watsnu

Species and Communities Branch newsletter for Species and Ecological Communities conservation
December 2009 Volume 15, Issue 2

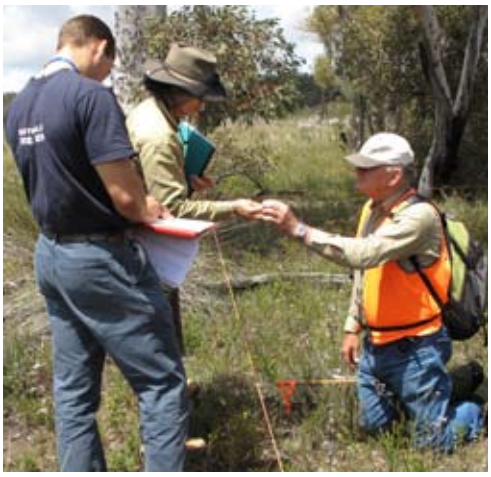
Surveying jarrah forest wetlands

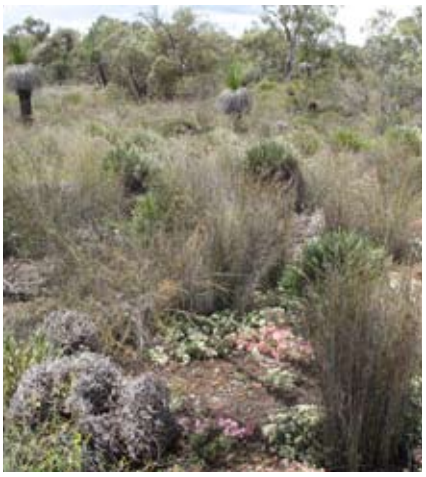
by Jill Pryde

The June 2009 issue of *WATSNU* featured an article on the wonders and values of the Canning River east branch mosaic wetlands that occur in jarrah forest near Karragullen. Department of Environment and Conservation (DEC) volunteers Fred and Jean Hort have spent many hours in this area and believe that the wetlands are unique due to their rich flora and invertebrates and the diversity of the plant communities.

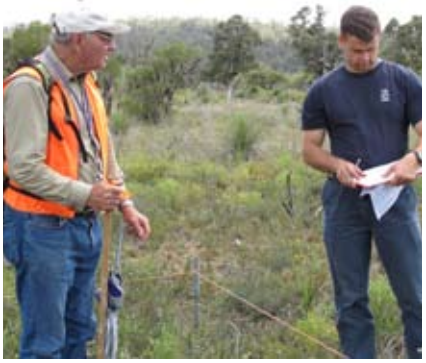
Following discussions with DEC's Species and Communities Branch, Fred and Jean compiled detailed biological information and submitted a public nomination for these special wetlands to the WA Threatened Ecological Communities Scientific Committee (TECSC) for assessment as a possible priority ecological community. The committee met in June and concluded that the wetlands are a mosaic and landscape of interest. The TECSC noted that some particular components of the wetlands were of interest and recommended that more information be gathered about their composition and regional distribution.

Staff from the Species and Communities Branch and Perth Hills District visited the site in mid-November with Fred and installed three quadrats in selected plant communities of interest. These include 'Heath with scattered *Eucalyptus drummondii*', 'Cracking clay flats' and 'Ironstone heath' communities. These sites will be revisited in 2010 to compile a complete flora list from each of the quadrats so the composition can be compared to other similar communities that occur in the south-west of the State.





Above left and bottom DEC staff survey quadrats with Fred Hort.
Above Ironstone wetlands.
Below Jarrah forest wetlands.
Photos – Val English



Inside this issue

When rocks aren't just rocks: the microbial communities of Black Point

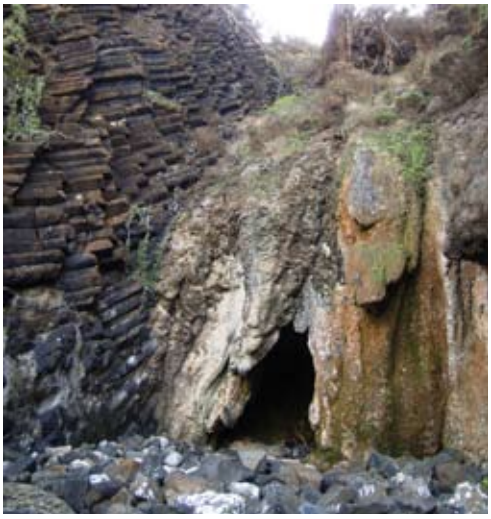
by Cassidy Newland

Situated 40 kilometres south-east of Augusta is spectacular Black Point, one of the few places in Western Australia where formations of columnar basalt can be seen. However, few people know that there is another unique feature that makes this place special: the formations of microbial tufa.

Microbial tufa is a soft limestone-like rock which is a form of microbialite which, unlike other similar sedimentary deposits such as tamala limestone, are generally not composed of skeletal remains but are formed through interactions between microbial communities and detrital or chemical sediments. Other types of microbialites include the stromatolites of Shark Bay and the thrombolites of Lake Clifton.

Microbial tufa forms in fresh water streams and spring flows where microbial interactions aid in the precipitation and deposition of calcium carbonate resulting in the formation of a soft spongy rock. At Black Point, most of the microbial tufa formations occur on basalt, fed by springs which flow from where the vegetation meets the edge of exposed basalt.

