



watsnu

Species and Communities Branch newsletter for species and ecological communities conservation
December 2013 Volume 19, Issue 2



Coastal saltmarsh listed

By Val English

The coastal regions of southern Australia, in particular areas near the mouths of estuaries, contain salt-adapted vegetation known as coastal saltmarsh. Although the saltmarsh areas may appear to be rather barren and harsh environments, they can be damaged by pressures including harbour developments, infilling for housing, changes to drainage and water quality, and weed invasion. Coastal saltmarsh vegetation is recognised nationally and globally as an ecosystem of high ecological value that is increasingly under threat.

The Australian Government has just listed the Subtropical and Temperate Coastal Saltmarsh as a nationally threatened ecological community, with a ranking of vulnerable. The vegetation type is also listed as a priority ecological community in Western Australia.

The Australian Government's distribution map for the coastal saltmarsh ranges from

southern Queensland through New South Wales, Victoria, Tasmania, South Australia and south-west WA. In WA, the coastal saltmarsh generally occurs in a narrow coastal margin in subtropical and temperate zones - south of the Tropic of Capricorn (23° south latitude).

The boundaries of WA's coastal saltmarsh are not well documented, but it is estimated that there is about 2-3000 hectares of salt marsh in southern WA and that about half of the vegetation type has been lost to date.

The coastal saltmarsh vegetation provides very useful services in maintaining the coastal habitat in healthy condition. These include filtering water as it flows towards the ocean, providing a fish nursery habitat and food and nutrients for fauna, and helping buffer coastlines from damaging winds and wave action.

The coastal saltmarsh occurs in coastal areas under tidal influence. It mainly occurs associated with sandy or muddy shorelines of estuaries and embayments and some open coasts not subject to high

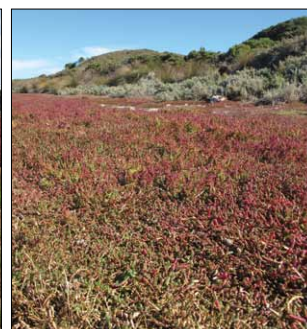
level wave activity. It can also occur on near-coastal islands. The flora that occurs in WA's coastal saltmarsh is richer than has been recorded in other states of Australia and mainly includes salt-tolerant vegetation (*halophytes*) such as grasses, herbs, reeds, sedges, and shrubs. The two most common plant families are salt bushes (*Chenopodiaceae*) and the grasses (*Poaceae*).

The Department of Parks and Wildlife (DPAW) has a series of projects already underway that will assist in determining the distribution of the coastal saltmarsh vegetation in south west WA and that will help provide a basis for future management. The listing of the community as nationally threatened provides opportunities for seeking resources from the Australian Government for rehabilitation work on coastal saltmarsh vegetation that has been degraded by past practices, and is in need of higher level land management.

For more information contact Val English on (08) 9334 0409 or email val.english@dpaw.wa.gov.au.

Inside this issue

Coastal saltmarsh listed	1
Woylie translocation to Perup Sanctuary	2
It's all in the genes: Quenda genetic diversity in the spotlight	2 to 3
Significant vegetation identified south of Perth	3
Fauna management course 2013	4
Phyto Fighter 1000 installed at Little Mt Lindesay	4
Workshop on a new system for ranking ecosystems	5
Recovery plans	5 to 6
Recent changes to WA threatened species lists	7 to 8
WATSNU is 20 years old!	9



From left to right Rottneest saltmarsh. Photo - Gemma Grigg. Rottneest saltmarsh. Photo - Val English. Rottneest saltmarsh. Photo - Val English. Rottneest saltmarsh. Photo - Gemma Grigg. Mauds saltmarsh. Photo - Val English. Irwin River mouth. Photo - Gail Reed



Woylie translocation to Perup Sanctuary

By Rebecca Kay

The woylie or brush-tailed bettong (*Bettongia penicillata ogilbyi*) population was recently given a boost through the collaboration of DPaW's Science and Conservation Division, Great Southern District and Donnelly District staff who came together to assist in supplementing the woylie population at Perup Sanctuary. The sanctuary, located east of Manjimup, is surrounded by a predator-free fence and covers a total of 420 ha. The animals were sourced from Dryandra Woodland as part of the Woylie Recovery Program that seeks to maintain a captive insurance population.

