ASSOCIATION OF SOCIETIES FOR GROWING AUSTRALIAN PLANTS

HIBISCUS AND RELATED GENERA STUDY GROUP

MARCH 2005 **NEWSLETTER NO 5** 1SSN: 1448-1448

This Newsletter is the second for the year and the third is scheduled for May. I expect to spend June in the Northern Territory in the Wave Hill area. Though I will be with our Gem and Fossicking Club. I am looking forward to spotting plenty of Malvaceae. The season should be good there after the cyclone. Meanwhile here on the Sunshine Coast we virtually had no wet season and without some late rain a drought is likely. Early in the month I went to Bowen to spend a few days with Walter and Judy Willcox. They were marvellous hosts and we spent most of the time looking for Hibiscus I especially wanted to find **H. elsworthii** but this was not to be.

Upon returning home it was down to Mt. Coot-tha Botanical Gardens to present a talk with about 30 Regional members of SGAP. I am hoping for some new members of our SG following this exercise.

In this issue **H. heterophyllus** is covered in some depth though discussion on gardening potential and recipes will be carried over for the next issue. Some feedback would be appreciated feedback would be appreciated please as we would like to hear anything at all about Hibiscus in your area, especially **H. heterophyllus**.

Best wishes from your Study Group Leader.

Geoff Harvey

Two dazzling forms of H. heterophyllus from nth. Queensland. The bright yellow from Calen near Mackay and the white from Euri Creek, Bowen. How about that purple/black eye zone?

Images – Geoff Harvey

# HIBISCUS HETEROPHYLLUS Vent. Sens. Strict.

## Introduction

**Hibiscus heterophyllus** grows along most of the eastern Australian coastline, the southern limit being Kiama and West Cambewarra near Nowra more than latitude 35 degrees south and the northern limit near Coen (Silver Plains – Rocky River) and Lockhart River less than latitude 13 degrees south. In a straight line (as the crow flies), this represents a distance of 2,500 kilometers + from the monsoonal tropics to the cool temperate zone – (as far south as is Adelaide) From the eastern fall of the Great Divide, **H heterophyllus** frequently occurs right to the coastline. The Carnavon National Park, where it reputedly occurs along with **H divaricatus** and **H splendens,** is located in central Queensland, but still eastwards of the Great Divide.
In New South Wales it prevails in the same approximate locations as does **H. splendens.**
In Queensland it also exists in habitats near to or overlapping with **H.splendens** to as far north as Rockingham Bay near Tully in North Queensland.
**H. divaricatus** extends from the Wide Bay Pastoral District south of Gladstone to the Cook Pastoral District and inland to Carnavon Gorge and Springsure in the Leichhardt Pastoral District. These species belong to the Hibiscus Genus, section Furcaria and will readily interbreed where their populations overlap. Another Furcaria species that comes into the equation is **H meraukensis,** (originally named from Merauki on the southern coastline of New Guinea) with a wide Australian tropical distribution to as far south as Springsure and Duaringa west of Rockhampton. It is more distantly related to **H heterophyllus,** however hybrids have been recognised. A very restricted 'species' from the Burnett Pastoral District was recently discovered and called **'Hibiscus Barambah Creek'**. When it is properly described botanically it may well be recognised as a sub-species of **H splendens.**
From north tropical Queensland we have two more section Furcaria Hibiscus recently described. They are **H. saponarius** Craven and **H. fosteri** F.D.Wilson. The final section Fucaria, **Hibiscus diversifolius** found on the east coast is distributed from Fraser Island in Queensland to Botany Bay in New South Wales, and with a different chromosome number has a separate evolutionary history to the other section Furcaria Hibiscus mentioned above. An interesting variation does occur in isolation at Lake Euromoo on the Atherton Tablelands. This purple flowered form is considered to be merely a colour variant of the normal yellow bloomed **H. diversifolius.**
Most native plant enthusiasts have difficulty identifying the various Furcaria Hibiscus and they are invariably wrongly identified in plant nurseries. A further complication is the many hybrids originating from the wild or 'controlled' breeding programmes. Without a thorough knowledge of the species morphology, it would be quite impossible to correctly identify the parent species used in the cross. This is where good records and recording become so important. Many hybrids are being sold and there is every chance that they will have a genetical influence on the wild populations, should they be grown within pollination distance. On the Sunshine Coast the median strip on the road connecting the Bruce Highway to Maroochydore has been planted with **H. divaricatus** that have developed into spreading shrubs reaching 2 meters in height. Healthy, vigorous seedlings have grown under the original plants.
Did these east coast Furcarias radiate from a common ancestor within Australia? It is logical that they would have spread southwards after the last ice age and as Australia has drifted northwards. Even the smallest probability of success, given enough time, eventually becomes a certainty. It is also possible that the coastal Hibiscus were brought or traded southwards by the aboriginal population as the last ice age receded, from say 20,000 years ago. The Hibiscus fiber was important for binding and perhaps the plant as a food source.
In protected positions **H. heterophyllus** has been grown successfully in Melbourne, Canberra and Adelaide. The potential therefore exists for the wild population to eventually spread southwards from Kiama/Cambewarra localities.