Microbial tufa communities are found elsewhere in the south-west and have been recorded along the coast from Walpole to Cape Naturaliste. The most studied occurrences are between Cape Naturaliste and Cape Leeuwin including at the waterwheel in Augusta, Quininup Falls and Canal Rocks near Yelverton. The microbial tufa communities of the 'Capes' region are known as 'Augusta microbial – rimstone pools and cave structures formed by microbial activity on marine shorelines' and are currently listed as an endangered threatened ecological community (TEC).



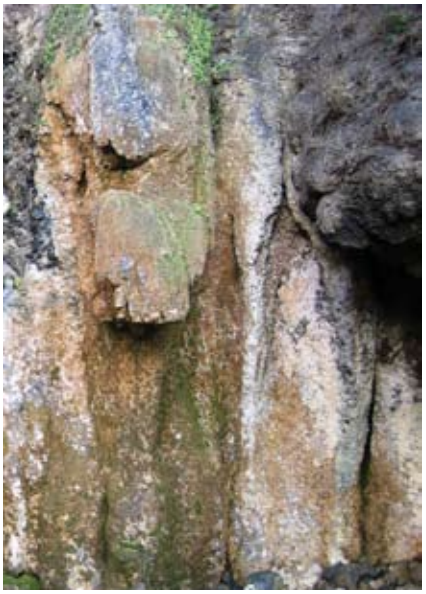
Previously, little was known about the microbial tufa at Black Point with the two occurrences known by DEC staff never being formally surveyed. This year, staff in DEC's Warren Region conducted a survey of Black Point to map and describe the occurrences of microbial tufa and collect samples for laboratory analysis.

The survey revealed that there were many more occurrences than previously known, with a variety of microbial tufa formations of varying ages and sizes being located. Formations on the eastern side of the point generally appeared much older and larger. It is thought that this location may have once been much wetter with more significant spring flows than are now known to exist on the eastern side of the point. Due to a changing climate and hydrology, some of these formations are no longer active.

The microbial tufa communities of Black Point are somewhat isolated from other known microbial tufa communities and before they can be considered for inclusion as new TEC occurrences more work is required to determine if they have a similar community composition to the Augusta microbial TEC. Samples have been collected at the Black Point and Walpole occurrences and further study and analysis is being carried out by Associate Professor Jacob John from Curtin University. Results from the study and analysis will determine if the microbial tufa occurrences are the same community type as previously described or whether they comprise a number of different communities.

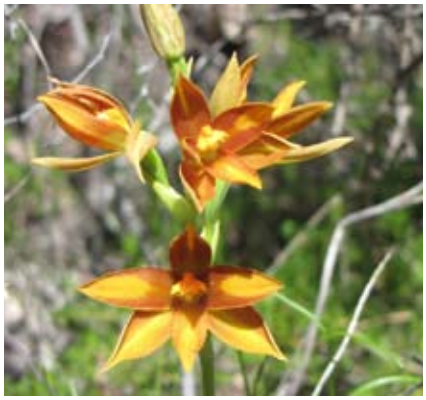
For more information contact Cassidy Newland on (08) 9771 7946 or by email (cassidy.newland@dec.wa.gov.au).

Above left Beaufort cave entrance.
Above Tufa stalactites.
Right Inactive tufa.
Below left Beaufort cave entrance.
Below Draping tufa formations.
Photos – Cassidy Newland



Range extension for cinnamon sun orchid

by Melissa Hoskins



Thelymitra dedmaniarum, commonly known as the cinnamon sun orchid, is listed under the Western Australian *Wildlife Conservation Act 1950* as critically endangered. The species is listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It was previously known from just two locations near Gidgegannup, but a recent survey by Swan Coastal District staff located a third population at Boonanarring Nature Reserve, north of Gingin.

Species of *Thelymitra* are commonly known as sun orchids because their flowers close at night or during cool, cloudy weather and open only on warm sunny days when there is little wind. The cinnamon sun orchid flowers in late spring when it is generally fine and warm.

Originally identified as *Thelymitra stellata* in 1992, the Boonanarring population was monitored in November 2009 by DEC Swan Coastal District staff who located 17 plants. Nine plants were in flower and another two plants had been grazed, with the remaining plants consisting of leaves only. Site and voucher collection information was recorded about the population including plant numbers, condition of the habitat and threatening processes. The individual plants were accurately mapped using a differential GPS so that populations of this species can be easily relocated in future when monitoring is undertaken. As a voucher specimen had never been collected for this population a collection was made during the November 2009 survey and was positively identified as *T. dedmaniarum*. This highlights the importance of vouchering new populations. This 'new' population increases the total number of known populations to three and also increases the known range of the species by approximately 60 kilometres to the north-west.

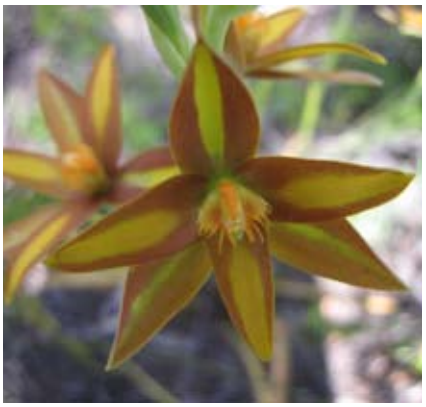
Top left *Thelymitra dedmaniarum* flowers.

