ASSOCIATION OF SOCIETIES FOR GROWING AUSTRALIAN PLANTS

HIBISCUS AND RELATED GENERA STUDY GROUP

AUG/SEPT. 2008 NEWSLETTER NO. 15 ; ISSN ; 1488-1488

A VERY ATTRACTIVE FORM OF HIBISCUS HETEROPHYLLUS FROM MT. CROSBY CLIFFS NEAR BRISBANE. IMAGE GEOFF KEENA.

TALIPARITI TILIACEUM (HIBISCUS TILIACEUS – THE COTTON TREE) SOUTH MISSION BEACH NTH. QLD. IMAGE GEOFF KEENA

NEWSLETTER NO 15 AUGUST/SEPTEMBER 2008

Some subscription money has been coming in so we can get the Newsletters 'up and running' again. Thanks to all members for your on-going support.
Welcome to Bernard Crow of Innisfail and the SGAP Rockhampton Branch who have joined our Study Group. I do hope that we can find some articles that are applicable and helpful to your particular areas.
As usual I have been traveling around and spent the last week of August at Wandoan (north-west Darling Downs) visiting several properties where Jurassic age plant fossils are found in the cultivated paddocks. The country there is a bit dry after good early winter rains and no Malvaceae plants were observed.
Meanwhile at Buderim we experienced a warm, wet start to winter with a cold, dry August. Last year we had 526 mm of rain in August and this year only 5 mm.
You will have probably noted in the Sept. SGAP Qld. Region Bulletin on page 10, news of the Hibiscus and Related Genera Study Group Meeting on 14th Sept. – just 2 weeks away. We are proposing a tour of the Maroochy. Bushland Botanical Gardens, Tanawha commencing at 10-00am. Following (the optional) tour, lunch can be had at the Gardens or at my residence : 155 King St. Buderim where tea and coffee will be available.
A meeting of the Sunshine Coast & Hinterland Branch of SGAP commences at 2 pm followed by a talk on Hibiscus with questions and answers.
Please contact me by phone on 07 5445 1828 or e-mail : bannh@bigpond.net.au if intending to meet up at the gardens or later at my residence. Colleen and Geoff Keena as well as Peter Bevan have confirmed their attendance.
I am very appreciative of Colleen Keena's in depth article on growing Alyogynes in the Sub-Tropics with a great selection of images. We are also fortunate to have Dr. Stephen Johnson's article on 'Weedy Malva Species'. Stephen is a Weed Ecologist with the Dept. of Primary Industries based at Orange in N.S.W.
The fine image of *Taliparíti tiliaceum* on the front cover depicts a first day bloom on the right and a two day old bloom on the left.
I have about 600 Native Hibiscus in containers, most of which were budded up nicely to hopefully be in bloom for our meeting on Sunday 14th September. In order to enhance their performance I drenched them with a liquid fertilizer and had most of the buds drop off followed by a nice flush of growth. Instead of admiring the blooms we may have to put the leaves to culinary purposes!
Hope you enjoy the N.L., with best wishes,

Geoff H.
.....
(Geoff H. S.G. Leader)

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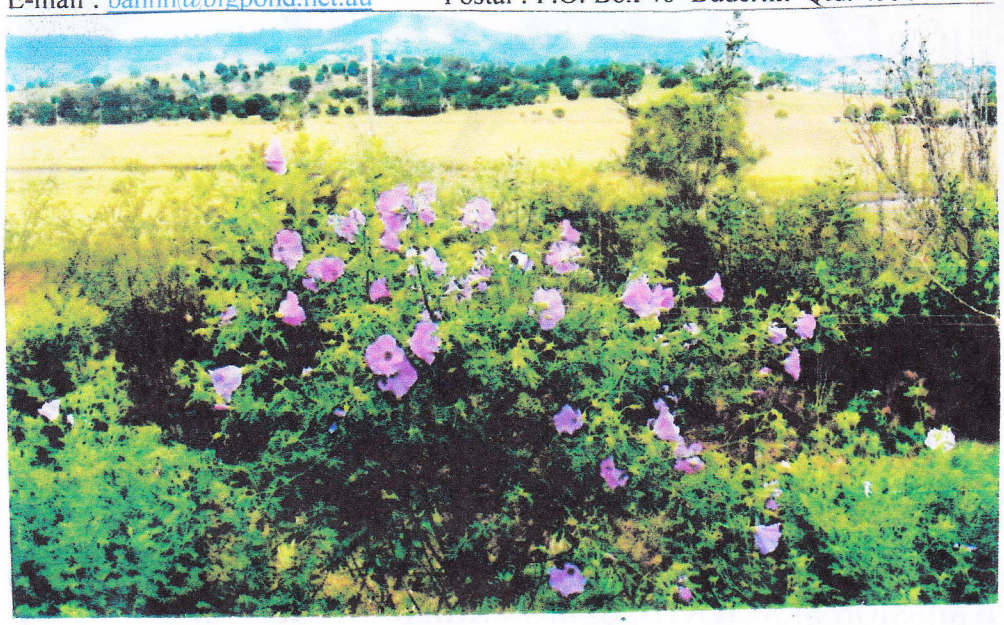


Alyogyne 'Lisle' at Keena's Property 27/8/08

Alyogynes in the Sub-tropics. Selected species and Crosses

Colleen and Geoff Keena, Glamorgan Vale, Qld.

INTRODUCTION

While we have not had the extended period of knowing and growing Alyogynes that we have had with hibiscus (see March 2008 Newsletter, Issue No. 13), it is about thirty years since we first tried to grow Alyogynes. These initial attempts, in two different gardens, were spectacularly unsuccessful. It wasn't until we decided to try growing them in pots that we finally had some success. Indeed, this was so successful that I was able to perform the first lot of crosses from plants grown in pots. Even many years later, I kept plants in pots if I wanted to cross species as I had more control over growing and flowering conditions. Some of our species and crosses can be seen in the first illustration. **SEE FIGURE 1.**

My interest in Alyogynes started both from seeing them flourish in gardens in Melbourne and from finding illustrations in early records of Australian plants (see Appendix). This interest has been furthered by anecdotes and photos from a number of friends growing them in California and in France. While Australian hibiscus have not been widely recognised and have not been widely available either in Australia or overseas, this is not the case for Alyogynes. Some Alyogynes, especially forms of *Alyogyne hakeifolia* are now available in the nursery trade in Australia and species of Alyogynes and a range of crosses are readily available in U.S.A.