I am not aware of Australian section Furcaria Hibiscus occurring naturally on the west coast of Cape York Peninsular or the pastoral district of Burke in the Gulf of Carpentaria, except of course **H meraukensis and H zonatus.**
In north-western Australia, 23 species of H. section Furcaria have been described and apart from **H. meraukensis and H zonatus** they do not extend beyond the Kimberleys in W.A. and/or Arnhem Land in the N.T.
Since the arrival of Europeans the alteration of the landscape has been dramatic with bush clearing, farmland cultivation, livestock grazing, urban development, highway construction, weed introduction and so forth. The day is long gone when Hibiscus (and other plants) could be studied, undisturbed in their former habitats. What we have left is part of the picture that is still altering. Even if it is imperceptible to us in our short lifetime, change is occurring at a steady rate. The late Keith Williams of Ipswich commencing 1979, wrote 4 beautifully illustrated and informative volumes titled 'Native Plants of Queensland' and his coverage of Hibiscus is very useful. He expressed concern that populations of Hibiscus in the wild were steadily on the decline.
If Hibiscus are now absent from a particular location it is highly likely that this has happened due to the influences of European settlement. The appearance of 'natural' hybrids may be due to habitat disturbance. For **H heterophyllus and H splendens** to endure as separate species throughout a huge geographic range one would have to think that they occupied separate habitats.
The object of this 'Newsletter' is to invite discussion and debate so that important information can be recognised and recorded. Such information will become more difficult to accurately record as time goes by. Once we have a foundation (eg this 'Newsletter'), regular additions and updates can be made, hopefully on a continuing basis. I am not a botanist and I am not trying to duplicate work that may be undertaken by botanists, but hopefully complement and help develop ideas. I read many scientific papers and am of the opinion that basic facts and background are sometimes lacking thus leading to incomplete conclusions. There is no substitute for local information. This publication should be made good enough and accurate enough to be used as a starting point for those who may research **H heterophyllus** and other species in the future. The recording of accurate geographic and ecological distributions must be of immense value and cannot be undertaken by a scientific researcher with a limited time frame allotted to a particular study.
The frequent occurrence of Hibiscus along road corridors and near settlements potentially represents species and hybrids transported from elsewhere. Highways in particular offer a 'corridor of opportunity' for some native plants, especially Hibiscus. Seed may arrive during the transportation of livestock, road construction machinery, travelers discarding plant parts containing seed etc. Authentic original populations as such are therefore difficult to substantiate. Some of the earliest recordings, e.g. **H.splendens** from the Goodna scrub and **H. heterophyllus** along the banks of the Brisbane River remain enduring natural habitats.

**Common Names** : Native Rosella, Green Kurrajong, Toilet Paper Bush, Queensland Sorrel Native Hibiscus, Native Cordage Tree, Currijong, Couradjong and (dtharanggarige and batham. Ref. MAIDEN.)

