where changes were of particular interest or concern, such as the Warden and Tordit-Gurrup Ramsar wetlands. Water level and rainfall were also continuously monitored at nine high-value wetlands, including key breeding sites for the threatened Australasian bittern, to help develop an improved understanding of likely consequences of predicted climate change, particularly rainfall decline, on wetlands of south-western Australia.



A Parks and Wildlife officer measures the pH and temperature of the water in a wetland near Cervantes. Photo – Parks and Wildlife

Reports on some of these wetlands have been published, some of which are available on the website: www.dpaw.wa.gov.au/management/wetlands/127-mapping-and-monitoring/223-surveying-monitoring-wetlands.

Management of marine wildlife

During 2014–15, the Department responded to 30 whale and dolphin incidents.

These involved 57 individual animals from eight species: southern right whale (*Eubalaena australis*), long-finned pilot whale (*Globicephala melas*), pygmy sperm whale (*Kogia breviceps*), humpback whale (*Megaptera novaeangliae*), sperm whale (*Physeter macrocephalus*), striped dolphin (*Stenella coeruleoalba*), bottlenose dolphin (*Tursiops* spp.) and the first record in WA of Omura's whale (*Balaenoptera omurai*). The Omura's whale was only the second time this species has been recorded in Australia.

There was one mass stranding of 23 long-finned pilot whales in 2014–15. Ten of this group were successfully returned to the sea.

Twelve humpback whales and one southern right whale were reported entangled in fishing gear and marine debris during 2014–15. Five whales were successfully disentangled, while the fate of the others is unknown as distance from shore or unfavourable conditions prevented intervention.

There were 15 reported seal incidents involving five species: Australian sea lion (*Neophoca cinerea*), New Zealand fur seal (*Arctocephalus forsteri*), sub-Antarctic fur seal (*A. tropicalis*), leopard seal (*Hydrurga leptonyx*) and southern elephant seal (*Mirounga leonine*). There was an increased

in the number of fur seal sightings reported by the public.

In April 2015, a senior wildlife officer represented the Department at an International Whaling Commission Workshop in the United States on large whale entanglement response management and contributed to improving welfare management protocols.

Management of commercial activities involving native animals and plants

The Department ensured that wildlife-based activities occurring during the year were licensed and managed in accordance with the *Wildlife Conservation Act 1950* (WC Act) and associated regulations, and were investigated to ensure compliance with legislation and the licences issued.

Quotas and commercial harvests for 2014 were:

- western grey kangaroo (*Macropus fuliginosus*) – quota: maximum of 197,600; harvest: 97,459
- red kangaroo (*M. rufus*) – quota: maximum of 85,000; harvest: 40,681
- euro (*M. robustus*) – no commercial harvest during 2014.

Under a nationally approved kangaroo management plan, aerial population surveys of kangaroos were undertaken in the South East Zone between August and September 2014 and the South West Zone in October

2014. The aerial surveys provided the basis for setting commercial harvest quotas for 2015.

The aerial survey results for the South East Zone indicated that the estimated populations of both western grey and red kangaroos in this zone had dropped below the thresholds contained in the management plan. As such, the Department was unable to set a commercial harvest quota for this zone for 2015. Following a more detailed analysis of this data and a review of historical harvest figures, a reduced quota was set in the South East Agricultural and Nullarbor management areas in March and June 2015, respectively.

In 2013, the Department decided not to renew the *Management Plan for the Commercial Harvest and Farming of Crocodiles in Western Australia*, due to declining levels of interest from industry. Currently, there is only one licensed crocodile farm remaining in the State and it has significantly scaled back its commercial farming operations.

The Department continued to implement the management plan for the commercial harvesting of protected flora, which was approved by the Federal Government under the EPBC Act in July 2013. A noticeable downturn has been seen in this industry in recent years.



An Omura's whale carcass found at Exmouth. Photo – Geof Parry/Channel 7

Wildlife Management



Stripe-tailed pygmy monitors were found concealed inside a children's book in a smuggling attempt.
Photo – Matt Swan/Parks and Wildlife



Sandplain geckos. Photo – Matt Swan/Parks and Wildlife

Regulation

Flora and fauna licensing

In 2014–15, there were 1808 flora licences and permits issued, a slight decrease of 3.7 per cent from the previous year. This included 265 commercial purposes licences, 153 commercial producer and nurseryman licences, 1157 scientific or other prescribed purposes licences, 22 sandalwood licences and 207 permits to take Declared Rare Flora (Table 7). The Department also issued 7996 fauna licences (other than damage, but including non-commercial), a decrease of 6.3 per cent from the previous year (Table 8). The interest in keeping pet herpetofauna (reptiles and frogs) increased slightly (4.4 per cent), with 4575 people currently licensed for up to three years. The number of avian fauna licences issued continued to decline with 2351 licences issued, a 17 per cent decrease on the previous year.

Incidents of prohibited reptiles being brought into or kept illegally in WA continued to increase. During 2014–15, the majority of illegally kept reptiles were seized in the metropolitan area but the numbers in regional areas rose substantially, particularly in the Midwest and Kimberley. These included three separate instances in which a single individual was apprehended for illegally taking 206 reptiles from the wild in the Wheatbelt, Midwest and Kimberley regions, to export them to more lucrative markets in the eastern

states. Another incident involved four foreign nationals who were apprehended after illegally taking 128 reptiles in the Kimberley, Pilbara and Midwest regions and attempting to smuggle them out of the country through the post to Thailand, Russia and Hungary.

A total of 389 Western Australian reptiles were seized, including south-west carpet python (*Morelia spilota imbricata*), black headed python (*Aspidites melanocephalus*), Stimson's python (*Antaresia stimsoni*), pygmy python (*Antaresia perthensis*), children's python (*Antaresia childreni*), death adder (*Acanthopis pyrrhus*), shingleback skink (*Tiliqua rugosa*), western blue tongue (*Tiliqua occipitalis*), ornate rock dragon (*Ctenophorus ornatus*), Pilbara rock monitor (*Varanus pilbarensis scincoides*), stripe tailed pygmy monitor (*Varanus caudolineatus*), spiny tailed skink (*Egernia* sp.), knob tailed gecko (*Nephrurus levis*), spiny tailed gecko (*Strophurus* sp.) and oblong turtle (*Chelodina oblonga*). Prohibited species seized included a northern carpet python (*M. s. variegata*) from Darwin, three central bearded dragons (*Pogona vitticeps*), three coastal carpet pythons (*M. s. mcdowellii*) from New South Wales/Queensland, one jungle python (*M. s. cheyneri*) from Queensland and one hybrid python commonly referred to as a 'Jag' (*Morelia* cross).

Damage and dangerous fauna licences

The Department received eight reports of potential problem crocodiles within crocodile control zones and another three reports outside these zones in the Kimberley. Three licences were issued to remove saltwater crocodiles from the wild because they posed a threat to the public, resulting in three crocodiles being destroyed and two others being relocated to a crocodile park. One licence was issued to remove and relocate freshwater crocodiles from lakes Kununurra and Argyle but no animals were trapped.

Nineteen dangerous fauna licences were issued for aggressive magpies (*Cracticus tibicen*), nine for kangaroos, four for Australian ravens (*Corvus coronoides*) and two for kookaburras (*Dacelo novaeguineae*) (Table 9). A number of dangerous fauna licences were issued to mitigate the risk of aircraft strike at Perth, Jandakot and regional airports. These licences applied to a range of mostly bird species, but also included red kangaroos and western grey kangaroos.

A total of 486 licences were issued for the control of animals causing damage (Table 10), including 18 licences for emus (*Dromaius novaehollandiae*), 364 licences for western grey kangaroos (a slight increase of 1.9 per cent in licence numbers but a reduction of 7.2 per cent increase in the number taken), five licences for red kangaroos, two licences for euros, four licences for agile wallabies,

24 licences for little corellas (*Cacatua sanguinea*), 24 licences for western long-billed corellas (*Cacatua pastinator*), seven licences for eastern long-billed corellas (*Cacatua tenuirostris*), five licences for ringneck parrots (*Barnardius zonarius*), five licences for galahs (*Eolophus roseicapilla*) and three licences for Australian ravens. Eleven licences were also issued to scare, trap and relocate or destroy waterfowl causing damage. In total, 108 damage licences were issued for birds, an increase of 14 per cent from 2013–14.

More information is available on the website: www.dpaw.wa.gov.au/plants-and-animals/licences-and-permits.

Table 7: Flora licences issued in 2014–15

Flora licences	No. issued
Commercial purposes	265
Commercial producers	153
Sandalwood (from Crown land)	1
Sandalwood (from private land)	22
Forest produce (from Crown land)	3
Scientific/prescribed purposes	1157
Take declared rare flora	207
Total flora licences	1808



Estuarine crocodile. Photo – Tim Willing

Wildlife Management

Table 8: Fauna licences issued in 2014–15

Fauna licences	No. issued		
Collection (Reg 17)	501	Dealing (emu eggshells) (Reg 13)	3
Bird/bat banding (Reg 23)	149	Farming (Reg 14)	8
Education and public:		Crocodyles:	
To take marine interaction (Reg 15)	248	Processing (Reg 7)	1
To take other (Reg 15)	203	Skin dealing (Reg 10)	0
To hold (Reg 16)	139	Farming (Reg 14)	1
Avian fauna:		Kangaroos:	
Trap (Reg 11)	1	Take for sale (Reg 6)	418
Species trapped commercially:		Processing (Reg 7)	17
Twenty-eight parrot (<i>Barnardius zonarius</i>)	31	Deal in carcasses (Reg 8)	19
Red-capped parrot (<i>Purpuricephalus spurius</i>)	7	Skin dealing (Reg 10)	6
Western rosella (<i>Platycercus icterotis</i>)	61	Export interstate:	
Keep and breed in captivity (Reg 12)	2351	Skins of fauna (or other dead fauna)	45
Keep in captivity (Reg 12A)	60	Fauna (live)	190
Deal (Reg 13)	39	Herpetofauna (reptiles and amphibians)	40
Breed for commercial purposes (Reg 14)	0	Export overseas:	
Herpetofauna (reptiles and amphibians):		Skins of fauna (or other dead fauna) from WA	11
Keeping	2603	Emu eggs or products (personal items) from WA	0
Dealing	36	Fauna (avian) from WA (live)	0
Farming	1	Import from interstate:	
Taking	7	Skins of fauna (or other dead fauna) into WA	3
Removing	437	Australian fauna (live)	286
Emus (<i>Dromaius novaehollandiae</i>):		Live exotic birds and other animals	145
Processing (emu eggshells) (Reg 7)	3	Herpetofauna (reptiles and amphibians)	25
Dealing (Reg 8)	0	Total fauna licences	7996

Table 9: Dangerous fauna licences issued in 2014–15

Dangerous fauna licences	No. of licences issued	Authorisation
Australasian shoveler (<i>Anas rhynchos</i>)	1	*destroy
	1	scare only
Australian bustard (<i>Ardeotis australis</i>)	2	destroy 40
Australian hobby (<i>Falco longipennis</i>)	1	*destroy
	1	scare only
Australian kestrel (<i>Falco cenchroides</i>)	1	*destroy
	2	scare only
Australian magpie (<i>Gymnorhina tibicen</i>)	17	destroy 23
	2	scare only
Australian magpie lark (<i>Grallina cyanoleuca</i>)	1	*destroy
	1	scare only
Australian pelican (<i>Pelecanus conspicillatus</i>)	1	*destroy
	1	scare only
Australian raven (<i>Corvus coronoides</i>)	2	*destroy
	2	scare only
Australian shelduck (<i>Tadorna tadornoides</i>)	1	*destroy
	2	scare only
Australian white ibis (<i>Threskiornis molucca</i>)	3	*destroy 50
	1	scare only
Banded lapwing (Banded plover) (<i>Vanellus tricolor</i>)	3	*destroy 18
	3	scare only
Barn owl (<i>Tyto alba</i>)	1	*destroy
	1	scare only
Baudin's cockatoo (<i>Calyptorhynchus baudinii</i>)	1	scare only
Black kite (<i>Milvus migrans</i>)	2	destroy 34
Black-shouldered kite (<i>Elanus axillaris</i>)	1	*destroy
	1	scare only
Black swan (<i>Cygnus atratus</i>)	1	*destroy
	2	scare only
Brown falcon (<i>Falco berigora</i>)	1	*destroy
	2	scare only
Carnaby's cockatoo (<i>Calyptorhynchus latirostris</i>)	1	scare only
Collared sparrowhawk (<i>Accipiter cirrocephalus</i>)	1	*destroy
	1	scare only
Crested pigeon (<i>Ocyphaps lophotes</i>)	1	*destroy
	1	scare only
Emu (<i>Dromaius novaehollandiae</i>)	1	*destroy 4
Estuarine (saltwater) crocodile (<i>Crocodylus porosus</i>)	3	destroy 4
	1	trap & relocate 3
Eurasian coot (<i>Fulica atra</i>)	1	*destroy
	1	scare only
Freshwater (Johnston's) crocodile (<i>Crocodylus johnstoni</i>)	1	destroy 10
Galah (<i>Eolophus roseicapilla</i>)	3	destroy 156
Great cormorant (<i>Phalacrocorax carbo</i>)	1	*destroy
	1	scare only
Great egret (<i>Ardea alba</i>)	1	*destroy
	1	scare only
Grey teal (<i>Anas gracilis</i>)	1	*destroy
	1	scare only
Hoary-headed grebe (<i>Poliiocephalus poliocephalus</i>)	1	scare only
Laughing kookaburra (<i>Dacelo novaeguineae</i>)	1	*destroy
	1	scare only
Little black cormorant (<i>Phalacrocorax sulcirostris</i>)	1	*destroy
	1	scare only
Little corella (<i>Cacatua sanguinea</i>)	3	*destroy 90
	1	scare only
Little eagle (<i>Hieraaetus morphnoides</i>)	1	*destroy
	1	scare only
Long-billed corella (western) (<i>Cacatua pastinator</i>)	1	*destroy
	1	scare only
Long-billed corella (eastern states species) (<i>Cacatua tenuirostris</i>)	1	*destroy
	1	scare only
Maned duck (<i>Chenonetta jubata</i>)	1	*destroy 2
	2	scare only
Osprey (<i>Pandion haliaetus</i>)	1	*destroy
	1	scare only
Pacific black duck (<i>Anas superciliosa</i>)	1	*destroy 16
	2	scare only
Peregrine falcon (<i>Falco peregrinus</i>)	1	scare only
Pink-eared duck (<i>Malacorhynchus membranaceus</i>)	1	*destroy
	1	scare only
Purple swamphen (<i>Porphyrio porphyrio</i>)	1	*destroy
	1	scare only

Wildlife Management

Table 9: Dangerous fauna licences issued in 2014–15 (continued...)

