

**ASSOCIATION OF SOCIETIES FOR GROWING
AUSTRALIAN PLANTS**
HIBISCUS AND RELATED GENERA STUDY GROUP
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H. divaricatus – large flower form from Biloela Qld.



Seed Capsule of Abutilon species

Newsletter No 19.

February 2010

Cover Images

The yellow *Hibiscus divaricatus* bloom is from a containerised plant, cutting grown, that came from site 39 Biloela/Gladstone Road during our North Queensland Field Trip of 2009. This plant is considered to be a valuable addition to our collection due to the large flowers (dia. 16 cm) and handsome well branched bushes with absence of prickles. It never ceases to amaze me how a hibiscus species vary in form from one location to another.

The bottom image represents the interesting seed capsule of an Abutilon (origin unknown) that came up in my garden. It has dark yellow blooms that open about mid-day and are the size of a 50 cent piece.

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Page 5 - Native Hibiscus species of South East Queensland – C. and G. Keena.

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Page 15 – Therapeutic effects of *Hibiscus sabdariffa*, Rosella (Roselle) – Dr. Dion Harrison.

Page 18 – Native Hibiscus and Hibiscus-like Species for South East Queensland and beyond – C. and G. Keena.

Some Hybridizing Results

H. heterophyllus red form of 'Rosie' was pollinated with *H. heterophyllus* yellow form from Mackay during October 2009. This resulted in 34 seed capsules containing 657 seed an average of 19.3 seed per capsule. 20 seed were planted resulting in 13 very robust seedlings. Should readers want some of this seed please send me a stamp addressed envelope.

Welcome to New Members

John Birbeck, Buderim Qld. Alison Fraser, Mt. Isa Qld. Beverley Kapernick, Gympie Qld. SGAP Pine Rivers Branch, Lawnton Qld. Grant Allen Wilby Victoria APS Victoria (additional subscription). We do hope that you get good value by belonging to our Study Group. Don't forget we will respond to any Hibiscus subjects that you may want us to write about, and that a very extensive seed bank is available.

Day Trip to Palmview.

John Birbeck was instrumental in securing a 20 ha Council Reserve in Denzen Road, Palmview situated west of the Bruce Highway near the Caloundra turn-off. It is a wet

eucalypt forest that was lightly logged more than 40 years ago containing Flooded Gum, Tallowwood, Serpentine some palms and numerous vines. The object of the visit was to locate *Hibiscus splendens*, which were found to contain plenty of seed and numerous seedlings. As this habitat favours *H. splendens* exclusively the species should be genetically pure. At the time of the visit the undergrowth was extremely dry and could have burnt fiercely thus eliminating the Hibiscus population. To be on the safe side we secured seed, cuttings and a few of the seedlings for safe keeping.

Geoff Simmons Bequest.

My report on the March 2009 collecting trip to North Queensland was presented to the Regional Meeting at Mt. Coot-tha Botanical Gardens on 9th November 2009. It is hoped to carry out the second part of the collecting trip to Western Queensland and the Gulf during May/June 2010. The very active wet season should guarantee good seeding conditions. We plan to be in Bowen on 9th and 10th May reaching Mt. Isa on the 11th or 12th May.

Spring Get-Together 18/10/09

We were exceedingly well looked after at Colleen and Geoff Keena's property at Glamorgan Vale in the Brisbane Valley followed by a great BBQ Lunch at Peter and Carol Bevan's of Lowood. This excursion was written up in some detail by Jan Sked in the Regional Bulletin of December 2009 – see page 39.

Those attending included : Neil and Helen Smith all the way from Bowen, Bev. and Eileen Kapernick from Gympie, Peter and Carol Bevan from Lowood, Dr. Dion Harrison from Karana Downs, Dr. Ross McKenzie from Ashgrove, Dr's Elwyn and Merve Hegarty from Indooroopilly, Fred Westerman from Lota. Sue White, from Fernvale – Secretary of the Ipswich SGAP, Geoff and Colleen Keena from Glamorgan Vale, Jan Sked, Shirley McLaran, Carol Guard from Pine Rivers SGAP, John, Stephanie, Alessandra Birbeck from Buderim, Geoff Harvey and Brian Kerr from Buderim, David Hockings from Maleny. The attendance of 23 people shows great support for our Study Group. It was a pity that conditions were so dry at the time. Since then we have been blessed by a good wet season and Hibiscus are actively growing.

Letters to the Editor.

A fair volume of correspondence has been forthcoming since we produced the 'Australian Plants' Vol 24, No. 197 pages 338 to 382. From Annette Houseman of Waughope N.S.W. a nice card and images of several Hibiscus and Alyogyne was much appreciated. She had the following to say "I find that the 'Barambah Creek' strikes readily when I trim and poke 'cuttings' in the ground. Wish other plants were so easy to propagate".

From Ian Tidswell of Noosa a mystery Malvaceae turned out to be *Anoda cristata*, a weed from the eastern Darling Downs identified by Weed Ecologist and S.GroupMember

Dr. Stephen Johnson. When checking further it was found that Ian Tidswell had moved from the Darling Downs to settle on the coast and seed of the plant must have been transported in some way. Likewise I noted *Malvastrum americanum* in a neighbour's garden. He too came from the Darling Downs where this introduced plant is a weed. Most correspondence and photos concern *H. trionum* for identification. It is amazing how this plant seems to mysteriously appear in gardens where it has not been previously recorded. Some of them are the Australian variety *H. trionum var vesicarius*. The most southern record reaching me to date is Wilby in Victoria from the garden of new member, Grant Allen.

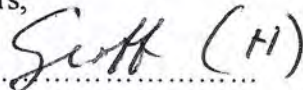
Hibiscus Oxalate Analysis

This is an on-going project with Colleen and Geoff Keena and Dr. Dion Harrison collecting the samples for analysis. Dr. Ross McKenzie is arranging the analysis. A table showing progress to date appears on page 4.

Our Study Group urgently needs a Malvaceae enthusiast from tropical North West Australia to help us with the large population of species that occur in that part of our large country. The Study Group is driven by a need to record all we can about the extensive but inadequately known Malvaceae Family in Australia and to eventually ensure that they are preserved in Regional Botanical Gardens. Our seed collecting is an important step in opening the way to achieve these aims

x Appendixed to this Newsletter please find "Notes from Study Group Leaders' Meeting at Geelong" in October 2009. "FW Memo to Study Group Leaders" from Paul Kennedy, President ANPSA. Copy of a letter sent to Study Group Co-ordinator, Philip Robinson dated 17th September 2009. Amongst this correspondence there are various matters that this Study Group should address in the near future. I haven't as yet communicated with the new Study Group Co-ordinator, Geoff Lay.

Hope you enjoy the newsletter, with best wishes to all members,



 Geoff Harvey – Study Group Leader

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x N.B. The N.L. is too bulky to include the proposed appendices.
 S-

Species	Specimen	Amount - Fresh weight in grams (Approx. Dry weight)	
		Petals	Leaf
H. heterophyllum	Mt Crosby Cliffs	138 g (10.3)	700 g (168)
H. heterophyllum	Quarry	102 g (7.6)	286 g (68)
H. heterophyllum	White local	103 g (7.7)	330 g (79)
H. heterophyllum x H. divaricatus	Citrus haze	115 g (8.6)	263 g (63)
H. divaricatus	Marlborough	111 g (8.3)	*

FY to DW conversion factor: x 0.24 for leaf samples, 0.075 for petal tissue

* Throughout the recent extended dry period, there were few leaves on H. divaricatus. There has recently been good rainfall and it is anticipated that foliage will soon be available. Collection will be done when sufficient foliage is available.