I think that there have been three factors in this success overseas: the blooms last more than one day, there are no prickles and Alyogynes can flower for an extended period.

I am using the names that are still on Alyogyne labels. I am aware of the work done by Dr John Conran with identifying species (see Newsletter 14) but throughout this article, I am using names currently on labels used by nurseries or names used by seed suppliers.

EARLY EXPERIENCES OF ALYOGYNES

We still recall the difficulty in obtaining Alyogynes. Our first plants were purchased while visiting family, from a nursery in Port Macquarie and another in Melbourne (The plants were nursed throughout the plane trip from Melbourne). As we started to have success in growing them, I accessed seed from Australian suppliers and from a friend in Western Australia and found it was easy to grow Alyogynes from seed. In fact, I found that seed which was about 10 years old germinated much more readily than fresher seed.

The early crosses were an attempt to develop a plant that would not drop dead in the humid conditions of a normal Queensland summer. However, before this, I had tried grafting Alyogynes onto a number of rootstocks. The rootstocks were small growing crosses of native hibiscus, e.g. 'Apricot Mist' and similar crosses. To my amazement the grafts took and the plants flourished but the plants did not live any longer than those grown in a raised bed with excellent drainage and so I did not pursue the idea of grafting.

PART 1 ALYOGYNE HUEGELII

Around thirty years ago, we found that there were three Alyogynes available. These were *Alyogyne huegelii*, the species form with a beautiful lilac bloom, *Alyogyne* "West Coast Gem" and a pink Alyogyne with a tulip-shaped bloom. This was available with a label "*Alyogyne heugelii pink*", "Southern Cross Hibiscus". The label described the plant as "Australia's very own native hibiscus'. **SEE FIGURE 2.**

ALYOGYNE HUEGLII CROSSES

We realised that if I wanted plants that coped with our conditions, planned crosses would be necessary. Of the three species initially available, the *Alyogyne huegelii* plant with the lilac bloom had a short life. The fragile blooms crowded the plant and gave the appearance of a cloud of butterflies floating above the bush. While *Alyogyne* "West Coast Gem" has a more substantial bloom, the bush is subject to wind damage and has never been long-lived in our conditions. This plant is the earliest to bloom, an important consideration when considering crosses. Also of importance for crosses is the shape of the flower. The petals overlap and the bloom retains this overlapping feature, unlike the species which can have petals that spread as the bloom ages (shown in Fig. 2). The third available plant was quite different. **SEE FIGURE 3.**

In fact, the deep mauve-pink flowers of what was then called *Hibiscus huegelii* var. *leptochlamys* were noted by Hill (1). These flowers are quite different from either the species or *A.* "West Coast Gem". The shape is different, being like a tulip and the stigma pads are not white as in the other two plants but are dark. At first, I thought this bloom was not as good as the more open blooms of the other two Alyogynes but I came to realize that the tulip-shaped bloom was attractive in its own right. It had one special feature that I had not detected in the others, the bloom is perfumed. More importantly, this plant seemed to live longer than the other two plants.

All three of these plants flower prolifically here but over a short period, mainly spring. Possibly the best aspect of these three initial plants, was that they did not all flower together. *Alyogyne* "West Coast Gem" started flowering in winter. It was followed by *Alyogyne huegelii,* lilac flowering form in early spring and then later in spring, the pink tulip-shaped Alyogyne started to bloom.

The first cross was between the lilac-flowering species and the pink tulip-shaped form. Over 40 seedlings grew from this cross. All that were kept to flowering stage had dark stigma pads, purple for *Alyogyne* "Patricia Noble" and bright pink for all others, including *Alyogyne* "Christopher Noble". The colour of all seedlings was vibrant, with more intensity than either of the parents. A number of these crosses were retained and are still doing well. There is a range of heights, with plants of *Alyogyne* "Patricia Noble" reaching about 1.5 metres while others such as *Alyogyne* "Carole's Choice" can be up to two or more metres in height.

SEE FIGURE 4.

A further cross was made from these Alyogynes. *Alyogyne* "Christopher Noble", with vibrant colour, bright pink stigma pads and the longest stem of any seedling, was crossed back to *Alyogyne* "West Coast Gem". **SEE FIGURE 5.**

I consider that the resulting seedling *Alyogyne* "Lisle" remains the best seedling that I have. It blooms even earlier than *Alyogyne* "West Coast Gem" and has its overlapping petals and 'felty' buds. It has the bright pink stigma pads and long stem of *Alyogyne* "Christopher Noble". In our conditions, it also has a longer flowering period than any of the Alyogynes previously mentioned, usually blooming from early winter until early summer and it lives longer than any of the Alyogynes in its parentage. The flowers last well when picked and the longer stems, up to 6 cm, are an asset when arranging *A.* "Lisle" in a vase. A seedling of *A.* "Lisle" x A. "Lisle" displays the overlapping petals and the bright pink stigma pads of its parent.

Two more crosses were made.

The first of these was made when a white form of *Alyogyne huegelii* was grown. In our conditions, *Alyogyne huegelii alba* is a lower growing Alyogyne which has infrequent blooms. This is in contrast to plants grown by a friend in Victoria where the plant blooms over an extended period. The pink tulip-shaped bloom was the pod parent and the white bloom was the pollen parent. The seedling was called *A.* "Gilly". **SEE FIGURE 6.**

The blooms are quite small but cover the plant. The flowers are initially pink but fade almost to mauve. The foliage feels like felt and gives the bush an attractive appearance. This Alyogyne flowers even longer into summer than its pod parent, with blooms appearing until mid-summer. Given the small size of the blooms, I think that this cross would be more suitable for a collector.