Above Jarrah and marri woodland habitat of new population.

Right Close-up of *Thelymitra dedmaniarum* flower.

Bottom right *Thelymitra dedmaniarum* flowers.

Photos – Melissa Hoskins

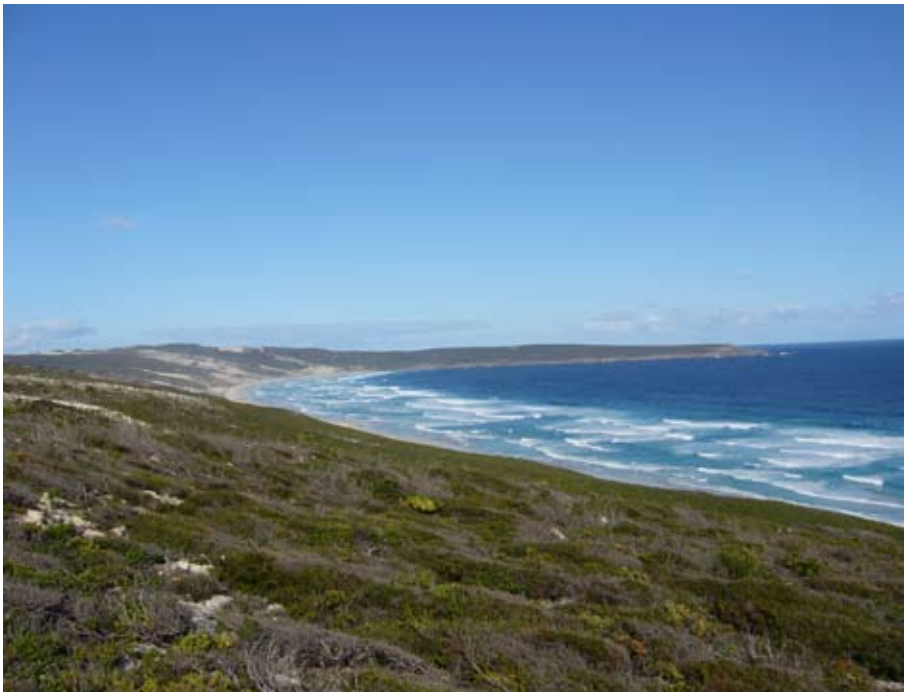


With the population at Boonanarring Nature Reserve being located in open low woodland of jarrah and marri with understorey including *Hakea trifurcata, Bossiaea aquifolium* and *Hibbertia hypericoides*, the potential habitat in which this species could occur has now been increased. Previously known populations are confined to areas of open wandoo woodland on red-brown sandy loam associated with dolerite and granite outcropping.

For more information contact Melissa Hoskins on (08) 9405 0740 or by email (melissa.hoskins@dec.wa.gov.au).

Recovery planning at a regional scale

by Janet Newell



In 2004, the South Coast Region and some other regions across Australia were chosen by the Australian Government for a pilot project to trial threatened species recovery planning at a regional scale. This project was developed to try to overcome some of the shortcomings of recovery planning at a species level such as the resource-intensive nature of single species recovery, that recovery is often carried out in isolation from other species and that it is sometimes not integrated with broader natural resource management issues.

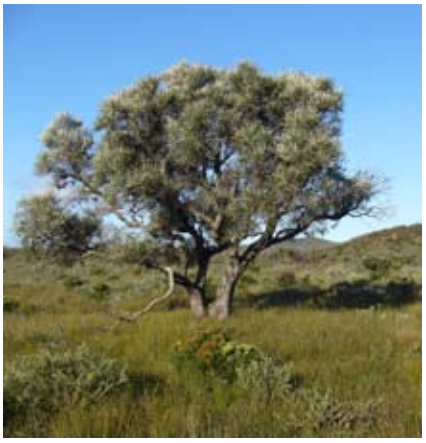
The project was recently completed and the South Coast Threatened Species and Ecological Communities Regional Strategic Management Plan was produced. The plan covers the South Coast Natural Resource Management Region, an area of 9.7 million hectares that includes 189 threatened species and ecological communities. Rather than providing detailed recovery actions for each species, the plan outlines a strategic approach to improving the integration of threatened species recovery and threat abatement at a regional scale. However, the plan does not meet the EPBC Act requirements for a recovery plan.

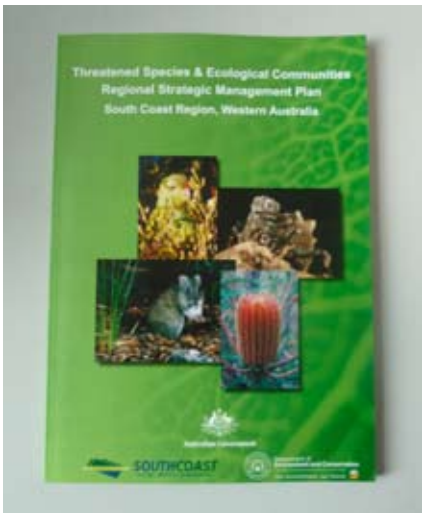
One of the recommendations of the strategic management plan is to develop recovery plans for smaller priority areas in the region that do meet the EPBC Act requirements. These plans will take a landscape approach to threatened species recovery and threat abatement and will incorporate broader biodiversity conservation issues. They will outline detailed recovery actions that will take into account all the threatened species in the area and potential interactions between the species and threatening processes.

