

Flora Survey of Chambigne State Conservation Reserve



The Endangered Pink Nodding Orchid, *Geodorum terrestre*.

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Scientific licence - No 11209

In late 2010, the Clarence Environment Centre was contracted by the NSW Department of Environment, Climate Change and Water to undertake a comprehensive flora survey of two newly acquired properties adjoining the existing Chambigne Nature reserve some 20 kilometres southwest of Grafton.

The combined properties comprise about 750 hectares of predominantly dry sclerophyll forested land on sandstone, rising from 30 metres to 160 metres above sea level



Blackbutt - Bloodwood community typical of the sandstone ridges on the properties.

The study area lies in the centre of the “McPherson–Macleay Overlap” which is internationally renowned for its high biodiversity due to the mix of flora species from subtropical and temperate Australia. The geology of the area is predominantly Kangaroo Creek sandstone, with numerous rocky outcrops, gullies and small cliff lines with shelters, in an area described by the Northern Rivers Regional Biodiversity Management Strategy as a centre of endemism.

One hundred years of farming activities, predominantly grazing, which has included high frequency fire regimes, and occasional logging have have has significant impacts on the property's biological diversity. There is also evidence of ring-barking of trees as a land-clearing strategy, but which has only resulted in dense regrowth of pioneers species such as Acacia and Cheese Tree.



Signs of previous ring-barking of trees, spanning perhaps 70 years, are clearly evident

However, with about 400 native species recorded during the survey it is clear there is still significant biodiversity present, and while the above degradation has negatively impacted some areas, considerable areas of healthy forest communities were recorded, and with a change of management, cessation of grazing, and reduction in fire frequency and intensity, these areas are expected to recover over the long term.

The survey methodology revolved about 12 predetermined locations where detailed plot assessments were undertaken, with each plot measuring 50m x 20m. A full description of the values of each site were recorded, as required for the North Coast Vegetation Classification Survey including:

- **Map name and number**
- **GPS location (AMG/MGA).**
- **Disturbance history - clearing, logging, grazing, fire, erosion, weeds, and storm damage.**
- **Soil depth, structure and colour.**
- **Slope and aspect.**
- **Description of plant community**
- **Percentage cover at upper, middle and ground levels, with dominant species identified.**
- **Trees with hollows, and maturity of community noted, and**
- **All species within the transect recorded and entered on the NSW Wildlife Atlas, with flowering and fruiting noted.**

A number of meander surveys were also undertaken in conjunction with the individual plot assessments, to assess the need for possible site changes to cover the entire range of vegetation types on the property, which resulted in the decision to add three other plots for detailed assessment.

All species identified on the meanders were also noted on the overall species list, and GPS readings for threatened and significant species were recorded unless abundant (e.g. the Broad-leaved Sandstone Apple (*Angophora robur*) which was found to occur widely across both properties, and entered into the NSW Wildlife Atlas.



The additional plots were added to record a sandstone heath community that is not uncommon in the neighbouring Chambigne Nature Reserve, but which had not previously been described as far as we could determine, a swamp sclerophyll and a freshwater wetland community.

As previously stated, vegetation on both properties is dominated by dry sclerophyll Eucalyptus forests. However, the survey found that while generally satisfying the broad Keith class of North Coast Dry Sclerophyll Forest, there are nevertheless a number of distinctly separate communities across the predominantly sandstone landscape, falling into the following general categories.

1. Blackbutt dominant dry sclerophyll community.

This community is dominated by Coastal Blackbutt (*Eucalyptus pilularis*) generally occurs on the ridge-tops and upper slopes accompanied by sparse numbers of tree species such as Broad-leaved Sandstone Apple (*Angophora robur*), and Bailey's Stringybark (*Eucalyptus baileyana*). Owing to the rocky nature of the preferred landscape, the understorey is generally sparse including Bitter Bark (*Petalostigma pubescens*), Geebung (*Persoonia stradbokensis*), Paper-barked Leptospermum (*Leptospermum trinervium*), herbs including *Platysace ericoides*, *Pomax umbellata*, and grasses, Kangaroo Grass (*Themeda australis*), and Wiry Panic (*Entolasia stricta*).