The last cross occurred when we were able to obtain the mauve-flowering form of the tulip-shaped Alyogyne in a nursery in Toowoomba. The first of the following photos was taken by Gil Bujanda in his garden in California. The second and third photos are of a seedling grown from seed taken from the species. This seedling was named *A.* "Pete's Mauve". The bloom is a slightly deeper colour than the species, is slightly larger and has better texture. Flowering is as prolific as on the pod parent. This plant is taller than any of the Alyogynes already mentioned, so is valuable in landscaping. **SEE FIGURE 7.**

All these seedlings have the profuse flowering of their pod parents. Even where the pollen parent has few flowers, the resulting seedling, *A.* "Gilly", flowers prolifically.

SUMMARY OF EXPERIENCES WITH ALYOGYNE HUEGELII.

Although it may now be possible to obtain other species, if I were starting again to develop plants that are more hardy for the sub-tropics, I think I would still start with the same three Alyogynes. They have many features of value, such as profuse flowering, even in a sub-tropical climate. With a planned program of crosses, it has been possible to maintain this flowering yet develop a wider range of colours on plants that flower over longer periods. Of even greater importance, the more recent crosses such as *A. 'Lisle'* live longer than the original plants.

If my main interest were landscaping, I would add in *Alyogyne huegelii* alba, because of its lower growth habit, even although it does not produce many flowers. I would also grow *Alyogyne* "Pete's Mauve", because of its prolific flowering and because it adds height to a planting of Alyogynes.

FUTURE DIRECTIONS WITH ALYOGYNE HUEGELII CROSSES.

One of the original crosses has regularly produced blooms with more than the normal number of petals. A bloom with more than five petals has been crossed back to itself and we are currently waiting to see if this trait has been passed on to the seedlings. **SEE FIGURE 8**

REFERENCES for PART 1

1. Hill, R.L. (1966), Australian Plants : 19-20

APPENDIX for PART 1 : ALYOGYNE IMAGES

1. PRINT IMAGES

Alyogyne hakeifolia: Watts, P. Pomfrett, J. Mabberley, D. (1997), *An Exquisite Eye : the Australian Flora and Fauna Drawings 1801-1820 of Ferdinand Bauer*. Historic Houses Trust of New South Wales, Glebe, NSW, page 50.

2. ONLINE IMAGES

A painting of Alyogyne hakeifolia by Ferdinand Bauer, based on a drawing by him of material collected on Middle Island, Goose Island or a bay near Cape Aris, in what is now South Australia, in 1802, can be seen at:
http://commons.wikimedia.org/wiki/Image:Alyogyne_hakeifolia_(Bauer).jpg
Alyogyne hakeifolia, then Hibiscus multifidus, was printed in Paxton's *Magazine of Botany* (6: 103 & plate) in 1839:
http://commons.wikimedia.org/wiki/Image:Hibiscus_multifidis_%28Paxton%27s%29.jpg
The National Library of Australia has a number of Alyogyne paintings of Ellis Rowan. We like these so much that we purchased some. A search for 'Ellis Rowan' + Alyogyne at the NLA site will give image details:
http://www.nla.gov.au/catalogue/pictures/

Alyogynes in the Sub-tropics. Selected species and Crosses

Colleen and Geoff Keena, Glamorgan Vale, Qld.

PART 2 ALYOGYNE HAKEIFOLIA.

INTRODUCTION

In Part 1, writing of *Alyogyne huegelii*, it was noted that initial attempts at growing them, in two different gardens, were spectacularly unsuccessful. If we were referring to *Alyogyne hakeifolia*, we would have to say that attempts at growing them in three different gardens have been an abject failure. The plants grow well initially but as soon as the humidity of a normal summer manifests itself, the *A. hakeifolia* plants die, literally overnight. I would be ashamed to list the number of *A. hakefolia* labels that are beside me as I write.

This sudden death attribute is not surprising, given that *Alyogyne hakeifolia* has a similar, but more inland, distribution to *Alyogyne huegelii*.

The initial *Alyogyne hakeifolia* plants were again purchased at an interstate nursery. The labels just had print without any illustration and indicated that *Alyogyne hakeifolia* was an evergreen tall shrub with narrow leaves and large yellow or mauve flowers in spring and summer. The label also indicated that the plant tolerates lime, drought and salt soils and is usually frost resistant. Depending on the colour purchased, the other colour was crossed out. It should be noted that although the label indicated the plant had mauve flowers, in fact, we would describe the blooms as pink.

NOTE: Before I obtained the mauve form, I found that a friend in Victoria, initially from overseas, had what she described as the mauve form of *Alyogyne hakeifolia*. She sent cutting material and I propagated these, only to find that what she called 'mauve', I called 'pink'. I found similar confusion with another friend from overseas so am noting this to indicate that what we perceive as pink may not be perceived that way outside Australia.

The plants purchased interstate were also nursed on a plane and initially made rapid progress, flowered profusely and set seed. However, all, including seedlings grown from seed, succumbed rapidly to summer moisture. After some time, *Alyogyne hakeifolia* plants with beautiful illustrated labels became available. The label included a photo of the bush and a bunch of flowers. The pink form was called *A.* "Melissa Anne", the yellow form *A.* "Elle Maree" and there was a form called *A.* "Shelby Ann" which had mauve flowers. The *A.* "Shelby Ann" label describes the flowers as purple.

As I particularly love white or cream flowers, I planted seed of *Alyogyne hakeifolia* obtained from a seed company in Western Australia. Initially I had no success but I planted more seed many years later and ended up with viable seedlings. The other forms that we had grown were around 2 metres whereas this form could only be described as a small tree. It probably lives longer here than the other colours. I love it so much that I have risked planting it yet again. **See FIGURE 1.**

I was a bit upset about the short life of *Alyogyne hakeifolia* plants in a normal summer here when a friend in California told me of the spontaneous crosses she had observed in a garden where both *Alyogyne huegelii* and *Alyogyne hakeifolia* were growing near her. Another friend has since sent photos of these. *Alyogyne huegelii* flowers earlier here than *A. hakeifolia*, however the pink tulip-shaped form of *A. huegelii* flowers mid-way between *A. huegelii* and *A. hakeifolia* and so was an ideal candidate for crosses, as it was still in flower when *A. hakeifolia* started to bloom. I had a pink flowering *A. huegelii* and a pink flowering *A. hakeifolia* in pots and that made crosses very simple.