**General Description** : Varies from a small perennial bush of less than 2 meters to a slender tree of 6 meters plus. The tree form grows in rocky gullies of the Sunshine Coast Hinterland near Kenilworth and Blackbutt as well as similar habitats in hilly forest country, particularly sub-coastal N.S.W. If grown in the open, the tree form will loose branches under windy conditions. It cannot therefore be grown into a satisfactory specimen without forest or wind-break type protection.
The best form for average garden conditions is the shrubby bush type that may grow into a sparse open plant if left unpruned. The branches, given time will become long and slender. The deeply

lobed basal leaves can be a handsome dark green to 220 cm in length under ideal growing conditions.
The bush shape is sometimes rounded, whilst others are of an erect pyramidal form.
Ideally, selections for garden purposes should be made from trialing the most promising forms. How this can be done is perhaps a problem that SGAP should consider. The work that Colleen and Geoff Keena have done in identifying clones suitable for the nursery trade is very considerable and worthy of recognition. Obviously the promotion of native plants will be much more successful if we promote the best possible clonal selections.
**Hibiscus heterophyllus** is a hardy, adaptable plant that can be grown in a wide range of climatic conditions and soil types.

**Habitat** : Dry schlerophyll forests, rainforest margins with summer rainfall, protected localities in cool climates with winter rainfalls, river banks, roadside cuttings, the dry edges of paperbark wet areas, rocky gullies, dry granitic soils at Bowen and rocky hillsides in good rainfall areas.

**The Bloom** : Mostly the bloom is presented from the terminal leaf axils in an upright position and opens fully to a saucer shape. The exception is when the branches have grown long and spindly, thus bending over. In comparison the flowers of **H. divaricatus** and **H. splendens** are often semi/pedunculate and bonnet shaped.
The most common colour is pure white with a pink to crimson band along one side of the petal and a red-purple spot at the petal base. The petal spot does not have the surrounding thin red horizontal stripe as seen in all **H. splendens** and **H. divaricatus** blooms. Specimens from Euri Creek north of Bowen have a purple/black petal base and a firm texture compared to the southern counterparts.
Bright yellow **H. heterophyllus** are common from 77 kilometers north of Marlborough to Sarina and Mackay. A pale yellow form occurs on the northern shoreline of Lake Cootharaba – (part of the Cooloola National Park); in the Sunshine Coast hinterland gullies near Kenilworth – (ref. Rosemary Opala) and off the Western Freeway in the second deep gully past the Mt. Coot-tha Botanic Gardens.- (Study Group Member David Hockings confirms that these yellow **H. heterophyllus** existed in this habitat prior to establishment of the gardens)
Yellow **H. heterophyllus** were also recorded from Brisbane's north side, probably no longer present due to urban spread. (David Hockings confirmed sightings of these in times past). The well known cultivar 'Wirruna' was raised by Mr. L. A. Craven of Black Rock, Victoria from a yellow **H. heterophyllus x H. splendens.**
Pink Blooms : An extensive population of pink **H. heterophyllus** extends eastwards of Glen Geddes and within 3 kilometers of Marlborough on the Bruce Highway towards the coastline. The most outstanding of these is the selected clone known as 'Rosie" found from near Yeppoon. The bloom colour varies from pale pinks near the highway to more intense colours eastwards towards the coastline.
Colleen and Geoff Keena report **H. heterophyllus** from Mt. Crosby Cliffs north of Ipswich and have provided excellent bloom images. They have also sent me images of another interesting pink from Warrell near Port Macquarie N.S.W. It has been sold through the nursery trade as 'Pink Haze'.
Pale pink **H. heterophyllus** have been seen by the writer in the state forest near Jimna – (Sunshine Coast Hinterland).
There are many pink Hibiscus that resemble **H. heterophyllus** in the northern end of the Sunshine Coast near Tewantin and Eumundi. They are natural hybrids between **H. heterophyllus** and **H. splendens** and at least two variants have been sold as 'Pink Ice'.
Bloom size may reach15 cm with 11 cm the average size. In southern New South Wales they bloom in late spring and summer; in south-east Queensland they bloom from August to December with the peak in October; the pink form near Marlborough bloom almost continuously throughout