Dangerous fauna licences	No. of licences issued	Authorisation
Red kangaroo (<i>Macropus rufus</i>)	1	destroy 20
Red-capped plover (<i>Charadrius ruficapillus</i>)	1	+destroy 5
Red-tailed black cockatoo (<i>Calyptorhynchus banksii</i>)	1	scare only
Red wattlebird (<i>Anthochaera carunculata</i>)	1	destroy 1
Richard's pipit (<i>Anthus novaeseelandiae</i>)	1	scare only
Square-tailed kite (<i>Lophoictinia isura</i>)	1	*destroy
	1	scare only
Straw-necked ibis (<i>Threskiornis spinicollis</i>)	4	*destroy 53
	2	scare only
Swamp harrier (<i>Circus approximans</i>)	1	*destroy
	1	scare only
Tree martin (<i>Petrochelidon nigricans</i>)	1	*scare only
Twenty-eight parrot (<i>Barnardius zonarius</i>)	1	*destroy
	1	scare only
Wedge-tailed eagle (<i>Aquila audax</i>)	1	*destroy
	1	scare only
Welcome swallow (<i>Hirundo neoxena</i>)	1	scare only
Western brush wallaby (<i>Macropus irma</i>)	1	destroy 5
Western grey kangaroo (<i>Macropus fuliginosus</i>)	7	destroy 73
	1	scare only
Whistling kite (<i>Haliastur sphenurus</i>)	3	destroy 9
	2	scare only
White-faced heron (<i>Egretta novaehollandiae</i>)	1	*destroy 2
	2	scare only
Willie wagtail (<i>Rhipidura leucophrys</i>)	1	scare only
Yellow-billed spoonbill (<i>Platalea flavipes</i>)	1	*destroy
	1	scare only

* While this licence covered a wide variety of species, only 147 birds were actually taken. These included Pacific black duck (16), Australian wood duck (2), white-faced heron (2), straw-necked ibis (3), banded lapwing (18) and galah (106).

+ Eggs of red-capped plover were destroyed as birds were nesting on airfield runway.



Carnaby's cockatoos. Photo – Rick Dawson/Parks and Wildlife

Table 10: Damage licences (fauna) issued in 2014–15

Dangerous fauna licences	No. of licences issued	Total number of each species authorised to be taken
Birds		
Australian raven (<i>Corvus coronoides</i>)	3	destroy 32
Australian white ibis (<i>Threskiornis molucca</i>)	1	scare only
Baudin's cockatoo (<i>Calyptorhynchus baudinii</i>)	2	scare only
Carnaby's cockatoo (<i>Calyptorhynchus latirostris</i>)	1	scare only
Emu (<i>Dromaius novaehollandiae</i>)	17	destroy 615
	1	trap/euthanase 100
Galah (<i>Eolophus roseicapilla</i>)	5	destroy 4070
Little corella (<i>Cacatua sanguinea</i>)	20	destroy 5880
	4	scare only
Long-billed corella (central west) (<i>Cacatua butleri</i>)	23	destroy 13,500
	1	scare only
Long-billed corella (Lake Muir) (<i>Cacatua pastinator</i>)	2	scare only
Long-billed corella (eastern states species) (<i>Cacatua tenuirostris</i>)	6	destroy 1400
	1	scare only
Red-capped parrot (<i>Purpureicephalus spurius</i>)	1	destroy 20
Red wattlebird (<i>Anthochaera carunculata</i>)	2	destroy 20

Silver gull (<i>Chroicocephalus novaehollandiae</i>)	1	scare only
Straw-necked ibis (<i>Threskiornis spinicollis</i>)	1	scare only
Twenty-eight parrot (<i>Barnardius zonarius</i>)	5	destroy 120
Waterfowl		
Australian shelduck (<i>Tadorna tadornoides</i>)	1	scare only
Magpie goose (<i>Anseranas semipalmata</i>)	1	destroy 100
Maned duck (<i>Chenonetta jubata</i>)	2	destroy 15
	2	scare only
	2	trap and relocate 70
Pacific black duck (<i>Anas superciliosa</i>)	1	destroy 40
	1	scare only
Purple swamp hen	1	trap and relocate 4
Mammals		
Agile wallaby (<i>Macropus agilis</i>)	4	destroy 1300
Euro (<i>Macropus robustus</i>)	2	destroy 75
Northern nail-tail wallaby (<i>Onychogalea unguifera</i>)	1	destroy 200
Pale field rat (<i>Rattus tunneyi</i>)	2	destroy 850
Red kangaroo (<i>Macropus rufus</i>)	5	destroy 310
Western grey kangaroo (<i>Macropus fuliginosus</i>)	363	destroy 15,679
	1	trap and relocate 20

Wildlife interaction licences

At 30 June 2015, 103 whale watching boat tour operators were licensed in WA. While these tours were primarily focused on humpback whales, southern right whales were also part of whale watching activity in the lower south-west, particularly at Albany, Augusta and Esperance. Pygmy blue whales (*Balaenoptera musculus brevicauda*) were also regularly encountered adjacent to Cape Naturaliste.

Parks and Wildlife issued one beach-based and 82 boat-based dolphin interaction licences, three in-water dolphin interaction licences and two boat-based dugong (*Dugong dugon*) interaction licences. Thirty-seven boat-based Australian sea lion and New Zealand fur seal interaction licences were issued. Three wildlife interaction licences were also issued to film marine wildlife for documentaries.

Wildlife Management

Offences

The Department provided guidance to members of the public visiting Parks and Wildlife-managed land regarding the legal requirements of parks and conservation legislation. During 2014–15, 449 caution notices were issued for minor offences. The number of infringement notices issued during the year decreased from 604 to 482 (Table 10). Written reports were prepared for 305 offences under the WC Act and its Regulations, and the CALM Act and its Regulations, an increase of 60 per cent on the previous year.

Action in 23 matters under both statutes was completed, with prosecution pending in 259 others.

The unlawful taking of black cockatoos from the wild continues to pose a serious threat to the conservation of these birds, particularly Baudin's cockatoo, which has suffered significant losses in fruit growing areas of the south-west. A number of reports of alleged illegal shooting have been investigated during the past 12 months but with little result. The keeping of pet herpetofauna (reptiles and amphibians) remained a popular activity and the number of investigations regarding the unlawful taking, possession and keeping of reptiles continued to rise.

The Department's management of the sandalwood industry and the detection of illegal or unsustainably harvested sandalwood from the wild continued throughout 2014–15, with numerous reports of illegal sandalwood harvesting being received. Parks and Wildlife again joined forces with the WA Police to deal with these activities. This approach resulted in the apprehension of two people for taking sandalwood illegally during 2014–15 and led to the identification of a major syndicate that is believed to have been involved in the illegal take and export of in excess of 100 tonnes sandalwood overseas, worth an estimated \$2 million. Inquiries are continuing and the alleged offenders face possible criminal charges of stealing and laundering.

Table 11: Number of reported offences in 2013–14 and 2014–15

	2013–14 reported offences	2014–15 reported offences
	Finalised figures	At 30 June 2015
Total offences reported	1263	1236
Court convictions	53	23
Court dismissals	0	0
Infringement notices	604	482
Letters of warning	17	12
Caution notices	548	449
No further action	6	10
Pending	27	259
Withdrawn	11	1
Restitution		
Total court fines	\$31,350	\$16,400
Total court costs	\$3641.60	\$1202.50
Infringement penalties	\$77,360	\$58,755

2013–14 figures have been finalised since the 2013–14 Yearbook was published.

Table 12: Offences under the *Wildlife and Conservation Act 1950* and Regulations that occurred in 2014–15

Charge	Reported offences	Convictions	Fines \$	Costs \$	Dismissed	Withdrawn	Letter of warning	Caution notice	No further action	Pending
<i>Wildlife Conservation Act 1950</i>										
Illegal taking or possession of protected fauna	260	20	13,500	900.90			3	5	8	224
Illegal importation, selling or taking for sale of fauna	28						1	19	1	7
Illegal taking of protected flora	3									3
Illegal taking of rare declared flora	6						5		1	
Illegal selling of protected flora	2									2
Offences against wildlife officers										
Failing to comply with licence conditions	40	1	400					31		8
<i>Wildlife Conservation Regulations</i>										
Offences relating to the acquisition, possession, control and disposal of fauna	30	1	500	150.80				24		5
<i>Wildlife Conservation Reptile and Amphibian Regulations</i>										
Offences relating to reptiles and amphibians	10							9		1
Totals	379	22	14,400	1051.70			9	88	10	250

Wildlife Management

Table 13: Offences under the *Conservation and Land Management Act 1984* and Regulations and the *Animal Welfare Act 1929* that occurred in 2014–15

Charge	Reported offences	Convictions	Fines \$	Costs \$	Withdrawn	Infringement notice	Letter of warning	Caution notice	No further action	Pending
<i>Conservation and Land Management Act 1984</i> and Regulations										
Illegal taking or possession of forest produce	12		1200		1	6		5		2
Offences against officers	2									2
Offences relating to marine parks and reserves	1	200								
Offences relating to disease risk areas										
Occupy CALM land	2		200			1		1		
Offences relating to activities on State forest, nature reserves and national parks	835		57,155			474	3	352		6
<i>Animal Welfare Act 2002</i>										
Cruelty to animals	2	1	2000	150.80						1
Total	857	1	60,755	150.80	1	482	3	361		9

Managing system-wide threats

Invasive species control

Western Shield

During 2014–15, the *Western Shield* wildlife recovery program continued to implement broadscale fox and feral cat baiting for native animal conservation. About 3.8 million hectares of conservation reserves and State forest were baited, using more than 1.1 million baits (about 600,000 fox baits and 500,000 feral cat baits). Corporate sponsorship was provided to the program by Alcoa, Tronox and Western Areas Ltd.

A major internal review of the program was finalised in 2014–15. The review highlighted the importance of controlling foxes and feral cats, and the significant in-roads being made to sustain and restore native animal populations in various areas across the State. The program's achievements include at least a 55 per cent reduction in fox abundance in south-west baited areas, and stable or sustained improvement of a number of native animal species populations, including chuditch, quokka and western brush wallaby. Populations of at least 53 threatened mammal and bird species remain in *Western Shield* baited areas. The program has also seen 37 successful translocations of threatened native animal species, contributing to their recovery.

In December 2014, the Department received registration from the Australian Pesticides

and Veterinary Medicines Association for its innovative feral cat bait, *Eradicat*[®]. This will enable further operational trials of *Eradicat*[®] to be undertaken in south-west forest areas, building on information gathered from current trials across select sites in the arid, semi-arid and south coast regions, and provides an opportunity to integrate feral cat baiting with existing fox baiting programs.

The Department contributed to completing the Commonwealth Government's feral cat eradication program being conducted on Christmas Island, which is using the *Eradicat*[®] bait.

In the Pilbara Region, Parks and Wildlife staff continued to implement the *Fortescue Marsh Baiting Plan*. This project is delivering a feral cat control program to the high value conservation area and completed the third year of operation in 2014.

In the South Coast Region, a cat baiting trial (*South Coast Integrated Fauna Recovery Project*) entered its fifth and sixth year in areas, including Cape Arid and Fitzgerald River national parks and its second year in Two Peoples Bay and Mount Manypeaks nature reserves and Waychinicup National Park. The trial aims to test the effectiveness of *Eradicat*[®] in the south-west high rainfall zone, in the habitats of a suite of threatened and priority native animals, including the critically endangered western ground parrot and Gilbert's potoroo. Feral cats and native animal species were monitored as part of this

adaptive management project that is refining methods for long-term operational use of the bait. Results from the trial are beginning to indicate environmental benefits with positive response evident in fauna, such as quenda (*Isoodon obesulus*) in Cape Arid National Park.

In the Wheatbelt Region, work began on an enhanced introduced predator control program at Dryandra Woodland, focused on controlling feral cats to safeguard the future of the wild woylie and numbat populations. This work is combining use of *Eradicat*[®] with existing fox baiting under *Western Shield* as well as undertaking targeted feral animal trapping.

Sponsorship from Tronox has also enabled the start of an operational trial to integrate *Eradicat*[®] with fox control in the northern coastal sand plains. This project is examining the effectiveness of this integrated baiting model in promoting recovery of native animals in this type of environment. Monitoring of both native and introduced animals using new methods, including remote cameras, will also be a key component of the project.

Training in native animal management and the safe and effective use of 1080 baits continued to be provided to Parks and Wildlife staff and volunteers. Departmental staff continued to monitor native animals across *Western Shield* sites and work also continued to establish predator monitoring at some sites.



A Parks and Wildlife officer weighing an animal.
Photo – Rebecca Campbell/Parks and Wildlife



Numbat. Photo – Doug Coughran/
Parks and Wildlife

Wildlife Management

The 1080 bait preference study continued at Bungelup Beach in Cape Range National Park near Exmouth, which supports a significant loggerhead turtle rookery. This study uses three types of baits – *Probait*[®] fox baits, dried meat baits manufactured in Exmouth and egg baits – and monitors uptake using remote cameras. Various techniques, such as tethering baits, were employed to reduce uptake by non-target species.

An *Eradicat*[®] baiting program was initiated in Cape Range National Park with the aim of improving the effectiveness of the existing fox baiting programs and to reduce cat predation on black-flanked rock wallaby, and three species of turtle nesting along the Ningaloo coast. The monitoring program comprised two independent methods: satellite collaring of feral cats and foxes prior to the baiting program, and monitoring of feral cat and fox activity using remote camera stations. The absence of foxes observed during the 2014–15 monitoring could be attributed to the apparent success of *Eradicat*[®] baits in controlling foxes across the broader Cape Range National Park environs.

More information on *Western Shield* is available on the website: www.dpaw.wa.gov.au/management/pests-diseases/westernshield.



Quokkas photographed on a remote-sensing camera. *Photo – Parks and Wildlife*



Fox caught in a camera trap. *Photo – Parks and Wildlife*



Parks and Wildlife officer Rebecca Kay releases a chuditch. *Photo – Rebecca Campbell/Parks and Wildlife*



Captured cane toads. Photo – Parks and Wildlife



Reggie the cane toad detector dog and Parks and Wildlife handler Andrew Rethus. Photo – Parks and Wildlife

State Cane Toad Initiative

Cane toads (*Rhinella marina*) are a declared pest under the *Biosecurity and Agriculture Management Act 2007* (BAM Act). Parks and Wildlife is the lead agency in Western Australia for cane toad management and since 2005 has undertaken a range of actions.

The *Cane Toad Strategy for Western Australia* identifies key actions for the management of cane toads in the State, with a focus on quarantine, research, education, communication and mitigating the impact of this pest animal on WA's native wildlife.

To implement the strategy, the Department engages with the community, including Indigenous ranger groups, and works collaboratively with scientists undertaking research that aligns with the goals of the strategy.

Key activities during 2014–15 included:

- Inventory surveys were conducted in advance of the cane toad frontline in the Kimberley Region to provide information on areas proposed for joint management with traditional owners under the *Kimberley Science and Conservation Strategy*. The surveys involved Aboriginal ranger groups, *Bush Ranger* cadet units, primary school students, volunteers, the Western Australian Museum, universities and Parks and Wildlife staff.