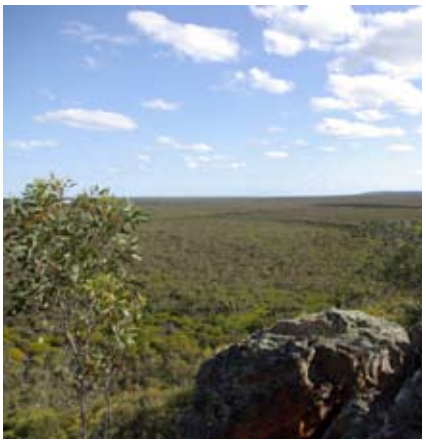
The first of these plans is currently being developed for the Fitzgerald Biosphere. The biosphere is about 1.3 million hectares, including the Fitzgerald River National Park and the surrounding catchments. It includes nine threatened fauna, 32 threatened flora and one TEC. Fifteen of the flora and the ecological community are endemic to the area. The area also includes numerous other endemic and/or priority species and ecological communities. The plan for this area will be completed by mid-2010.

Regional recovery planning is an exciting concept that the Australian Government is continuing to explore due to its potential to increase the effectiveness and efficiency of threatened species recovery and decrease the need for individual species plans.

For more information on regional recovery planning in Australia see the Department of the Environment, Water, Heritage and the Arts' website at www.environment.gov.au. For more information on regional planning on the South Coast contact Janet Newell at DEC's Albany office on (08) 9842 4525.







Above Cape Knob.

Right, top to bottom Cape Knob, regional management plan, Ravensthorpe Range and Mid Mount Barrens.

Photos – Janet Newell

Remote sensing cameras spot chuditch at Dryandra

by Mick Davis

DEC's Wheatbelt Region has successfully trialed the use of remote sensing day/night cameras to monitor fauna. The cameras use an infra-red flash to replace the traditional white flash, making night photos and also short videos possible. Motion sensors fitted to the camera take photos whenever there is movement.

A recent deployment of remote cameras at Dryandra Woodland uncovered some very interesting results. Western grey kangaroos, tammar wallabies, brush-tailed possums, echidnas, a grey kurrawong, several woylies and even chuditch were detected and successfully photographed over a one-month 'trapping' session.

Great Southern District Nature Conservation Leader Peter Lacey said the cameras were instrumental in confirming that chuditch continue to use the main block at Dryandra.

"In the past we have used traditional cage trapping to detect animals in Dryandra," Peter said.

"Although the remote cameras are not a replacement for traditional trapping techniques they have a number of advantages. The cameras use fewer resources, provide additional information about fauna behaviour and provide photographic proof of animals, which is less disruptive to animals.

"There is less potential to miss animals because of poor weather conditions or situations where the trap is already full and they can potentially pick up animals that are in poor health and consequently may not enter a cage trap."

A composite image of some of the animals captured by a remote sensing camera.

Photo – DEC

Remote cameras are increasingly being used by DEC and the community in the role of 'bush detective' and the more the cameras are deployed, the more we begin to understand about native and feral species in the bush.

If you are keen to know more or get one of your own cameras, contact your local *Land for Wildlife* officer at your nearest DEC office.

Threatened ecological communities monitoring course

by Val English

Sixteen people from DEC, a Natural Resource Management group and a local government authority attended the TEC monitoring course held in Perth on 4 and 5 November 2009. The course was organised by staff from DEC's Species and Communities Branch.

A pilot workshop was run in 2008 and the curriculum expanded and improved in response to feedback.

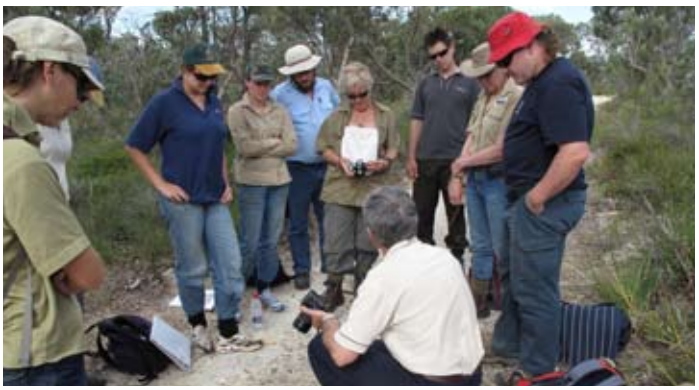
Changes to the curriculum for 2009 included more detailed information on designing monitoring with consideration of statistical power, more detailed information about hydrological issues, weed monitoring and new web-based resources available following the completion of the TEC component of the Resource Condition Monitoring (RCM) project undertaken with Commonwealth funding assistance through the Natural Heritage Trust. Monitoring protocols and standard operating procedures developed as part of the RCM project were discussed and provided to participants on a resource disk.