2. Brown Bloodwood – Sandstone Mahogany dry sclerophyll community



Typical Brown Bloodwood - Sandstone Mahogany community

This community to Kangaroo Creek sandstone, with all but about 5 hectares occurring in and around the Chambigne Nature Reserve. has already been mentioned above. It usually occurs along sandstone ridge tops. The community received a preliminary determination as an endangered ecological community in about 2004, but was eventually dropped due to strong lobbying by those planning to build a dam that would impact the community further to the south.

Nevertheless, there is probably less than 700 hectares of the community in existence, which also contains several other threatened species including three that are unique to the Shannon Creek area, and must be considered significant from a conservation viewpoint.

The community is dominated by *Corymbia trachyphloia* ssp *trachyphloia*, and *Eucalyptus psammitica*. It also supports Broad-leaved Sandstone Apple (*Angophora robur*), and a range of low shrubs including *Monotoca scoparia*, *Brachyloma scoparia*, *Acacia hispidula*, and *Daviesia wyattiana*; herbs such as *Platysace ericoides*, *Hibbertia vestita*, *Xanthorrhoea johnsonii*, and *Pomax umbellata*, while grasses are dominated by Wanderrie Grass (*Eriachne pallescens*).

3. Needlebark – Bloodwood dry sclerophyll community

Generally occurring on lower slopes with deeper alluvial soils, this community is dominated by *Eucalyptus planchoniana*, and Red Bloodwood (*Corymbia gummifera*), frequently accompanied by Red Ash (*Alphitonia excelsa*), and Bailey's Stringybark (*Eucalyptus baileyana*). Understorey is generally much denser than other sclerophyll communities, dominated by various *Banksia* species, including *B. aemula*, *B. oblongifolia*, and *B. spinosa*, along with *Leptospermum polygalifolium*, *Melaleuca seiberi*, and Prickly Moses (*Acacia ulicifolia*). Herbs and grasses are also more plentiful and include The Leafy Wedge Pea (*Gompholobium virgatum var aspalathoides*), *Lomandra longifolia*, *Lomandra filiformis*, and Austral Bugle (*Ajuga australis*).

4. Forest Red Gum – Broad-leaved Apple sclerophyll community

The Forest Red Gum (*Eucalyptus tereticornis*), - Broad-leaved Apple (*Angophora robur*) dominated community occurs in creek valleys in deeper alluvial soils, often with Black Sheoak (*Allocasuarina littoralis*), Native Cherry (*Exocarpus cupressiformis*), and Bitter Bark (*Petalostigma pubescens*). The ground cover in these areas is dominated by predominantly native grasses such as Kangaroo Grass (*Themeda australis*), Barbed Wire Grass (*Cymbopogon refractus*), Blady Grass (*Imperata cylindrica*), and sedges such as (*Schoenus ericetorium*).

5. Thin-Leaved Stringybark - Narrow-leaved Red Ironbark community,



Riparian habitat along Back Creek with elements of Eastern Riverine Forest.

This community is associated with some riverine vegetation along some sections of Back Creek, showing elements of Eastern Riverine Forest (Keith 2004), with Thin-leaved Stringybark (*Eucalyptus eugenioides*), Forest Red Gum (*Eucalyptus tereticornis*), River Oak (*Casuarina cunninghamii*), and Narrow-leaved Red Ironbark (*Eucalyptus crebra*).

The shrub layer contains Weeping Bottlebrush (*Callistemon viminalis*), Fringed Wattle (*Acacia fimbriata*), and Blackwood (*Acacia melanoxylon*), while ground cover is dominated by grasses such as *Ottochloa gracillima*, and *Oplismenus aemulus*, various sedges, *Cyperus*, *Eleocharis* and *Juncus* species, and forbs.

Other communities recorded:

1. Heath on Sandstone community



An area of heath vegetation on Kangaroo creek sandstone.

