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PO BOX 135 PALMERSTON NT 0831
http://tenpsnt.tripod.com

~ AUGUST 2006 NEWSLETTER ~

MEETINGS AND FIELD TRIPS

We meet on the third Thursday of the month at 7:30 pm. General meetings conclude by 8.15pm and are followed by a guest speaker beginning at 8:30 pm. There is time for a cuppa between the meeting and the guest speaker. The venue for the meeting is Marrara Christian School Library, on the corner of Amy Johnson and McMillan Drives.
All welcome. Bring plants to swap, sell or have identified.

~ NEXT MEETING THURSDAY 17TH AUGUST ~

~Murray Hird~

"Bioprospecting"

From Industry Development, Department of Business, Economic & Regional Development. Murray will talk on Bioprospecting. Can a company really gain ownership of a plant and all its' properties?

~ FIELD TRIP- to be arranged. ~

"Aquatic Plants"

A field trip with Dave Wilson to look at examples of Top End aquatic plants and the aquarium facilities needed for growing these plants.

~ OTHER UPCOMING EVENTS ~

~Next Meeting Thursday 21st September 2006~

~GARDEN SPECTACULAR~

Saturday 12th and Sunday 13th August.

Busy weekend for our group, as we sell our Top End Natives to the Darwin Community.
Get involved, Russell has a time table, please put your name down if you can help man our stall.

~Aquatic, Horticulture and Ranaculture~

Talk by Dave Wilson

We all enjoyed the refreshing talk by Dave as he led us through the story of his original business growing water plants, aquarium fish and frogs. Dave set up the business selling to the pet shops and aquarium trade 5 years ago. Being a bit of a pioneer in this area in the Territory, he experimented setting up his own system of ponds, cages and ecosystems using filters, water hardeners, skimmers, solar heaters, fly attracting feeders and recycled containers. He has had to negotiate all sorts of beaurocratic regulations and permit systems. At one stage he was told he had an aquatic business not a nursery, despite having about 100 species of very beautiful and colourful water plants.

Dave also collects breeds of aquatic fish such as threadfin rainbow fish, spotted blue eye and peacock gudgeon fish, collected from creeks at the end of the Kakoda Trail. He also breeds white claw yabbies. For this side of his work he needs fisheries permits and is classed as a primary producer.

One plant that Dave uses for providing shade in the breeding ponds, is Pistia stratiods, commonly called cabbage flower and referred to as an exotic. He is working to have its status changed as it is now considered to be a Top End native.

Dave works with Aboriginal families buying fish and plant species from them, and has worked with the Djelk Rangers in Maningrida to see if they can breed fish for him, but working as collectors has proven to be more successful. Dave breeds the fish and sells them in the NT and interstate. Some of his stock is even sold to Belgium, via Queensland. He also collects in Kakadu, where it has taken him 4 years of negotiations and still he finds himself having to compete against illegal collectors.

Ranaculture is the culture of breeding frogs and this is another thriving section of his business. Dave has designed fly traps which use cane toads to attract the flies to the traps, which open directly into the frog cages where frogs sit waiting for the next unsuspecting fly to enter.

You may not realise how special these creatures are. All frogs are given 2 months quarantine before leaving the Territory for interstate and are treated for worms by pouring dilute Ipomac solution onto their backs. After all this special treatment they can then be sold for $12 per centimetre and there is a waiting list! The Vietnamese import 12 tonnes of frogs per year as food and other markets include the use of frog skins in surgery and in the production of sunburn creams.

So if this has wetted your appetite, be sure not to miss the tour of Dave's place at Howard Springs still to be arranged.

Robyn Knox

Pistia Stratiods on a Aquapond.

TENPS Wetland Wander(May 2006 field trip in Humpty Doo).

Herbs

Buchnera linearis
Byblis liniflora
Calandrinia quadrivalvis (purple)
Calandrinia sp. (yellow)
Cassytha filiformis
Centranthera cochinchinensis (Native Hollyhock)
Cleome sp. x 2
Drosera indica
Drosera petiolaris
Geodorum neocaledonicum (Shepherd's crook ground orchid)
Gomphrena canescens
Gomphrena canescens subsp. canescens
Goodenia armstrongiana.
Goodenia pilosa
Huxleya linifolia
Limnophila fragrans (Vick's vapour rub plant)
Lindernia plantaginea
Lobelia sp.
Ludwigia octovalis
Mitrasacme sp
Oldenlandia sp.
Polygala sp.
Ptylotus sp.
Sowerbaea alliacea
Spermacoce exserta
Urena lobata
Utricularia chrysantha
Utricularia leptoplectra
Utricularia odorata
Waltheria indica

Aquatic

Eriocaulon sp.
Nymphoides minima
Nymphaea violacea
Pogostemon stellatus

Grasses & sedges

Chrysopogon sp.
Cyperaceae sp.
Eriachne sp.
Eragrostis sp.
Sarga sp.
Schizachyreum sp.
Xyris indica

Shrubs & trees

Calytris extipulata.
Dolichandrone filiformis
Pandanus spiralis
Melaleuca viridiflora
Melaleuca nervosa
Lophostemon lactifluus

Kindly compiled by Felicity Middleton and Sally Jacka.