the year, whilst in tropical Queensland good blooming was noted in March, 2005. As no seed had as yet set, blooming probably continues during autumn/winter. All **H. heterophyllus** grown on the Sunshine Coast from whatever origin seem to adapt their flowering period to the spring in line with the local forms. The hinterland blooming is later than that on the coast, perhaps reaching a peak in late November.
The flowers are born on sturdy pedicels averaging 0.2 cm long. This differs from **H. splendens** that has a flower stalk with both a pedicel and a peduncle distinctly articulated about 10 cm below the flower.
The southern blooms of **H. heterophyllus** open early morning, whilst the pinks from Marlborough and the white from Bowen open late morning. The yellow from Mackay opens mid morning and does not close until late afternoon.
The southern blooms are thin textured compared to the tropical counterparts.
The five stylar branches are usually purplish/red and lie close together at the end of the red staminal column of about 25 mm. As the day progresses the staminal column bends to one side touching the petal surface, thus coming into contact with insects entering and leaving the flower. I suspect that the inner petal surface is minutely pubescent as pollen is readily retained. Cross pollination is therefore more likely where different plants are growing within pollination distance. This is most obvious where different east coast Furcarias are grown together and the resultant seed grown to reveal an assortment of hybrid types.
In the bud stage the coloured outer petal margin is the only part visible, revealing the bright crimson or pink colour. Some **H. divaricatus** also have the coloured petal margin whilst other populations have no banding. **H. splendens** has no banding except when a cross pollination has occurred with **H. heterophyllus.** The cultivar 'Pink Ice' is a typical example.

## The Seed Capsule.

The calyx usually has a dense covering of stellate pubescence and is divided into 5 acutely pointed lobes. The stiff, flattened bractioles are generally 10 in number, reaching 16 mm in length and to the touch can feel like coarse sandpaper. The ovoid capsule about 1.85 cm to 2.0 cm in length, has long brown or silky cream coloured pubescence that can be dense or sparse. Numerous angular brown seeds are contained in the beaked, 5 valved capsule.
The section Furcaria is identified within the Hibiscus genus by having 3 ribs on each calyx lobe, one thickened mid rib and two prominent marginal ribs.

## The Plant.

The perennial shrub or small tree varies in size and shape according to genetical history and/or habitat. Short conical prickles are sometimes scattered over the branches, whilst some plants even in the same population group may be quite free of prickles. The bark of the plant may be dark green or reddish/brown and smooth. The north Queensland plants at Euri Creek, Bowen have rough brown bark. The cane-like ascending branches from some forest populations readily break off when grown in exposed situations.
The name **heterophyllus** means : 'with different leaves, referring to the great variation in leaf shape on the same plant' The basal leaves are usually 3-lobed. Leaves above are alternate, entire, linear to ovate in shape, usually wider at the center, with an obtuse apex. Foliar nectaries are present (in Qld.) on the midrib undersurface often exuding nectar at flowering time and attracting ants. Leaf margins are serrate. Hooked spines are scattered along the midrib undersurface angled towards the tips pf the leaves. Stellate pubescence is present on the new growth.

## Aboriginal Use of H. heterophyllus

In Qld. strong white fiber was produced from the root bark of **H. heterophyllus** to use for cordage such as binding, dilly bags , fishing nets etc.
Eary reports from the Sydney area (ref. Ludwig Leichardt) recorded excellent natural rope made from the bark..
Young shoots and leaves as well as the roots of young plants were eaten in north Qld. without any preparation.
'It is uncertain where the name "Kurrajong" was first used to describe the district but it was common by 1824 when settlement was well advanced. The name in an aboriginal name meaning the fibrous bark of certain plants. The Green Kurrajong, **Hibiscus heterophyllus, Malvaceae** is probably the plant best answering that description in this district. The rough greyish bark provided the local aborigines the Boo-roober-on-gal tribe with the material for fishing lines, nets and for making canoes.' Ref. http://rotarnet.com.au/users/9/96917/Kurrajong.htm
There is no doubt that the east coast aborigines made a wide use of this plant and were probably instrumental in aiding its wide distribution, perhaps accidentally when collecting plant parts and transporting them from one place to another.

