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New plant species unearthed by Regional Herbarium

As appeared in Busselton-Margaret Times, 02/02/2006

A shared devotion to the indigenous native plants of the Cape Naturaliste region earned Don Carter and Hazel Cole certificates of gratitude from the Dunsborough community on Australia Day.

The pair have spent many years in the bush collecting, sorting and identifying specimens for the WA Herbarium.

Mr. Carter and Mrs. Cole have undertaken monthly surveys of flowering plants at many of the bush reserves around Dunsborough, discovering species not previously noted in the area.

On one of their floral surveys last year, they discovered a previously unknown species of *Gastrolobium*, the native pea family.

At the request of the WA Herbarium, a wider search for the species resulted in several other discoveries of the species.

For now, the native pea has been given the

scientific name of *Gastrolobium sp. Quindalup*.



Gastrolobium sp. Quindalup



Don Carter with the Dunsborough Community Award and Hazel Cole with the new species they discovered: *Gastrolobium sp. Quindalup*.

Photo by A. Palmer

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Welcome to the First Edition!

Thank you to everyone who has contributed to this jam-packed first edition of The Flora Scene.

The aim of this newsletter is to keep Regional Herbaria within the South West NRM Region up-to-date and informed with what's happening both within the regional herbaria and at the State Herbarium.

You can help keep these information gates open by contrib-

uting to the newsletter!

Share with us your history, your problems, your future plans, let us know of special events or of funding you have obtained. We want it all!

The newsletter will be released on a quarterly basis at the start of each new season (March, June, September and December); closing dates for contributions will thus be a month in advance, so write it on your

calendars now.

Funded in part by an NHT/SWCC grant and CALM, my position as SW Regional Herbarium Liaison Officer was developed to assist in the revitalization of the SW Regional Herbaria Network through the assessment of current activities and the provision of assistance to volunteers as needed.

Continued pg 2

Project looking to boost regional herbaria

Jane Hammond, Fremantle Freelance



Bunbury Regional Herbarium volunteers at Manea Park (Jean Walker, Sue Merritt, and Gloria McNerney). Photo by D.Harvey.

Collections of dried plants held in regional herbaria throughout the south-west are being given a boost through a project designed to assist volunteers in maintaining and expanding their botanic collections.

The project is being funded with the help of more than \$120,000 from the Australian Government's Natural Heritage Trust and the State Government through the South West Catchment Council (SWCC).

Project manager, regional flora conservation officer with the Department of Conservation and Land Management (CALM) Russell Smith said regional herbaria had an important role to play in documenting and conserving the biodiversity of the south-west region.

He said there were 15 regional herbaria established in the region five years ago under an earlier Natural Heritage Trust funded project.

The current project would

attempt to reinvigorate the herbaria and provide advice and assistance to the volunteers who looked after the special collections.

Mr. Smith said some regional herbaria, like the Bunbury Herbarium, were thriving with up to 10 active volunteers meeting each week to expand and collate the collection. Others had all but disappeared. All were important in providing and collecting specimens for the State Herbarium and providing an invaluable local resource for identifying local plants.

"The idea is that all of the herbaria use the same methods employed by the State Herbarium to process plant specimens and to catalogue them," Mr. Smith said.

Thousands of specimens had been lodged with the State herbarium by regional herbaria in the south-west in the past few years.

"Regional herbaria are the source of a lot of specimens that would otherwise not get to

the State Herbarium. They also act as a place where local people or organisations can get assistance identifying plants.

"They are important in locating new populations of endangered plant species. In Bunbury the volunteers have been involved in searches for threatened and priority flora. Sometimes they find new populations of threatened species."

Mr. Smith said the Bunbury group had also been involved in collections at sites that had not previously been well surveyed.

"Regional herbaria are an invaluable resource," he said. "The project will provide assistance to the existing herbaria with the provision of some herbarium materials and help with accessing funding and information."

He said the project would also help lift the profile of regional herbaria and their role in conservation.