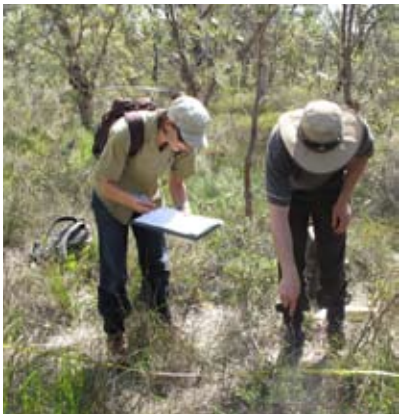
Nine DEC staff from the Nature Conservation and Regional Services divisions provided presentations and facilitated field studies and discussions about monitoring scenarios during the two-day course.

The afternoon field sessions included setting up quadrats and transects in Bold Park and Koondoola open space with the kind permission of the Botanic Gardens and Parks Authority and the City of Wanneroo.

Overall feedback from the course was positive and organisers hope to run it every second year.

For more information on monitoring threatened species and ecological communities, including monitoring protocols and standard operating procedures, see the DEC's website www.dec.wa.gov.au and navigate to 'Monitoring' under the 'Management and protection' page.





Above TEC course participants discussing photo monitoring with Kim Williams.

Right TEC course participants monitoring a transect at Koondoola Open Space.

Photos – Val English

Conservation of the graceful sun-moth

by Carly Bishop

The graceful sun-moth (*Synemon gratiosa*) is a small, brightly coloured day-flying moth endemic to south-western Australia. It is restricted to the Swan Coastal Plain between Quinns Rocks and Mandurah. It is Specially Protected Fauna under the WA *Wildlife Conservation Act 1950* and listed as endangered under the Commonwealth EPBC Act. There are few known populations and none in conservation reserves.

Adult graceful sun-moths are found for only a few weeks each year, mainly in March, so it is only at this time that reliable surveys can be conducted. For most of the year the larvae (caterpillars) live underground where they feed on the subterranean parts of two closely related Lomandra species, *Lomandra maritima* and *L. hermaphrodita*. The distribution of these plants is the major determinant of potential graceful sun-moth habitat.

L. maritima was identified as a larval host plant only recently and this has widened the potential habitat of the graceful sun-moth to include many areas zoned for clearing in near-coastal parts of the Perth and Peel areas. This creates an urgent need to clarify the habitat and distribution of the species to resolve any potential conflict between the species' conservation and future development.

During 2010, DEC Research Scientist Carly Bishop will be coordinating a DEC specific nature conservation project to survey the graceful sun-moth and its habitat. These surveys will extend from (at least) Wilbinga in the north to Binningup in the south, including existing and proposed conservation reserves. The project will determine the habitat and distribution of the graceful sun-moth, provide a regional context for environmental impact assessment processes and clarify the conservation status of the species.

As part of environmental impact assessment processes, environmental consultants will be required to survey for graceful sun-moth and DEC will incorporate the results of these surveys in the study. DEC conducted training sessions for environmental consultants, local government officers, DEC staff and volunteers on survey methods for the graceful sun-moth in November 2009 and will hold more in February to March 2010.

There will be extensive surveys and searches for adult graceful sun-moths between late February and early April 2010. Participation of volunteers, community groups and DEC staff will be sought for these surveys.

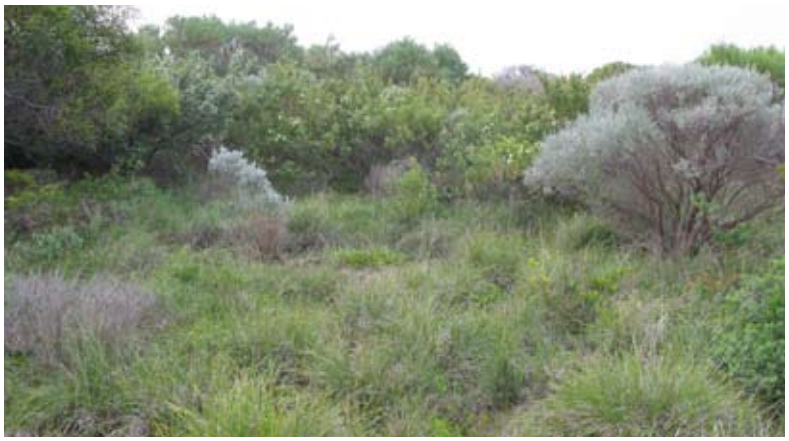
Anyone wishing to find out more about the project, or who would like to take part in the February to April 2010 surveys, please contact Carly Bishop at DEC's Science Division (carly.bishop@dec.wa.gov.au).

Below from left When at rest, the graceful sun-moth's dark grey-black forewings cover the bright orange hind wings.
The undersides of the graceful sun-moth's wings are marked with bright orange.

Photos – David Pike, City of Joondalup

Below *Lomandra maritima* at Ocean Reef.

Photo – Jill Pryde



Improving data about ecological communities

by Nina Stick

DEC's Species and Communities Branch received resources for the Shared Land Information Platform (SLIP) through State Natural Resource Management funds for a project to improve priority ecological community (PEC) and TEC data. Specific data from the project will be put on the SLIP website and will be available to NRM groups to help guide land management decisions.

A number of PECs are potentially under significant threat but comprehensive information including accurate location and boundary data are not currently available in DEC's threatened ecological community database. The aim of this project is to address some of these data gaps. The locations of occurrences will be confirmed, boundaries of some PECs will be ground-truthed, general data about sites improved and buffer distances reviewed.