- The cane toad detector dog has been working from freight depots and tourism locations and travelling the Kimberley to promote the 'check your load for a toad' message to help reduce numbers of hitchhiker toads.
- A three-year operational plan is in preparation for the Kimberley islands with a focus on research to reduce breeding success of cane toads on islands and mitigate their impact on native animals.
- More than 20 live cane toad drop-off points were maintained throughout the east Kimberley at various locations, including tourist sites at El Questro Station, Home Valley, Parry's Farm and Purnululu National Park.
- Ongoing support and assistance was provided to cane toad-related research projects. A collaborative project between the Department and the University of Sydney, with the involvement of Balanggarra Rangers, on the Forrest River floodplain has revealed that goannas exposed to small non-lethal toads survived longer when toads invaded their habitats. Work on northern quolls in Mitchell River National Park in the north Kimberley has indicated that they display at least short-term taste aversion learning and further trials are planned to examine how long this may last.
- Databases of sightings and cane toad distribution continued to be maintained, with the Department's cane toad webpage updated regularly.
- Newsletters were produced twice a year and regular contributions were made to the Department's social media pages.
- Cane toad and biodiversity information sessions were presented to schools and community groups using the *Cane Toad Education Manual*.
- Cane toad information brochures, signs, and posters continued to be developed and distributed.
- Media events were organised to raise awareness about cane toad identification and hitchhiker toad risks.
- The Department continued to provide the community with cane toad identification, reporting and sighting services via the Wildcare Helpline, email and phone response. The Department has a rapid response strategy to positively identify and destroy cane toads found in the south-west.

More information on cane toad management is available on the website: www.dpaw.wa.gov.au/management/pests-diseases.

Wildlife Management

Introduced pest animal management

Parks and Wildlife collaborated with the Department of Agriculture and Food WA (DAFWA) and Recognised Biosecurity Groups (RBGs) to implement coordinated broadscale feral donkey, camel, horse, cattle and pig control programs. Fencing of priority biodiversity areas was undertaken in the Kimberley and Pilbara to reduce the impact of these pest animals through exclusion.

Cattle mustering programs were undertaken in Millstream Chichester National Park in the Pilbara Region, with about 150 cattle removed, and in King Leopold Ranges Conservation Park and on Carson River Station in the Kimberley. Aerial culling was also undertaken in Purnululu National Park and the Ord River Regeneration Reserve.

Large feral herbivore control continued at Fortescue Marsh. This partnership with the Pilbara RBG has seen 106 feral donkeys removed and nine VHF telemetry collars fitted to female donkeys. Remote camera monitoring has shown a significant reduction in feral donkey activity near available water. Ten feral horses were fitted with satellite collars giving a greater understanding of feral horse movement patterns, including home ranges. The satellite collar information will be assessed to establish if feral horses are suitable as 'Judas' animals.

The Department continued to support wild dog control efforts by RBGs and the pastoral

industry across the rangelands. The Midwest Region assisted with bait manufacture and distribution on former pastoral leases managed by the Department. The Goldfields and Wheatbelt regions continued to contract licensed pest management technicians and undertake contract management work through the RBGs to manage wild dogs and feral predators on unallocated Crown land and Parks and Wildlife-managed land adjacent to pastoral leases and farmland. The South Coast Region continued to provide support through resource contribution to the Declared Species Groups in Ravensthorpe and Esperance to assist with wild dog control programs, as well as advice on environmental assessment of the State Barrier Fence extension. The Wheatbelt Region provided support to the Eastern Wheatbelt Declared Species Group and the Central Wheatbelt Declared Species Group, in conjunction with DAFWA.

Aerial shooting of feral goats was carried out in national parks and nature reserves in the Midwest Region and an on-ground shooting program in Cape Range National Park removed about 60 goats.

Throughout the year, the Department continued to take part in cooperative management of feral pigs across the South West, Midwest and Warren regions. Feral pig control activities included monitoring, trapping and poisoning. Significant input and support was provided to Southern

Feral Pig Action Group control activities throughout these regions. The South West Region undertook monitoring and trapping of feral pigs at 30 sites covering 20,000ha. Parks and Wildlife's South West and Warren regions contributed to the State NRM-funded feral pig control project managed by South West Catchments Council. Trials to detect feral pigs using a thermal camera mounted on a UAV began but with limited success. Ongoing trials with the Department's thermal camera mounted in a fixed-wing aircraft are planned for 2015–16. The Midwest Region carried out feral pig poisoning

operations using 1080 baits in Lesueur National Park, Badgingarra National Park, Coomallo Nature Reserve, Moresby Range Conservation Park and a number of sites associated with Declared Rare Flora, and liaised with adjacent landowners to ensure coordinated management and to increase the effectiveness of control measures.

The Great Southern District continued to control rabbits by baiting and fencing at sites where threatened flora has been determined to be at risk from grazing by this pest animal.



Feral goat in Kalbarri National Park. *Photo – David Pearson/Parks and Wildlife*

Management of environmental weeds

During 2014–15, work continued on a species-based prioritisation project that aims to prioritise weed species for control in each of the Department's nine regions. The project enables weeds to be assessed based on their invasiveness, impacts, potential and current distribution and feasibility of control. The results from these assessments will also potentially help other land managers.

Of the weed species assessed, 14 species have been identified as a high priority for control as eradication is achievable, and another 181 species identified as a priority for management due to their high environmental impact and rapid invasiveness. As it is not possible to control all infestations of these species, priorities for management will be assessed through the Department's proposed asset-based prioritisation process. This process aims to maximise the efficiency and effectiveness of weed control efforts through a consideration of priority weed species, biodiversity and other values at risk from these weeds and an assessment of available resources, so appropriate management actions can be applied by each region.

The main environmental weeds targeted for management by Parks and Wildlife in 2014–15 included silver wattle (*Acacia dealbata*), Sydney golden wattle (*Acacia longifolia*), ruby dock (*Acetosa vesicaria*), bridal creeper (*Asparagus asparagoides*),

tagasaste (*Chamaecytisus palmensis*), rubber vine (*Cryptostegia grandiflora*), rough tree fern (*Cyathea cooperi*), boxing glove cactus (*Cylindropuntia fulgida* var *mamillata*) and other cactus species, dolichos pea (*Dipogon lignosus*), Paterson's curse (*Echium plantagineum*), Veldt grass (*Ehrharta calycina*), African lovegrass (*Eragrostis curvula*), Geraldton carnation weed (*Euphorbia terracina*), hesperantha (*Hesperantha falcata*), Victorian tea-tree (*Leptospermum laevigatum*), African boxthorn (*Lycium ferocissimum*), ice plant (*Mesembryanthemum* sp.), cape tulip (*Moraea flaccida*), tree tobacco (*Nicotiana glauca*), date palm (*Phoenix dactylifera*), blackberry (*Rubus* sp.), harlequin flower (*Sparaxis bulbifera*), *Tamarix* sp., verbesina (*Verbesina encelioides*), *Watsonia* sp., Bathurst burr (*Xanthium spinosum*) and arum lily (*Zantedeschia aethiopica*).

Across the Kimberley, Parks and Wildlife nature conservation officers and the Miriung-Gajerrong, Yawuru, Bunuba, Willinggin, Balangarra and Wunambal Gaambera Aboriginal native title groups implemented weed control programs for a range of species, including mission grass (*Pennisetum polystachion*), hyptis (*Hyptis suaveolens*), prickly acacia (*Acacia nilotica*), stinking passionflower (*Passiflora foetida*), bellyache bush (*Jatropha gossypifolia*), grader grass (*Themeda quadrivalvis*), mimosa (*Mimosa pigra*), parkinsonia (*Parkinsonia aculeata*), taro (*Colocasia esculenta*), calotrope (*Calotropis procera*),



Parks and Wildlife officer Sandy Benson and Ngurrawaana Ranger Colin Mack weeding in Millstream Chichester National Park. Photo – Peter Nicholas/Parks and Wildlife

gamba grass (*Andropogon gayanus*) and gallons curse (*Cenchrus biflorus*). Rubber vine has been specifically targeted in a collaborative program involving government departments, community and industry groups, pastoralists and members of the public. The *Aquila Project* coordinated by the Friends of the Fitzroy volunteer group and part of the broader *West Kimberley Rubber Vine Eradication Project*, is using members of the public to review aerial photos posted on a website, to locate rubber vine infestations in the Fitzroy River Valley. Parks and Wildlife continued to use *CyberTracker* software on hand-held devices for mapping and recording weed data with great success.

Together with Mount Gibson Mining, Parks and Wildlife funded a research project on stinking passionflower, which was undertaken by CSIRO. Several sites in the Kimberley and at Millstream

Chichester National Park in the Pilbara were monitored for invasion of this weed into natural vegetation. The results to date suggest that that an initial 'lag phase' of invasions is transitioning into a period of rapid expansion. The management implications of these results are diverse and include considerations relating to native wildlife, tourism, mine site rehabilitation and agroforestry.

The long-term date palm control program continued at Millstream Chichester National Park, with the on-ground work undertaken by the Ngurrawaana Rangers. Rangers from the Murujuga Aboriginal Corporation received training in weed identification and began mapping priority weed species in Murujuga National Park, near Karratha, with a strong focus on the distribution of stinking passionflower.

Wildlife Management

Shark Bay District continued to control isolated infestations of *Verbesina encelioides* on South Peron unallocated Crown land and buffel grass (*Cenchrus ciliaris*) on Bernier Island with the intention of eradicating them before they become established.

Parks and Wildlife's Swan Region continued research into environmental weeds invading native plant communities. In spring 2014, field work began as part of a project to revisit 15-year-old floristic plots in seasonal clay-based wetlands in the western Wheatbelt to investigate change over time, including the impacts of weed invasion. The results of a three-year study into appropriate control techniques and the impacts of *Watsonia* invasion on an endangered shrub, *Diplolaena andrewsii* in John Forrest National Park were published and weed management trials commenced in the coastal shrublands on Penguin Island. Implementation of weed management and restoration plans continued at 22 priority sites across the region. Weed management notes on *FloraBase* continued to be updated and two weed management workshops were run for district and regional staff.

As a part of the *Banksia Woodland Restoration Project*, weed management action plans were implemented for 20 bushland areas. Eight species of serious environmental weeds were sprayed in more than 600ha of urban bushland, with a major focus on veldt grass control in 320ha of banksia woodland.

Thirty-one monitoring quadrats were established to investigate the impact of weed management on plant recovery and diversity after fire in banksia woodland.

The Goldfields Region continued to work closely with the Goldfields-Nullarbor Regional Biosecurity Association, Rangelands NRM and DAFWA through a cactus working group to target the eradication of Weeds of National Significance (WoNS) species of cactus within the Great Western Woodlands and Goldfields Region. Parks and Wildlife continued to engage with local governments and the community regarding the control of cactus species, major infestations of which are outside lands managed by the Department. In 2014–15, the focus was on areas around Kalgoorlie and in the Shire of Menzies.

Restoration continued in previously infested sites along the Warren and Donnelly rivers where blackberry had declined. This work is being undertaken by the Warren Catchments Council, in conjunction with Parks and Wildlife and CSIRO, with funds from the Federal Biodiversity Fund.

During 2014–15, the Department's South Coast Region continued work in partnership with the Friends of the Porongurup Range to control weeds in and around Porongurup National Park. The long-running project targeted species such as blackberry, red valerian (*Centranthus ruber*), dolichus pea and introduced acacias. Weed control also occurred in key reserves near Albany and

Esperance, including Victorian tea tree in Warrenup Nature Reserve in partnership with South Coast NRM.

More information on control of invasive plant species is available on the website: www.dpaw.wa.gov.au/management/pests-diseases.

Plant disease management

The Department worked on a range of plant disease management projects and initiatives in 2014–15. The ability to effectively mitigate the risks of *Phytophthora* dieback (a plant disease caused by the soil-borne pathogen *Phytophthora cinnamomi*) to our unique environment is greatly enhanced with accurate and current information on where the pathogen already occurs in the landscape. *Phytophthora Dieback Interpreters* are uniquely skilled and trained to map occurrences of *P. cinnamomi*. In September 2014, the Department's Ecosystem Health Branch launched a new system for registering departmental and private sector dieback interpreters and monitoring standards of interpretation. This system is ensuring that consistent, high-quality information on disease occurrence is available to land managers inside and outside the department.

At 30 June 2015, a new half-day training course developed and delivered by the Department had trained 500 departmental personnel to achieve *Green Card Level 1: Awareness and Basic Phytophthora Dieback Hygiene*.



Collecting seed of the critically endangered *Banksia anatonata* in the Stirling Range.
Photo – Sarah Barrett/Parks and Wildlife

Parks and Wildlife's Vegetation Health Service (VHS) analyses soil, plant and water samples for presence of *Phytophthora* spp., and in 2014–15 processed more than 1900 samples collected by the Department's disease interpreters, private contractors and land managers from across the State's south-west. In addition to *Phytophthora cinnamomi*, seven other *Phytophthora* species were identified in association with dying native flora. Two of these were reported as new occurrences for WA, under provisions of the BAM Act. The VHS continued to work in partnership with the Centre for Phytophthora Science and Management at Murdoch University to DNA-sequence recent and historical WA isolates from the VHS culture collection.

Parks and Wildlife collaboration continued on the *Western Australian State Phytophthora Dieback Management and Investment Framework*, funded by State NRM and administered by South Coast Natural Resource Management Inc. The project has identified an indicative top 100 priority protection areas. In 2014–15, the focus was on reviewing and endorsing plans for on-grounds works for eight of these areas.

Treatment of critically endangered flora and ecological communities with phosphite continued. This systemic compound has been shown to protect susceptible plants from the impacts of *P. cinnamomi*. Aerial phosphite spraying treated the EPBC

Act-listed Eastern Stirling Range Montane Heath and Thicket TEC, Shrublands on Southern Swan Coastal Plain Ironstones TEC near Busselton, and the Montane Mallee Thicket of the Stirling Range TEC.

Innovative *Phytophthora* control techniques continued to be employed at two infestations in Fitzgerald River National Park in an effort to contain further spread of *P. cinnamomi*. These areas continue to be monitored by the South Coast Region.

Myrtle rust

Myrtle rust (also known as eucalyptus and guava rust) is a fungus of South American origin that arrived in New South Wales in 2010 and has since rapidly spread along the eastern seaboard and into northern Australia. It affects plants from the Myrtaceae family, of which more than 1500 species occur in WA. By June 2015, myrtle rust had been detected in all states and territories except South Australia and WA.

In March 2014, the Department developed a plan, aligned with the DAFWA *State Contingency Plan*, in preparation for a myrtle rust incursion onto lands managed by Parks and Wildlife. Departmental personnel have received training to ensure they are aware of the threat, can recognise the symptoms and know how to respond if myrtle rust is detected. Updates on myrtle rust distribution and spread are regularly provided.