One of the overall management strategies for woylies is to preserve the species' remaining genetic variation to maximise its long-term conservation value. Dryandra Woodland is one of the largest and most important areas for fauna conservation in the central western wheatbelt and supports a genetically distinct woylie population that is not represented in the Perup Sanctuary. Relocation of some animals from Dryandra to the Perup Sanctuary supports the management strategy for the woylie.

The translocation team consisted of six trapping teams, a woylie processing team, and runners to ferry the animals to their new home. A total of 36 woylies were successfully translocated and have since been captured on remote cameras located throughout the sanctuary. These cameras have been set up to assist monitoring the population. The animals were also monitored through captures during the



October trapping session. The five day translocation operation undertaken in July demonstrated how a collaborative approach is important in achieving important conservation outcomes.

Many other species were also captured during the trapping event at Dryandra, including brushtail possums, chuditch, red-tailed phascogales, mardo, grey-bellied dunnarts, and quenda. Dryandra Woodland is continuing to prove to be a valuable conservation asset with a relatively large proportion of the original mammal fauna still persisting, partly due to the success of the *Western Shield Program*. Perup Sanctuary continues to confirm its value by providing a secure introduced predator-free location that ensures the population of woylies continue to grow.

For more information please contact Rebecca Kay: Phone 08 93340453 or email rebecca.kay@dpaw.wa.gov.au.



Top Woylie captured on remote camera. Photo – Rebecca Kay

Above Chuditch. Photo – Kimberley Page

It's all in the genes: quenda genetic diversity in the spotlight

By Kym Ottewell

Unlike their endangered eastern states counterparts, the Western Australian sub-species of the quenda or southern brown bandicoot, *Isodon obesulus ssp. fusciventer* is currently listed as a Priority 5 (conservation dependent) species. Quenda are under pressure from ongoing habitat clearance, habitat modification from altered fire regimes, and predation by introduced animals (including cats, foxes and dogs). They prefer dense, scrubby habitat with low ground cover, particularly along watercourses or around wetlands. On the Swan Coastal Plain this habitat is becoming increasingly fragmented through the expansion and intensification of urban development. Fragmented populations may be smaller in size and may become disconnected from other populations, leading to increased inbreeding and loss



Above Quenda in a back yard at Roleystone. Photo – Kym Ottewell

of genetic diversity over time. These factors may mean that populations are less adaptable to future changes in environmental conditions or may be more susceptible to novel disease threats. The facial tumor disease currently impacting Tasmanian devils is an example of how a species with limited genetic diversity may be devastated by exposure to a novel disease.

DPaW's Science Division is currently undertaking a genetic study to investigate the patterns of genetic diversity and gene flow among populations of quenda on the Swan Coastal Plain which is highly fragmented, and in the Perth Hills where it is less fragmented. A study is also planned to investigate the genetic relationships

of quenda throughout its range - from Yanchep, through the Perth metropolitan area and Perth Hills, to the karri and jarrah forests and the south-west coastal areas. This will help understand whether quenda comprise a single or multiple 'management units'.

Can you help?

It is unfortunate that quenda are often sighted as roadkill, but their deaths need not be in vain. When roadkill, or other deceased animals are relatively fresh (2-3 days), their DNA can still be used for scientific study. We are asking for the help of the public in taking tissue samples (e.g. a small snippet of ear tissue) to help with

our study. If you regularly see roadkill Quenda or may have other contact with deceased animals (e.g. as a wildlife carer) and believe you can assist, please contact Kym Ottewell (details below) for a collecting kit. Otherwise a small sample can be taken, along with location details, and placed in the freezer until a collecting kit can be sent. We are currently interested in receiving samples from the Perth Hills or south-west coast areas as these are currently under-sampled.

For more information please contact Kym Ottewell: phone 08 9219 9086 or email kym.ottewell@dpaw.wa.gov.au

Significant vegetation identified south of Perth

By Val English



Above Floristic communities along Byford rail. **Above right** Quadrat survey. Photos – Val English.

The Swan Coastal Plain is the highly cleared coastal strip in the south-west of WA between Jurien Bay and Dunsborough. A significant proportion of the vegetation on a series of the landforms on the southern end of the coastal plain including the Pinjarra Plain ('Guildford clays') and the foothills at the base of the Darling and Whicher scarps has been cleared. These landforms consequently contain many vegetation types that are listed as threatened ecological communities (TECs) because of their rarity and pressures on them. Many patches of bushland that occur on these landforms have been surveyed and their TEC status clarified, however a number of these areas have not been surveyed in detail. Land management practices for these unsampled areas of vegetation therefore have not previously been based on a good understanding of their importance.