There are numerous natural soaks, mainly occurring on skeletal sandstone, where the vegetation is dominated by heath species - *Acacia granitica*, *Kunzea opposita*, and *Leptospermum microcarpum*. Other shrubs commonly found include *Calytrix tetragona*, *Dodonaea hirsuta*, *Baekea diosmifolia*, and *Cryptandra propinqua*. Small patches of sedges and ferns are common in moister areas including species of *Chielanthes*, *Scleria*, and *Fimbristylis*.

In recording this community for the North Coast Vegetation Classification Survey, we were unable to match it with any existing Keith class (Ocean Shores to desert Dunes – Keith 2004). The authors of this report have noted that this community is relatively common in and around the adjoining Chambigne Nature Reserve, but not common in similar sandstone communities of the Kangaroo Creek sandstone formation, and recommend further research to determine the extent of occurrence.

2. Swamp Sclerophyll Forest on Coastal Floodplain Community



Swamp Sclerophyll community dominated by Paperbark (*Melaleuca*) species.

An area of approximately 4 hectares of forest closely resembling the endangered Swamp Sclerophyll Forest on Coastal Floodplain occurs along a permanent soak towards the southeastern corner of the property (GPS – 477913 – 6705792).

While the floristic component matches Swamp Sclerophyll, the locality is not coastal floodplain. The Scientific Committee's determination states the community occurs up to 50m above sea level. The Chambigne community lies at 75m above sea level, and is on relatively steeply sloping land with visibly flowing water from a soak at the base of a sandstone ridge.

This community is dominated by Broad-leaved Tea Tree (*Melaleuca quinquinervia*), along with Swamp Turpentine (*Lophostemon suaveolens*), Forest Red Gum (*Eucalyptus tereticornis*), and Tea Tree *Melaleuca alternifolia*. The mid storey contains shrubs and small trees including Cheese Tree (*Glochidion ferdinandi*) and Red Ash (*Alphitonia excelsa*).

Ground cover consists of ferns such as *Blechnum indicum*, grasses and reeds including Blady Grass (*Imperata cylindrica*), *Oplismenus aemulus*, and various *Cyperus*, *Fimbristylis*, and *Eleocharis species*, with herbs *Gonocarpus chinensis*, *Gonocarpus micranthus*, *Philydrum lanuginosum*, *Dianella caerulea* and *Glycine clandestina*.

3. Freshwater Wetlands on Coastal Floodplains Community.



Freshwater Wetland on Coastal Floodplain on the property's eastern boundary

There is an extensive area of Freshwater Wetland on Coastal Floodplain Community along Perennial Creek, but more than 50% of it is on two neighbouring properties to the east and north.

This area is dominated by grasses and sedges with the following species noted - (species from the indicative assemblage list published in the Scientific Committee's Determination are shown in red):

Baumea articulata,
Baumea rubiginosa,
Cyperus cyperoides
Cyperus difformis
Cyperus flaccidus
Cyperus fulvus
Cyperus flavidus
Cyperus haspan
Cyperus polystachyos
Cyperus snaguinolentus
Cyperus sphaeroideus
Fimbristylis nutans
Fimbristylis dichotoma,
Fimbristylis tristachya
Fuirena ciliaris
Gleichenia microphylla
Gonocarpus chinensis
Hydrocotyle laxiflora

Isachne globosa
Juncus alexandri
Juncus planifolius
Juncus polyanthemus
Juncus prismatocarpus
Juncus subsecundus
Leersia hexandra
Lepironia articulata
Ludwigia octovalvis
Ludwigia peploides
Paspalum orbiculare
Persicaria strigosa
Philydrum lanuginosum
Pteridium esculentum
Ranunculus inundatus
Rhynchospora brownii
Schonoplectus mucronatus
Xyris complanata

* * *

Threatened species (Under the TSC and EPBC Acts)

Three endangered species were found during the survey, the **Swamp Foxglove** (*Centranthera cochinchinensis*), **Pink Nodding Orchid** (*Geodorum terrestre*) and **Lemon-scented Grass** (*Elyonurus citreus*), and four vulnerable species were also recorded; **Broad-leaved Sandstone Apple** (*Angophora robur*), and **Square-fruited Ironbark** (*Eucalyptus tetrapleura*) (both listed as vulnerable under the TSC and EPBC Acts); the grass species *Ancistrachne maidenii*, and a subshrub *Tephrosia filipes* (TSC Act only).