"(Regional Herbaria) are important in locating new populations of endangered plant species."

Welcome to the First Edition!

Continued from pg 1

It has certainly been a busy first three months with visits to many of the SW Regional Herbaria, the production of this newsletter, media interest in the Regional Herbaria Network and the ongoing maintenance and coordination of the Bunbury Regional Herbarium and its band of amazing volunteers.

The Bunbury volunteers have had a break over the summer period but are now back with a

very busy 12-months ahead of them. Our particular focus being on the sampling of areas on the Eastern side of the forest block that have lacked sufficient sampling in the past.

It is evident from this newsletter that other Regional Herbaria are also set for a huge year. I am certainly more than happy to assist any groups in planning their works programs for 2006, feel free to contact me at the office or send me an

email.

I hope everyone has a great and productive year and if I haven't met you already I look forward to doing so in the near future.

Keep those articles coming!

Frances Kirchner
SW Herbarium Liaison Officer



Frances Kirchner and Shirley Fisher at the Bunbury Regional Herbarium.

Photo by South West Times

Under Pressure – The Busselton Ironstone Association

Aarron Grant, Threatened Ecological Community Officer, CALM Blackwood District

The Southern Ironstone association is a Threatened Ecological Community (TEC) located on the Abba Plain inland from Busselton. This TEC is classified as endangered under the Federal Endangered Species Protection Act 1992 (ESP Act) with approximately 5 - 6% of the original extent remaining.

Due to the Ironstones being of very small areas and the majority now island reserves within the agriculture zone, the Ironstone TEC is constantly under pressure from numerous threats.

Weed invasion, hydrological changes, disease (*Phytophthora cinnamomi*), mining activities, fire and bottlenecks of genetics due to population size are a few of the threats we are currently working on to reducing impacts.

The ironstone formation is a very harsh and unforgiving environment. Sheet laterite rock with no to minimal skeletal soils and seasonal inundation, provides limited opportunity for plants to be successful. However, the ironstone community, through time, has produced an array of species highly specialised to deal with the conditions and until clearing and land use modifications were very successful.

Due to this specialisation, species associated with the ironstone tend to be endemic and as a result a number are listed as Declared Rare Flora (DRF) and Priority species

Grevillia maccutcheonii, *Gastrolobium papilio*, *Darwinia* sp. Williamson, and *Dryandra squarrosa* subsp. *argillaceae* are just a few DRF associated with the ironstone communities.

Currently there are 15 locations within the Blackwood District which have been classed as the Busselton Ironstone. Of this, the areas range from highly degraded (generally the ironstone and a couple of remnant species present) to almost pristine condition showing a full complement of species with a number of minor threats beginning to show their presence.

Of these locations one has a high level of endemism and is being impacted from a number of the biggest threats. Williamson Road has three species which to date have not been located elsewhere (*Gastrolobium papilio*, *Darwinia* sp. Williamson, *Lambertia echinata* subsp. *occidentalis*).

Williamson road also has *Petrophile latericola* (DRF) in healthy numbers which in its' only other known location has only three plants remaining. There is also an array of other DRF

and Priority species present (*Hakea oldfieldii*, *Chamelancium roycei*, *Dryandra nivea* subsp. *uliginosa* and *Dryandra squarrosa* subsp. *argillaceae*).

The threats at this location are numerous and are placing significant strain on the TEC. *Phytophthora cinnamomi* (Pc) is present and is responsible for numerous deaths, in particular to *Lambertia echinata* subsp. *occidentalis* and *Dryandra squarrosa* subsp. *argillaceae*. It seems Pc has been present for some time and it may be responsible for an alteration to the vegetation complex already.