Two conservation officers have been employed to complete the project. The officers have started work on a suite of PECs including the priority 3 ecological community 'Northern Spearwood shrublands and woodlands'. This community was identified in a 1994 report about the plant communities of the southern Swan Coastal Plain. Major threats to this community are clearing for extraction of limestone and for residential development.

Other communities that will also be a focus for the project are located in other parts of the State including DEC's Goldfields, South West and Midwest regions.

For more information please contact Nina Stick on (08) 9334 0344 or by email (nina.stick@dec.wa.gov.au).

Priority 3 ecological community – 'Northern spearwood shrublands and woodlands' at Bold Park.

Photo – Nina Stick

Philotheca basistyla – a critically endangered species in decline in the Wheatbelt

by Natasha Moore

Philotheca basistyla is restricted to two very small roadside populations between Kellerberrin and Trayning. These populations are found growing underneath taller shrubs and trees in dense scrub heath vegetation on deep yellow sand. This type of habitat has been mostly cleared for agriculture, is highly grazed by rabbits and is slowly declining every year. The total population currently consists of 32 mature plants, three of which are showing signs of senescence. Recent monitoring and survey work indicates that at the current rate of decline and with no intervention the species could be expected to become extinct within five to eight years.

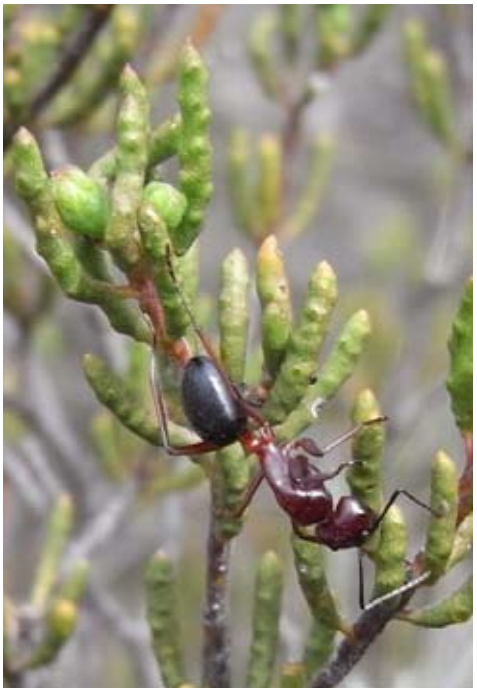
An extensive search of surrounding potential habitat during spring (18 kilometres of roadside and 320 hectares of remnant vegetation) has proven unsuccessful. During this survey however, several suitable sites were identified for the translocation of this species should funding be secured in the future.

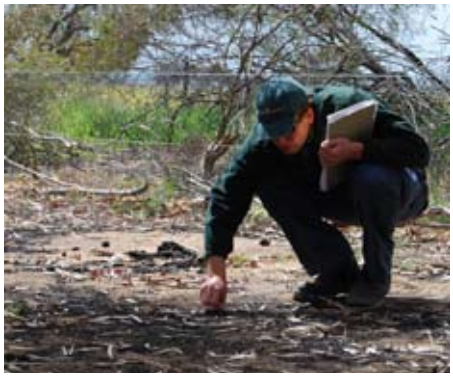
While there is a degree of prime habitat remaining for this species, the plants seem to be unable to recruit seedlings under current conditions. A trial recruitment burn was conducted last autumn in an area adjoining one of the populations. However, slightly lower than average winter and spring rainfall events have led to a late germination of seedlings in the plots and due to the general lack of knowledge of seedling morphology, results from this experiment are still pending.

Several ant species have been observed foraging on the tips of the plants' branches, but very little is known about the relationship between these ants and the plants. The presence of ant species on shrubs and trees is commonplace and more work needs to be done to determine whether *P. basistyla* is doing more than simply providing nectar to the ants or if there is a genuine mutualism between them (a relationship between two organisms of different species that benefits both and harms neither). One of the ant species has been identified as *Camponotus postcornutus* which is known to be a scavenger and will also feed on honeydew and nectar. Mutualistic associations of some *Camponotus* with certain butterflies are well documented.

There are many simple questions about the relationship between *P. basistyla* and ant species that remain unanswered. Do the ants feed from the flowers? Do ants harvest the seeds? During the evening/night when the ants are more active, can they be seen taking leaf hoppers from their nests up to feed or are they attending other insects? Without further urgent research and investigations into this species and the landscape processes that are at work in the area, we may never fully understand its role in the ecosystem nor be able to effectively and efficiently recover this species in the wild.

For more information contact Natasha Moore or Ben Lullfitz at DEC's Merredin office on (08) 9041 2488.





Clockwise from top left
A suspected *Philotheca basistyla* seedling.

Close up of *Philotheca basistyla* showing a *Camponotus postcornutus* worker in a pose that suggests it is imbibing fluid or at least paying close attention to a particular part of the plant.

Photos – Ben Lullfitz

Philotheca basistyla flower.

Philotheca basistyla plant.

Flora conservation officer Ben Lullfitz surveying a trial plot.

Photos – Natasha Moore

Monitoring fire effects

by Val English

Recovery plans for threatened ecological communities (TECs) generally recommend applying fire at an appropriate intensity and frequency that ensures the vegetation maintains its condition. Unfortunately, in many cases there is insufficient information about fire response to determine this.