Species protected under the National Parks and Wildlife Act 1974

The following species, protected under the National Parks and Wildlife Act, 1974, were recorded during the survey

<i>Adiantum aethiopicum</i> , Maidenhair Fern	<i>Adiantum hispidulum</i> , Rough Maidenhair
<i>Arthrochilus prolixus</i> , Whispy Elbow Orchid	<i>Davallia pyxidata</i> Hare's Foot Fern
<i>Dendrobium kingianum</i> Pink Rock Orchid	<i>Dendrobium linguiforme</i> Tongue Orchid
<i>Dendrobium speciosum</i> Rock Orchid	<i>Lomatia silaifolia</i> , Crinkle Bush
<i>Microtis unifolia</i> , Common Onion Orchid	<i>Platy cerium bifurcatum</i> , Elk Horn
	<i>Restio tetraphyllus</i> ,

Significant species (as defined in "Significant Vascular Plants of Upper Northeast NSW", Sherringham and Westaway, 1995).

The following significant species (Sherringham and Westaway), were recorded during the survey.

<i>Abildgaardia vaginata</i>	<i>Hakea florulenta</i>
<i>Acacia granicica</i>	<i>Hibiscus heterophyllus</i> subsp <i>luteus</i>
<i>Acacia hispidula</i>	<i>Isotoma armstrongii</i> ??
<i>Cleistochloa subjuncea</i>	<i>Kunzia opposita</i>
<i>Aristida queenslandica</i>	<i>Lasiopetalum ferrugineum</i> ssp <i>ferrugineum</i>
<i>Buchnera gracilis</i>	<i>Lomandra filiformis</i> ssp <i>flavior</i>
<i>Cryptandra longistaminea</i>	<i>Ludwigia peploides</i>
<i>Cryptandra propinqua</i>	<i>Melaleuca alternifolia</i>
<i>Daviesia wyattiana</i>	<i>Paspalidium gausum</i>
<i>Dodonaea cruciflora</i> ex <i>hirsuta</i> (RoTAP)	<i>Petalostigma pubescens</i>
<i>Eucalyptus psammitica</i> (RoTAP)	<i>Sauropus hirtellus</i>
<i>Evolvulus alsinoides</i> var <i>decumbens</i>	<i>Spermacoce brachystema</i>
<i>Glycine cyrtoloba</i>	<i>Stylidium uliginosum</i>
<i>Gonocarpus chinensis</i> ssp <i>verrucosus</i>	<i>Utricularia gibba</i>
<i>Goodenia bellidifolia</i>	<i>Zornia floribunda</i>
	<i>Zornia muriculata</i>

Other species considered to be significant

The following species, with considered reasons for significance, are included below.

<i>Allocasuarina litoralis</i>	The Black Sheoak and Forest Oak are the only two local species
<i>Allocasuarina torulosa</i>	known to provide food for the threatened Glossy-black Cockatoos, a species recorded on the property during the survey.

Threatened Species Profiles

Centranthera cochinchinensis Swamp Foxglove

Family - Scrophulariaceae

Other common names: Nil.

Status: Endangered.



An uncommon herb, *Centranthera cochinchinensis* is found growing in moist situations in northern NSW, Queensland, the Northern Territory and Western Australia. In the Clarence Valley, it has been recorded at Coutts Crossing and Fortis Creek State Forest, and now at two sites near Chambigne, including this State Conservation Reserve.

The Swamp Foxglove can grow to 50cm in height, with small hairy leaves and attractive pink flowers appearing in late summer to autumn.