Article and images by Colleen and Geoff Keena, Glamorgan Vale.

INTRODUCTION

There are eight hibiscus species native to South East Queensland that are described in 'Mangroves to Mountains' (1): *Hibiscus divaricatus*, *Hibiscus diversifolius*, *H. heterophyllus*, *H. meraukensis*, *H. splendens*, *H. sturtii*, *H. tiliaceus* and *H. trionum* var. *trionum*. Two are small annuals for us: *Hibiscus sturtii* and *H. trionum*. *H. trionum* var. *trionum* is introduced. There is a native form, *H. trionum* var. *vesicarius*. Both forms have weed potential. *H. diversifolius* has a widespread distribution. In Australia it grows in swampy coastal areas and has weed status. *Hibiscus tiliaceus* is a tree native to the shores of the Pacific and Indian oceans. It can become invasive. These hibiscus species are not described further here but are shown in the next article.

The remaining hibiscus species of South East Queensland are in Hibiscus section *Furcaria*, that is, they have ribbing on the calyx. 'Rosella', *Hibiscus sabdariffa*, is from this section but is not native. The species described below cross easily if more than one species is grown. Seedlings can be worth retaining as they may extend the colour range and/or flowering period. In South East Queensland, native hibiscus flowers are white, yellow or pink. Although the blooms are delicate, the plants are hardy.

The blooms of native hibiscus are valuable for attracting wildlife. By growing a range of hibiscus species, you can have blooms in the garden nearly all year-round making them valuable for faunascaping. The blooms produce nectar to feed nectar-eating birds and predators and also attract insects for insect eaters, provided there are protected water sources and nesting places. In addition, the seed capsules can provide for seed-eaters. Thus, apart from our enjoyment of birds and insects, native hibiscus attract birds and other predators, so encouraging natural pest control as the insects use the plant as a food source and are themselves controlled by a wide range of predators. Honeyeaters take advantage of the large nectar-rich flowers. Birds such as lorikeets are attracted to the seeds and the sight and sound of a *Hibiscus heterophyllus* literally covered with lorikeets bowing down the branches as they feast upon the seed capsules more than compensates for any damage sustained. Insects seek out the flowers of this species. As well as insects and birds, frogs can be found on blooms and foliage of native hibiscus and caterpillars on the leaves. See FIGURE 1 ii. While we don't enjoy seeing leaves eaten by caterpillars or damaged by leaf rolling by caterpillars, we enjoy the resulting winged creatures.

Native hibiscus are fast growing, hardy and suitable for most soils in full to partial sun but should be protected in frost prone areas. Young plants are particularly vulnerable to frost damage and may be lost if not protected. Native hibiscus are easily propagated from seeds or cuttings. As blooms form on new growth, pruning after flowering will not only keep plants to a more manageable size but will mean greater numbers of flowers. Irritant hairs on seed capsules must be avoided. If irritant hairs become embedded in skin, applying sticky tape and ripping off will aid in the removal of irritant hairs.

Although *Hibiscus heterophyllus*, *H. splendens* and *H. divaricatus* are small trees in their natural environment, plants can be grown successfully in pots. The larger the pot, the larger the plant will become. Initially I planted stock plants in very large pots. The plants soon became so large that I couldn't reach the top to pick blooms or tip prune. Now I use 6" (15 cm) or 8" (20 cm) pots for stock plants as I find it is easier to store a large number of plants and to maintain a reasonable size. I have been able to maintain stock plants in 6" (15 cm) pots for almost 30 years. Plants in these pots have fresh soil added each spring and roots are pruned as necessary.

With the exception of *Hibiscus tiliaceus*, most of the other hibiscus that grow as trees are not long lived in our subtropical conditions. However, once the parent plant dies, a thicket of seedlings can usually be found around the position where the parent plant grew. We retain the strongest of these or any which show different characteristics, e.g. shape of leaves, tolerance to dry conditions. We now have some interesting plants that started off as seedlings after the parent plant died.

1. *Hibiscus heterophyllus*

Hibiscus heterophyllus is the native hibiscus most commonly found in South East Queensland. However it is not confined to this area. It is found along the east coast of Australia from central New South Wales to Lockhart River in North Queensland. The flowers in the southern half of the range are white and those in the northern half of the range are yellow. It is usually a prickly tall plant to 6 metres. There can be great variation in the colouration of the flowers. See FIGURE 2. The most common form locally has white petals with a band of deep rose pink to crimson along one edge of the back of the petals. Although local forms mostly have large white flowers, sometimes lemon yellow (found at Kenilworth) or pink flowers (found between Somerset Dam and Kilcoy) can be found. The "eye" at the centre of the bloom is a rich red. Open flowers are usually about 10.5 cm across, although larger blooms can occur. This species flowers heavily in spring but some plants may start blooming in late winter and others may bloom until mid-summer in South East Queensland.

The name refers to the two shapes of leaves that can be found on the same plant. On the upper part of the plant, the leaves are entire, whereas lower down on the stem, the leaves may be divided into two, three or five deep lobes. Plants can be quite free of prickles but prickles are often scattered along the branches. The blooms, particularly the white ones, show up well against the dark green of the mature leaves.

Hibiscus heterophyllus occurs along the margins of light rainforest, on hillsides, in gullies and along creek banks. It often grows along road sides in South East Queensland although it is easy to miss the plant growing amongst other vegetation until it blooms.

In cultivation, it needs well drained soil in either a sunny or semi-shaded position. We have seen it growing in protected positions in temperate regions and in open positions in tropical areas.

This plant is fast growing. Regular tip pruning prevents plants from becoming sparse. The plant tolerates light frosts here. Although frosts may damage foliage, established plants usually recover.

This species was described in early written records. *Hibiscus heterophyllus* was recorded in 1824 by Allan Cunningham. Describing the vegetation along the Brisbane River, he noted that *Hibiscus heterophyllus* was very frequent on the immediate bank "clothed with a profusion" of flowers. *Hibiscus heterophyllus* was also recorded by Charles Fraser in 1828 and again in 1844 by Ludwig Leichhardt. Even prior to those mentions, *Hibiscus heterophyllus* is listed as one of the plants taken back to France on Captain Baudin's voyage to Australia. This voyage had been approved by Emperor Napoleon. The Emperor's wife Josephine grew plants collected by Captain Baudin, including *Hibiscus heterophyllus*, in her hothouses outside Paris early in the 19th century. One of the first things she did after becoming Empress was to appoint P.J. Redouté 'Painter to Josephine, Empress of the French'. His painting of *Hibiscus heterophyllus* is shown as a full page colour reproduction in 'Napoleon, the Empress and the Artist' written by Jill Hamilton (1:149; text is now online). Jill Hamilton notes the disparity between the French appreciation of Australia's plant heritage and current Australian practices, given that it has been estimated that less than 1% of the plants grown in domestic gardens in Australia today are native.

This local plant is so noticeable that it featured in early written records, it is listed as a food source for both people and fauna and has the ability to survive in the toughest of conditions. It is an outstanding plant for the local spring garden.