The results however were somewhat of a surprise. All seedlings had purple flowers. The foliage was similar in all seedlings. Only the form with the finest foliage was retained. This foliage provides a contrast to the foliage of *Alyogyne* "Blue Moon" (see next paragraph), unlike the foliage shown under the seeds in the first image of FIGURE 2i which is very similar to the foliage of *Alyogyne* "Blue Moon" in FIGURE 3. Different types of foliage from the A. huegelii x A. hakeifolia cross can be observed in FIGURE 2ii. The retained cross lives as long here as *Alyogyne huegelii*, so the crosses were successful in that a form with much longer life was obtained. As well, the foliage is attractive even when the plant is not flowering. The seedling was named *A. 'Montburg Purple'* after the nursery of a friend who has Alyogynes available online in Victoria. I found it very interesting to observe the difference in seeds. It was quite easy to tell whether a cross had been achieved by observing the seed. **See FIGURE 2.**

A plant with interesting foliage was purchased in Victoria as *Alyogyne huegelii*, fine leaf form. This plant was given to a propagator at a nursery in Brisbane. These plants have been called *A.* "Blue Moon". The flower is lighter in colour than *Alyogyne* "Montburg Purple" and the two look attractive growing together but unfortunately, I have been unable to keep *A.* "Blue Moon" alive here. The plants grow into stunning specimens and then die, virtually overnight. **See FIGURE 3.**

Growing from seed can produce interesting results, as I found when 'normal' pink *A. hakeifolia* seed produced a seedling which had a bloom with a deeper colour than the pod parent on a much smaller sized plant. Unfortunately, the seedling did not live any longer than its parent. **See FIGURE 4.**

I no longer persist with *Alyogyne hakeifolia*, other than the cream form and the cross with *Alyogyne huegelii* which resulted in *A.* "Montburg Purple"

I do have commercial seed and may try growing more plants from seed.

FURTHER DEVELOPMENT OF ALYOGYNES

As with Hibiscus, efforts at hybridisation are intentional. Our areas of focus with both Alyogyne *huegelii,* and *A. huegelii* crossed with *A. hakeifolia* have included:

LANDSCAPING:

1. Smaller growing plants
Alyogyne "Patricia Noble" is smaller growing. **See FIGURE 5.**

2. Different colours of blooms
Colour: Crossing lilac and pink resulted in the rich colour of *Alyogyne* "Christopher Noble". **See FIGURE 5 of Part 1 and and FIGURE 5.**
NOTE: This was not so when *Alyogyne huegelii*, pink and *Alyogyne hakeifolia*, pink, were crossed. All seedlings had purple blooms.

A plant with a lighter coloured bloom has been named Alyogyne 'Misty'. **See FIGURE 5.**

3. Longer flowering
Alyogyne "Lisle" resulted from crossing the lilac form of *Alyogyne huegelii* with *A. huegelii*, pink. There was a difference in flowering time of the parents, with the lilac form flowering first and the pink form later. The seedlings from this cross had a slightly longer flowering period than either parent. One of the seedlings was then crossed with *Alyogyne* "West Coast Gem" which begins flowering here in winter. *A.* "Lisle" is always the first to flower here, beginning even earlier than *A.* "West Coast Gem" and it continues flowering until the end of the time when its pollen parent, *A. huegelii*, pink, is in flower. **See FIGURES 5 of Part 1 and FIGURE 6.**

4. Plants for specific situations, e.g. Alyogynes as standards, Alyogynes as screening plants. **See FIGURE 7.**

5. Plants which can better tolerate our conditions:
Of the plants that were available when we started growing Alyogynes, *Alyogyne huegelii* pink tulip form proved to live the longest. Two crosses with this plant in their parentage, *Alyogyne* "Lisle" *and Alyogyne* 'Montburg Purple', have been found to live longer here than other previously available Alyogynes. **See FIGURE 5, Part 1, FIGURES 6 and 2.**

PLANTS FOR INSIDE THE HOUSE:

6. Flowers with longer stems for picking and flowers for extended vase life
Both *A.* "Christopher Noble" and *A.* "Lisle" have longer stems than any of the species in their parentage, making them better as cut flowers. *A.* "Lisle" has blooms which last longer than any others when picked. **See FIGURE 5 of Part 1 and See FIGURE 6.**

7. Different forms of blooms:
It is important to identify plants that have characteristics that are valued. Current seedlings have been developed from blooms with more than five petals. **See FIGURE 8 of Part 1.**

SUMMARY

Success in growing Alyogynes will depend both on what kind of growing conditions are provided and which varieties are selected. While Alyogynes can grow in sub-tropical conditions, some losses can be expected in wet, humid conditions, especially with *Alyogyne hakeifolia*. If humidity is a problem, there should be plenty of space between plants for air flow and plants should be grown in a well-drained, sunny location. We grow them on raised beds.

Some *Alyogyne huegelii* crosses and a cross between *Alyogyne huegelii* and *Alyogyne hakeifolia* are living longer in our conditions and at least one *Alyogyne huegelii* cross, *Alyogyne 'Lisle',* has a longer flowering period than has previously been available to those growing Alyogynes in the sub-tropics.

There seems to be less variation within Alyogyne crosses than is evident within Hibiscus Section Furcaria. Unlike hibiscus, there does not appear to be much, if any, difference between seedling grown Alyogynes and cutting grown plants. It is important to note that a seedling still should not be judged until the plant has been grown from a cutting and trialled as a cutting-grown plant over an extended period. In some plants, attractive features, such as blooms with more than five petals or extremely heavy flowering, have not become obvious until several flowering seasons have passed.