## Insects Associated with Hib. Heterophyllus.

The ants feeding on leaf nectaries to the exclusion of other insects has been mentioned above. Do plants in the cooler regions of NSW have these leaf nectaries? Solitary native bees have been observed to remove all the visible pollen from a bloom. This insect with white stripes on a black abdomen appears late in the spring to early summer on the Sunshine Coast. Insects which are pests include the Metalic Flea Beetle and Mealy Bug. Native Hibiscus blooms are often populated with myriads of small flies and hibiscus beetle - Macroura concolor (Macleay) An occasional spray with Dimethoate 300 used at the rate 6 mls. to 5 lt of water with 10 mls of cooking oil and 2 drops of detergent – will control most pests for about 2 weeks. So as not to damage the plants this spray should be applied just before sunset. Use protective clothing and wash well after applying.

## Propagation.

In south east Queensland cuttings can be taken all the year around using sturdy, healthy growth about 16 cm long cut at an angle through a node. Use a hardwood striking compound and place cuttings not too deeply in a sharp sand mix with say 10% peat and 10% perlite. The pots and cutting mix should be washed in a 10% bleach mix a day or two before use, to deter fungal problems. The same applies to seed raising mix to prevent damping off. I use an atomizer to apply a very mild organic fertilizer mix to the cuttings every 2 or three days. Keep in a shaded position out of the wind and a good root system should develop in 4 to 8 weeks.
**H. heterophyllus** seed are best planted in the spring after soaking them in hot water or abrading with sand paper. They usually germinate readily and can be potted on at the three leaf stage. In the wild germination takes place after spring storms have appeared. The hard seed may remain dormant for some time as good germination often occurs after bush fires.
Cutting grown plants produce a mass of fibrous roots rather than a tap root and will thus produce a manageable plant with a superior flowering season. Cutting grown plants can be kept in containers indefinitely by tip pruning regularly from an early age, particularly after the flowering season. The tap root can be cut on seedling plants should it be decided to keep them in containers. If cuttings have to be transported, wrap them in slightly damp newspaper, cover with plastic and keep in an esky or ice box. They can be kept in a good condition for a week or more.

## General

The names **H. heterophyllus subsp. heterophyllus, H fitzgeraldi F. Muell, H. heterophyllus leefi Hochr and H. heterophyllus subsp. luteus (Hochr.) F.D. Wilson,** though no longer 'valid', pop up in publications quite frequently. The only valid name for this taxa is **H. heterophyllus Vent. Sens. Strict.**

As can be seen from the above descriptions (see introduction) we have a polymorphic mix of section Furcaria Hibiscus along the Australian east coast. I would suspect that there are many genetic variations not yet recorded as they occur over such an immense area in many habitats. One thing we can do as members of this Study Group is to feed in information even if trivial so that it can be recorded. I have compiled a list of localities where **H. heterophyllus** is found and rather than load up this Newsletter, can send it separately should a reader require same.

F.D. Wilson's distribution data for **H. heterophyllus** in Hibiscus Section Furcaria (Malvaceae) in Australia, Aust. J. Botany., 1974, 22, 157-82, though often quoted, is 'out of date' due to many new recordings especially throughout the 'disjunct' area mentioned on page 169.Also the latitude quoted for **H. divaricatus** as 25 degrees – 26 degrees S. and Long. 151 – 152 degrees E. should be 22 degrees – 26 degrees S and Long. 152 degrees – 146 degrees East.

H. divaricatus was seen in the Kraga Hills by the writer and David Hockings. This is approx. 26 deg. S – 150 deg E. The western limit is probably Carnavon Gorge.

Two splendid forms of H. heterophyllus. The top Pink from Mt. Crosby Cliffs, Qld. and the Bottom from Warrell, N.S.W. Images from Geoff & Colleen Keena