Altered hydrology and salinity

Key activities undertaken under the *Natural Diversity Recovery Catchment Program* in 2014–15 included:

- At Buntine-Marchagee in the Midwest Region, work to protect important biological assets continued. During the year, about 2000 seedlings of a local provenance species (*Eucalyptus pyriformis*) were added to supplement the already extensive revegetation program at the Hodgsons' fresh-brackish wetland complex. Direct seeding trials were also completed to introduce species that are difficult to propagate, which will further add to the area's species diversity. Revegetation was targeted at water management and over the past six years the survival and continued growth of revegetation has been very good in spite of successive years of below-average rainfall. Results from a drilling program have been compiled and ongoing monitoring will form the basis for the assessment of the threat of altered hydrology to the biological values associated with the Hodgsons' wetlands.
- In the Drummond catchment in the north-eastern Swan Region, on-ground works were undertaken to address the threat of surface water wash bringing weeds and stubble mulch into the reserve and south-western claypan from heavy summer rainfall events. A trial burn of *Acacia chapmanii* was undertaken to promote population recovery and the effectiveness of this is being monitored. Measures to control feral pigs, which have emerged as a recent management issue, have been put in place with the aim of employing additional control options in 2015–16. Research was completed into the environmental controls on reproduction and recruitment of robin redbreast bush (*Melaleuca lateritia*), an important plant component of the claypan TEC.
- At Lake Bryde in the Wheatbelt, significant progress was made towards developing a draft recovery plan. The catchment has a diverse range of stakeholders, who are represented by a stakeholder group that is regularly consulted as part of the planning process. A Parks and Wildlife advisory group addressed technical aspects of the plan. Recovery actions during the past year included 90,000 seedlings planted on 66ha of public and private land, in partnership with the Department's *Remote Regions Nature Conservation Program*. Monthly and biannual bore monitoring is ongoing, a bore monitoring database and recording tool have been developed and Lake Bryde Natural Diversity Recovery Catchment staff began testing this tool. Once completed landholders will be able to request data from bores on their properties. Vegetation health was assessed across the reserve and observations of the TEC showed a stable population of the lake bed plant

Wildlife Management

Muehlenbeckia in East Lake Bryde and Lake Bryde and improving health of the population in Lakeland Nature Reserve.

- At Toolibin Lake in the Wheatbelt, the recovery catchment planning process is close to completion. Monitoring of catchment hydrology and biodiversity continued with an extensive photo-monitoring program being undertaken. Improvements to the groundwater pumping system on the floor of the lake have continued and 23,000 native seedlings were planted on former agricultural land purchased by the Department at Miller's Block, upslope of Toolibin Lake, to manage surface water flows and connect conservation reserves. Significant maintenance work occurred at the diversion gates to arrest potential soil erosion and scouring from surface flows diverted around the lake.
- In the Lake Warden catchment near Esperance, the effective management of the Lake Wheatfield gravity pipeline saw a continuation of the previous improvements in waterbird numbers and riparian vegetation. The Department continued biannual monitoring of waterbirds across the Lake Warden and Lake Gore Ramsar sites and confirmed the success of managing water levels to maintain a variety of waterbird habitats.

More information on salinity management work conducted in Parks and Wildlife

collaborative projects under the Future Farm Industries Cooperative Research Centre can be found on the website: www.dpaw.wa.gov.au/management/salinity.

Assessment of land and resource use impacts on public reserves and biodiversity conservation assets

During 2014–15, the Department continued its significant role in providing advice to proponents and decision-making authorities on a range of major resource and other development proposals affecting Parks and Wildlife-managed lands and waters, other areas of conservation value and significant species and ecological communities. The aim was to guide the effective management of development projects and activities to maintain or improve nature conservation outcomes for lands and waters managed under the CALM Act and species protected under the WC Act.

This included advice on a range of mining and petroleum exploration and development projects on land managed by the Department, such as the Cyclone Mineral Sands Project in Great Victoria Desert Nature Reserve, seismic survey in Beekeepers Nature Reserve, Ocean Reef marina proposal in Marmion Marine Park, proposed iron ore mining in Mount Manning – Helena-Aurora Ranges Conservation Park, and the Christmas Creek and Cloudbreak iron ore project expansions near Fortescue Marsh, as well as a number of basic raw



Grasstrees in Mount Frankland North National Park. Photo – Peter Nicholas/Parks and Wildlife

material extraction proposals in State forests at Gnangara. The Department also provided significant input to around 2000 land-use proposals, including town planning schemes, structure plans, subdivisions, development applications and native vegetation clearing permits across the State. The Goldfields Region hosted several visits to the Helena-Aurora range area by interested groups.

The Department also facilitated decision-making processes under the *Fish Resources Management Act 1994* relating to an expansion of Ocean Grown Abalone Pty Ltd's greenlip abalone aquaculture operation in Ngari Capes Marine Park.

Parks and Wildlife provided support in implementing the responsibilities of the Minister for Environment, the Conservation Commission and the Marine Parks and Reserves Authority in considering and

providing advice under sections 24 and 24A of the *Mining Act 1978* and section 15A of the *Petroleum and Geothermal Energy Resources Act 1967*, on access to lands and waters managed under the CALM Act. The Department provided advice and recommendations on whether, and under what conditions, access (mining tenements and 'entry onto land') to areas of CALM Act-managed lands and waters should be granted.

Parks and Wildlife also fulfilled various responsibilities for advice and decision-making under the provisions of State Agreement Acts for resource development projects affecting land managed by the Department, in particular bauxite mining and rehabilitation activities in State forests of the south-west by Alcoa and Worsley Alumina and coal mining and rehabilitation activities by Yancoal Australia and Lanco Griffin Coal.

Building biodiversity knowledge

Biological inventory

Terrestrial inventory

The Kimberley Island Biodiversity Survey was completed with the final publication of the hardback volume *'Biodiversity Values on Selected Kimberley Islands, Western Australia'* (Records of the Western Australian Museum, Supplement 81). The final publication of the Pilbara Biological Survey is close to completion, with a further chapter published on the riparian flora and plant communities (Records of the Western Australian Museum, Part B of Supplement 78). The final chapter examining compositional patterns of the terrestrial fauna, and wetland flora and fauna, as well as conservation reserve representativeness, was recently accepted for publication.

In partnership with the Balanggarra and Dambimangari traditional owners, Parks and Wildlife completed biodiversity surveys of a further three islands off the north Kimberley coast, and an adjacent mainland site in the Berkeley subregion. A total of 131 vertebrate species (24 mammals, 29 reptiles, five frogs and 73 birds) and 359 plant taxa were detected on the islands, as well as 65 vertebrates and 115 plant taxa at the mainland location. Results further highlighted the importance of the islands as conservation refuges, with new populations of threatened mammals and many species endemic to the north Kimberley discovered. Surveys were

funded through the *Kimberley Science and Conservation Strategy*.

Through a partnership with the Terrestrial Ecosystem Research Network (TERN), 38 AusPlots Rangeland sites were established and sampled in the Coolgardie, Pilbara and Little Sandy Desert bioregions. Thirty of these sites were associated with the Great Western Woodlands Supersite at Credo or the South Western Australian Transitional Transect, which extends from Mount Roe in the Warren bioregion to Wanjarri Nature Reserve in the Murchison. Many plant species of scientific and conservation interest were recorded and a large volume of soil and vegetation data was collected, analysed and provided to the TERN Aekos facility and the National Soils Archive.

With support from Fortescue and BHP Billiton Iron Ore, the field data collection phase of the Fortescue Marsh floristic and vegetation mapping project was completed. One hundred and twenty-eight permanent floristic plots were sampled on the marsh. Subsequent identification of plant collections has documented 360 taxa, including two new species, new populations for 11 priority taxa and recorded major range extensions for 19 taxa. The survey has also documented unique plant communities on gypsum dunes not previously known from the marsh. The final phase of the project is to complete a vegetation map to underpin conservation planning for this nationally important wetland.

Aerial and ground surveys were completed on 50 island nature reserves under the *Pilbara Islands Project*, which is funded by a Wheatstone Project offset. Data collected included marine turtle and seabird nesting, weed distribution, plant species (specimens from nine islands were lodged with the WA Herbarium), and the intensity and nature of public visitation. Pale field rat (*Rattus tunneyi*) and Lakeland Downs mouse (*Leggadina lakedownensis*) were recorded on some islands. No exotic ants were recorded and minimal visitation impacts were observed. Islands located close to the mainland appear to be at risk from invasive species, such as parkinsonia, and fox prints were detected on Tent Island in Exmouth Gulf. Collaboration with James Cook University, UWA and the WA Museum extended the surveys to include cultural and archaeological aspects.

A biological survey was undertaken in the Peterswald map sheet area located in the northern Great Victoria Desert. This is one of a number of map sheets identified by the Federal Government as areas where little biodiversity information exists. A total of 64 terrestrial vertebrate species were identified, including 12 native and four introduced mammals along with 48 reptiles. Fifty-eight birds were also recorded. This work continues to resolve the large gaps that exist in our knowledge of species distributions, status and patterns throughout the State.

A project to improve the use of camera traps as a survey and monitoring tool is underway at Dryandra Woodland. This is the first detailed examination of the application of camera traps for monitoring mammal communities undertaken by the Department and has so far resulted in recommendations regarding camera placement, camera models, settings and software. Along with refining this methodology, the project has produced a baseline detection index and an indication of habitat use for a number of significant threatened mammals in Dryandra, as well as for feral cats and foxes.

The Department continued to undertake biodiversity surveys ahead of the cane toad frontline. Six surveys were completed in conjunction with Bunuba, Wilinggin and Balanggarra traditional owners.

Wetland vegetation communities and amphibians were surveyed at a range of wetlands along the Jurien coast. These data will inform conservation planning in reserves such as Beekeepers Nature Reserve, including assessment of gypsum mining proposals and sustainable water resource planning.

Wildlife Management

The Department continued to take the lead in the coordination of biotic and abiotic data for wetlands, including mapping wetland type, extent and distribution in the landscape using the geomorphic wetland classification system. During the year, the Department assessed the accuracy of the wetlands mapping layer for the Swan Coastal Plain (Geomorphic Wetlands Swan Coastal Plain dataset) at 14 sites over the 364,960ha of the dataset.

Surveys of threatened and priority flora, native animals and ecological communities were undertaken or coordinated by the Department. Details are provided in the threatened species and ecological communities recovery section of this publication.

Information gathered through Biodiversity Audit II on threatened and priority plants and animals, and threatened and priority ecological communities has been compiled into a database, which is now available for Parks and Wildlife staff to inform management planning and action. The audit information provides a snapshot in time of the condition of biodiversity assets, the pressures they are subject to, management effectiveness and future management requirements for ecosystems across the 54 Interim Biogeographic Regionalisation for Australia subregions of WA. Parks and Wildlife staff can now access updated information on threatened plants and animals and ecological communities in each subregion and Statewide.

Work continued on developing a consistent approach to reporting vegetation statistics across the State. Statewide statistics are available from several different vegetation mapping products, including the Regional Forest Agreement mapping, the Statewide Beard-Hopkins mapping, and detailed mapping on the Swan Coastal Plain. A review of the Swan Coastal Plain mapping is being undertaken to provide better integration of this mapping product with the Regional Forest Agreement mapping, and enable the production of a compiled set of vegetation statistics using the most accurate and up-to-date data available. In the past 12 months, the review of the southern Swan Coastal Plain was completed and mapping products will be released over the coming months.

Marine inventory

The Department continued to focus on the development and implementation of the *Western Australian Marine Monitoring Program* (WAMMP), which informs the adaptive management of WA's marine parks and reserves and threatened marine fauna. WAMMP works with the Department's regional marine management staff, and external collaborators like the Department of Fisheries, Australian Institute of Marine Science (AIMS) and CSIRO, to measure trends in the condition of key marine biodiversity assets, the human pressures acting on them and the Department's management response. During 2014–15,

fieldwork concentrated on Ngari Capes, Shark Bay, Marmion, Shoalwater Islands, Ningaloo and the Barrow/Montebello islands marine reserves to monitor seagrasses, algae, corals and fish communities. WAMMP also now hosts a marine scientist focusing on the implementation of monitoring in proposed and established marine reserves in the State's Kimberley region.

The Department continued to host the node leadership and science coordination of the Western Australian Marine Science Institution's (WAMSI's) \$12 million *Kimberley Marine Research Program*. This research initiative will inform and support the planning and management of new marine parks and reserves in the Kimberley, through 25 integrated science projects, supported by an estimated \$18 million co-investment by WAMSI partners. The research is providing new knowledge on marine habitats, biodiversity and ecological processes across the Kimberley, including information on human use and values, with final findings planned for publication in 2017. Parks and Wildlife staff also work on specific projects, including a survey of marine turtle nesting beaches in partnership with traditional owners and research into key ecological processes associated with fish and coral recruitment.

In late 2014, WAMMP provided updated synthesis reports of long-term monitoring for WA's marine parks and reserves extending

from Walpole and Nornalup Inlets Marine Park on the south coast to Lalang-garram / Camden Sound Marine Park in the Kimberley.

The Department's marine scientists continued to implement diverse research projects that address key management-related knowledge gaps in WA's marine parks and reserves. These include a collaborative study with The Australian National University, AIMS and UWA to examine the ecological significance of lagoonal macro-algae at Ningaloo Marine Park that has provided new knowledge on the role of algae as a key habitat for juvenile fish in coral reef ecosystems. Fieldwork was also undertaken with collaborators from UWA and the WA Herbarium to determine the diversity and distribution of poorly understood intertidal reef communities at Ngari Capes Marine Park, where 16 sites were surveyed during the summer of 2015. In the south-west, research on spatial and temporal patterns in the distribution of benthic invertebrate fauna of the Walpole and Nornalup Inlets Marine Park undertaken in collaboration with Edith Cowan University concluded, with remaining work focused on data analysis and publication. The project revealed a diverse faunal assemblage, while additional surveys identified 49 algal species in the same marine park. This baseline data for invertebrates and algae can now be

used to measure change through ongoing monitoring and reporting.

Other research on the structure of mangrove communities in Shark Bay Marine Park and intertidal reef communities in Marmion and Shoalwater Islands marine parks was prepared for publication. More than 100 invertebrate species, predominantly molluscs and echinoderms, were identified on intertidal reefs of metropolitan marine parks, as well as more than 110 species of algae. These studies are being used to establish suitable indicator species and a baseline assessment of reef condition for ongoing monitoring, evaluation and reporting.

Implementation of research and monitoring associated with industry offset programs continued during 2014–15. The *North West Shelf Flatback Turtle Conservation Program* funded by a Gorgon Project offset undertook research to investigate acoustic tracking of hatchlings in an altered light environment, the impact of marine debris on turtles in northern Australian waters and the impact of climate change on marine turtle incubation. Additional work focused on assessing the impacts of fox predation on turtle nests at Mundabullangana Station, near Port Hedland, and assisting with monitoring flatback turtles at Eighty Mile Beach Marine Park.

Research undertaken under a Wheatstone Project offset involved three boat-based

field trips and an aerial survey to determine the abundance and distribution of dolphins in near-shore Pilbara waters. Fieldwork was also conducted at Depuch Island, waters near Onslow, Exmouth Gulf and Shark Bay as part of a regional-scale study of the connectivity and recovery potential of Pilbara marine ecosystems following natural and human-induced disturbance, to improve the understanding of marine flora and fauna in the Pilbara region. This included identifying critical habitat for humpback whales, dugong and inshore dolphins and the development of a threatened species information and protection program to inform improved conservation management.