Alyogynes were featured in early written records. These plants have the ability to survive in the toughest of conditions. It is hoped that increasing interest will not only make these beautiful, useful and tough plants more readily available, not just overseas as is currently the situation but also within Australia. It is also hoped that the landscaping potential of this long ignored family of plants will gain greater recognition in Australian horticulture, even in sub-tropical conditions. The horticultural potential is being increasingly recognised, for example, in February 2005, Alyogyne was a featured plant in 'Australian Horticulture (1).

REFERENCE for PART 2

Gwen Elliott. 'The gem from the west flowers year round'. In Australian Horticulture, February 2005, page 12.

FIGURE 1: **Some Alyogyne Species and Crosses**

***Alyogyne huegelii* species**

***Alyogyne* 'West Coast Gem'**

***Alyogyne huegelii* pink label**

***Alyogyne huegelii* species lilac**

***Alyogyne* 'West Coast Gem'**

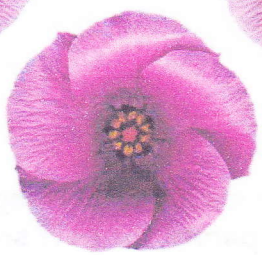
***Alyogyne huegelii* species pink**

FIGURE 2: **Our three original Alyogynes**

FIGURE 3: ***Alyogyne huegelii* pink tulip form**

Alyogyne pod parent

Alyogyne pollen parent

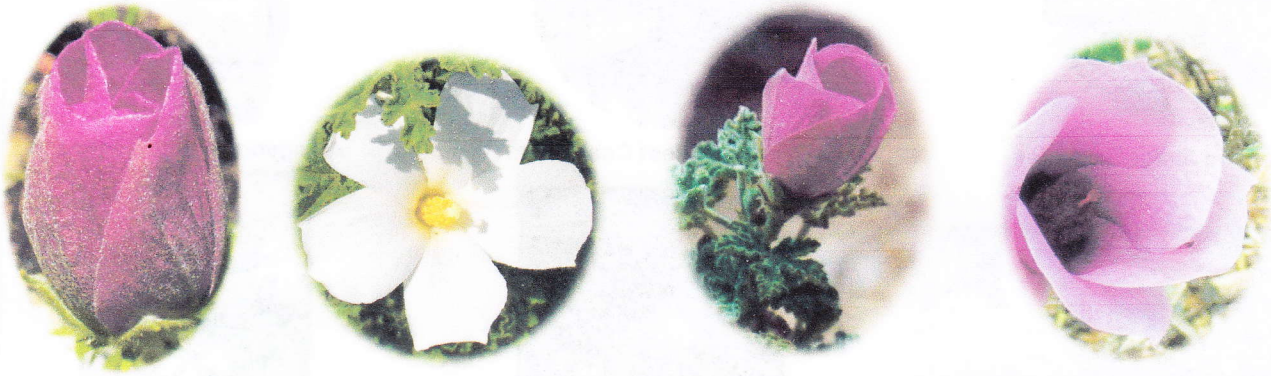


Alyogyne seedling

FIGURE 4: Cross between *Alyogyne huegelii*, lilac bloom and *A. huegelii* pink tulip bloom

Alyogyne 'Christopher Noble' *Alyogyne 'Lisle'*

FIGURE 5: **Pod parent *Alyogyne* 'West Coast Gem' (see Figure 1)**
Pollen parent *Alyogyne* 'Christopher Noble'; Seedling *Alyogyne* 'Lisle'



Pod parent: pink tulip *Pollen parent: white species* *Seedling, Alyogyne 'Gilly'* *Alyogyne 'Gilly'*

FIGURE 6: **Pod parent *Alyogyne huegelii* pink tulip (see also Figure 1)**
Pollen parent *Alyogyne huegelii* alba; Seedling *Alyogyne* 'Gilly'

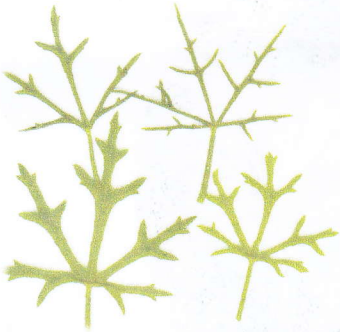
Pod parent: mauve tulip; pollen parent unknown *Seedling, Alyogyne 'Pete's Mauve'*

FIGURE 7: **Pod parent *Alyogyne huegelii* mauve tulip**
Pollen parent Unknown; Seedling *Alyogyne* 'Pete's Mauve

FIGURE 8: **Selected blooms on *Alyogyne huegelii* lilac x *Alyogyne huegelii* pink have been used as Pod parent and Pollen parent for new seedlings.**

FIGURE 1 Different colours of Alyogyne hakeifolia.

FIGURE 2 i Cross between *Alyogyne huegelii* (pink tulip-shaped) left and *Alyogyne hakeifolia,* pink, right. Seed and foliage of one seedling is shown in the centre of the image to the left. Blooms of parents and retained seedling are shown in the central image and seed only in the image on the right.



Foliage of other seedlings.

Images of *Alyogyne huegelii x A. hakeifolia,* "Montburg Purple".

FIGURE 2 ii A Cross between *Alyogyne huegelii* (pink tulip-shaped form) and *Alyogyne hakeifolia*, pink form produced, *Alyogyne* "Montburg Purple", the seedling with the finest foliage. Other seedlings from this cross had similar foliage as shown in the image on the left and all had purple flowers.

LEFT: Plant purchased as *Alyogyne huegelii* Fine Leaf

RIGHT: Plant labeled *A.* "Blue Moon"

CENTRE IMAGE: LEFT Foliage of *Alyogyne* "Montburg Purple".

RIGHT Foliage of *Alyogyne huegelii* Fine Leaf.

FIGURE 3 *Alyogyne* "Blue Moon"

FIGURE 4 LEFT: Seedling of *Alyogyne hakeifolia,* pink form. Parent is at right.
Seedling was called *Alyogyne* "Pete's Pink".