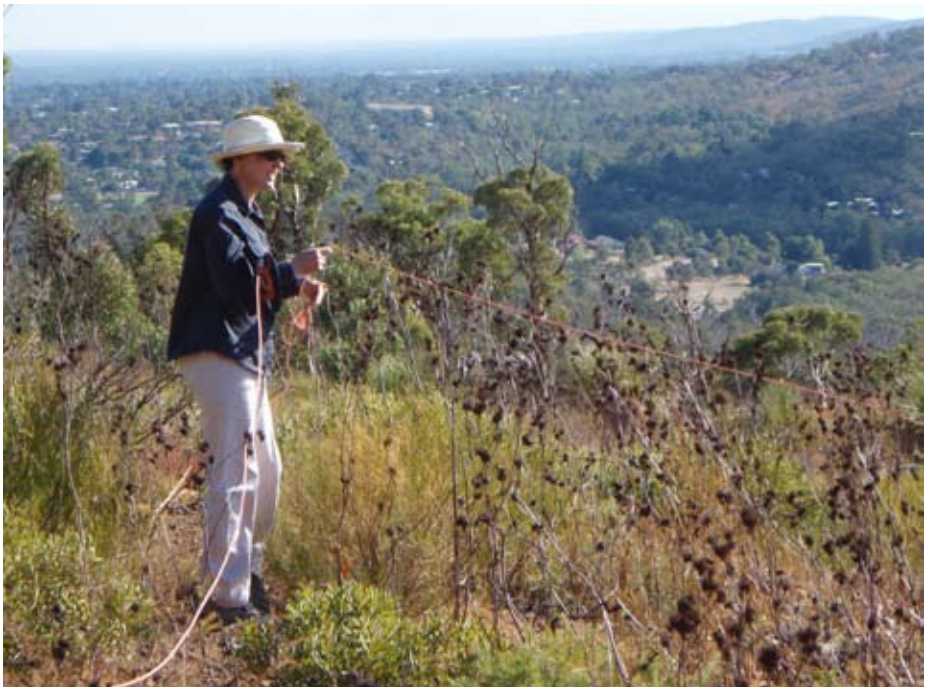
Areas of bushland that contained threatened and priority ecological communities in the hills and Darling Scarp near Perth were recently planned for prescribed burning to help reduce the risk of intense wildfires. This has provided a unique opportunity to establish monitoring sites to indicate how the vegetation responds to and recovers from fire at a particular intensity in a particular season.

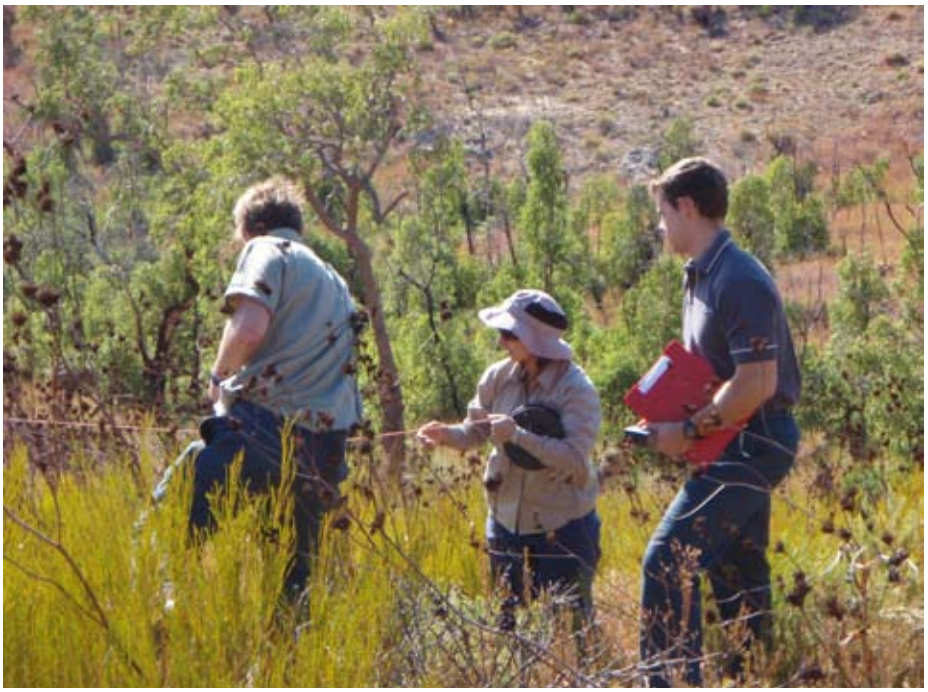
Permanently marked sites in two different plant communities were established by Species and Communities Branch TEC specialist staff and staff from DEC's Perth Hills District in areas planned for burning in 2009. The communities are known as 'Central granite shrublands' (a priority 4 community), and 'Eastern *Banksia attenuata* and/or *Eucalyptus marginata* woodlands' (an endangered TEC).

Specific monitoring protocols were designed for each of the communities, targeted in particular at determining the response of the most fire sensitive species present. The granite shrublands contain a suite of species that hold their seeds in woody fruits and release seeds after fire. Species that are killed by fire and do not resprout, and require lengthy time periods to mature and produce seed, can be particularly sensitive to short inter-fire intervals. These species are a focus for the monitoring of this granite community.