A review of historical research relevant to management of the proposed Dampier Archipelago marine reserves was completed during 2014–15 as part of a Pluto offset. A multi-faceted research and monitoring program, also funded through a Pluto offset, is nearing completion and will provide information to support improved management of the marine ecosystems of the Dampier Archipelago and the associated pressures that result from increased development. Another Pluto offset saw the start of long-term monitoring in the proposed marine reserves and planning was undertaken to establish a number of management-related marine ecological research projects that will focus on key



Oyster Stacks, Ningaloo Marine Park. *Photo – Peter Nicholas/Parks and Wildlife*

habitats and communities, ecological processes and large marine fauna.



Parks and Wildlife scientist Andrew Halford undertakes genetic sampling of a small crocodile. *Photo – Daniel Barrow/Parks and Wildlife*

Wildlife Management

During 2014–15, collaborations were continued or established with WA-based marine science research programs that link to Departmental management priorities, including the Pilbara Marine Conservation Partnership, which is led by CSIRO and UWA and undertakes research on key marine habitats, species and ecological processes and how they respond to environmental pressures at a regional scale. Collaborations were also continued with Apache Corporation and were established with AIMS to study coral in Ningaloo Marine Park and the \$5 million CSIRO/BHP Billiton *Ningaloo Outlook Project*.

Taxonomy and biotic collection management

The number of plant specimens held at the Western Australian Herbarium increased by 1.16 per cent (a net increase of 8668 specimens), bringing the total number of specimens held to 759,797.

At 30 June 2015, the collection at the WA Herbarium comprised specimens from all major groups of plants, algae, mosses, lichens and fungi (Table 11).

During the year, 484 specimens were loaned to other institutions and 115 specimens were received on loan from other herbaria. The WA Herbarium forwarded 1222 specimens to and received 1137 exchange specimens from other Australian and international herbaria.

The reference herbarium of vascular plants, which had 14,775 specimens representing 11,702 taxa, was used by 1108 visitors during the year.

WA Herbarium specimen database

Records of all specimens incorporated in the WA Herbarium are entered into the WA Herbarium specimen database, WAHerb. During the year 8732 specimen records were added to WAHerb, including 961 priority flora and 211 threatened flora. The total collection of priority and threatened flora comprised 48,091 specimens.

Table 14: Number of specimens in different taxonomic groups in the WA Herbarium collection.

Taxonomic Group	Number of specimens		Increase since June 2014	
	(June 2015)	Number	Percentage	
Myxomycetes	942	31	3.4	
Fungi	25,381	1301	5.4	
Lichens	18,078	125	0.7	
Algae	23,500	72	0.31	
Liverwort and hornworts	2108	1	0.05	
Mosses	6913	7	0.1	
Ferns and fern allies	3752	36	0.97	
Gymnosperms	2068	11	0.54	
Flowering plants	677,055	7148	1.07	
Total	759,797	8732	1.16	



Angianthus globuliformi, the 10,000th known species to be named in the Western Australia's native plant species record. Photo – Mike Lyons/Parks and Wildlife

Fire and biodiversity research projects

Parks and Wildlife partnered with the Biodiversity Fund, Charles Darwin University (CDU) and Australian National University to investigate the impacts of fire regimes on breeding success of the Gouldian finch (*Erythrura gouldiae*) in the Kimberley. Gouldian finches have been observed to abandon breeding sites that are burnt too often or too hot, in the year following a fire. This joint project is looking at whether finch declines are related to reduced sorghum seed quality due to impacts of fires on soil nutrient status. Detailed spatial fire maps derived from GIS remote sensing imagery (2006–15) were used to stratify seed collections across the full fire frequency gradient to look at effects of fire on seed quality. A burning experiment was also established to test for effects of fires of differing intensity on seed availability. Finch feeding experiments will link seed quality and fire frequency with feeding preferences of the birds.

A joint Parks and Wildlife, Melbourne University and CDU project has been initiated to investigate the role of fire mosaics and tree hollow distributions in determining abundance patterns among threatened arboreal mammals. This project is being undertaken in the north Kimberley and the Northern Territory (NT) in conjunction with the *Kimberley Science and Conservation Strategy* and NT monitoring programs. GIS techniques using remote sensed fire data and

on-ground tree-hollow surveys will be used to link fire with mammal distributions. Addition of artificial nest boxes will also be used to test for nest hollow limitations in areas with higher fire frequency and lower mammal abundance.

The Department's Central Wheatbelt District provided assistance for the Wongan Hills State NRM funded threatened flora fire management project, which included collecting seed from critically endangered and endangered plant species, analysing soil seed banks, and quantifying and testing the viability of canopy-stored seed from common serotinous species under threat of becoming locally extinct in long unburnt areas. The project is also testing the viability of old seed collections of common species stored under less than ideal conditions to gain some understanding of potential seed bank longevity of threatened species in the same genera.

The adaptive management project continued in Quarram Nature Reserve in the Warren Region, with the aim of protecting and promoting the structure and ecological integrity of a native grassland PEC through the introduction of experimental fire. It is believed the existing infrequent fire regime has promoted the encroachment of shrubs into the PEC by allowing them additional time to mature and store large amounts of seed in the soil, and then rapidly out compete grasses. Two monitoring plots have been established in the PEC; the first area to be exposed to



Containment line at a fire burning at Purnululu National Park. Photo – Parks and Wildlife

fire on a two to three-year rotation, and the second to be exposed to a 'normal' six to eight-year rotation. Fences were erected around half of the plots, to exclude native herbivore grazing and determine the impact of post fire grazing by herbivores in grasslands. The plots are monitored annually during the flowering period, recording flora species and an estimate of abundance. A prescribed burn was undertaken in 2014–15 and follow up monitoring is planned to determine the success of the trial.

More information on fire and the environment is available on website: www.dpaw.wa.gov.au/management/fire/fire-and-the-environment.

Wildlife Management

Information and data management

NatureMap provides access to high-quality biodiversity data through an internal web portal. In 2014–15, the focus on historical regional surveys continued, with the addition of invertebrate and waterbird data from 16 aquatic projects and over 20 years of survey. Other new datasets included a long-term Goldfields fauna survey, quenda community survey and Pilbara threatened fauna. New theme-based content included a summary of findings on vegetation response to fire within the Great Western Woodlands. Occurrence records now total around 3.4 million, an increase during the year of 207,840. Industry and private individuals continue to dominate user registrations for access to *NatureMap*, with total registrations increasing by 12 per cent to 1953.

Redevelopment of the Fauna File database, used to manage native animal survey and monitoring data, continued. The upgraded system will make information easier to access and improve analysis and reporting capacity.

The Department began developing a survey database, BioSys, starting with data from the Landscape Conservation Initiative undertaken under the *Kimberley Science and Conservation Strategy*.

Encouraging public understanding and support for biodiversity conservation

The Credo Field Study Centre and Supersite near Kalgoorlie, which opened in October 2013, continued to be used for research and

seminars. The focus of the research and Supersite is the ‘OzFlux’ climate station at Credo former station that will monitor the energy, water and carbon balance of mature eucalypt woodland. The Supersite also links with the ‘AusCover’ initiative of TERN (led in WA by Curtin University), that develops calibrated and value-added remote-sensing products using ground-based measurements in the Great Western Woodlands and other supersites.

The Department continued to work with the Goldfields Land and Sea Council in the Kalgoorlie area, providing casual employment opportunities for Aboriginal rangers during bushfire mitigation operations, cactus control and reserve management activities.

In the Kimberley, more than 200 traditional owners were engaged in on-country land management works and training and over 63 casual fee-for-service jobs were created for Aboriginal people under the *Kimberley Science and Conservation Strategy*. Biological surveys, weed control and fire management programs were undertaken.

The Pilbara Region continued to work in partnership with Rangelands NRM and Greening Australia to undertake activities with landscape-scale benefit for the Pilbara Corridors project. This five-year project is funded through the Federal Government’s Biodiversity Fund. The project is a collaboration with people in the Fortescue River catchment of the Pilbara region (pastoral

and mining land managers and the Aboriginal community) through shared knowledge and best practice. It focuses on landscape-scale activities that connect across management boundaries providing coordinated responses to biodiversity threats, including coordinated fire management, and mitigating the spread of invasive weeds and feral animals through coordinated mapping, data management and targeted on-ground control.

Provision of biodiversity conservation support and advice for private land

Roadside conservation

Parks and Wildlife’s administration of the Roadside Conservation Committee (RCC) continued, with funding support from Main Roads WA. The RCC seeks to facilitate best practice management of remnant vegetation in transport corridors through raising awareness, liaison and cooperation. The RCC met four times during 2014–15.

During the year the RCC:

- delivered training workshops on best practice roadside vegetation management for senior staff and work crews of the shires of Williams, Mukinbudin, Kellerberrin, Cranbrook and Pingelly, and similar training for a business contracted by a range of local governments for roadside vegetation control
- conducted roadside vegetation surveys in the shires of Kalamunda and Cranbrook, including training volunteers in survey and mapping techniques

- in conjunction with Parks and Wildlife’s Geographic Information Systems (GIS) Branch, used the results of roadside vegetation surveys to develop roadside conservation value maps and an accompanying report for the shires of Cranbrook and Kalamunda
- distributed signs for eight new Flora Roads declared by two local governments on the recommendation of the RCC
- contributed significantly to a group addressing the decline of a large number of trees in rail corridor vegetation
- undertook a range of activities to raise awareness of roadside conservation and engage with stakeholders, including presenting a display at the WA Local Government Association’s Local Government Convention, and speaking at two public forums about RCC’s role in addressing roadside weed management
- improved public access to RCC’s conservation value mapping data through the Western Australian Local Government Association’s Environmental Planning Tool (an online spatial data viewer used by many local governments). This has made data on weeds and habitat values available through a GIS application for the first time
- prepared several publications on a range of topics relating to roadside vegetation management

- prepared and distributed a publication about the Ministerially-endorsed Roadside Environmental Weeds List
- continued to respond to enquiries and concerns from local governments and individuals regarding roadside conservation matters.

More information about roadside conservation and the RCC is available on the website: www.dpaw.wa.gov.au/management/off-reserve-conservation/roadside-conservation.

Healthy Wetland Habitats

Healthy Wetland Habitats is a voluntary off-reserve conservation program that provides technical and financial assistance to private land managers for the management of wetlands of high conservation value on the Swan Coastal Plain, funded through a Main Roads WA environmental offset. Management action planning and funding of up to \$10,000 are offered to eligible landholders. Since the program started in 2006–07, 90 expressions of interest have been received and 23 agreements signed. Under these agreements, landholders have collectively committed to revegetation works on 45ha of wetland, weeding on 139ha of wetland and the installation of 4.8km of fencing to protect wetlands from stock.

A voluntary management agreement for the Waterbird Conservation Group to assist in conservation management of Folly and Maramanup pools near Baldivis was finalised and funding was provided to purchase

volunteer insurance to conduct restoration activities, a weed spray unit and the chemical herbicide to control weed infestations, including kikuyu (*Cenchrus clandestinus*), couch grass, *Lotus* spp., *Allium* spp. and common fig (*Ficus carica*).

Two draft voluntary management agreements were prepared in 2014–15 for the management of a large seasonally inundated wetland on a property on the Gingin Brook, which is habitat for the threatened freshwater mussel, *Westralunio carteri*, and a 13ha seasonally inundated wetland in the Shire of Capel. The latter is listed under the Directory of Important Wetlands of Australia for supporting roosting and refuge sites for populations of migratory shorebirds listed under international migratory bird agreements.

More information about *Healthy Wetland Habitats* is available on the website: www.dpaw.wa.gov.au/management/off-reserve-conservation.

Urban Nature

The *Urban Nature* program provides technical advice and on-ground support to land managers working to protect, manage and restore biodiversity in the Swan Region and beyond.

Working with more than 76 stakeholders from community groups, private landholders, local government, State agencies and universities, *Urban Nature* conducted 105 on-ground activities to facilitate best-practice bushland

management and provided technical advice on 196 occasions. Much of the work involved adaptive management and research trials, and liaison with land managers to implement the results of the trials in 20 high-priority sites.

Technical support continued for managers of clay-based wetlands TECs, with an annual workshop and field day at Bandicoot Brook Reserve, Waroona. In spring 2014, work commenced to gain an understanding of change over time in clay-based wetlands on the Darling Plateau and address management implications through relocating and rescoring 10 floristic plots established in the early 1990s.

Training and technical support for bushland management included six workshops and field days, nine lunchtime seminars, 15 presentations, four newsletter articles, two reports, an abstract and two scientific publications. About 1900 copies of the quarterly newsletter *Bushland News* were distributed to support community involvement in bushland conservation and management.

Work with the Friends of the Shoalwater Islands Marine Park continued on the restoration of plant communities on Penguin Island and in 2014, populations of the Australian hollyhock (*Malva preissiana*) were re-established through a series of direct seeding trials. Endemic to offshore islands, the Australian hollyhock became extinct from the island in the 1970s. Weed management trials to facilitate the recovery

of the threatened native wild rose (*Diplolaena andrewsii*) across its range on public and private lands continued. Work continued with the Lowlands Conservation Committee on the development of interim management guidelines for the Lowlands *Bush Forever* site.

Parks and Wildlife is coordinating the *Perth Banksia Woodland Community Restoration Grants* program to support community efforts to restore and manage banksia woodland. A total of \$300,000 was awarded to 20 community conservation projects, which will take place over a 28-month period ending in September 2016.

Urban Nature launched the *Find a Conservation Group* web application (www.dpaw.wa.gov.au/find-a-conservation-group) to help people locate and get in touch with groups actively working to protect and manage bushland in their local area. It takes the form of a searchable Google map and will work on a computer, tablet or smartphone. The app is interactive and easily updatable and currently includes 152 groups which, in combination, work to conserve and manage 32,000ha of bushland, wetlands and natural areas across the Swan Region.

More information about the *Urban Nature* program and a list of grant recipients are available on the website: www.dpaw.wa.gov.au/management/off-reserve-conservation/urban-nature.

Wildlife Management

Land for Wildlife

The *Land for Wildlife* (LFW) program is a non-binding voluntary management agreement between the Department and private land managers. A total of 2046 properties are registered in the program. During 2014–15, 45 new properties were registered with LFW and at 30 June 2015, the total area of LFW sites was 284,473ha. The decrease of around 50,000ha from 2013–14 was largely accounted for by the transfer of a property from LFW into Government ownership.

Parks and Wildlife staff visited 65 properties, of which 44 were new properties, and 21 were formally revisited for stewardship matters. During these visits, staff recorded 20 occurrences of rare or threatened native animals, flora or ecological communities.

LFW organised five displays at agricultural shows or similar events, and gave 30 talks at workshops, seminars, schools or other groups. Four editions of *Western Wildlife* were produced. LFW staff contributed 10 articles to print media and gave two radio interviews.

During 2014–15, the operating model for LFW was reviewed to focus on more efficient delivery and greater integration with other off-reserve conservation programs. The Department will continue to provide central coordination of the program and is investigating options for a community partnership arrangement for delivery of regional engagement.

More information about LFW is available on the Parks and Wildlife website: www.dpaw.wa.gov.au/management/landforwildlife.

Nature Conservation Covenants

The *Nature Conservation Covenant* program assists private landowners with the conservation of bushland of high nature conservation value by placing a protective covenant on the land's title, and providing management advice and assistance through incentives and a stewardship program.