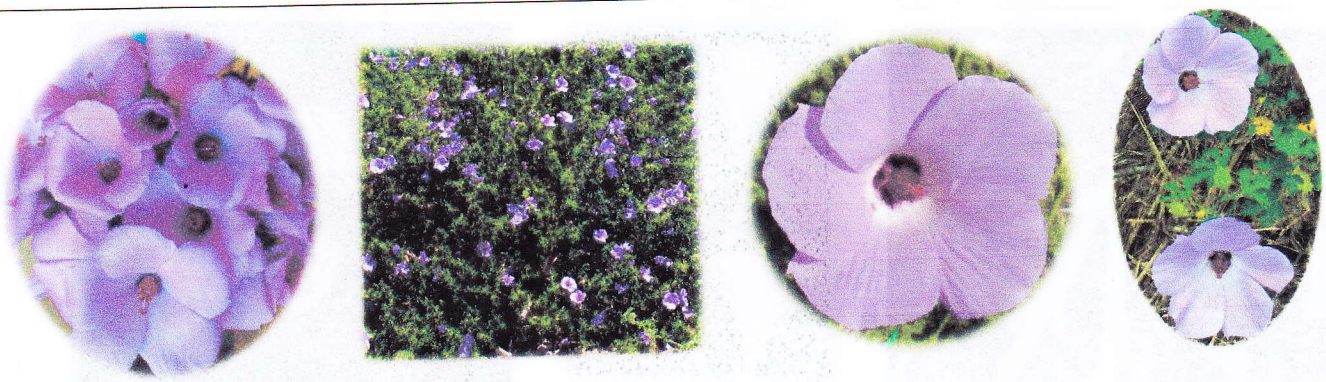


FIGURE 5: LEFT. Small growing plants, *Alyogyne* "Patricia Noble".
RIGHT. Different coloured blooms, *Alyogyne* "Misty".

FIGURE 6: Alyogynes for picking, e.g. *Alyogyne* "Lisle"

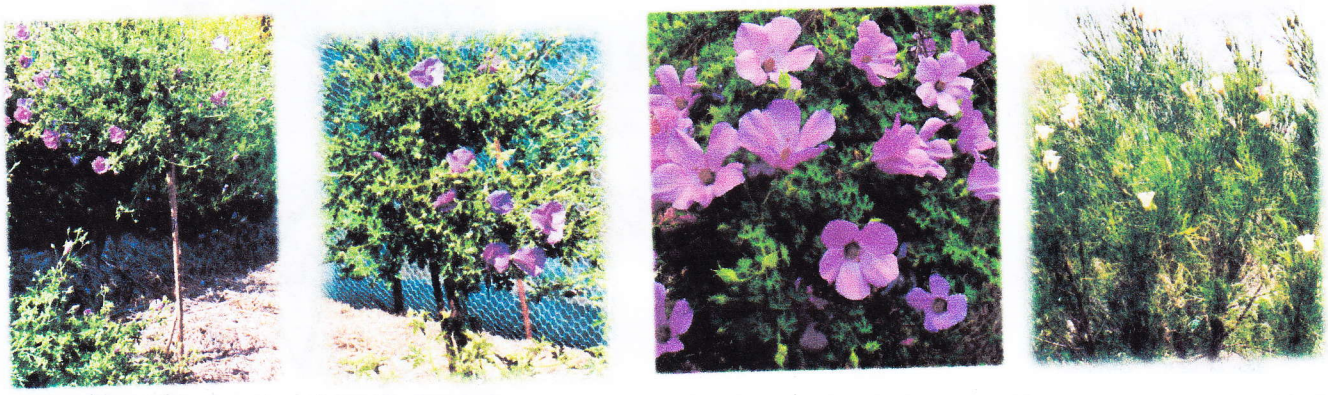


FIGURE 7. Alyogynes for special purposes
As a Standard
As a Screen

Weedy *Malva* species

Dr Stephen Johnson
Department of Primary Industries, Orange, NSW 2800

Introduction

The information presented in this article focuses on *Malva* species that have been recorded as naturalised or 'weedy' in Australia. It briefly focuses on a range of species before examining one of the most significant *Malva* weeds in Australia, *M. parviflora*, in some detail. For those interested in delving deeper into the weedy status of plant species around the world, a useful starting place is Rod Randall's 'A Global Compendium of Weeds (2002), see the further information list at the end of this article). Up-to-date information from Rod's book is available on the internet at http://www.hear.org/gcw/

Weedy Malva species

It is thought that there are around "25-40 species of *Malva* throughout the world, most of which had become widespread weeds" (Ray 1995). Nine species have been recorded as either naturalised or weedy in Australia with *M. parviflora* a significant problem.

Australian Hollyhock (*M. preissiana*), was previously known as *Lavatera plebeia* and *M. australiana* (Figure 1 and as described in Newsletter 13, pages 10-11). It is found in all states and territories of Australia except Tasmania (TAS). Although many regard this as a native Australian species, there is some discussion about whether certain populations of this species have also been introduced. The species is an erect perennial herb that grows to 2 metres high. Its leaves are up to 20 cm long and 5-9 lobed, while the flowers are pale pink, lilac or white (Figure 2), often with darker veins. The fruit is 6-7 mm in diameter. This species flowers in the period July-February. It hybridises with *M. dendromorpha* in some areas.

Tree mallow (*M. dendromorpha*), was previously known as *Lavatera arborea*. This introduced species originates from the Mediterranean and is found in New South Wales (NSW), Victoria (VIC), TAS, South Australia (SA) and Western Australia (WA). It is an erect biennial to perennial herb, 1-3 m high with a woody base. The leaves are 2-25 cm long and 5-7 lobed, while the flowers are pink to purple with darker veins, often darker near the flower centre.

Cretan mallow (*M. linnaei*), was previously known as *Lavatera cretica* (also briefly mentioned in Newsletter 13, pages 10-11). The species has been introduced from the Mediterranean region and is found in NSW, VIC, TAS, SA and WA. This erect herb grows to 1.5 m high. The leaves are 3-10 cm long, 5-7 lobed, and flowers are lilac-pink and smaller than those of *M. preissiana*. The fruit is 7-10 mm in diameter. This species flowers in the period July-February.