I would always grow this species. I love it for the noticeable blooms which stand out against the dark foliage. In addition, I particularly like this species as the petals can be used for drinks, syrup and jam. I consider jam and syrup from the blooms of this species to be the most tasty of all the native hibiscus forms that I have tried. More information about *Hibiscus heterophyllus*, including recipes, can be found online at <http://www.hibiscus.org/species/hheterophyllus.php>
<http://www.hibiscus.org/culinaryexisting.php>

2. *Hibiscus splendens*

1.

Hibiscus splendens occurs in a range of locations in South East Queensland, as well as in New South Wales. See FIGURE 3. The flowers, which are profuse in early spring to mid-summer turn to one side. This is one of the largest-flowering of the Australian native hibiscus with blooms 12 to 18 cm in diameter, although we have seen one form with blooms up to 22 cm.

Hibiscus splendens is a tall shrub, usually 2 to 6 metres. We have seen plants on rainforest edges growing to 8 m. The stem can have a dense or sparse covering of prickles or can be free of them. The large silvery-grey foliage is densely covered with soft velvety hairs which make the leaves feel furry. The leaves vary in shape. The leaves are simple and narrower at the top of the plant but lower down on the plant they may be lobed with three or five deeply-cut lobes. The calyx and seed capsule are covered in hairs. The large flowers are various shades of pink. On the inside, towards the base of the flower, the colour fades to white and this is continued upwards into the pink of the petals as thick white veins which can be clearly seen. The "eye" at the base of the flower is edged by a narrow red line.

Hibiscus splendens occurs naturally in open sunny situations or in the sunny understorey of open forest, along the margins of coastal scrubs or of light rainforest. It is found near creeks or if growing on a ridge, it is found in localities where moisture can collect.

In cultivation, it needs well drained soil in either a sunny or semi-shaded position. We have seen it growing in protected positions in temperate regions. This plant is fast growing. Regular tip pruning prevents plants from becoming sparse. The plant tolerates light frosts. This species performs well as a container plant. We have found that this species is unable to cope with drought as well as *Hibiscus heterophyllus*.

Like *Hibiscus heterophyllus*, *Hibiscus splendens* also featured in early records. Dr Graham, Professor of Botany in the University of Edinburgh wrote (2): This noble plant was raised, I believe, in various collections, from New Holland seeds sent by Mr Fraser in November 1828; but I am not aware that it has flowered anywhere before the present month (May 1830), when it blossomed in ... the Royal Botanic Garden, Edinburgh. Its only fault, as a cultivated plant, is its great size; but in its native situation, it must present a most brilliant appearance, Mr Fraser writes of it, "This I consider the king of all the Australian plants which I have seen. I have it 22 feet in height. The flowers this season measured 9 inches across, were of the most delicate pink and crimson, and literally covered the plant."

When we tried to find this plant 150 years after it was first described so enthusiastically, we were unable to find it in any nursery, despite the enthusiasm shown in the early records. More information about *Hibiscus splendens* can be found online at <http://www.hibiscus.org/species/hsplendens.php>

Hibiscus 'Pink-Ice' is a cross between a white *H. heterophyllus* and *H. splendens*. It has pink blooms over a long period. A cross between *H. heterophyllus*, yellow and *H. splendens*, *H. 'Wirruna'*, is an example of a cross with a longer flowering period and a new colour, salmon. See FIGURE 3 i and 3 ii.

3. *Hibiscus divaricatus*

Hibiscus divaricatus has a more limited distribution in South East Queensland than the previous two species, occupying the northern parts of the region and beyond. Its name has been changed from *Hibiscus heterophyllus* subsp. *luteus* to *Hibiscus divaricatus*. It is a tall shrub with an extended flowering period. The forms that we have seen in South East Queensland have lemon or gold flowers. This species has been a standout plant for us, flowering profusely even in drought. See FIGURE 4.

The flowers of *Hibiscus divaricatus* have light crimson centres and are usually up to about 10 cm across although larger forms do occur. As in *Hibiscus splendens*, the "eye" at the base of the flower is edged by a narrow red line. The calyx is smooth. The stems usually have some prickles. The leaves, which have toothed margins, are dark green, up to 10 cm and may be long or deeply 3 lobed. We have forms with narrow leaves and one form with a wider leaf. Both these forms are shown in FIGURE 4.

Hibiscus divaricatus is normally only 5m or less and usually has an erect central stem that branches fairly close to the ground. The branches are fairly long, straight, generally ascending. The lower ones grow at an obtuse angle to the main stem before becoming ascending and produce short stems which are mainly the flowering stems.

We have found that, generally speaking, seedlings around *Hibiscus divaricatus* are so like the parent in appearance that as the plants grow and intertwine, it is difficult to tell which is the parent plant and which is the seedling. This is not the case with the other three species described here. As we grow many compatible species and forms of species, seedlings other than those of *Hibiscus divaricatus* tend to be quite different from the parent plant.

Along with *Hibiscus heterophyllus*, this species is listed as a Famine Food (3). This would be our second preference in native hibiscus, both because of its hardiness to drought and light frosts and because of its long flowering period. More information can be found online at <http://www.hibiscus.org/species/hheterophyllus-hdivaricatus.php>

Hibiscus 'Citrus Haze' is a cross between *H. divaricatus* and *H. heterophyllus*. It has extended flowering and is suitable for jam. See FIGURE 4: i.

4. *Hibiscus meraukensis*

Hibiscus meraukensis is much smaller than the previous plants. This plant has a widespread distribution, extending from the Kimberleys of Western Australia to South East Queensland and Papua New Guinea.

Hibiscus meraukensis usually has white flowers although it can have pink flowers. It mostly performs as an annual in our garden but at least one form grows over a long period of time. This form is shown in the first of the images in FIGURE 5. The second and third images are of an annual form.

The flowers vary in size, ranging from 6 cm to 12 cm. They have a red or maroon centre. The leaves are variable, with one to three lobes. Leaves can be up to 12 cm. *Hibiscus meraukensis* grows best in a sunny position. It needs good drainage. It is often propagated by seed although the form that grows as a perennial here is easily propagated from cuttings in spring and summer.

Hibiscus 'Ian's Lemon' is a chance cross between *H. meraukensis* and *H. divaricatus*. It grows to 3 m and flowers for an extended period.

SUMMARY

Those of us who live in South East Queensland are fortunate to have native hibiscus occurring locally. Not only are these hardy plants attractive to us but they also are attractive to local wildlife. However, although those species described above occur in South East Queensland, we have seen some performing beyond this area, with some even flourishing in protected positions in temperate regions. For those from areas other than South East Queensland who are interested in growing native hibiscus, it is probably worth considering the species with the largest natural distribution, *Hibiscus heterophyllus*, as it copes with a range of conditions. (*Hibiscus meraukensis* is also widespread but in warmer areas, not in cooler places like *Hibiscus heterophyllus*). Apart from being hardy, fast growing and valuable for 'fauna-scaping', there will be a bonus to growing *Hibiscus heterophyllus*, namely tasty jam, syrup or drink for those who like to eat their garden.