DPaW's Species and Communities Branch and South West Region have

just completed a project to survey quadrats established in a series of areas of unsampled vegetation in the southern Swan Coastal Plain. The work was completed with funding assistance from South West Catchment Council and was focused on the Pinjarra Plain and Foothill landforms. The project involved detailed on-ground survey of the flora in 46 permanently marked quadrats, and analysis and interpretation of the data. The work resulted in 38 new areas being confirmed as containing listed TECs. Of these, twenty five locations contain TECs that are protected under federal legislation and are also listed as TECs in WA. An additional 13 locations were identified as containing TECs that are listed at the state level only.

A number of the new TEC sites recognized through this report require management action such as fencing, fire management, and weed and feral animal control to prevent further degradation. The recognition of TEC status through



this project will not only assist in providing greater protection to the patches of vegetation, but will also help in attracting funds for their management.

The permanently marked quadrats will provide a means of tracking the way the vegetation varies over time, and also for monitoring changes that may occur in response to climatic variations.

For more information please contact Val English: phone 08 3340409 or email val.english@dpaw.wa.gov.au.

Fauna management course 2013

By Juanita Renwick

Early mornings, late nights, ticks, spiders, scorpions, frogs, woylies, chuditch and brushtail possums are all a part of everyday life on a fauna management course. This year the course was held at the Perup Forest Ecology Centre near Manjimup on 4-8 November. Fourteen enthusiastic DPaW staff from around the state were provided skills on project design, best practice, taxonomic identification, animal ethics and welfare relating to fauna monitoring and research. This year's course was re-structured to provide participants a range of skills in designing a science project using theoretical and practical teachings gained during the course and from the shared knowledge of experienced staff. This enabled course participants to consider issues relating to fauna management, monitoring and research that the Department's fauna management staff deal with on a daily basis.

This year the field component exceeded animal capture rates from last year with 41 woylies (*Bettongia penicillata ogilbyi*) captured, all females having pouch young; seven chuditch (*Dasyurus geoffroyi*) captured with the majority dispersing juveniles; many brush-tail possums (*Trichosurus vulpecular*); several different species of frogs including the clicking frog (*Crinia glauerti*) and the



Above *Chenistonia* spp. a trapdoor spider.
Right *Heleioporus eyrie* a moaning frog.
Photo – Abby Thomas.



moaning frog (*Heleioporus eyrie*); several male trapdoor spiders (*Aname* spp. and *Chenistonia* spp.) and a few skink species including the four-toed mulch skink (*Hemiergis peroneii*).

For further information contact Juanita Renwick: Juanita.renwick@dpaw.wa.gov.au or Manda Page: manda.page@dpaw.wa.gov.au.

Phyto Fighter 1000 installed at Little Mt Lindesay

By Janine Liddelow



Above Testing the new Phyto fighter. **Right** Phyto fighter Mt Lindesay.
Photos – Janine Liddelow.

The Department's Frankland District recently installed a Phyto Fighter 1000 footbath at Little Mt Lindesay. Previous dieback interpretation has shown that the lower slopes of Little Mt Lindesay are infested with root-rot disease, *Phytophthora cinnamomi* but the upper slopes remain uninfested. It is important to take as many measures as possible to protect the uninfested area, as Little Mt Lindesay has many susceptible rare and endemic plant species as well as being part of a Mount Lindesay – Little Lindesay

Vegetation Complex threatened ecological community.

The Phyto Fighter 1000 is a footbath system that was first developed and launched by local Walpole resident Gary Muir in 2010. There have been some refinements and the latest version was installed on Little Mt Lindesay with some modifications to fit the site. The system involves walking onto a grate to a cleaning station where a hand operated pump is used to spray a sterilant onto boots.

The unit can hold up to 40 litres of the sterilant and is easy to maintain and use.

The installation of the Phyto Fighter 1000 was carried out using local DPaW staff. It was bolted onto the granite and an extended ramp was designed to ensure that walkers stepped off onto solid granite once they had passed through the cleaning station. Blue gravel under the ramp and protective boarding installed on the downslope side were used to prevent erosion and wash-off. An environmental assessment of the potential impact of the sterilant on mosses and other flora was carried out and it was found that the sterilant was unlikely to have any impacts.