Musk mallow (*M. moschata*), has been introduced to VIC and TAS from Europe and North Africa. This perennial herb grows up to 1 m high. The leaves are deeply divided which is a significant difference to other *Malva* species. The flowers are mauve or white and the fruit downy. While the species is recognised as a weed elsewhere, it has only been recorded as an occasional garden escape in Australia.

Dwarf mallow (*M. neglecta*), also known as *M. rotundifolia*, has been introduced from Europe and North Africa. This species is very similar to mallow-of Nice (*M. nicaeensis*). *Malva neglecta* is an annual species and generally prostrate to ascending in habit. The leaves are 2-6 cm long, 5-7 lobed, and the flowers white to pinkish-lilac. The species is a minor weed of wasteland in NSW, VIC, TAS and WA.

Mallow-of-Nice (*M. nicaeensis*), has been introduced from the Mediterranean area. It can be erect or prostrate in habit, annual to biennial, with stems to 50 cm long. The leaves are about 1-10 cm long, 5-7 lobed, while the flowers are light purple, lilac or bluish. The fruit is 5-8 mm in diameter. Again, the species is a minor weed of wasteland in NSW, VIC, SA, TAS and WA.

Tall mallow (*M. sylvestris*), has been introduced from Europe, Asia and northern Africa. This erect herb is biennial or perennial and grows to 1.5 m high. The leaves are 3-10 cm long and flowers are pink to purple with darker veins. The fruit is 5-7 mm in diameter. This species is uncommon throughout NSW, VIC, TAS and Queensland (QLD).

M. verticillata (no common name recorded), has been introduced from Europe, Asia and northern Africa. It is erect in habit and grows to 1m high. The leaves are 8-10 mm long and the flowers are white or pink. The fruit is 6-7 mm in diameter. It is only found south western NSW.

Malva parviflora
Common names: there are a number of common names for this species including marshmallow, small-flower/ed mallow, mallow, little marshmallow, Egyptian mallow, ring-leaf mallow, whorl-flowered mallow and whorled mallow.

The problem: introduced from the Mediterranean area and is now a common weed of cropping, gardens and occasionally pastures. It is also common in waste areas near stock yards, residences, along watercourses and roadsides. It grows on a range of soil types.

Malva parviflora occurs in all states but is generally most common and problematic below the tropic of Capricorn. In particular it is a common winter/spring cropping weed throughout central and southern QLD and western NSW. Of note is the increase in both density and distribution of this species in Western Australia throughout the last 10-20 years.

It is thought that the increased incidence of this species in cropping situations is due to the increased use of reduced tillage practices. This may partly explain the situation. It is also likely that both a reduction in the general range of herbicides used and a reliance on glyphosate-based herbicides (which the species appears to have some tolerance to), when combined with a decrease in cultivation has lead to increased survival of the species.

Seedlings: have heart-shaped leaves that are 8-10 mm long and 6-7 mm wide on long purple stalks (up to 13 mm long). The first and subsequent leaves have a notched base, slight lobes and teethed margins (Figure 3).

Adult plants: are annual to biennial herbs, generally 30-100 cm high with stems upright or ascending in habit (Figure 4). The leaf stalks 5-24 cm long, and the leaves purple to green 3-10 cm long/wide (rarely to 20 cm) with 5-7 broad lobes, and wrinkled. Flowers occur in clusters of 3-4 in the leaf axils, have 5 pink to almost white petals, are 4-6 mm long, on stalks 7-22 m long. The fruit is a rounded capsule to 9 mm diameter with 8-12 segments, green at first (Figure 5) and then brown when mature. The species is similar to *M. nicaeensis*.

Biology and lifecycle: extensive research on a number of aspects of the biology and lifecycle of *M arviflora* has been done by Dr Pippa Michael and her associates (see further reading list). Much of the following has been drawn from her work: -

- mechanical scarification or fluctuating summer soil temperatures (50/20°C) were required to break seed dormancy. This dormancy mechanism would prevent early germination after summer rainfall which would be unlikely to wet the soil to a sufficient enough extent to allow seedling survival;

- germination occurred over a wide range of temperatures (5-37°C) and did not require light or darkness;
- seeds from populations collected in areas of 'low' rainfall (337-344 mm) were more responsive (in terms of germination) to fluctuating temperatures, in contrast to those from higher rainfall areas (436-444 mm);
- after 3 years, the maximum seedling emergence in field trials was 60%, with buried seeds producing 13-34% higher emergence than seeds on the surface;
- the species rapidly grows and becomes locally dominant in years of high winter rainfall;
- flowering occurs early in plant growth (one study indicated first flowering 51 days after germination) and continues throughout winter and spring. Flowering occurs throughout the life of the plant;
- the species in predominantly inbreeding, and it was postulated that the lack of genetic variation in the species across Western Australia may be a result of extensive sheep movement and subsequent spread of the species (see below);
- flowering time in different populations was photoperiod sensitive with populations from more northern latitudes needing shorter day lengths to initiate flowering than populations from more southern populations;
- seeds were capable of germinating early in their development (if removed from the adult plant), reaching a peak at 63% 9 days after flowering, but declined as seed development progressed probably due to the imposition of physiological dormancy (via an impermeable seed coat). Physiological seed maturity was calculated as 21 days after flowering. These studies suggested that control measures to prevent further seed set needed to occur at or before flowering as the formation of the impermeable seeds fairly soon after flowering left little opportunity for management post-flowering;
- the species is readily eaten by stock but may cause 'staggers' if eaten in quantity. This condition may be potentially fatal but having said this, livestock may be used to control weeds including *M. parviflora*;
- studies indicate that viable seed passes through horses, and birds, after eating. While 98% seed separated from the hard seed coat was unviable after 12 hours in a sheep rumen (increasing to 100% after 24 hours), over 92% of seed still in its seed coat was viable for periods of 12-144 hours in the rumen;
- in a follow-up study, relatively few seeds still in their seed coat (20%) survived being eaten and passage through the digestive system; and
- accordingly, *M. parviflora* can be spread by sheep if plants with hard seed coats are grazed. The management recommendations that arise from this are that sheep be allowed to graze immature plants, which apparently they do with some preference, and holding of sheep for at least 8 days under weed free conditions before relocation to ensure that all seed has moved through the digestive system.