The banksia or eucalypt woodland community included in the study contains a suite of herbs and shrubs that are not thought to be particularly fire sensitive, but their response to fire requires further study. The monitoring established for this plant community is therefore aimed at the general range of species that make up the vegetation type.

The sites established for this study, including areas that will not be burnt that act as 'control' areas, will be re-surveyed at regular intervals. The first re-survey will be undertaken very soon after the burn. This will provide information about which species have been killed by fire, which resprout from rootstock and which produce seedlings after fire. Follow-up surveys will gradually build up a picture of the response of individual species, and of the plant community as a whole, to particular patterns of burning in terms of inter-fire intervals, seasonality and the intensity of fire to which they are exposed.





Information from these studies will then be used to design future fire regimes that will help to maintain the species composition and structure and general condition of these very special plant communities.

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

Top Staff setting up a fire monitoring quadrat in the priority 4 community – 'Central granite shrublands'.

Above Staff setting up a fire monitoring quadrat.

Photos – Jill Pryde

Thelymitra sp. Ongerup – a little known species confined to the Ongerup area of WA

by Andrew Brown

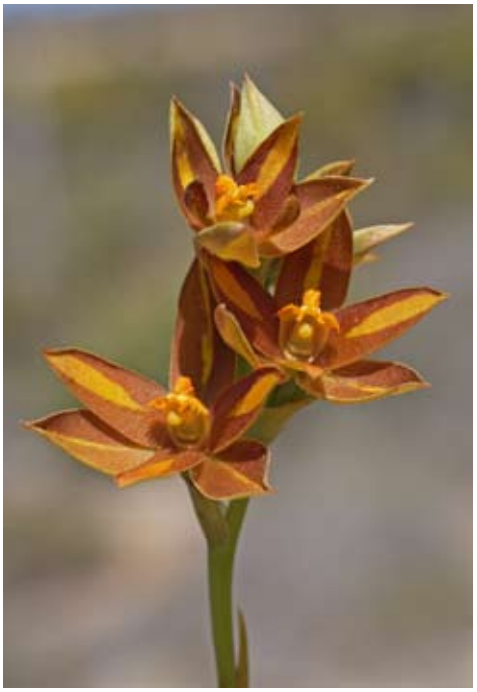
This highly attractive undescribed species was brought to the attention of Species and Communities Branch staff by Sue Oborne (a member of the Albany District Threatened Flora Recovery Team) during a team meeting at Ongerup in 2007. Sue had found the species on her farm some years previously and had sent a specimen to the WA Herbarium. At that time, staff at the Herbarium had identified the species as *Thelymitra stellata*. However, Sue was convinced that it was different. Surveys indicted that the species was obviously not *T. stellata* and, although a member of the so-called *T. fuscolutea* complex, did not match any other species in that group. Consequently, the plant was provided the phrase name *T.* sp. Ongerup. A second, larger population was located some hundreds of metres from the first population during the survey.

The species, which has a single broad leaf that is withered by the time of flowering, grows to 30 centimetres high and has between two and seven golden-yellow, brown and orange highly fragrant flowers to four centimetres across. These differ from *T. stellata* principally in their broader, more ornate upper column lobe and different colouration. *T.* sp. Ongerup is also found several hundred kilometres south-east of *T. stellata* and has a generally later flowering period.

In order for the species to be provided priority flora status a specimen must be lodged at the WA Herbarium, so Species and Communities Branch staff visited the site again in November 2009. With the Obornes' help, surveys of the known populations were undertaken and specimens collected. Similar habitat in other areas on the farm were also searched, however no other populations were located. Other areas along roadsides were surveyed but again no new plants were located.

Members of the WA Native Orchid Study and Conservation Group have also searched for this species without success and it appears likely that it is very restricted.

Due to its restricted nature and small population sizes the species will be recommended for priority flora status.



Right *Thelymitra* sp. Ongerup.
Below Close-up of *Thelymitra* sp. Ongerup.

Photos – Andrew Brown

Recovery plans approved

Seven new and one revised flora interim recovery plans (IRPs) have recently been endorsed by DEC's Director Nature Conservation.

No.	Title	Prepared by	DEC regions/districts involved
286	*Acacia cochlocarpa* subsp. *velutinosa*	Robyn Luu and Andrew Brown	Wheatbelt
287	Gibson wattle, *Acacia imitans*	Rebecca Hayes and Catherine Page	Midwest
288	Nyingarn wattle, *Acacia unguicula*	Rebecca Hayes and Catherine Page	Midwest
289	Pungent jacksonia, *Jacksonia pungens*	Robyn Luu and Andrew Brown	Moora, Avon Mortlock
290	Ninghan violet, *Hybanthus cymulosus*	Rebecca Hayes, Kym Pryor and Catherine Page	Geraldton
291	*Marianthus paralius**	Robyn Luu and Andrew Brown	Swan Coastal
292	Bodallin poison, *Gastrolobium diabolophyllum*	Robyn Luu and Andrew Brown	Yilgarn
293	*Guichenotia seorsiflora*	Robyn Luu and Andrew Brown	Avon-Mortlock, Yilgarn, Great Southern

**Marianthus paralius* was previously known as *Billardiera* sp. Seabird (G.J. Keighery) and co-occurs within 'Coastal shrublands on shallow sands' (otherwise known as floristic community type 29a), which is a priority 3 ecological community.

Left *Guichenotia seorsiflora*

Photo – Ben Lullfitz

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