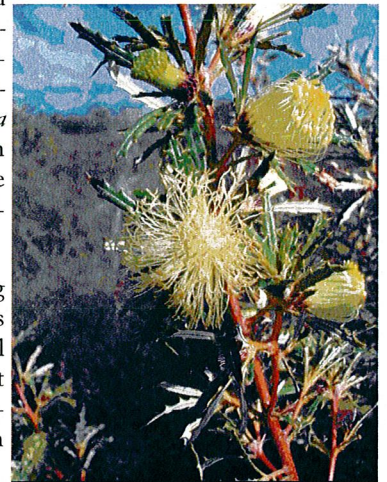
Weed invasion from agriculture is increasing with an invasion of grasses and pasture weeds noticeable along the edges of the TEC. Feral animals such as rabbits, are having significant impacts on the TEC in particular to the reduction of recruitment of endemic species through increased grazing.

A change to the hydrological pattern or dewatering of the watertable through mining may be the cause of a recent vegetation collapse at this location. Up to 80% of all the species in a 30m x 30m corner were affected by water stress during the 2004/05 summer. The final analysis showed that the majority of species affected had recovered by winter 2005 but 60% of the *Gastrolobium papilio* population was lost. Investigations and monitoring are continuing in order to determine the cause and the full extent of the damage.

This disturbance event shows how vulnerable the TEC and its associated species are to impacts. In this case 60% of the only known population of *Gastrolobium papilio* has been lost. If the population fails to recruit or the area undergoes another disturbance event in the near future, it is highly likely the species could become extinct in the wild.

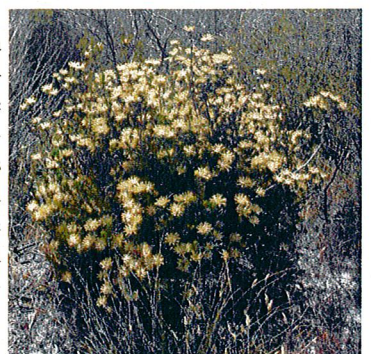
The Busselton Ironstone is unique and has a spectacular array of highly specialised and endemic species. It is undergoing change (in some cases at an unprecedented rate) through a number of threats. The conservation of these areas is imperative and through monitoring, works and the development of ex situ populations we should be able to increase our knowledge and successfully protect and preserve these communities.

However until the true value of these TEC's are appreciated and their status as critically endangered is accepted in all areas of the community it will be an uncertain future and they will continue to be under pressure to survive.



Dryandra squarrosa subsp. *Argillaceae*. Photo by A. Grant

“It is highly likely the species could become extinct in the wild.”



Petrophile latericola. Photo by A Grant

Introducing: The Cape Naturaliste Regional Herbarium

Don Carter, Cape Naturaliste Regional Herbarium volunteer



Photo by S.D. Hopper

The Cape Naturaliste Herbarium started in Dunsborough in August 1999 in response to a need in the area for local flora information. The Herbarium now has some 750 specimen vouchers, 90 of which are common weeds. The vouchers are A4 and crowded into four, four drawer filing cabinets in the corner of a shed. Insects enjoy this set up so periodic insecticide treatment is required.

Specimens are collected from private properties and Shire reserves with the owner's permission and often at their request.

Public interest in bush areas has enabled us to carry out monthly surveys of the plants flow-

ering at the time, on numerous sites. Records of these are added to data kept on the computer.

The number of determined species returned as subsp. or var. in this area is very interesting. Some were noted as significant outliers, such as *Ptilotus aff. declinatus* found at Rocky Point.

A plant not unlike *Gastrolobium bilobum* has been determined as *Gastrolobium sp.* Quindalup (H. Cole & D. Carter) 577. On checking with adjacent land owners we found the plant was common over quite an area of the Quindalup ridge. It is also found on two shire reserves in the area.

Other plants of note in the Cape Naturalist Regional Herbarium are:

- *Johnsonia inconspicua* P. 3 - The landowner asked us to confirm this plant and as a result this area has been fenced as the kangaroos had not let them flower.
- *Acacia semitrullata* P. 3 - found on the same 20 acres of bush as above.
- *Drakaea micrantha* DRF again found on above site.
- *Acacia lateriticola* "glabrous variety" BR Maslin 6765.
- *Caladenia viridescens* DRF found on bush blocks at Yallingup Fields Estate.