At 30 June 2015, 186 covenants had been cumulatively established over 240 titles and 20,224ha of land, which support several threatened species and ecological communities, as well as wetlands (including Ramsar-listed wetlands), *Bush Forever* sites and registered Aboriginal sites. A further 44 covenants were in negotiation.

Since 2014, the majority of covenants prepared and registered by the Department's covenant program have been as a result of a subdivision condition. The south-west of WA has been a large focus of the covenants being put forward and continues to be a key focus area.

More information about the *Nature Conservation Covenant* program is available on the website: www.dpaw.wa.gov.au/management/off-reserve-conservation/nature-conservation-covenant-program.

Animal ethics

The *Animal Welfare Act 2002* prohibits the use of animals for scientific purposes without a licence issued under the provisions of the Act. The Department holds a licence to use animals for scientific purposes and, as such, staff in the Department are required to comply with licence conditions and abide by the *Australian Code of Practice for the Care and Use of Animals for Scientific Purposes, 8th Edition, 2013*. Under the code, the Department has operated an Animal Ethics Committee since 1990 to ensure that all staff involved in any aspect of the care and use of animals for scientific purposes are aware of, and act in accordance with, the code, which promotes the ethical, humane and responsible care and use of animals.

In 2014–15, the Animal Ethics Committee comprised 11 members made up of departmental staff and external individuals, including veterinarians, scientists, those with a commitment to the welfare of animals and community members. The Animal Ethics Committee met six times to review project documentation. Applications are assessed by the Animal Ethics Committee using the principles set out in the Code of the three Rs: reduction, refinement and replacement.

The Animal Ethics Committee assessed and approved more than 300 items in 2014–15, consisting of new applications, amendments to existing projects, renewals for existing projects, annual reports and adverse event

reports. Active projects covered the following broad areas of research (in order of number of projects): native animal monitoring, general research, translocations, surveys, education, feral animal control research and marine research.

The Department's Animal Ethics Committee also assesses projects on behalf of the Centre for Whale Research, Australian Wildlife Conservancy, WA Museum and the Federal Department of Agriculture. It has memoranda of understanding with the following institutions for jointly managed projects: The University of Western Australia, Murdoch University, Edith Cowan University, The University of Queensland and James Cook University.

In order to ensure conditions of licences are being adhered to, members of the Animal Ethics Committee also conduct periodic inspections of physical facilities for the care and use of animals. Currently, there are nine animal housing facilities approved by the Animal Ethics Committee, although not all currently contain animals. During 2014–15 inspections were carried out at four of these facilities.



Karijini National Park. *Photo – Conservation Commission*

Highlight

Surveying the islands of the Kimberley



Islands in the Buccaneer Archipelago. *Photo – Mark Cowan/Parks and Wildlife*



A survey team sets traps on Long Island, an island in the Buccaneer Archipelago.
Photo – David Pearson/Parks and Wildlife



Boronia wilsonii, a species that grows on sandstone outcrops. Photo – Mike Lyons/Parks and Wildlife



A magnificent green tree frog recorded during a survey of Augustus Island.
Photo – Mark Cowan/Parks and Wildlife

Years of research on the unique islands of the Kimberley has highlighted a wealth of biodiversity values and resulted in a new book, *Biodiversity values on selected Kimberley islands*, that will help inform planning and management decisions into the future.

Prior to 2007 the biological values of many of the remote and spectacular Kimberley islands remained unknown.

That changed when scientists from Parks of Wildlife and the Western Australian Museum teamed up with the Balangarra, Uunguu, Dambimangari, Mayala and Bardi-Jawi traditional owners and began surveying these islands.

The Kimberley Island Biodiversity Survey, which began in 2007, has doubled knowledge of existing species on a number of islands and provided the first-ever data on seven other islands and island populations of many vertebrates were discovered, including three endangered mammals.

The results from the surveys on 24 islands were collated in 10 scientific papers, which ultimately became the book, documenting plant and animal species believed to be at risk from threats, such as toxic cane toads, existing on the Kimberley mainland.

The papers describe island biogeographic patterns for each of the plant or animal groups that were surveyed, while another paper details Aboriginal connections, values and knowledge of the Kimberley islands.

The final paper in the book integrates the biological data obtained during the surveys to identify common biogeographic patterns among the plant and animal groups, to help provide a basis for conservation priorities for the surveyed islands.

With a few exceptions, the islands have remained almost free of invasive species and are less altered by fire than the adjacent mainland, but this remote coastal region has seen increasing human activity in recent years, bringing a range of potential risks to its natural values.

Biodiversity values on selected Kimberley islands provides baseline information for planning of conservation management under the *Kimberley Conservation and Science Strategy* and is informing the processes being used to protect the significant cultural and natural values of the Kimberley.



Operational highlights

Forest Management



Paperbark, Mount Manypeaks Nature Reserve. Photo – Peter Nicholas/Parks and Wildlife

The Forest Management Service ensures the provision of economic, social and cultural benefits from State forest and timber reserves, while conserving biodiversity, maintaining soil and water values, and sustaining health, vitality and productive capacity of the forest for current and future generations.

Consistent with the statutory purpose of State forest and timber reserves as defined in the *Conservation and Land Management Act 1984*, forest management is provided for on an ecologically sustainable basis. This includes implementing Government policies, and providing for the harvesting, regeneration and growth of forest products in accordance with the current forest management plan.

Implementation of approved forest management plans and government policies and programs

Forest Management Plan 2014–2023

The *Forest Management Plan 2014–2023* came into effect on 1 January 2014. The plan was prepared by the Conservation Commission through the agency of the Department and was released by the Minister for Environment on 6 December 2013.

The focus was on ensuring timber harvesting operation are compliant with the requirements of the plan, including meeting new silvicultural guideline requirements to retain additional habitat elements such as large marri trees.

Work began on developing working arrangements between Parks and Wildlife and the Forest Products Commission (FPC) with the aim of clarifying the roles and responsibilities of each agency.

The plan provides economic opportunity for the industry to access an allowable cut of jarrah sawlogs of 160,000m³, should markets eventuate. Accessing this upper limit requires approval by the Minister for Environment.

All old-growth forests continue to be protected under the plan.

More information on forest management and the *Forest Management Plan 2014–2023* is available on the website: www.dpaw.wa.gov.au/management/forests/managing-our-forests/161-a-plan-for-managing-our-state-south-west-forests.

Community forest inspection program

Community forest inspections provide community representatives with the opportunity to inspect aspects of the harvest of native forest trees from areas of State forest first-hand, and to learn more about relevant management systems and processes.

Members of the voluntary conservation movement, representatives from local government and staff from the Forest Products Commission (FPC), Parks and Wildlife and the Conservation Commission inspected areas of Helms forest block in the south-west in 2014.

Inventory, assessment and modelling of natural resources

A wide range of technical services related to the inventory, assessment and modelling of natural resources was provided within Parks and Wildlife and to the FPC, Conservation Commission and external clients. Major areas of activity included:

- gathering and analysing wood inventory data to assist the FPC, Parks and Wildlife and the Conservation Commission in planning, managing and monitoring timber production in State forest and timber reserves
- continual interpretation of digital images of State forest acquired between 2009 and 2013, to map forest characteristics and stratify areas for wood inventory

- continual updating of the jarrah (*Eucalyptus marginata*) inventory with measurement of a selection of inventory plots
- undertaking vegetation mapping to inform silvicultural decisions, old-growth forest assessments, *Phytophthora* dieback disease impact predictions and the protection of poorly represented vegetation complexes undertaking field measurements to monitor the log removals and silvicultural standards associated with timber harvest operations, and maintain current and accurate data
- providing specialist services to Parks and Wildlife divisions, the FPC, other Government agencies, natural resource management groups and external clients (services included aerial photography, photo-interpretation, photogrammetry, vegetation and disease mapping surveys, and database design and development)
- deploying and integrating modelling software and developing natural resource models to support the *Forest Management Plan 2014–2023*
- upgrading and developing forest resource management systems to support the *Forest Management Plan 2014–2023*.

Maintenance and enhancement of biodiversity and other values

Measures undertaken to sustain or enhance biodiversity and other forest values included the provision of information about *Phytophthora* dieback and maps of its occurrence, to enable operations to be undertaken with the lowest risk of spreading the disease. Other Forest Management Service responsibilities included implementing an approvals, monitoring and compliance management system for disturbance operations on State forests and timber reserves, and setting standards for the management of a range of values. Eighty-five disturbance operations, covering 6750ha of State forest and timber reserves, were evaluated and monitored for compliance with the environmental outcomes in the *Forest Management Plan 2014–2023*.

The Department's Regional and Fire Management Services Division delivered other sustainable forest management outcomes, and the Science and Conservation Division undertook research to inform management of biodiversity, ecosystem health and vitality, and soil and water values.

Health and vitality in natural landscapes

Mapping the presence of symptoms of the plant disease caused by *Phytophthora* dieback was carried out during the year to determine its occurrence. Hygiene requirements were specified for activities

likely to result in the movement of soil (and potentially, as a consequence, *Phytophthora* dieback) on lands managed by Parks and Wildlife. An area of 28,468ha was mapped to assist the planning of roadworks, timber harvesting and other disturbance operations. This included 12,035ha previously mapped that were re-checked.

Integrated planning support

The maintenance and enhancement of biodiversity and other values across landscapes requires a high level of integrated planning within Parks and Wildlife. This outcome was supported through:

- planning support to Regional and Fire Management Services Division to guide the selection and management of public firewood and licensed flora harvesting areas
- monitoring and collating information about areas burnt by bushfire and prescribed fires across the forest, to support fire planning and reporting
- assisting Regional and Fire Management Services Division to evaluate the biodiversity assets at risk from disturbance when assessing proposals for roads, utility corridors and other infrastructure.

Forest Management

Management of soil disturbance in timber harvesting

The protection of soil during timber harvesting and other disturbance operations improved considerably during the *Forest Management Plan 2004–2013*. The *Forest Management Plan 2014–2023* carried forward a trafficability index and operational requirements to be applied in different risk periods to protect soil during timber harvesting. The Department continued to manage an approvals process for access during moist soil conditions. Authorisation of access to 26 forest coupes for potential harvesting areas during winter and spring was granted based on consideration of the risk associated with soil attributes. Access was not granted to areas with an inherently high risk of soil disturbance.

A review of the soil disturbance monitoring conducted from 2005 to 2014 led to the development of a revised soil disturbance monitoring procedure with increased focus on identifying and mapping the tracks created by heavy vehicles.

Implementation of fauna habitat zones

The *Forest Management Plan 2004–2013* introduced fauna habitat zones in State forest and timber reserves. The network was refined for the 2014–2023 plan. Since the plan commenced in January 2014 the design, analysis, survey and liaison work was undertaken for fauna habitat zones adjacent to proposed disturbance activities, and the

location of five fauna habitat zones was finalised. The zones cover a gross area of 846ha of State forest.

Management system for approvals, monitoring and compliance

All operations in State forest require consideration and approval. Department staff monitored the compliance of operations with the conditions of approval and environmental management standards. The planning checklist for disturbance activities which was reviewed and updated to account for additional requirements of the *Forest Management Plan 2014–2023* is used for this purpose.

Where non-compliance in timber harvesting operations is identified, the proponent may be issued with an incident report (IR). Where the non-compliance is considered to require a formal communication, investigation and response by the proponent a works improvement notice (WIN) is issued if the non-compliance can be rectified by further field works, or a management letter (ML) is issued if it cannot. In 2014–15, staff issued 18 IRs and seven WINs. Of the values affected for IRs, six related to biodiversity, six to soil and water, four related to ecosystem health and vitality and two related to productive capacity. Of the WINs issued, three related to soil and water, two related to ecosystem health and vitality and two related to biodiversity.



Common clematis, Mount Frankland Wilderness Lookout. Photo – Bron Anderson/Parks and Wildlife

Forest monitoring and research

The *FORESTCHECK* program continued to monitor the effects of timber harvesting on biodiversity. The program samples macrofungi, cryptogams, vascular plants, invertebrates, terrestrial vertebrates, birds, forest structure and coarse woody debris.

Seven *FORESTCHECK* sites in the eastern Blackwood District and one existing and two new sites in Perth were sampled in spring 2014 to complete the annual monitoring cycle. Monitoring trials using cameras to detect terrestrial vertebrates in karri forest were

carried out in the Donnelly District. During autumn 2014, monitoring was also undertaken at seven new sites established in the eastern part of the Blackwood District, and at one existing and two new sites in the Perth Hills District.

The analysis of data from the 10-year monitoring period 2002–12 was completed and associated scientific papers are in preparation. A review process was initiated to assess the capacity and process of delivery for *FORESTCHECK* into the future.

Forest auditing

A range of forest management activities were audited in 2014–15. These audits examined the processes for monitoring native forest timber harvesting operations in the Swan, South West and Warren regions for compliance with requirements of the *Forest Management Plan 2014–2023*.

Monitoring of native forest harvesting

Timber harvesting operations in State forest and timber reserves in the area of the *Forest Management Plan 2014–2023* continued to be approved and monitored in accordance with guidance documents that specify a range of requirements, including silvicultural practices, protection of soil and water values and demarcation of informal reserves not available for timber harvesting. Field monitoring of these operations was undertaken by regional Parks and Wildlife staff.

Coupe management and environmental protection

The FPC conducts harvesting operations on Department-managed land where compliance is required with a range of environmental standards. This audit assessed a sample of these environmental management and protection elements in selected active coupes and one dormant coupe in jarrah forest.

Table 15: List of coupes sampled.

Coupe	Region	Status	Species
Ellis Creek	Warren	Active	Jarrah
Upper Capel	South West	Active	Jarrah
Yeticup	Warren	Active	Jarrah
Amphion	Swan	Dormant	Jarrah

Planning checklists

Planning checklists must be completed by the FPC and approved by the Department before timber harvesting can begin. All coupes sampled had correctly completed planning checklists for each relevant harvesting operation. Each section of the checklist had been addressed and approval signatures were in place.

Coupe demarcation

Management boundaries, including the coupe, and informal reserves such as river, stream, areas of old-growth forest and travel route and diverse ecotype zones, must be identified and demarcated before approved timber harvesting operations begin. The management boundaries of three coupes were assessed and all required boundaries were correctly demarcated.

Protecting water and informal reserves

Informal reserve boundaries, including river and stream zones, should be protected during all phases of the harvesting operation.

The stream zones and reserve boundaries of three coupes were sampled for compliance. No incidents were recorded in two coupes. One minor incident totalling 5m was recorded in one coupe. This incident involved machine activity crossing into a reserve boundary. No major incident was recorded for any of the sampled coupes.

Stream zones were demarcated at or above the prescribed width requirement.