Threats come from fire, trampling, and at Coutts Crossing, from mowing.

Geodorum terrestre

Pink Nodding Orchid.

Family - Orchidaceae

Other common names: Shepherd's Crook Orchid.

Status: Endangered.



While relatively common in south east Queensland, *Geodorum terrestre* is extremely rare in NSW. There was only one recorded site in the Clarence Valley, at Corymbia State Conservation Reserve which, at last count, contained only 3 plants.

Now, a population of more than 90 *Geodorum terrestre* has been found at the Chambigne property growing in a highly degraded site, where some plants are not robust as a result. However, despite the species' range being said to be north of the Hastings River, we understand this is possibly the southernmost known population.

Threats come generally from fire, logging, grazing, and picking by collectors, most of which should be reduced by the new management.



The Geodorum's degraded habitat at Chambigne

Elyonurus citreus

Lemon-scented Grass

Family – Poaceae

Status: Endangered.



Distribution: Lemon-scented Grass occurs north from Grafton in NSW. It is only known from localities south of Casino, north-west of Grafton, near Cudgen Lake on the Tweed coast and in Yuraygir National Park. It also occurs in Queensland, NT, WA and New Guinea.

Growing in loose tufts, the *Elyonurus citreus* reportedly grows north from Grafton (Flora of NSW), and has been recorded across northern Australia. There appears to be a dearth of records from the Clarence Valley. However, the rediscovery of the species on the Chambigne property could be a new southern range extension

Its leaves are 2 to 3mm wide and are lemon scented when crushed, The 3 to 12 cm long flowering head, which flowers in summer, reaches about 1 metre in height, and can be found growing in sandy soils along creek banks.

Ancistrachne maidenii

Family – Poaceae

Other common names: Nil.

Status: Vulnerable.



Ancistrachne maidenii is a prostrate perennial grass species that occurs north from Sydney, reaching its northern limit in the Clarence Valley where it has been identified at Copmanhurst; near Glenreagh; in the Chambigne Nature Reserve, and now in the Chambigne Conservation Reserve.

Its alternate leaves are evenly spaced along the trailing stem and measure some 3cm by 5mm, with the stem terminating in a short flowering spike to about 4cm in length (spikes also occur in the leaf axils).



Its preferred habitat is on sandstone on rocky hillsides in partial shade, and threats come from excessive fire and disturbance for development.

Angophora robur

Sandstone Rough-barked Apple

Family - Myrtaceae

Other common names: Broad-leaved Sandstone Apple.

Status: Vulnerable (both TSC and EPBC Acts).



The Sandstone Rough-barked Apple is endemic to the Clarence Valley, and common in sandstone communities across the valley from about Glenreagh to Coaldale. In appearance it is similar to the common Broad-leaved Apple (*Angophora subvelutina*), but generally smaller with a browner tinge to its stringy bark. The defining difference is the size of their fruits, with those of *A. robur* being at least twice that of *A. subvelutina*. To compound the confusion that sometimes arises, there have been reports that the two species cross pollinate to produce hybrids with intermediate sized fruit.

A. robur grows to 10m and has a generally gnarled appearance. Its leaves are opposite and stem claspings, and flowers are white.

Threats to the species come mainly from infrastructure provision, clearing for roads, power lines and telecommunication towers. Other threats come from land clearing for rural residential development, too frequent burning, and forestry activities.

On the positive side, much of the species' preferred sandstone habitat has been placed into the State's reserve system, including Sherwood, Flaggy Creek, Tallawadjah, and Chambigne Nature Reserves, and now Chambigne Conservation Area where the species is abundant.

Eucalyptus tetrapleura

Square-fruited Ironbark

Family - Myrtaceae

Other common names: Nil.

Status: Vulnerable.



The Square-fruited Ironbark is a medium sized tree growing to about 30 metres. Just one of a number of Eucalypt species endemic to the Clarence Valley, its range extends from Halfway Creek south of Grafton to Coaldale northwest of the city. Small scattered occurrences have been found on the Chambigne property.