"The amazing colour changes of these fascinating plants makes the walk worthwhile in any season"



Creery Wetlands bird hide.

Photo by M. Love.

Creery Wetlands Conservation Reserve

Peg Foreman, Mandurah Regional Herbarium volunteer

It is a unique experience to visit the Creery Wetlands Nature Reserve on the Peel Inlet at Mariners' Cove in Mandurah.

Fortunately in 2001 it was declared a Crown Reserve of 93.02 hectares and is part of a much larger area including Creery and Channel Islands, vested with the Conservation Commission and managed by the Department of CALM.

The entrance gates, through the vermin proof fence, lead you to a magnificent open view over the samphire marshes to the water and islands of the estuary.

The walks and boardwalks are wide enough for wheel chair access with seating at intervals.

Throughout the Reserve large

attractive signage boards are plentiful, describing the history, flora, fauna and bird life as you explore the area. A bird hide has been provided.

Low lying areas are dominated by samphire marsh. The amazing colour changes of these fascinating plants makes the walk worthwhile in any season. The samphire marsh supports abundant invertebrate fauna and is a feeding ground for water birds. The samphires act to filter sediments and organic matter from the water—hence act as a sink for nutrients.

The dominant species are several *Halosarcia* and *Sarcocornia* species, the *Suaeda australis*, *Samolus*, *Frankenia* and *Triglochin*. These extraordinary plants are a worthwhile study for any Wildflower enthusiast.

Sedgeland, *Casuarina* and *Melaleuca* species occur within the Reserve and provide habitat for waterbirds and quendas. Approximately 60 plant species have been identified in the Reserve and these specimens are part of our Mandurah Regional Herbarium collection.

Mr. Frank Pridam, one of the many bird enthusiasts in Mandurah, wrote: "Mariners' Cove, as part of the Creery Wetlands, is classified as a Ramsar Site in recognition of its international status as a water-bird habitat. It is inhabited or visited regularly by at least seventy species, from the small but distinctive Grass Bird, which may be heard calling from the samphire heads to the large flocks of waders feeding in the lagoons, especially at the end of summer."

Introducing: The Margaret River Regional Herbarium

Jane Scott & Jenny Stevens, Margaret River Regional Herbarium volunteers

The Margaret River Regional Herbarium project was founded in 1998.

The habitats initially covered included a wide range, from seashore to inland plateau, and from the limestone Leeuwin-Naturaliste Ridge to the laterite uplands east of Margaret River, with samples from the sandplains, wetlands and granite outcrops between.

Vegetation types ranged from coastal communities, through heathland to woodland and tall Jarrah-Marri and Karri forest.

Duplicate samples were collected, and the specimens to be retained here were carefully mounted for display by volunteer Jo Alferink. The display sheets have been arranged in (more or less) taxonomic order, together with the WA Herbarium notes, in A4 files beautifully decorated by Jo. Currently we have 15 volumes with approximately 600 specimens held in the Margaret

River public library, where they are easily accessible by the general public.

The collection is being widely used as a reference tool, by students from the schools and from TAFE, by people engaged in bush regeneration projects and propagation of native plants, and by many individuals with a general interest in native plants. It has proved to be a valuable resource for the district.

Most of the plants in our local herbarium have been described and illustrated in the book by Jane Scott and Patricia Negus, 'Field Guide to the Wildflowers of Australia's South West, Augusta – Margaret River Region'.

Our collecting is now based on expanding our knowledge of local plant communities, finding species which are not already in the herbarium, and discovering the distribution and surrounding communities

of the Priority plants in our area.

We have three collectors at the moment, individually working around Gracetown, Bramley, Treeton and Rosa Brook. Later in the year we plan to have collecting expeditions in the State Forest areas of our shire.

We now scan our specimens before sending them to Perth, as well as collating the photos that we have taken, and in the future our herbarium will be stored in this form on CD.