REFERENCES

1. G Leiper, J Glazebrook, D. Cox, K. Rathie, "Mangroves to Mountains, Revised, Logan River Branch SGAP (Qld Region) Inc., 2008.
2. Jill, Duchess of Hamilton, *Napoleon, The Empress & The Artist*, Kangaroo Press, (a Simon & Schuster imprint), 1999. Text is online at <http://www.jill-hamilton.com/pdf/napoleon-the-empress-and-the-artist.pdf>
3. *The Edinburgh New Philosophical Journal*, Vol. 9, 1830, page 170.
4. http://www.hort.purdue.edu/newcrop/faminefoods/ff_families/MALVACEAE.html

HIBISCUS OF SOUTH EAST QUEENSLAND 1

FIGURE 1: Insects on a hibiscus bloom; a frog on a *Hibiscus heterophyllus* bloom; frog on a leaf of *Hibiscus heterophyllus* and a caterpillar on a native hibiscus leaf.



FIGURE 2: Different forms of *Hibiscus heterophyllus*



FIGURE 3: Different forms of *Hibiscus splendens*



BELOW LEFT **FIGURE 3 i:** *Hibiscus* 'Pink Ice' is a cross between *H. heterophyllus*, white and *H. splendens*.

BELOW RIGHT **FIGURE 3 ii:** *Hibiscus* 'Wirruna' is a cross between *H. heterophyllus*, yellow and *H. splendens*.



HIBISCUS OF SOUTH EAST QUEENSLAND 2

FIGURE 4: *Hibiscus divaricatus*: photo of bush was taken in drought conditions



BELOW: **FIGURE 4 i** *Hibiscus* 'Citrus Haze' is a cross between *H. divaricatus* and *H. heterophyllus*.



FIGURE 5: *Hibiscus meraukensis*.



BELOW: **FIGURE 5 i** *Hibiscus* 'Ian's Lemon' is a cross between *H. meraukensis* and *H. divaricatus*.



RAISING HIBISCUS FROM SEED

Geoff Harvey

WHY GROW FROM SEED?

There are 70 or more native Hibiscus in Australia and should you desire to grow them, the only option is to resort to seed propagation. Just a few species are offered for sale in Nurseries and in my experience they are more often than not hybrids with other species. Our Study Group maintains a very large seed bank selection of species and hybrids and following a recent grant to collect seed, many members have requested seed and are still doing so. We can guarantee most of the species as they have been collected from pure populations. Other selections came from localities where a mix of species and varieties occurs such as Glen Geddes in the Marlborough region of Queensland's Capricornia. Full details will accompany any seed requests. Once you have grown a species in your garden along with other species further propagation must be vegetative by cuttings or grafting to guarantee that the species is maintained as pure. As many species appear to be declining in their natural habitat or naturally crossing with other species it is most important that we try and preserve whatever species we can.

FROM BLOOM TO SEED.

Fertilization brings to the end the purpose of the bloom. All parts such as the petals, stamens etc wither, leaving behind the ovary protected by the calyx and receptacle. Hormones cause the plant to use its energy on developing the ovary and the ovules inside. In four to twelve weeks, the ovary and its contents will ripen. A seed is a **matured ovule enclosed inside the capsule**. In the Hibiscus genus the capsule contains 5 chambers which may produce one to forty or more seed. Please note that the term pod is incorrect for Hibiscus as it is single chambered as with beans and peas. On occasions Hibiscus may produce capsules completely void of seed – a 'phantom event'. A native species known as *H. meraukensis* frequently produces seed capsules with viable seed from buds that don't open to allow normal pollination. This is known as a cleistogamous occurrence. You may observe that native Hibiscus blooms bend towards the sun. This is especially noticeable with *Hibiscus splendens* and is probably induced by an auxin that stimulates cell elongation on the side away from the light hence the bending from faster growth.

WHAT IS A SEED?

The seed is the ripe ovule, the end product of plant reproduction. A seed is made up of a tiny living embryo, stored food and the seed coat; it is a complete embryo plant. In Hibiscus the food is stored in the "seed leaves" called cotyledons. When the plant begins to grow it is nourished by the two cotyledons until it can develop true leaves and produce its own food by photosynthesis. As the seed begins to grow, the cotyledons develop before any other leaves appear. The Hibiscus is classified as an **angiosperm** meaning that

it is a vascular flowering plant producing seed in ovaries.

Vermin love germinating seed and will devour emerging cotyledons if they can gain access but usually leave the true leaves.

THE HIBISCUS DICOT. SEED.

Native Hibiscus seed vary in size and shape but usually will have a swollen end with the other end tapered. On the tapered end will be a scar called the **hilum**, which marks where the seed was attached to the capsule wall.

Near the end of the scar is a tiny pore, the **micropyle**. This is the small opening in the wall of the ovule that the pollen tube grew through just before fertilization. The outer coat or **testa** is brown in colour with some species being hairy and others glabrous. The two cotyledons tightly fill the space inside and towards the top of the seed coat. They are fleshy, white in colour and not at all leaf-like.

Seed of Hibiscus splendens



Seed of Hibiscus heterophyllus

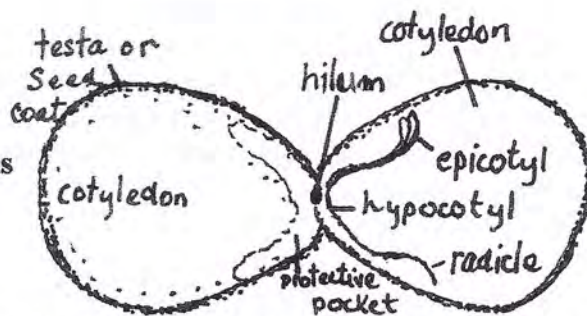


The other parts of the embryo plant are between the cotyledons. The embryonic stem or **hypocotyl** fits into the protective pocket lying between the cotyledons as does the embryonic root called the **radicle**.

The **epicotyl** is made up of two tiny leaves each folded over the other.

Between these leaves lies the **apical meristem tissue**. When the Hibiscus seed germinates the **hypocotyl** (stem) and the **radicle** develop quickly and the **epicotyl** some time later. The **cotyledons** provide the food

cotyledons separated



HIBISCUS SEED DORMANCY

Many seeds go through a rest period before they germinate and with Hibiscus a variable percentage are thus affected. In my experience *Hibiscus trionum* variety *vesicarius* failed to germinate for 12 months even though heat treated. In previous Newsletters we published reports of seed that germinated after many years in storage with David Hockings. Seed coats are designed to protect the seed from cold, pests, heat and dryness. When conditions are right for the seed to grow, dormancy ends and germination begins. In my lawn and garden today (8/2/10) there are hundreds of germinated Hibiscus seed following very warm weather and two days of rain. The ability of seed to germinate is

called **viability**. Seed viability depends upon conditions during dormancy and on the amount of food stored in the cotyledons and endosperm. Ideally seed should rest in a cool, dry place. After removal from the capsule, seed must be dried out before storage. I prefer small screw top glass jars or resealable plastic envelopes with a dusting of fungicide and a small satchet of silica gel. I get the satchets of silica gel from shoe shops and use copper oxy-chloride as a fungicide.. Warmth and moisture will reduce viability. Many people use sealed paper envelopes to store seed. Commercial seed growers run tests on the viability of different batches of seed they sell. They monitor what percentage of the seed can be expected to germinate. Later on we will examine what may be attempted by the grower to achieve, even germination of seed.