It is hoped that with the use of this system the upper slopes of Little Mt Lindesay will remain free of *Phytophthora* for many years to come allowing all the susceptible plant species living there to thrive.

Special thanks to Gary Muir, Rob Purnich, Kat Williams, Wayne Lloyd, Trevor Brown, Derek Thombleson and Jason Benson on their assistance with the construction and installation.

For more information please contact Janine Liddelow: phone 08 98 400 455 or email janine.liddelow@dpaw.wa.gov.au.

Workshop on a new system for ranking ecosystems

By Val English

A series of different protocols are applied across Australia for determining the level of threat to ecological communities (also termed 'ecosystems'). These are used to develop lists of threatened ecological communities (TECs) in the different States and Territories, and nationally. The lack of a common assessment framework has hampered assessment of risk to ecological communities, especially where they cross state boundaries, and there has also been no systematic risk assessment of ecological communities across Australia.

The International Union for Conservation of Nature (IUCN) has developed a new risk assessment system for ecosystems. The protocol provides an international standard for monitoring and reporting on global trends in ecosystem health and for planning action for conservation. The system complements the IUCN's Red List criteria that have applied to threatened species for many years.

The Australian Centre for Ecological Analysis and Synthesis (ACEAS) is a group that seeks to link ecosystem



Above Workshop participants.

scientists and environmental managers to improve understanding and management of Australian ecosystems. In March 2013 ACEAS organized a workshop near Brisbane that was attended by scientists and environmental managers from Australia and New Zealand to discuss the IUCN's new risk assessment protocol for ecosystems. DPaW's representation at the workshop provided opportunity for input to examining the use of the Ecosystems Red List criteria in the Australia - New Zealand region.

The workshop facilitated training in application of the new protocol to Australian ecosystems/ecological communities. Outputs of the workshop are proposed to include review papers on data needs and standards for applying the risk assessment to ecosystems and a comparison between the new international protocol and current listing practices across Australia.

For more information please contact Val English: phone 08 3340409 or email val.english@dpaw.wa.gov.au.



Above *Androcalva adenothalia*. Photo – Andrew Crawford, Right *Grevillea bracteosa* subsp. *howatharra*. Photo – Gemma Phelan.

Recovery plans

Recently endorsed recovery plans by DPaW's Director of Science and Nature Conservation and national recovery plans endorsed and adopted in 2013.

Interim Recovery Plans

No.	Title	Prepared by	DPaW region involved
331	Cinnamon Sun Orchid, <i>Thelymitra dedmaniarum</i>	Robyn Luu, Andrew Brown	Swan
332	Boddington spider orchid, <i>Caladenia</i> sp. Quindanning	Robyn Luu, Andrew Brown	Swan
333	Stirling Range wattle, <i>Acacia awestoniana</i>	Robyn Luu, Andrew Brown	South Coast
334	Stirling Range beard heath, <i>Leucopogon gnaphalioides</i>	Robyn Luu, Andrew Brown	South Coast

Recovery/Management plans (continued)

335	<i>Grevillea bracteosa</i> subsp. <i>howatharra</i>	Robyn Luu, Andrew Brown	Midwest
336	<i>Androcalva adenothalia</i> (formerly <i>Commersonia adenothalia</i>)	Robyn Luu, Andrew Brown	Midwest
337	Hopetoun beard orchid, <i>Calochilus pruinosus</i>	Robyn Luu, Andrew Brown	South Coast
338	Heath dominated by one or more of <i>Regelia megacephala</i> , <i>Kunzea praestans</i> and <i>Allocasuarina campestris</i> on ridges and slopes of the chert hills of the Coomberdale Floristic Region (update)	Monica Hunter, Jill Pryde	Midwest

Recovery/Management Plans (Western Australia)

No.	Title
56	Quokka (<i>Setonix brachyurus</i>) Recovery Plan
57	Whale Shark Management: with particular reference to Ningaloo Marine Park'

National Recovery Plans for species occurring in WA and two WA plans that have been endorsed and adopted under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as National Recovery Plans in 2013.