Like many places in the South West, the biodiversity in this area is astounding, and in the face of the urban and agricultural development here, gathering information about our plants and their communities is imperative for their survival into the future. Our shire covers a large area, much of which has barely been sampled, if at all, and we welcome new volunteers with whatever skills they have.



Callistachys lanceolata.
Photo by J. Stevens

Introducing: The West Arthur Regional Herbarium

Val Crowley, West Arthur Regional Herbarium volunteer

The members of the West Arthur Regional Herbarium group have been rather inactive recently due to lack of contact with the Perth Herbarium through workshops, newsletters, etc. since funding was curtailed. Hopefully the appointment of Frances Kirchner as Liaison Officer for the South West Catchment Region will remedy this.

Another, and possibly main reason for inactivity was the lack of necessary stationary to mount and place the specimens already collected in our local herbarium. In other words—why collect more specimens to be stored in a box and not

easily available for local use, also it was difficult to check whether identical specimens from the same area had not already been forwarded to the Perth Herbarium, which must be a source of some annoyance there given the limited space and funding to deal with duplicate specimens.

Hopefully this situation will now be remedied as we have received a grant for sufficient cards, plastic inserts and files to mount all our specimens. Included in the grant was funding for a desk with shelving, chair and microscope for use by anyone wishing to identify specimens. We will now con-

centrate on catching up with mounting and labeling collected specimens so these will be available to help more easily with identification, for instance recently the school gardener needed identification prior to spraying as she said there are regulations regarding certain sprays that may be used in schools.

Our herbarium is housed in the West Arthur Library which is in the Telecentre building in Darkan. The Land Care office is also in this building so the Resource Management Officer has easy access to the herbarium facility.

"(The Regional Herbaria) has proved to be a valuable resource for the district."



For information or to submit an article contact

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Useful Websites:

<http://florabase.calm.wa.gov.au/>

<http://www.calm.wa.gov.au/>

Useful Tips

When collecting specimens that are seeding use a display folder with plastic inserts to separate the specimens. You can then transfer the specimens to a press on your return home.

This editions useful tip was provided by Jenny Stevens from the Margaret River Regional Herbarium. If you have a tip you would like to share, send it in!

Fibonacci Numbers

Peg Foreman, Mandurah Regional Herbarium volunteer

If you would prefer to receive this newsletter in electronic format please let me know.

The popular novel 'The Da Vinci Code' by Dan Brown brought to public notice Leonardo Pisano, better known by his nickname Fibonacci. Leonardo was born in Italy in the early 12th Century. He was a mathematician who discovered a sequence of numbers that have had a profound impact upon plants and the natural world.

Fibonacci numbers have a sequence built up by adding the last two previous numbers of an equation to get a third. Beginning $0+1=1$, $1+1=2$, $2+3=5$, $3+5=8$, and so on. This sequence is quite common in plants.

As cells at the growth point

divide they move out to form a spiral pattern. Each cell is positioned at an angle to the next of about 137.5 degrees. Counting these cells in each successive rotation you would find Fibonacci numbers. The larger pattern becomes apparent to the naked eye when we see a Banksia flower spike, a pine cone, a pineapple or seeds in a daisy flower. 'Petals' of a daisy come in Fibonacci numbers 21, 34 or 55. In the gardening world 137.5 degrees is known as the Golden Angle. Leaves on the echeveria and lettuce are in this pattern to allow leaves maximum sun exposure.

It has been found that plants use the spiral pattern to pack the maximum number of seeds

into a flower head and still maintain strength in the structure.

Using Fibonacci numbers 89 divided by 55=1.618, this is known as the Golden Number. The ratio 1:1.618 is known as the Golden ratio. This proportion is used everywhere, and makes things pleasing to the human eye from the cereal box, your favourite painting or to the Acropolis in Athens.

Observing our Wildflowers leads you to unexpected delights, especially through the microscope.

Partly a summary of an article inspired by Sparshott College display at the Chelsea Flower Show and my own thoughts.