Swamp bottlebrush. Photo – Peter Nicholas/
Parks and Wildlife

Forest Management

Table 16: Summary of coupe demarcation

	Stream zone	Other reserves	Total
Length assessed (m)	2346	1576	3922
Length correctly marked (m)	2346	1576	3922
Percentage correct	100	100	100

Table 17: Summary of incidents

	Stream zone	Other reserves	Total
Length assessed (m)	2346	1576	3922
Number of minor incidents	1	0	1
Length of minor incidents (m)	5	0	5
Number of major incidents	0	0	0
Length of major incidents (m)	0	0	0
Percentage of edge protected intact	99.8	100	99.9

Habitat retention

To ensure the availability of suitable refuge hollows for native animals after timber harvesting, habitat trees and ground logs are retained. The requirements for habitat trees and ground logs were:

- five primary habitat trees per hectare (trees that have a moderate to high probability of bearing hollows)
- six to eight secondary habitat trees per hectare (trees that have a lower probability of bearing hollows at the time of tree

marking, but provide for the sustained availability of hollows through time. These trees also contribute the structural diversity in the coupe)

- one ground log per hectare (logs with a diameter greater than 10cm and a length greater than 3m).

Table 18: Habitat retention

Standing habitat						
No. of coupes assessed for habitat trees	Area sampled (ha)	No. of primary habitat trees in samples	No. of secondary habitat trees in samples	Average no. of primary habitat trees / ha	Average no. of secondary habitat trees / ha	Average number of all habitat trees / ha
4	22	189	146	8.6	6.6	15.2

Ground habitat			
No. of coupes assessed	Area sampled (ha)	Number of habitat logs in samples	Average number of habitat logs per hectare
4	22	29	1.3

In the four coupes sampled, the average number of primary and secondary habitat trees was above the required retention rate. All coupes had at least the required retention rate for both primary and secondary habitat trees. For ground habitat requirements, all four coupes achieved the required, or were above, the retention rate.

Protecting crop trees

Marked crop trees are required to be protected from damage during harvesting operations.

Damage was defined as:

- exposure of more than 100 square centimetres of cambium
- felling, breaking or uprooting of a crop tree
- removal of more than 30 per cent of the crown.

As well as avoiding physical damage, all debris created by a harvesting operation should be removed from the base of crop trees.

Table 19: Crop tree assessment

No. of coupes assessed	No. of crop trees assessed	No. of crop trees undamaged	No. of crop trees damaged	Compliance
4	396	383	13	97%

Table 20: Crop tree tops disposed and not disposed

No. of crop trees assessed	No. of crop tree tops disposed	No. of crop tree tops not disposed	Compliance
396	372	24	94%

All of the four coupes assessed were below the allowable five per cent limit for crop tree damage. The highest level of damage recorded was four per cent and the lowest three per cent.

As well as avoiding physical damage, all debris created by a harvesting operation should be removed from the base of crop trees. This task is commonly known as 'tops disposal' and is designed to protect crop trees from fire damage. All woody material greater than 75mm in diameter must be removed at least 1m from the bole of the crop tree.

Of the four coupes assessed, two achieved, or were above, the compliance level of 95 per cent, with the remaining two just below. The

highest level of completed tops disposal was 95 per cent and the lowest level 93 per cent.

Protecting soil

When log extraction is completed in any feller's block, and prior to machinery leaving, spreader banks must be constructed across all extraction tracks and disturbed firebreaks with exposed soil to minimise the risk of soil erosion. The minimum size and angle of banks is set and the prescribed spacing is dependent on the slope and soil type.

Table 21: Erosion control

No. of coupes assessed	Length of snig track assessed (m)	Length of track meeting specification (m)	Length of track not meeting specification (m)	Compliance
4	4152	4152	0	100%

Rehabilitating landings

There is an annual program in place to rehabilitate log landings. At the completion of harvesting, landings are ripped and scarified and then seeded and fertilised when conditions are right. Preparation work for landing rehabilitation, ripping and scarifying was undertaken in most completed coupes sampled, except where products still remained on the landings.

Protecting threatened flora

Before any activity is undertaken on Department-managed land resulting in the removal of native flora, field searches are required to determine whether threatened flora is present. Records of field searches for the presence of threatened flora populations were available for all coupes assessed.

Protecting threatened native animals

Areas planned for harvesting were assessed in a desktop study against a matrix that determined the probability of habitats of threatened native animals occurring, which was incorporated into the *Fauna Distribution Information System*.

Adaptive management

The *Wungong Catchment Environment and Water Management Project* conducted in the 12,845ha Wungong Catchment near Jarrahdale concluded in 2013–14. A closure plan prepared between Parks and Wildlife and the Water Corporation plan, which identified outstanding work and a timeline for this work to be carried out, is being implemented where resources permit.



Red-capped robin. Photo – Matt Swan/ Parks and Wildlife

Forest Management

Provision for harvesting, regeneration and growth of forest products

Silvicultural guidance

A suite of supporting documentation continued to be developed and published through 2014-15, including procedures relating to jarrah and karri silvicultural and supporting reference material for jarrah forest silviculture. Copies of the guidelines and supporting documents are available on request at www.dpaw.wa.gov.au/management/forests/managing-our-forests/167-silviculture.

Training of relevant personnel continued in the application of silvicultural practices and the implementation of monitoring procedures.

Monitoring of areas subject to timber harvesting and associated treatments

Monitoring was undertaken in areas subject to commercial timber harvesting, silvicultural treatments and forest disturbance activities under the direction of the FPC. In the 12 months to December 2014, 6750ha of native forest were harvested with silvicultural objectives outlined in Table 19.

Table 22: Silvicultural objectives

Forest type	Silvicultural objective	Area cutover (ha)
Jarrah	Release of regeneration (gap)	760
	Establishment of regeneration (shelterwood)	1490
	Promote growth on retained trees (thinning)	500
	Single tree selection (retention in Phytophthora dieback areas)	890
	Selective	1430
	Subtotal	5070
Karri	Establish jarrah/karri regeneration	–
	Establish regeneration (clearfall karri)	290
	Establish regeneration (partial karri clearfall)	–
	Promote growth on retained trees (thinning)	480
	Subtotal	770
Wandoo	Establishment of regeneration	–
	Promote growth on retained trees (thinning)	–
	Subtotal	–
Other forest type	Other (mining and clearing for utilities)	910
Total		6750

Jarrah silvicultural objectives for 1070ha harvested in 2014–15 or previous years were achieved by follow-up treatment during the year. Karri regeneration was completed on 360ha harvested in either 2014–15 or previous years.



Rowell's Pool, Mount Frankland South National Park. Photo – Peter Nicholas/Parks and Wildlife

Table 23: Trends in the area of native forest harvested

	Jarrah forest	Jarrah/wandoo forest	Clearfelled or cut to seed trees	Karri forest Thinned
	(ha)	(ha)	(ha)	(ha)
1976–77	32,320	1170	2610	-
1977–78	26,020	740	4450	-
1978–79	25,540	530	2710	-
1979–80	25,150	860	2110	60
1980–81	22,930	1440	2080	180
1981–82	24,680	610	2180	320
1982–83	23,740	330	990	190
1983–84	21,540	580	1490	260
1984–85	20,010	1440	2360	500
1985–86	22,640	650	1590	340
1986	19,340	1150	1090	490
1987	17,180	1380	1310	700
1988	23,400	490	1180	840
1989	15,130	200	1510	910
1990	12,960	100	1560	340
1991	10,910	-	1920	230
1992	13,990	30	1540	310
1993	14,250	40	1630	80
1994	14,050	50	1440	-

1995	17,830	30	2410	-
1996	22,320	50	1300	60
1997	18,240	60	1870	60
1998	19,250	60	1,970	320
1999	14,200	50	1890	360
2000	20,570	10	1310	70
2001	15,760	-	1380	120
2002	13,260	30	700	350
2003	8520	-	720	485
2004	8860	-	330	920
2005	6220	30	460	1070
2006	8440	300	400	1130
2007	8120	60	560	1000
2008	7280	0	390	660
2009	8990	10	740	920
2010	4520	0	400	1220
2011	*6120	30	740	850
2012	6760	0	370	650
2013	5880	0	290	560
2014	5070	0	290	480

Total includes small areas of other forest types cleared for mining or landings.

* The figure given in the 2011-12 Yearbook (7500ha) was incorrect as it included clearing for mining.

Operational highlights

Fire Management



Bushfire at Cheynes Beach near Albany in November 2014. *Photo – Parks and Wildlife*



Karri forest burnt by the O'Sullivan bushfire in February 2015.
Photo – Lachie McCaw/Parks and Wildlife



Bushfire season 2014–15

The 2014–15 bushfire season was marked by significant bushfires in Bullsbrook, O'Sullivan and Lower Hotham.

In total, Parks and Wildlife staff attended and monitored 825 bushfires throughout the State in 2014–15, which burnt about 2,569,695ha. For regional details about the number of fires attended and area burnt, see Table 24.

About 24 per cent of all bushfires attended by the Department were caused by lightning, slightly below the 10-year average of about 23 per cent. About 37 per cent were deliberately lit or arson-caused, below the 10-year average of about 43 per cent. For more details about the causes of fires attended by the Department, see Table 25.

Two of Parks and Wildlife's five pre-formed incident management teams were deployed in full to bushfires in 2014–15.

Table 24: Bushfires in 2012–13 to 2014–15

Category	Number of bushfires**			Area burnt (ha)*		
	2012–13	2013–14	2014–15	2012–13	2013–14	2014–15
State forest						
– native hardwood	120	104	186	1457	426	56,736
– softwood plantation	90	78	76	510	196	5507
National parks	136	121	154	238,467	1,537,710	938,621
Nature reserves	52	58	68	1,004,689	92,389	569,982
Other Department reserves	69	57	92	672,768	247,181	167,012
Other Crown lands	37	45	36	992,114	164,429	393,467
Private property	138	113	179	531,870	25,056	65,456
Unallocated Crown land	34	31	34	2,035,519	142,232	372,914
Total	676	607	825	5,477,394	2,209,619	2,569,695

Only includes data from 1 July 2014 to 30 June 2015.

* Area (ha) burnt by bushfires in the tenure type.

** Number of bushfires that started in each tenure type and fire cause.

Fire Management

Table 25: Bushfires causes: in 2012–13 to 2014–15

Cause	Number of bushfires**			Per cent		
	2012–13	2013–14	2014–15	2012–13	2013–14	2014–15
Deliberately/illegally lit	248	223	304	37	37	37
Escapes – non Department burning	2	5	8	0	1	1
Escapes – Department burns	24	23	51	4	4	6
Accidental – timber industry	6	6	3	1	1	0
Accidental – other industries	44	26	39	6	4	5
Accidental – recreationists	58	97	78	9	16	9
Lightning	193	141	200	28	23	24
Unknown	77	61	120	11	10	15
Other causes	24	25	22	4	4	3
Total	676	607	825	100	100	100

Only includes data from 1 July 2014 to 30 June 2015.

** Number of bushfires that started in each tenure type and fire cause.

Table 26: Area and number of bushfires attended and monitored by Parks and Wildlife for all regions 2014–15

Region		State forest native hardwood	State forest softwood plantation	National	Nature reserves	Other Department reserves	Other Crown lands	Private property	Unallocated Crown land	Total
South-west forest regions										
Swan	Area (ha) *	39,682	5492	473	939	10,253	1724	14,126	698	73,387
	Number **	96	61	54	15	40	13	88	6	373
South West	Area (ha) *	1373	15	499	0	719		1298	3	3907
	Number **	68	15	17	3	29		52	6	190
Warren	Area (ha) *	15,671		78,254	456		951	5276	338	100,946
	Number **	21		20	6		1	10	2	60
Subtotal	Area (ha) *	56,726	5507	79,226	1395	10,972	2675	20,700	1039	178,240
	Number **	185	76	91	24	69	14	150	14	623
Other regions										
Kimberley	Area (ha) *			281,452	445,348	28,710	314,397		274,701	1,344,608
	Number **			9	4	10	6		4	33
Pilbara	Area (ha) *			573,644	3606	127,113	48,173	33,828	76,435	862,798
	Number **			43	7	8	10	1	8	77
Midwest	Area (ha) *			2324	1744	23	20,215	9733	1098	35,137
	Number **			3	7	3	4	15	1	33
Goldfields	Area (ha) *			1200	113,293		8008		19,223	141,724
	Number **			2	17		2		4	25
Wheatbelt	Area (ha) *				116			1		117
	Number **				5			0		5
South Coast	Area (ha) *	10		774	4479	194		1196	418	7071
	Number **	1		6	4	2		13	3	29
Grand total (all regions)	Area (ha) *	56,736	5507	938,620	569,981	167,012	393,468	65,457	372,914	2,569,695
	Number **	186	76	154	68	92	36	179	34	825

* Area (ha) burnt by bushfires in the tenure type (slight discrepancies in totals may appear due to rounding).

** Number of bushfires originating in the tenure type.

Fire Management

Prescribed burning

Parks and Wildlife has legislative responsibility for bushfire preparedness on the land it manages (generally parks, reserves and State forest) and unallocated Crown land and unmanaged reserves outside metropolitan and town site areas. Bushfire preparedness activities include the preparation and implementation of an annual prescribed burning program on these lands.

Prescribed burning on Parks and Wildlife-managed lands throughout the State is undertaken to reduce the occurrence and impacts of large, intense bushfires; to protect and conserve community assets and biodiversity values; and to regenerate and protect forest ecosystems following harvesting operations or other disturbances. In many cases these outcomes are achieved together within a prescribed burn.

The indicative burn target for 2014–15 in the south-west forest regions was 200,000ha. To meet this objective, the Department's burn planning process identified potential areas in excess of 200,000ha as available for prescribed burning in the south-west forest regions for the 2014–15 burning seasons. The surplus burn area provides the flexibility to safely take advantage of favourable burning conditions as they occur in different parts of the south-west.

In 2014–15, the Department achieved 147,082ha of prescribed burning in the south-west forest regions, including about 6,381ha burnt for pine plantation protection. Forty-seven per cent of the planned fire activities were undertaken in the spring and early summer period (September to December 2014), 39 per cent in autumn (April to June 2015), 12 per cent in winter (July and August 2015) and two per cent in summer (January to March 2015).

Figure 3 shows the achievement of prescribed burning in the south-west forest regions from 2002–03 to 2014–15. The relatively low level of burning for several years during this period reflects the impacts of reduced rainfall and often unfavourable weather conditions experienced in those years. While these conditions were again experienced to a degree in spring 2014, a relatively favourable autumn season in 2015 compensated and allowed a significant increase in prescribed burning in 2014–15 relative to recent years.

The average area of burning achieved by the Department in the south-west forest regions over the previous 10 years has been about 139,494ha per annum.

Figure 4 shows the number of years since fire last occurred in south-west forest regions vegetation/fuel that was prescribed burnt in 2014–15. Approximately 78 per cent of the



Staff conduct a prescribed burn in the Wheatbelt. Photo – Parks and Wildlife

area burnt had not been burnt for at least 10 years and 89 per cent of burns contained some fuel that had not been burnt for 10 years or more.