Further information

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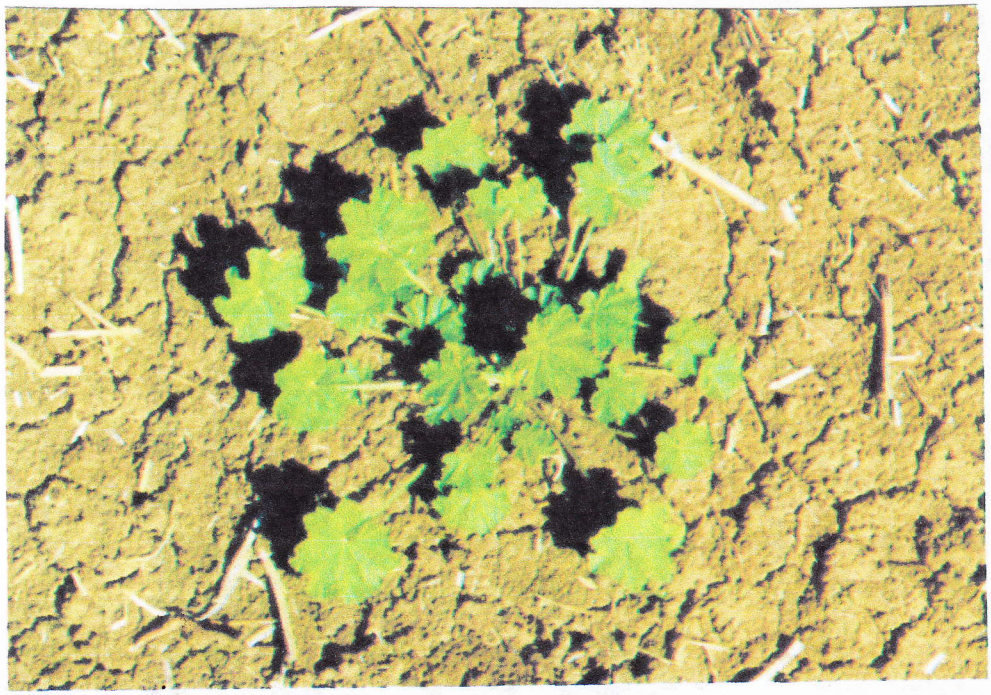
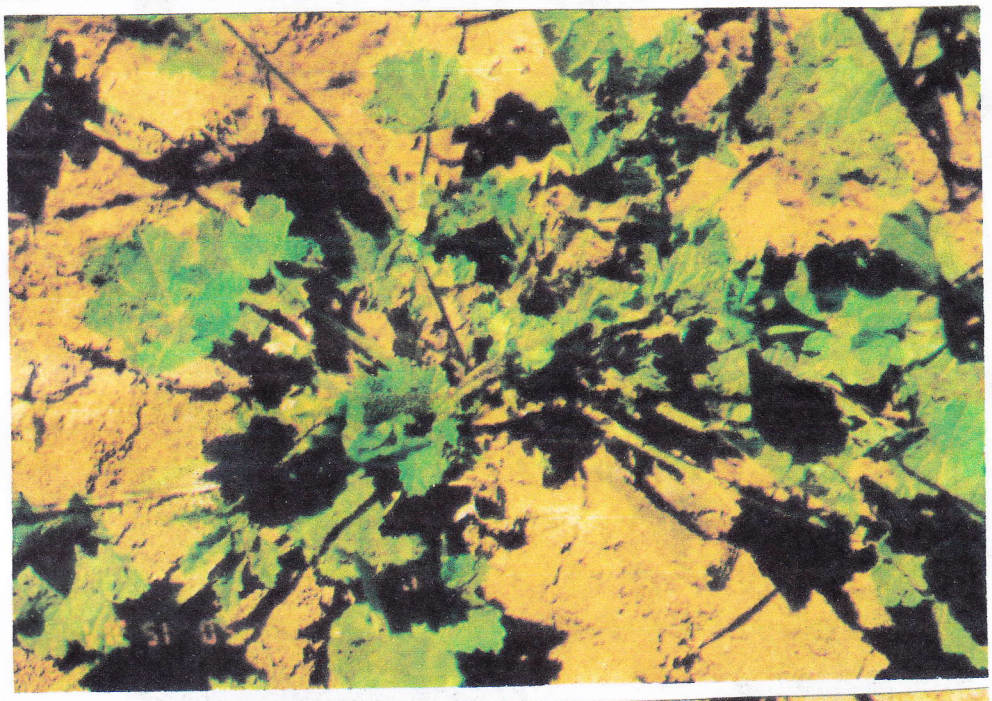
Fig. 2 2 Images Malva preissiana - Stephen Johnson. in flower. Fig 1



Malva parviflora
Seedling

Fig. 3



Malva parviflora
flowering plant

Fig. 4

Malva parviflora
flowering and
fruit.

all images –
Dr. Stephen Johnson

Fig. 5

AT-A-GLANCE GUIDE

- 2m
- Full sun/semi-shade
- Best climate
- Hardiness: suitable

plant of the month

Blue hibiscus

Alyogyne huegelii

This spreading evergreen native shrub has a continuous display of pale mauve, purple, white or yellow hibiscus-like flowers from spring to autumn. Looking at the bloom it's easy to see why it was once classified as a hibiscus. It is fast-growing with divided, slightly felty leaves. Bird- and butterfly-attracting.

GROWING NOTES

This shrub is excellent for dry areas however it also does well in subtropical and temperate regions. Plant in any well-drained soil and regularly prune lightly to shape. It's tolerant to lime, drought and frost.

DESIGN NOTES

- Plant with other flowering shrubs.
- Use as a feature plant.