The typically rough 'ironbark' covered trunk is grey-black in colour, and generally twisted and kinked. The relatively large leaves are a dull bluish green on both surfaces, and measure to 20cm long by 3cm wide. It is a winter flowering species and the subsequent distinctively ribbed fruits, which give it a square profile when viewed from the end, resulting in its common name, measure to 10mm long by 5mm wide.

The main threats have traditionally come from logging, cutting for fence posts by farmers who value the hard, termite resistant timber, and trampling by cattle. However, the Pacific Highway realignment, currently under construction, 2010, is estimated to see the destruction of over 10,000 specimens.

Tephrosia filipes

Tephrosia filipes

Family – Mimosaceae

Other common names: Nil.

Status: Vulnerable.



Tephrosia filipes grows mainly in Queensland but has a disjunct occurrence in scattered locations in the Clarence Valley from about Copmanhurst to Dalmorton, and east to the Shannondale area. In the Chambigne SCA there is at least one healthy population along the southern end of the western boundary.

A member of the pea family, it is a small frail sub-shrub growing to only 20cm high. It has 2 to 5cm long compound leaves with 7 to 19 narrow oval leaflets measuring to 15mm long by 2.5mm wide, arranged along the axis. A terminal raceme measuring to 10cm carries from 2 to 6 pink to dark red flowers, measuring about 7mm long, and appear in summer, followed by narrow 20mm by 3mm wide pods.

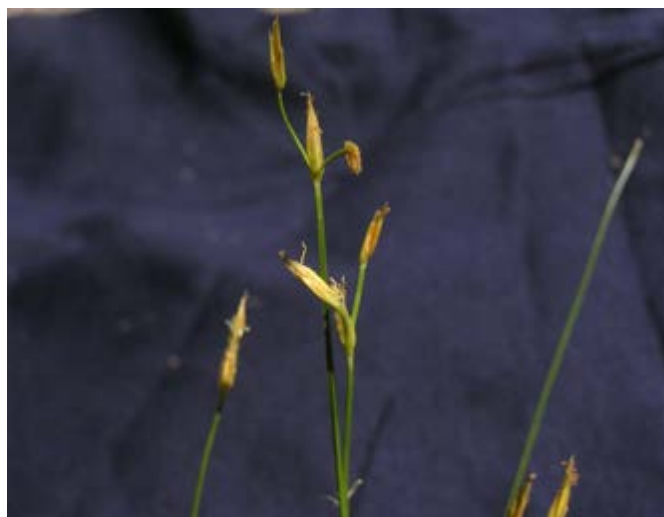
Grows in dry sclerophyll forest in sandstone derived soils, where threats come from farming and grazing activities and too frequent fire.

Other significant species

Abildgaardia vaginata

Status: Regionally uncommon.

Abildgaardia vaginata is significant (Sherringham and Westaway 1995), not only because it is considered to be rare in NSW, because also because it reaches the southern limit of its range in the Clarence Valley.



Acacia granitica

Status: Disjunct population from tablelands.

As the name implies, it is more commonly found growing on Granite across the tablelands, but has been recorded in a variety of habitats in the Clarence Valley, though mainly in association with sandstone, having been found in most of the sandstone flora reserves from Glenreagh to Banyabba.

It is a spreading shrub to 3 metres, with long narrow dark green leaves measuring to 25cm in length by some 2-3mm in width. Flower heads are shortly cylindrical, appear in spring, and measure up to 15mm long by 8mm wide, followed by more or less straight flat pods up to 8cm long by 3mm wide.

Acacia hispidula

Status: Disjunct population in the Clarence Valley

The *Acacia hispidula* is more commonly found growing in granite habitats on the New England Tablelands or Sydney sandstone locations, but has disjunct populations growing on Kangaroo Creek sandstone in the Clarence Valley, having been recorded at Banyabba and Chambigne Nature Reserves, and in the Ramornie National Park.



Aristida queenslandica

Status: Regionally uncommon

Aristida queenslandica is a wiry, tussock-forming grass, that produces sharp seed carrying awns.