Figure 3: Prescribed burning in the south-west forest regions, 2002–03 to 2014–15

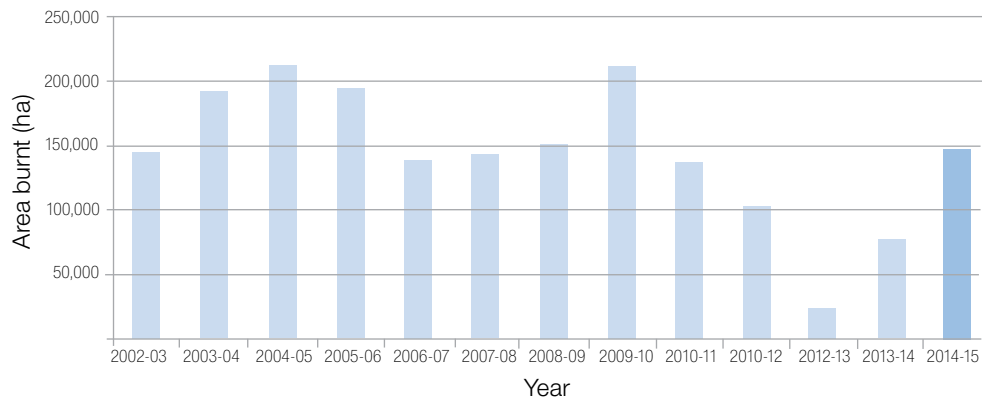
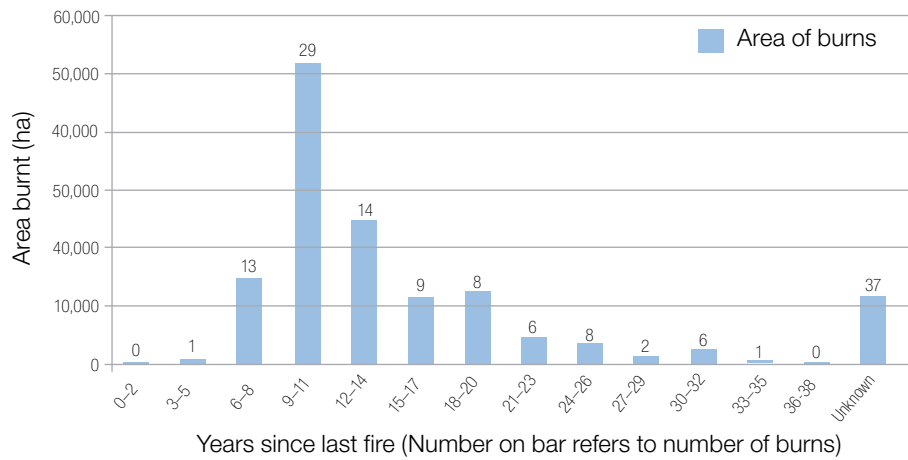


Figure 4: Years since fire last occurred in the south-west forest regions that was prescribed burnt in 2014–15



Prescribed burning in Yanchep Pine Plantation. Photo – Leigh Sage/Parks and Wildlife

Fire Management

The application of prescribed fire by Parks and Wildlife outside the south-west forest regions has increased markedly since July 2003, when the Department became responsible for bushfire risk prevention and preparedness over large areas of unallocated Crown land and unmanaged reserves. Significant progress has been made in the Pilbara, Kimberley and Goldfields regions in applying prescribed fire across the landscape to achieve biodiversity conservation outcomes and to minimise the potential extent of damaging bushfires.

The Department completed about 1.98 million hectares of prescribed burning in the Kimberley, Pilbara, Midwest, Goldfields, Wheatbelt and South Coast regions. Many of these burns were open-edged and wind-driven with aerial ignition. These burns provide the habitat diversity necessary to conserve biodiversity and establish protective buffers to limit the spread of bushfires. The burns were carried out on Parks and Wildlife-managed lands as well as on unallocated Crown lands and unmanaged reserves in these regions.

In the Wheatbelt Region, early rain in March and April in 2015 increased soil and litter moisture which enabled burning to start earlier than usual. Eighteen burns were conducted on land managed by the Department from Kojonup in the south to Bonnie Rock in the north, with 2,518ha burnt. Most burns were between 100 and 200ha, with almost 100 per cent of planned burns carried out during the season.

In 2014–15, the combined total area of prescribed burning undertaken throughout the State was 2,124,809ha. Figure 5 shows the area prescribed burnt in all Parks and Wildlife regions since 1978–79.

Figure 5: Prescribed burning in all regions from 1978–79 to 2014–15

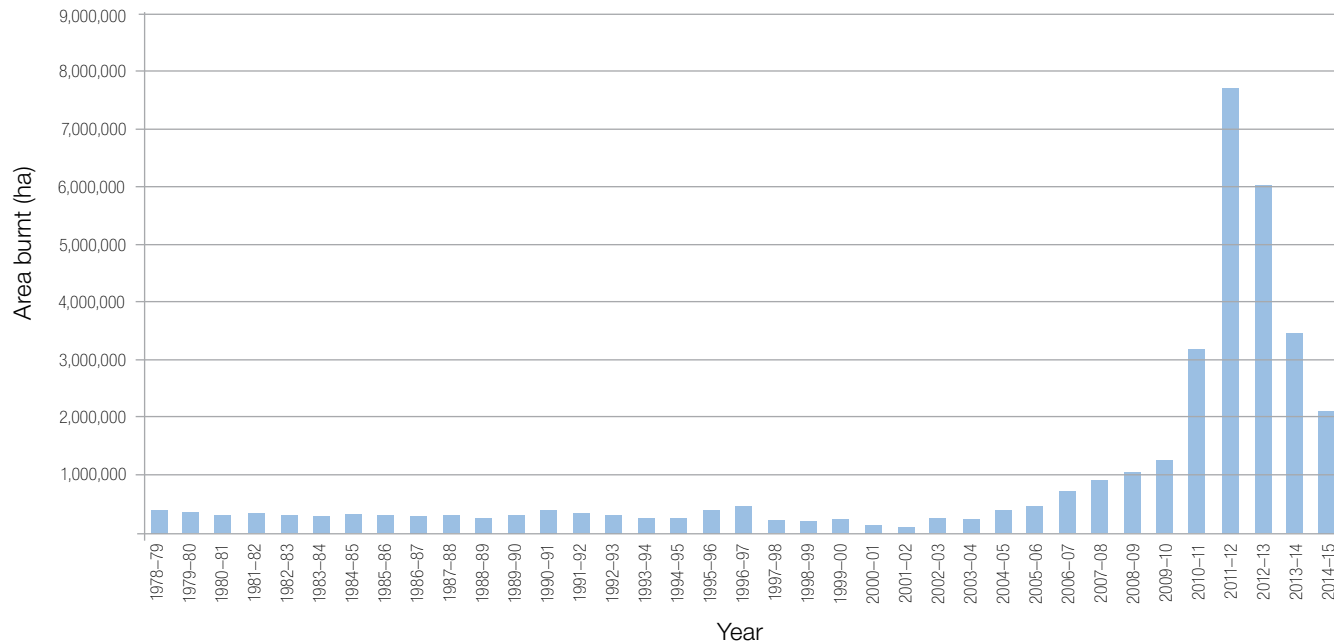


Table 27: Number and area (ha) of prescribed burns conducted by Parks and Wildlife in local government areas in 2014–15

Local government authority	Number	Area (ha)
City of Albany	3	360
City of Armadale	5	2814
City of Busselton	1	899
City of Cockburn	1	10
City of Gosnells	2	353
City of Greater Geraldton	2	194
City of Mandurah	1	141
City of Swan	4	2684
City of Wanneroo	11	2987
Shire of Ashburton	5	35
Shire of Augusta-Margaret River	3	448
Shire of Beverley	3	9269
Shire of Boddington	4	4944
Shire of Boyup Brook	2	2559
Shire of Bridgetown-Greenbushes	7	3555
Shire of Broome	1	354
Shire of Bruce Rock	1	24
Shire of Capel	3	745
Shire of Carnamah	2	240
Shire of Chapman Valley	1	101
Shire of Chittering	2	698
Shire of Collie	9	13,878
Shire of Coolgardie	2	21
Shire of Coorow	1	351
Shire of Cuballing	1	79
Shire of Dandaragan	4	350
Shire of Dardanup	2	1664
Shire of Denmark	8	15,944
Shire of Derby-West Kimberley	4	279,212
Shire of Donnybrook-Balingup	8	2156
Shire of Esperance	5	204
Shire of Gingin	9	5131
Shire of Halls Creek	2	360,080
Shire of Harvey	7	974
Shire of Irwin	2	673
Shire of Kalamunda	7	4681
Shire of Kellerberrin	1	15
Shire of Kent	1	468
Shire of Kojonup	1	84
Shire of Kulin	1	128
Shire of Manjimup	22	17,164
Shire of Moora	1	1
Shire of Mundaring	6	907
Shire of Murray	9	7868
Shire of Nannup	8	4920
Shire of Narrogin	1	128
Shire of Northampton	2	180
Shire of Pingelly	2	117
Shire of Plantagenet	4	14,895
Shire of Ravensthorpe	4	2273
Shire of Serpentine-Jarrahdale	4	1065
Shire of Tammin	1	29
Shire of Toodyay	6	8129
Shire of Victoria Plains	1	478
Shire of Wagin	1	22
Shire of Wandering	3	9923
Shire of Waroona	3	296
Shire of West Arthur	3	4509
Shire of Westonia	1	379
Shire of Williams	2	299
Shire of Wiluna	3	2775
Shire of Wongan-Ballidu	1	52
Shire of Wyndham-East Kimberley	10	1,327,693
Shire of Yilgarn	4	693
Shire of York	2	502

Fire Management

Table 28: Area (ha) and number of prescribed burns for all Parks and Wildlife regions 2012–13 to 2014–15

South-west forest regions		2012–13	2013–14	2014–15
Swan	Area (ha)	9978	21,225	62,793
	Number	46	52	61
South West	Area (ha)	5918	21,975	28,920
	Number	22	22	34
Warren	Area (ha)	7572	35,034	55,369
	Number	19	37	39
South-west forest regions subtotal	Area (ha)	23,468	78,234	147,082
	Number	87	111	134
Other regions		2012–13	2013–14	2014–15
Kimberley	Area (ha)	5,030,846	3,308,225	1,967,339
	Number	7	12	17
Pilbara	Area (ha)	8017	61,485	35
	Number	8	7	4
Midwest	Area (ha)	-	1,897	2091
	Number	-	6	15
Goldfields	Area (ha)	968,206	19,032	2796
	Number	3	4	6
Wheatbelt	Area (ha)	10,568	549	2,518
	Number	9	7	18
South Coast	Area (ha)	6247	862	2948
	Number	10	13	13
Other regions subtotal	Area (ha)	6,023,884	3,392,050	1,977,727
	Number	37	49	73
Grand total (all regions)	Area (ha)	6,047,352	3,470,284	2,124,809
	Number	124	160	207

Table 29: Area (ha) of prescribed burns on each tenure type in 2014–15

	2014–15
State forest	71,787
National parks	1,215,526
Nature reserves	31,221
Conservation parks	256,030
Softwood plantation	6381
Unallocated Crown land	92,811
Other Crown land, other Parks and Wildlife reserves and private property	451,053
Total area (ha)	2,124,809

Operations, planning and interagency cooperation

Aerial bushfire suppression operations

Parks and Wildlife contracted eight fixed-wing water bombers from November 2014 to April 2015. The aircraft provided rapid aerial suppression capability in the South Coast, Midwest, Wheatbelt and south-west forest regions, including the Perth outer-metropolitan area, giving significant assistance to ground crews in the initial attack on bushfires.

Fixed-wing water bombers were used on numerous bushfires that threatened residential areas across the south-west. These aircraft attended 190 bushfires and dropped 2291 loads. More details can be found in the 2014–15 Annual Report which is available on the website www.dpaw.wa.gov.au/about-us/annual-report-and-yearbook.

Bushfire detection

Parks and Wildlife provided an effective bushfire detection system in the most bushfire prone areas of the south-west forest regions through fixed lookout towers and a fleet of 10 'spotter' aircraft. Spotter aircraft flew 4989 hours for aerial surveillance and 456 hours in support of aerial suppression operations during the year. More details can be found in the 2014–15 Annual Report which is available on the website: www.dpaw.wa.gov.au/about-us/annual-report-and-yearbook.



Water bomber. Photo – Leigh Sage/Parks and Wildlife

Bushfire training and development

The Fire Management Services Branch development and education section conducted 23 formal fire management training courses involving 260 participants. Course participants were predominantly from Parks and Wildlife, including campground host volunteers, but also included personnel from the Forest Products Commission (FPC), the Department of Fire and Emergency services (DFES) and local governments.

Annual mandatory pre-season training was undertaken across the Department in preparation for the 2014–15 fire season. A total of 784 Parks and Wildlife and FPC personnel participated and met training requirements in operational and non-

operational areas including the use of two-way radios, storage and use of fire blankets and turnover drills.

The aviation operations section provided training to 142 aerial operations personnel of which 41 participants were from external organisations from Adelaide, Northern Territory and the Kimberley. More than 150 water bomber reloaders across 40 operational bases were also trained, with the majority of these participants from volunteer bushfire brigades and local State Emergency Service units.

More details can be found in the 2014–15 Annual Report which is available on the website: www.dpaw.wa.gov.au/about-us/annual-report-and-yearbook.



Mount Chudalup fire tower, D'Entrecasteaux National Park. Photo – Parks and Wildlife

Fire Management

Prescribed fire planning and risk management

The Department continued to engage and collaborate with the Office of Bushfire Risk Management (OBRM) in the constant pursuit of improvement. An assurance program conducted by OBRM to scrutinise the Department's burn planning processes again occurred throughout the year in a number of regions.

Bushfire preparedness on unallocated Crown land

Since 1 July 2003, the Department has had responsibility for the coordination and on-ground management of bushfire risk prevention and bushfire preparedness works on 89 million hectares of unallocated Crown land and unmanaged reserves outside the Perth metropolitan area and town sites.

Work undertaken by Parks and Wildlife in 2014–15 included the construction and maintenance of firebreaks, modification of vegetation in strategic buffers, open-edge prescribed burning and large-scale aerial ignition.

In the Kimberley, Pilbara and Goldfields regions, the Department continued to make good progress in engaging and building partnerships with stakeholders, including Aboriginal communities and neighbouring

pastoralists. The use of planned fire for developing landscape-scale, mosaic patterns of burnt and unburnt patches continued to yield benefits for mitigating large bushfires, protecting biodiversity and cultural values, and achieving designated nature conservation outcomes.

Interagency bushfire management

During 2014–15, significant Parks and Wildlife fire management resources were dedicated to improving interagency bushfire management arrangements through the Interagency Bushfire Management Committee (IBMC) and associated sub-committees. Details about the sub-committees servicing the IBMC are included in the 2014–15 Annual Report which is available on the website www.dpaw.wa.gov.au/about-us/annual-report-and-yearbook.

Outside the IBMC, Parks and Wildlife initiated and participated in substantial interagency liaison with DFES, local government and other government departments on fire management related matters.

Key efficiency indicators

Efficiency indicators are currently under review for both prescribed burning and bushfire suppression.



Ground crew reloading a water bomber. *Photo – Parks and Wildlife*



Pre-bushfire season safety training. *Photo – Karla Graham/Parks and Wildlife*



Pre-bushfire season fitness training. *Photo – Peter Nicholas/Parks and Wildlife*



Department of
Parks and Wildlife