Recovery plan title	Status of plan	Adoption date
Recovery Plan for the Australian Sea Lion (<i>Neophoca cinerea</i>)	National RP	Adopted 11 June 2013
Recovery Plan for the White Shark (<i>Carcharodon carcharias</i>)	National RP	Adopted 6 August 2013
Conservation Management Plan for the Southern Right Whale	National RP	Adopted 6 August 2013
Western Spiny-tailed Skink (<i>Egernia stokesii</i>) Recovery Plan	Adopted as a National RP	Adopted 21 February 2013
Chuditch (<i>Dasyurus geoffroi</i>) Recovery Plan	Adopted as a National RP	Adopted 21 February 2013

All plans will be made available on the DPaW website: dpaw.wa.gov.au



Above Chuditch release. Photo – Kimberley Page. **Centre** Western spiny-tailed Skink. Photo – David Pearson. **Right** Jurien sea lions. Photo – Kevin Crane

Recent changes to WA threatened species lists

The *Wildlife Conservation Act 1950* provides for taxa (species, subspecies and varieties) of native flora and native animals fauna to be specially protected because they are under identifiable threat of extinction, are rare, or otherwise in need of special protection. Such specially protected wildlife (fauna and flora) is considered to be “threatened”. The WA Minister for Environment recently approved changes to the list of threatened species that were

recommended at the 2013 Threatened Species Scientific Committee (TSSC) meeting. The new lists were published on the 17 September 2013 and can be viewed on DPaW’s listing of threatened species and ecological communities’ webpage along with the following summary of changes in the tables below <http://dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/listing>

Fauna	Common name	Scientific name	Status 16 February 2012	Status 6 November 2012
Additions to Schedule 1	Barrow cave gudgeon	<i>Milyeringa justitia</i>	None	Vulnerable D2
	<i>Banksia montana</i> mealybug	<i>Pseudococcus markharveyi</i>	None	Critically Endangered A4ce, B1ab(iii)+2ab(iii)
	Talyuberlup assassin spider	<i>Zephyrarchaea barrettae</i>	None	Vulnerable D2
	Cape Le Grand assassin spider	<i>Zephyrarchaea marki</i>	None	Vulnerable D2
	Toolbrunup assassin spider	<i>Zephyrarchaea melindae</i>	None	Vulnerable D2
	Eastern massif assassin spider	<i>Zephyrarchaea robinsi</i>	None	Vulnerable D2
Additions to Schedule 2	Western long-beaked echidna	<i>Zaglossus bruijnii</i>	None	Presumed Extinct
Addition to Schedule 4	Whale shark	<i>Rhincodon typus</i>	None	Schedule 4 – other specially protected fauna
Changes to IUCN category and criteria	Woylie or Brush-tailed bettong	<i>Bettongia penicillata ogilbyi</i>	Endangered A3be; A4be	Critically Endangered A2be
Changes to IUCN criteria only	Cave gudgeon	<i>Milyeringa veritas</i>	Vulnerable B2, C2a	Vulnerable D2
Nomenclature changes	Previous name	Current name	Notes	
Scientific name changes	<i>Acizzia</i> sp. 70 (McCarthy’s plant louse)	<i>Acizzia</i> sp. (WAM E82757) (McCarthy’s plant louse)	Voucher specimen registration number added.	
	<i>Trioza</i> sp. 03 (Banksia brownii plant louse)	<i>Trioza</i> sp. (WAM E82758) (Banksia brownii plant louse)	Voucher specimen registration number added.	
	<i>Lasionectes exleyi</i> (Cape Range Lasionectes)	<i>Kumonga exleyi</i> (Cape Range Remipede)	Recent paper (Hoenemann et. al. 2013) referred by the WA Museum	
	<i>Rhinonictis aurantius</i>	<i>Rhinonictis aurantia</i>	Spelling amended in accordance with change to the WA Museum checklist.	



Above Bluff Knoll Montane community. Photo – S Barrett **Right** Midwest wildflowers.