A. queenslandica is just one of many spear grasses of the same genus in the valley.

Being uncommon in the region, coupled by the fact that this species reaches its southern limit just south of Grafton, all adds to its significance.



Cleistochloa subjuncea

is a clumping grass that grows on sandstone. Flora of NSW does not record the species as occurring on the NSW north coast, and PlantNet only records it from the Banyabba – Fortis Creek area. It is a common species on rockier ridges on the Chambigne SCA.

Cryptandra propinqua

Status: Regionally uncommon.

Cryptandra propinqua is a rigid much branched, one metre high shrub, occurring in scattered populations across Australia. Locally it has been recorded from the Ramornie and Nymboida National Parks and in several nature reserves containing its preferred sandstone habitat.

Leaves are small, mostly less than 1cm long and 2mm wide. White flowers with reddish brown bracts at their base, equal in length to the petals, appear during winter and spring.





Daviesia wyattiana

Daviesia wyattiana, is described by Sherringham and Westaway as a “disjunct taxa” from the Northern Tablelands and South Coast botanical regions. However it occurs in most of the sandstone areas of the Clarence Valley including at a few locations in the Chambigne SCA.

Dodonaea hirsuta

Status: RoTAP, Rare.

The *Dodonaea hirsuta* population in the Clarence Valley is currently being described by Ian Telford as a new species, different from populations that occur on the Northern Tablelands, the North West Slopes, and Queensland, and likely to be given the name "*Dodonaea cruciflora* I.R.Telford ined." The southernmost population is at Flaggy Creek Nature Reserve, north of Glenreagh.

It grows to 1.5 metres, with small bright green leaves, with 3 to 5 teeth, and measure just 6mm long, clustered along branchlets. The 3 to 4 winged fruits, measuring up to 15mm long, provide a spectacular show of orange brown to red.



***Eriachne rara* Wanderrie Grass**

Status: Regionally uncommon.

According to “Sherringham and Westaway” *Eriachne rara* reaches its southern limit on the Gwydir Highway. That limit has been extended with the recording of the species on Chambigne Nature Reserve some years ago. It is one of two *Eriachne* species recorded at Chambigne.



Eucalyptus psammitica

Status: (RoTAP)

The Sandstone Mahogany is a medium sized tree growing to 20 metres high with a very limited range starting north of Coffs Harbour with its northern limit in the Clarence Valley at Banyabba Nature Reserve.

E. psammitica has finely fibrous brown bark on trunk and branches. Its leaves are narrow lanceolate to 15cm by 2.5cm, with a slightly paler shade of green on the lower surface. Fruits are round measuring from 6 to 8mm diameter.

Evolvulus alsinoides var decumbens

Status: Regionally uncommon.

Evolvulus alsinoides is widespread in NSW and across Australia with the exception of Victoria and Tasmania. Nowhere is it common however, and has been recorded elsewhere in the Clarence Valley at Angourie and Shannondale south of Grafton.

It is a prostrate plant with stems spreading to 40cm with oval leaves measuring to 30 by 5mm and small round blue flower, about 9mm diameter.



Glycine cyrtoloba

Status: Reaches southern limit in Clarence.

Found commonly growing in sclerophyll woodland and littoral rainforest, in gullies or rocky hillsides, mostly on Kangaroo Creek sandstone, north from Grafton (Flora of NSW). It has been previously recorded south of Grafton at Chambigne Nature Reserve.

Gonocarpus chinensis ssp verrucosus

Status: Regionally uncommon.

Uncommon on the NSW North Coast, the *Gonocarpus chinensis* occurs north from the Hawkesbury River into Queensland. In the Clarence Valley it has been recorded at Shannondale, southwest of Grafton, Fortis Creek, and the junction of the Mann and Nymboida Rivers.

It is a slender herb growing to about 45cm, with narrow opposite leaves, measuring from 20 to 45mm by 5mm wide, with small teeth resembling notches. It has a spreading head of minute flowers measuring a mere 1 to 1.5mm.