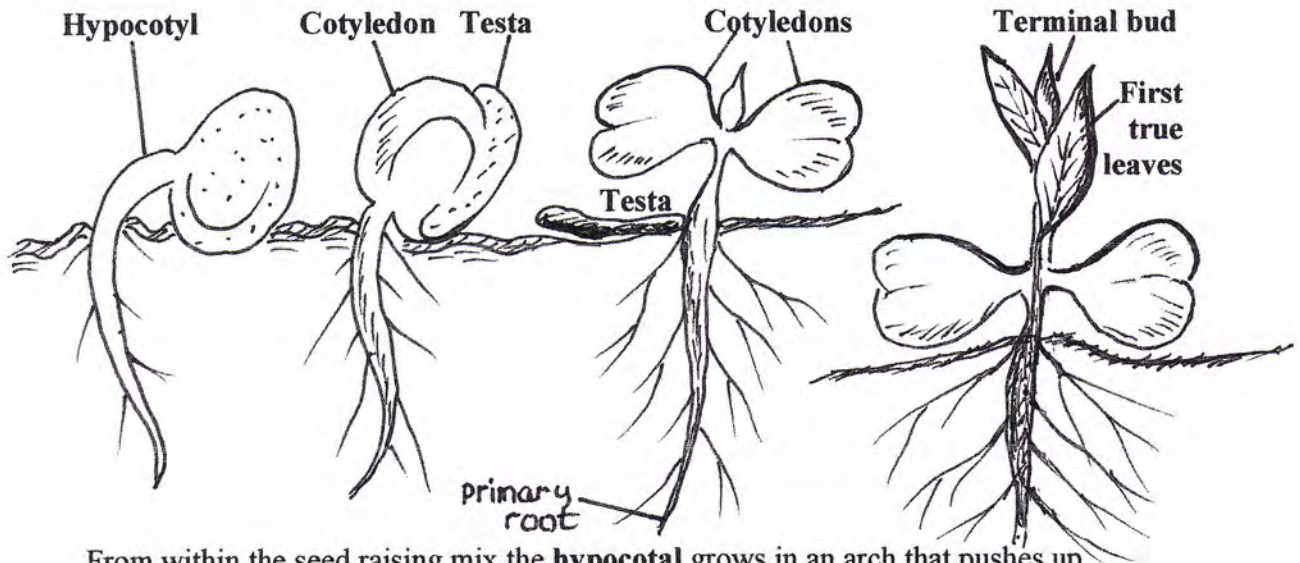
THE NEEDS FOR GERMINATION

Most seed will germinate when they have moisture, oxygen and the right temperature. Before a seed germinates, it absorbs a lot of water. This softens the seed coat and makes the seed swell. Hibiscus seed soaked in hot tap water will mostly float and then sink overnight for planting the following day. Too much water may encourage the growth of fungi that can decay the seed. The best temperature for seed germination is probably between 15 and 28 degrees celcius. In south-east Queensland, seed are best germinated Feb.-March to be hardened off before winter or from October onwards in spring. The use of heat mats and other aids will allow germination during the cool months. Tender seedlings can be kept in translucent storage containers with the lid for protection. Also large cool-drink bottles with the top or bottom cut off can be placed over grow tubes for out of season protection from cool wind, pests and vermin. During germination, the cells in the seedling divide very rapidly requiring a lot of oxygen. I use a good quality seed raising mix with seeds planted no more than 5mm below the surface. Sometimes the commercial seed raising mix tends to compact. This can be alleviated by adding vermiculite thus allowing oxygen to enter the mix. Much of the food stored in the cotyledons or endosperm of the seed is starch. Whilst the embryo is growing, the starch is changed into sugar by an enzyme called **amylase**. The new plant can then use the sugar as food. I sterilize the reused pots or tubes by washing in cool water with about 10% by volume of bleach added. The use of fungicide such as 'Fongarid' is recommended should 'damping-off' be a problem.

Alternatives to pre-soaking seed in hot water to aid germination include carefully nicking the seed coat with a very sharp knife or scalpel, abrading the seed coat with sand paper or emery board or soaking in sulphuric acid for no longer than 20 minutes..

I spray young seedlings regularly with 'Seasol' through an atomiser to be superseded by a very mild liquid fertilizer as the seedlings develop true leaves. Usually I end up with far too many seedlings and have to discard the excess.

HOW THE SEEDLING GROWS.



From within the seed raising mix the **hypocotyl** grows in an arch that pushes up through the surface. Once above the ground, the **hypocotyl** arch straightens out lifting the two cotyledons onto a horizontal plane. In Hibiscus the first terminal bud may not appear until two weeks or more after the commencement of germination. The root grows quite rapidly downwards to become the primary root of the seedling. Germination is an interesting and amazing process. Regardless of how the seed is placed in the soil the growth during germination will be correctly orientated with the root growing down into the soil and the cotyledons rising straight up above the surface.



Images
9/2/10

Good germination of Hibiscus 'Barambah Creek' ready for potting-up. Note use of 'china-graph' pencil.



Hibiscus pentaphyllus recently potted-on from communal pot. Seed from 2009 seed collecting trip to north Queensland. Reference site number 24

Therapeutic effects of *Hibiscus sabdariffa*, Rosella (Roselle)

By Dr Dion Harrison

Images by Colleen and Geoff Keena

Recently my father was telling me that his blood pressure was getting very high. This reminded me of some research articles I had recently read on the therapeutic effects of *Hibiscus sabdariffa*, commonly known as Rosella in Australia, or Roselle overseas. *H. sabdariffa* is an erect annual herb. It has been grown widely in central and west Africa and across Asia for many years where it has been consumed for its therapeutic affects in the form of a cold drink or hot tea (sour tea) prepared from fresh or dried calyces (Ali *et al.*, 2005). In Australia, it grows wild as a naturalised, introduced species in the northern tropics and is also cultivated in the tropics and subtropics primarily for making delicious jam, but also jelly, syrup and cordial. In folk medicine, tea made from the calyces of *H. sabdariffa* is used to treat a range of ailments including high blood pressure (hypertension), liver disease, and fever (Ali *et al.*, 2005). When I began to look a little more into this I was quite surprised at the level of scientific enquiry into these claims. These studies include the analyses of the key constituents of *H. sabdariffa* tea extracts and their effects on different body tissues (human and animal) in laboratory studies and human clinical trials. I have provided a brief account below and some references for those interested in reading further. Please note, this article is by no means a comprehensive review, nor an endorsement as a medical treatment as I am not a medical practitioner.

Effects on high blood pressure (hypertension)

There are several studies that have investigated the effects of Rosella Tea on reducing high blood pressure. Haji Faraji *et al.* (1999) conducted a clinical trial on 54 participants diagnosed with 'moderate' high blood pressure. 31 participants consumed rosella tea daily and 23 drank ordinary tea. The tea was prepared from two spoonfuls of blended tea in one glass of boiled water boiled for 20–30 min, at least 1 h before measuring their blood pressure. After 12 days, there was an 11% decrease in both the systolic and diastolic blood pressure in participants drinking the rosella tea. The average blood pressure (systolic/diastolic) dropped from about 157/100 to 140/90 mmHg. Three days after stopping the treatment, systolic blood pressure increased by about 8%, and diastolic pressure increased by 5.6%.

In another clinical trial conducted by Herrera-Arellano *et al.* (2004), 39 participants consumed rosella tea for 4 weeks. The tea was prepared from 10 grams of dried, ground calyces in 500 mL of boiling water steeped for 10 minutes, and then consumed before breakfast each day. As a comparison, 36 participants took Captopril tablets, a pharmaceutical prescribed for treating high blood pressure. The study found that the *H. sabdariffa* tea was as effective as the prescriptive medicine with no adverse reaction reported. The results showed that rosella tea was able to decrease the systolic blood pressure from 139/91 to 124/80 mm Hg. There were no significant differences in blood pressure detected in both treatment groups at the end of the study.