Recent changes to WA threatened species lists

Flora	Scientific name	Status 16 February 2012	Status 6 November 2012
Additions	<i>Caladenia</i> sp. <i>Collie</i> (E. Bennett s.n.)	Priority 1	Critically Endangered C2a(ii)
	<i>Commersonia apella</i>	Priority 1	Critically Endangered A4; B2ab(iv); C2a(ii); D
	<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182)	Priority 1	Critically Endangered B2ab(i,ii,iii,iv,v)
	<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)	Priority 3	Critically Endangered B1ab(ii,iii,v)+2ab(ii,iii,v)
Deletions	<i>Banksia mucronulata</i> subsp. <i>retorsa</i>	Critically Endangered B2ab(iii)	None – De-list
	<i>Verticordia plumosa</i> var. <i>pleiobotrya</i>	Vulnerable B1ab(iii,v)+2ab(iii,v)	None – De-list
Changes to IUCN Category/Criteria	<i>Acacia splendens</i>	Endangered B1ab(iii)+2ab(iii)	Critically Endangered B1ab(iii)+2ab(iii).
	<i>Myriophyllum lapidicola</i>	Vulnerable B1+3d (IUCN 1994)	Endangered B2ab(iii,v); C2a(i)
Nomenclature changes	Previous name	New name	Publication/notes
	<i>Apium prostratum</i> subsp. <i>phillipii</i> ms	<i>Apium prostratum</i> subsp. Porongurup Range (G.J. Keighery 8631)	The WA Herbarium has reverted this manuscript name back to the phrase name to align with Council of Heads of Australian Herbaria (CHAH) 2005 phrase name protocols.
	<i>Banksia rufa</i> subsp. <i>pumila</i> (A.S.George) A.R.Mast & K.R.Thiele	<i>Banksia rufa</i> subsp. <i>pumila</i>	Authors need to be removed after name on Notice for consistency.
	<i>Commersonia adenothalia</i> C.F.Wilkins ms	<i>Androcalva adenothalia</i> C.F.Wilkins	See C.F.Wilkins & B.A. Whitlock in Austral.Syst.Bot. 24:290 (2011).
<i>Pityrodia scabra</i>	<i>Pityrodia scabra</i> subsp. <i>scabra</i>	Publication of the new subspecies <i>Pityrodia scabra</i> subsp. <i>dendrotricha</i> requires the creation of the type subspecies name for the listed taxon.	

The next TSSC meeting will be scheduled within the first quarter of 2014 and the public are invited to submit nominations for changes to the lists. Nominations to add taxa to, or delete taxa from, the current declared rare flora and Specially Protected Fauna lists should be submitted to the TSSC (tssc@dpaw.wa.gov.au) by the end of January 2014. For further information including application forms and guidelines visit DPaW's website [Call for public nominations for listing (and delisting) of threatened plants and animals www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/listing/118-call-for-public-nominations-for-listing-and-delisting-of-threatened-plants-and-animals] or contact DPaW's Species and Communities Branch on 9334 0455.



Above *Caladenia* sp. *Collie*. Photo – Andrew Brown.

WATSNU is 20 years old!

Jill Pryde

With the first edition printed in October 1993, a total of 720 articles have now been published in our newsletter, WATSNU. The articles have included many topics concerning WA's threatened and priority flora, fauna and ecological communities. There have been many exciting articles on rediscovered species, articles on the status and recovery of flora, fauna and ecological communities, on rehabilitation and restoration of their habitat and purchases of land to protect species and ecological communities. Articles relating to biodiversity conservation outcomes and the protection of WA's natural heritage, in relation to collective cooperation, partnerships with volunteer groups, private land holders and traditional

owners, including covenanting of land to protect environmentally sensitive areas have been published. We have reported on recovery team meetings, recovery plans and management plans and their implementation. Information has been provided on funding that has assisted research and recovery. Articles have provided information on the listing and de-listing of flora and fauna and ecological communities and of translocations of species. Sadly, we have also reported on many threats that include weeds, feral animals and disease to name a few. The newsletter has also provided interesting reports on hydrological investigations, fire monitoring, mapping vegetation and field days.

In WA there are currently 415 threatened flora and 2,951 priority flora, 246 threatened fauna, 13 specially protected fauna and 196 priority fauna and 69 listed threatened ecological communities (TECs), and 302 Priority ecological communities.

All newsletters are archived in DPaW's library. Thanks to Lisa Wright who maintains the newsletter index.

For more information please contact Jill Pryde: phone 08 93340263 or email jill.pryde@dpaw.wa.gov.au.

WATSNU through the years...



Department of
Parks and Wildlife



Editors: Jill Pryde
Species and Communities Branch
Department of Parks and Wildlife
Western Australia
Locked Bag 104, Bentley Delivery Centre, Bentley WA 6983
Email: jill.pryde@dpaw.wa.gov.au