The Goodenia pilosa flowers are usually yellow but those growing on the Wetlands are often a pale to dark pinky-orange.
The second photo is a Goodenia armstrongiana in amongst Limnophila fragrans with tiny white/mauve flowers. The crushed leaves of the Limnophila fragrans smell very strongly of Vick's vapour rub.

~Spines, prickles, wire plants, divaricates... how plants defend themselves against vertebrate browsers~

At the last meeting of the Top End Native Plant Society we were very lucky to have Professor William Bond of the Botany Department, University of Cape Town give a wonderful presentation on plant defences against browsing.

First William Bond discussed the role of spines, which are the most obvious physical defence of plants. Spines tend to occur on palatable plants that grow in nutrient rich soils and spiny species are more abundant where browsing herbivores are common. In spite of this, spiny species are often the stable diet of browsers. Spines only work against ground herbivores; not against arboreal herbivores as they have manipulative hands that can reach between the spines. Thus spiny plants are rare in forests where most of the herbivores are arboreal. Spines also evolve in response to particular herbivores. Small spines are ineffective against a large herbivore and small herbivores can eat between large spines. However William Bond noted that no spine was effective against elephants!

However animals are not deterred by spines, they go and browse a spiny plant anyway. It does slow their ability to browse and they move onto the next plant sooner. From the tree's perspective it reduces damage to branches rather than leaves, which is fine as branches are much harder to replace. Plants in Africa tend to produce a cage of spines to deter grazing when the plant is young and then produce larger leaves and flowers when the plant is tall and robust enough to resist grazing.

Then we moved on to examine divaricate shrubs. Divaricate shrubs have juvenile foliage of thin but very strong branches that are angled at nodes to produce many zig-zag shaped branches. These zig-zag branches

tend to be only produced on the lower part of the plant. Foliage produced higher up the plant consists of larger leaves and thicker branches that have less tensile strength. These types of shrubs are unusually abundant in New Zealand. Does this web of fine branches protect the plant from frost, reduce wind or reduce soil drying? Another suggestion is that perhaps this branching pattern evolved to protect the plants against moas. This moa grazing protection hypothesis was tested by presenting the plants to emus. Emus consumed mature foliage 5 – 6 times faster than the juvenile divaricate foliage. Fewer leaves were consumed from the juvenile foliage and much less branch damage was caused.

The zig-zag divaricate branching was very effective at resisting bird grazing. William Bond demonstrated how emus feed by plucking and tearing a lettuce. The divaricate branches were very strong and flexible so it was very difficult to cause damage by plucking. The plant may lose a few small leaves but the branches just bend and then spring back. Mammals however cause damage by biting and can very easily bite through the thin divaricate branches. Thus plants of New Zealand and Madagascar, which have evolved to resist browsing by large birds, can be very sensitive to damage by introduced browsing mammals, such as goats.

William Bond recently travelled through the Northern Territory looking at how Australian native plants protect themselves from grazing. Few Australian native plants have well developed spines. Even genera with spines, such as *Capparis* and *Smilax* have poorly developed spines in Australian species compared to the armoury that they have evolved in African species. One NT example of a species that relies on spines to deter browsing is *Acacia tetragonophylla*. Some of the W.A. Proteaceae have very spiny leaves, perhaps to deter birds from attacking their canopy stored fruits, but this feature is uncommon in Australian plants. Maybe the Australian native plants that had well developed protection against mammalian browsers died out along with their megafauna browsers? Or perhaps we return to the observation that plants have not successfully developed physical defences against arboreal browsing mammals.

William Bond suggests that kangaroos and wallabies, with their well developed manipulative hands, are really hopping monkeys as far as plants are concerned and just too difficult to defend against with physical plant defences.

Sean Bellairs

Are you interested accessing, using or contributing to the TENPS Database?

TENPS and its members have several databases and collections of images. Phil Hickey has been charged with the task of collating, organising and generally getting them sorted out. To do this he needs input from members to understand what THEY want the database to do. As the saying goes "Speak now or forever hold your silence!" Comments can be emailed to Phil.Hickey@cdu.edu.au, passed on through the committee or directly. Detailed requirements can be discussed for the price of a cuppa from any reputable coffee establishment.

~NEXT MEETING THURSDAY 17th AUGUST~

~Murray Hird~
"Bioprospecting"

SENDER: TOP END NATIVE PLANT SOCIETY
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NT 0831

TO:

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