High blood pressure is particularly common among people with Type 2 diabetes where it accounts for 75% of added heart disease risks in people with this disease (Richardson, 2009). Mozaffari-Khosrav *et al.* (1999) conducted a trial involving 68 diabetic persons with mild hypertension. The subjects in the study were not taking anti-hypertensive or anti-lipidemic medication. The participants were randomly assigned to drink rosella tea or black tea infusions twice a day for one month. The results showed that the average systolic blood pressure for the rosella tea participants decreased from 134 mm Hg at the beginning of the study to 113 mm Hg after one month. By comparison, the mean systolic blood pressure in the black tea participants increased from 119 mm Hg to 127 mm Hg.

While the precise components in rosella tea and their mechanism(s) of action remain to be fully elucidated, studies have shown that the calyx extracts can generally act as a smooth muscle relaxant, or vasodilator, and this effect on arteries is likely to be one of the factors that help ameliorate high blood pressure. It has been suggested that rosella tea may inhibit Angiotensin I Converting Enzyme (ACE), which is the same target enzyme of some pharmaceutical drugs prescribed to reduce high blood pressure (Carter, 2003).

Effects on cholesterol

Atherosclerosis, commonly known as hardening of the arteries, is one of the major risk factors for coronary heart disease. It is widely recognized that the oxidative modification of 'good' or LDL (low density lipoprotein) cholesterol to 'bad' HDL (high density lipoprotein) cholesterol plays a major role in this disease. There are several lines of evidence that the water-soluble extracts from the dried calyx of Rosella possess both antioxidant effects against LDL oxidation as well as cholesterol lowering (hypolipidemic) effects (Hirunpanich *et al.*, 2006). Again, while the precise components and their mechanism(s) of action remains to be fully elucidated, the calyx of Rosella has been shown to contain many chemical constituents such as alkaloids, L-ascorbic acid, anisaldehyde, arachidic acid, anthocyanin, β -carotene, β -sitosterol, citric acid, cyanidin-3-rutinoside, delphinidin, galactose, gossypetin, hibiscetin, mucopolysaccharide, pectin, protocatechuic acid, polysaccharide, quercetin, stearic acid and wax (Gaet, 1999). Some of these constituents are well known antioxidants. For example, many of you will be familiar with the bright red colour of the rosella calyx which is largely from the pigment known as hibiscus anthocyanin. Other antioxidants include ascorbic acid (better known as Vitamin C), quercetin and protocatechuic acid. Hibiscus protocatechuic acid has been shown to be a potent antioxidant in animal studies (Tseng *et al.*, 1996). Several studies have shown that compounds such as β -sitosterol and pectin from many fruits and vegetables possess cholesterol lowering effects in the blood (Hirunpanich *et al.*, 2006).

Summary

There is emerging scientific evidence supporting the claims from folk medicine that tea made from *H. sabdariffa* calyces may have several therapeutic effects. It should be noted that the clinical studies discussed above are considerably small in scale, and therefore have less chance of detecting adverse effects. While no adverse effects were reported in the trials reviewed here, there are warnings in the literature and on the internet for pregnant women to avoid consumption of rosella tea concoctions for therapeutic use, presumably due to evidence that tea extracts may stimulate contractions of uterus tissue (Fouda *et al.*, 2007; also see W1). Also, there are indications that certain medication may interact with tea made from rosella (Fayke *et al.*, 2007). In spite of this, rosella tea and other 'fruit tea' infusions containing dried rosella are commercially available in the supermarket with no specific warning labels. However, I gather that the quantity of dried calyx in a standard tea bag is quite a deal less than what is used in the therapeutic concoctions discussed above which appear to be much stronger.

Disclaimer: *the author of this article does not take any responsibility for any adverse effects from the consumption of plants. Always seek advice from a medical professional before using a plant medicinally, and ensure the plant is correctly identified.*

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17. **HIBISCUS SABDARIFFA**



Blooms can change colour throughout the day



Blooms, calyces and foliage. Calyces are often called 'flowers' or 'fleurs'



Calyx showing seed capsule



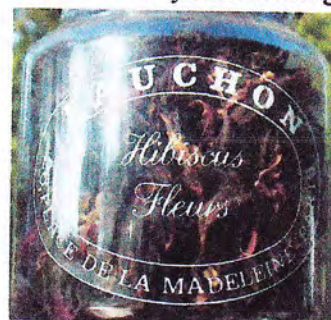
Calyx



Calyces forming up stem



Dried calyces and seeds of different forms



Dried calyces purchased in France

Native Hibiscus and Hibiscus-like Species for South East Queensland and beyond

Article and images by Colleen and Geoff Keena, Glamorgan Vale.

INTRODUCTION

As noted in Native Hibiscus in South East Queensland, there are eight species described in 'Mangroves to Mountains' (1): *Hibiscus divaricatus*, *Hibiscus diversifolius*, *H. heterophyllus*, *H. meraukensis*, *H. splendens*, *H. sturtii*, *H. tiliaceus* and *H. trionum* var. *trionum*. Four were described in some detail in the previous article, 'Plants of South East Queensland': *Hibiscus divaricatus*, *H. heterophyllus*, *H. meraukensis*, *H. splendens*.

Some of the crosses between these hibiscus species were noted in the previous article, however there are now many more crosses. Information on some of the earlier crosses can be seen at http://www.hibiscus.org/articles/hibiscus_section_furcaria-pt1.php

When considering species of hibiscus and hibiscus-like species that perform well in South East Queensland, the four species listed but not already described must be considered. Images of these are in FIGURE 1.

As previously noted, two are small annuals for us: *Hibiscus sturtii* and *H. trionum*. *H. trionum* var. *trionum* is introduced. There is a native form, *H. trionum* var. *vesicarius*. The third plant is *H. diversifolius* and the final plant is *Hibiscus tiliaceus*. While all these plants, other than *Hibiscus sturtii*, can become invasive, they can still be of value for landscaping in appropriate conditions, particularly *Hibiscus diversifolius* and *Hibiscus tiliaceus*. This article does not discuss annuals such as *H. trionum* and *H. sturtii*.

IT SHOULD BE NOTED THAT WHILE THE FOLLOWING PERFORM WELL IN SOUTH EAST QUEENSLAND, THIS DOES NOT MEAN THEY ARE RESTRICTED TO THIS AREA.

For example, *Hibiscus tileaceus* is being used for hedging on a farm in Western Australia (personal communication, 2009). However, the weed status of each of the following species should be checked before planting. A reference such as 'The Global Compendium of Weeds' contains a large number of hibiscus and related species: <http://www.hear.org/gcw/>

Hibiscus diversifolius performs best with adequate moisture and so it does well in low-lying parts of our garden, e.g. next to the dam. *Hibiscus diversifolius* occurs along the eastern coast from Botany Bay in New South Wales to Fraser Island in Queensland. It also grows in South Africa and adjacent islands and can be found in Pacific Islands. Most forms are burnt to the ground by the frosts that occur here in winter but new plants can spring up around the original planting. There is some variability in the forms that we have found. The form that we have seen along roadsides with drainage ditches, particularly in areas where sugar-cane is grown, has lobed leaves although the leaves near the ends of stems can be undivided. In contrast, plants we have found in several locations on the Sunshine Coast have leaves that are almost circular in shape. There is a form from the Crater Lakes in North Queensland that has maroon blooms here in summer, lemon blooms in winter and pink blooms in spring and autumn. This form strikes readily in water in the warmer months, particularly in a dark glass bottle with some charcoal added to keep the water clean. The maroon form rarely sets seed here, in contrast to the lemon forms so we usually propagate the maroon form from cuttings. We keep a stock plant of this colour-changing form that we named 'Colour Magic' in our shadehouse. This means that we can enjoy its flowers for most of the year, even during winter. See FIGURE 2.

Hibiscus tiliaceus is the final plant mentioned in 'Mangroves to Mountains' (1). It can be found along the sea coast of Australia from the New South Wales border to the Gulf of Carpentaria but is common in most tropical countries, particularly on the islands of the Pacific. A single plant can reach enormous dimensions, up to 9 m tall and up to 16 m wide. However, when a hibiscus is the choice of plant for screening, this is the first hibiscus species that we would consider. Here we use it to give privacy to the house from the road and in a different area to block westerly winds. If space is a problem, we have seen this growing in an enormous planter on a rooftop car park so it does not need to go into the ground. This tree is used as a landscaping species in Brisbane and Brisbane Airport has many plants. If seeding is a problem, there is a

variegated form that does not flower in our conditions. This form doesn't become as large but we have found that it is more susceptible to frost damage although the larger the plant, the less it is damaged. See FIGURE 3. For those interested in this species, there is information at:
<http://www.agroforestry.net/tti/H.tiliaceus-beach-hibiscus.pdf>

When considering what other species of hibiscus may do well in South East Queensland, it is important to consider where the plant is found. This becomes even more critical if the plant is to be dependent on rainfall alone. We do not water any hibiscus once they are established, unless they are in a difficult position, e.g. on a steep slope or under mature gum trees. The list of **Australian WaterWise** plants is helpful to find plants that are waterwise (2). There are three hibiscus or hibiscus-like plants shown. *Gossypium sturtianum* is included under the list of medium shrubs and *Hibiscus heterophyllus* along with *Lagunaria patersonii*, are shown under tall shrubs and trees,

Gossypium sturtianum is one of our favourite hibiscus-like plants although it does not occur in South East Queensland. It is found in all mainland states and is the floral emblem of the Northern Territory. Although it comes from regions with a hot dry climate, it has performed well for us. Pink-mauve flowers with a dark red centre can be seen for much of the year. Its long-flowering period, its tolerance to heat, to drought and to light frost make this a plant that we would always grow. The delicate blooms are an additional reason for growing this wonderful plant. See FIGURE 4.

Lagunaria patersonia, often called 'Norfolk Island Hibiscus', is another hibiscus-like plant that flowers here every year. See FIGURE 5. The more recent plantings of this species have not made the rapid growth in our garden of the plants mentioned in the previous article but they need no maintenance. We have seen this species used as a street tree in Sydney and I have seen it in a number of schools in South East Queensland. This hibiscus-like tree has hairs on the seed capsule that are extremely irritant and care must be taken when handling the seed capsules. It was another plant grown by Emperor Napoleon's wife Josephine and it also was painted by P.J. Redouté (3).

There are other species of **hibiscus-like** plants that are found in South East Queensland. 'Mangroves to Mountains' (1) includes other species from the Malvaceae or Mallow Family. The plants traditionally included in this family are mallows, abutilons, cotton (*Gossypium*), hibiscuses and related plants. 'Mangroves to Mountains' lists *Abelmoschus moschatus* subsp. *moschatus* (page 47), *Abutilon oxycarpum* (page 399) and *Thespesia populnea* (page 32). These plants have hibiscus-like features.

Abelmoschus moschatus subsp. *moschatus* comes from South Stradbroke Island. It is short-lived, with yellow flowers in summer. We grow it in a pot in the shadehouse where we can enjoy the blooms and catch the seeds that form in hairy, papery capsules. See FIGURE 6

Abutilon oxycarpum comes up in our vegetable garden. It has small yellow flowers throughout the year. The seed capsules have pointed segments. The plants are small, between 1 and 2 m. See FIGURE 7.

Thespesia populnea is the hibiscus-like tree that is a must-have for us. See FIGURE 8. This plant is found on islands in Moreton Bay. When young, it was damaged by frosts (-6C) but always recovered. As this is a plant that grows along the coast, sometimes in association with *Hibiscus tiliaceus*, we have planted it at the bottom of a slope, so that it is well watered after rain, sometimes sitting in water for some time. However, it is also growing higher up where it receives only direct rainfall. We love the large shiny leaves and the delicate lemon blooms that change to deep pink on the second day after they open. It can be found throughout the Pacific, including the Society Islands. An illustration from the visit to the Society Island by Joseph Banks is included in Banks' Florilegium, Plate 591. For more information on *Thespesia populnea*, see: <http://www.hibiscus.org/species/tpopulnea.php>

The extended family Malvaceae includes a wide variety of plants such as a range of *Brachychiton* species, including our favourite, *Brachychiton bidwillii*, page 132 in 'Mangrove to Mountains' and *Sterculia quadrifida*, page 396. As these are amongst our favourite plants, we will describe them briefly.

Brachychiton bidwillii While the flowers are beautiful, the main attraction of this plant for us is that it attracts honey-eaters. As the plant shown in the attached image is growing next to our house, we get enjoyment from the blooms and the birds. Another *Brachychiton* species, *B. acerifolius*, growing in the rainforest section of our garden, has attracted a mother and baby owl, image attached. The father owl was keeping watch in an adjacent tree. While we grow a number of *Brachychiton* species, most become large trees. We particularly enjoy our *B. bidwillii* plants as the flowers can be easily seen. We sometimes use the woody boat-shaped seed capsules from various *Brachychiton* species in dried flower arrangements. However, there are irritant hairs which must be avoided. We have eaten bread flavoured with *Brachychiton* seeds but it must be stressed that the seeds need to be treated before being safe to eat (treatment is described in 'The Bushfood Handbook (4). *Brachychiton* species are deciduous. See FIGURE 9.

Sterculia quadrifida This is a plant we would include in any collection of bush foods (along with *Hibiscus heterophyllus*, see previous article). The common name, 'Peanut Tree', tells why we like to grow this tree. The peanut sized seeds are edible without any treatment being required. This plant is semi-deciduous. See FIGURE 10.

NOTE : We enjoy having deciduous plants in the garden, both because of the variety they provide and because they allow winter sun to enter the house but keep out summer sun. As well, because the *Brachychiton* species flower on bare branches, the flowers are prominent.

Hibiscus insularis We were thrilled to find three large plants of this species in this garden when we moved here ten years ago. Although the bushes were large, they did not bloom until the last few years and a plant that we planted ten years ago has not yet had any blooms. This species was described in a previous N/L and won't be discussed further. See FIGURE 11.

We could not write anything about *Hibiscus* and hibiscus-like plants without including *Alyogyne*. Of these, only one species performs well in our garden, *Alyogyne huegelii*.

Alyogyne huegelii *Alyogyne* was included in *Hibiscus* but is distinguished by the flowers having a style which is undivided to the stigmas whereas the style of *Hibiscus* is branched to below the stigmas. *Alyogyne*s are endemic to Australia and are found in Western Australia, South Australia, Northern Territory, and Queensland. Well drained soil is essential to grow *Alyogyne*s but even in raised beds, *Alyogyne*s are not long-lived in our garden, usually living around 3-5 years. However, the plants present such a stunning sight in spring that we are prepared to replant every few years. See FIGURE 12.

We have various crosses between the different forms of *Alyogyne huegelii* species and between *A. huegelii* and *A. hakeifolia*. Many of these have extended the colour range and the flowering period.

Alyogyne hakeifolia grows well here but even mature plants succumb in wet conditions. We have been able to raise seedlings of *Alyogyne cuneiformis* but they also died in wet conditions.

Information on *Alyogyne*s can be found at <http://www.hibiscus.org/articles.php> and <http://www.hibiscus.org/species/ahuegelii.php>

Abelmoschus manihot One further Malvaceae plant is a must-have for us. See FIGURE 13. *A. manihot* provides us with green leaves that we use in any way that spinach is normally used. There is information and an illustration in *Native Plants of Queensland, Volume 1 (5)*.

In an article on underutilised and neglected crops, this plant has been described as a highly productive and nutritious vegetable and it was noted that its significance in nutrition and as a source of protein should not be underestimated in relation to people of Pacific Island communities. The report also suggests that it could become an important leafy vegetable elsewhere in the humid tropics (6). As we are not in the tropics, we keep stock plants of this tasty plant in the shadehouse during winter. Information can be found at <http://www.hibiscus.org/species/amanihot.php>

SUMMARY

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The Malvaceae that are mentioned above have been standout performers in our garden during the drought and later extended dry conditions, with no established plants receiving additional water.

Many of the outstanding plants have presented no surprises, however I have been disappointed with some of the hibiscus with grey foliage that I thought would perform well, e.g. a form of *Hibiscus splendens* from a mountain region in N.S.W. and *Hibiscus 'Barambah Creek'* and a cross between these. *Hibiscus 'Barambah Creek'* came into cultivation more recently than other species noted here. On the other hand, I had expected *Hibiscus tiliaceus* and also *Thespesia populnea*, found on islands in Moreton Bay, to need supplementary watering because of their large leaves. However, neither has ever looked like drooping and *Thespesia populnea* has flowered normally. As expected, *Gossypium sturtianum*, *Hibiscus heterophyllus* and *Lagunaria patersonii*, along with *Brachychiton species* have performed well, although particular plants may have performed poorly because of their particular location.

When flowers are needed, there are always some Malvaceae in bloom. Friends whose gardens stopped providing flowers in the drought and later dry conditions, always comment that if I have flowers, then I must be growing native plants. Normally I would not pick these blooms as I would disturb birds, insects and frogs but sometimes these may be the only flowers available.

It is important to note that the plants in our garden cope with a range of temperatures, from -6C to 46C. They also flourish within a range of conditions, from heavy rainfall to extended dry conditions.

Given the range of conditions that our plants face, we believe that the fact that hibiscus and hibiscus-like plants occur or grow well in South East Queensland, should encourage those in other parts of Australia to grow these plants.

Of all the hibiscus and hibiscus-like species described, our favourites are :

Hibiscus heterophyllus (edible blooms), *Hibiscus divaricatus* (long flowering), *Gossypium sturtianum* (tough but with delicate blooms over a long period), *Thespesia populnea* (beautiful blooms and foliage) and *Abelmoschus manihot* (edible).

Hibiscus and hibiscus-like plants provide food and shelter for a range of creatures. Birds build nests in hibiscus plants and eat the seeds. Insects and frogs are also attracted to these plants. Some even provide us with food. These plants are not just beautiful but hardy and our garden would provide us and our visiting creatures with much less enjoyment if we did not include hibiscus and hibiscus-like plants in our planting.

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3. <http://www.jill-hamilton.com/pdf/napoleon-the-empress-and-the-artist.pdf>
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6. <http://www.bioversityinternational.org/fileadmin/bioversity/publications/pdfs/468.pdf>.

LINKS TO ILLUSTRATIONS OF SOME MALVACEAE IMAGES FROM THE NATIONAL LIBRARY OF AUSTRALIA.

Hibiscus diversifolius <http://nla.gov.au/nla.pic-an6177149>

Hibiscus heterophyllus <http://nla.gov.au/nla.pic-an6724343> and <http://nla.gov.au/nla.pic-an6729955>

Hibiscus splendens and *Hibiscus divaricatus* <http://nla.gov.au/nla.pic-an6729934>

Lagunaria <http://nla.gov.au/nla.pic-an6134394>

Alyogyne huegelii <http://nla.gov.au/nla.pic-an6729967>

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FIGURE 9: *Brachychiton bidwillii*

Blooms and Honeyeater



Blooms on bare branches



Brachychiton acerifolius and Owls



FIGURE 10: *Sterculia quadrifida*

Scan of foliage and blooms



Foliage and Frogs



Edible Seeds

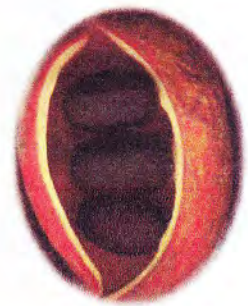


FIGURE 11: *Hibiscus insularis*

Hibiscus insularis:
bushes in bloom



H. insularis
blooms: Day 1,2



FIGURE 12: *Alyogyne huegelii*

Alyogyne bush in bloom



Alyogyne crosses



A. huegelii
x *A. hakeifolia*



FIGURE 13: *Abelmoschus manihot*

Left and centre, young leaves and bloom of the same form



Form that only has foliage



HIBISCUS and HIBISCUS-LIKE PLANTS FOR SOUTH EAST QUEENSLAND 2

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FIGURE 5: *Lagunaria patersonia*

Foliage



Bloom and foliage



Bloom



Capsule, irritant hairs

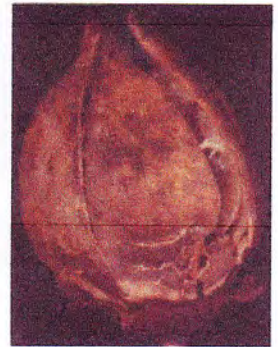


FIGURE 6: *Abelmoschus moschatus* subsp. *moschatus*

Bloom and stamen



Bloom, foliage, capsule



Bloom



FIGURE 7: *Abutilon oxycarpum*

Bloom and foliage



Blooms



Foliage, capsules



FIGURE 8: *Thespesia populnea*

Blooms and foliage



Day 1 bloom



Day 2 bloom



25.



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Hibiscus and Related Genera Study Group

The Hibiscus and Related Genera Study Group is one of over 20 [Study Groups](#) whose aims are to further knowledge about the cultivation, propagation and conservation of specific Australian plants. This group publishes regular newsletters documenting reports from members into cultivation issues, propagation methods and natural occurrences of Australian members of the Malvaceae family. These reports assist in assessing the suitability of various species for cultivation in a range of climatic zones.

Members of the Group are mainly keen amateurs with no formal horticultural or botanical knowledge, although a number of professionals in those fields also participate. As in all study groups, the members' work is mainly carried out in their own homes and gardens and in their own spare time.



Left: *Hibiscus diversifolius*. Right: The floral emblem of the Northern Territory, Sturt's Desert Rose (*Gossypium sturtianum*).

Photos: Brian Walters

Hibiscus and Related Genera Study Group Website *Link - <http://asgap.org.au/>*

A website for the group has been established. It provides further information about joining the group and its aims and activities. The website can be found at the link below.

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