Its preferred habitat is on the verges of swamps or other damp soils.



**The bright yellow flower of
*Hibiscus heterophyllus subsp luteus***



**The pale lilac flower of
*Hibiscus heterophyllus subsp heterophyllus***

Hibiscus heterophyllus subsp luteus

Status: Currently unknown.

Hibiscus heterophyllus subsp luteus has only recently been described by a Queensland botanist as a subspecies to the more commonly occurring lilac flowering *Hibiscus heterophyllus subsp heterophyllus* or Native Rosella (below left) which, until recently, have both been recognised as different forms of the latter.

The shrub grows to 3 to 4 metres in height and in the Clarence Valley has only been recorded from the Chambigne area south west of Grafton. It has prickly stems and attractive dark green leaves that are either lanceolate in shape or deeply three lobed. It has large striking dark yellow flowers with deep purple centres.

The preferred habitat for *H. heterophyllus subsp luteus* is in sheltered gullies on sandstone. It appears to be a fire tolerant species having survived in its very restricted known range through 150 years of high frequency burning by local landowners.

Hakea florulenta

Is relatively common in dry sclerophyll forests of the Clarence Valley. The significance of this species' is its occurring close to its southern limit north of Woolgoolga. Not common at Chambigne.



Isotoma armstrongii

Status: Regionally uncommon.

For the *Isotoma armstrongii*, the Clarence Valley LGA is once again the southern limit, having been recorded near Corrindi. Its range however, extends into Queensland and the Northern Territory.

It is a fragile annual herb growing to about 30cm if supported by surrounding vegetation. Leaves are few and narrow, measuring up to 35mm by 3mm. Single white or pale blue flowers appear on long stalks up to 8cm long.

Kunzea opposita

Status: Regionally uncommon.

A shrub that can grow to 3 metres in height, *Kunzea opposita* occurs north of the New England National Park and west to Mt Kaputar. In the Clarence Calley, it has been recorded at a number of sandstone reserves including, Chambigne Nature Reserve, and the Copmanhurst, and Ramornie districts.

Kunzea opposita has attractive foliage and flowers. The leaves are minute, measuring just 3mm long and .5mm wide. In Spring, a mass of pink flowers appear on the ends of branches. Its habitat is generally heath country in dry sclerophyll forests, usually on sandstone.



Lasiopetalum ferrugineum* ssp *ferrugineum

Status: Regionally uncommon.

Lasiopetalum ferrugineum var. *ferrugineum* is a one metre high shrub found along the east coast and adjacent ranges of Australia from Victoria to northern NSW. It is found growing in sclerophyll forest and heathland in the Clarence Valley LGA at several sandstone areas including Sherwood, Chambigne and Tallawudjah Nature Reserves.

Stems and under side of leaves are covered with rusty coloured hairs giving leaves a distinctive two-tone appearance. Leaves are narrow, downward pointing, and measuring to 9cm by 1.2cm wide. Clusters of small yellowish green flowers appear in spring.



Melaleuca alternifolia

Melaleuca alternifolia is an important component of the Endangered Swamp Sclerophyll Community, a small area of which potentially exists in the south western corner of the property at about 47800 – 6706000.

The species is also significant in that it reaches its southern limit near Woolgoolga.

Petalostigma pubescens

Otherwise known as Bitter Bark, the *P. pubescens* also reaches its southern limit locally (Hayards Crossing). It is very common in the Chambigne area.



Spermacoce brachystema

According to Sherringham and Westaway, the *S. brachystema* is at its southern limit on Doboy Road in the Nymboida State Forest. Common on sandstone in the district, but not common at Chambigne.



Sauropus hirtellus

Status: Rare in NSW

Once thought to be extinct in NSW, and under threat of extinction in Queensland (Flora of NSW, Vol 1), the *S. hirtellus* has now been recorded at several locations around the Clarence Valley particularly around Shannon Creek, Chambigne and Pillar Valley.

It is a subshrub growing to 30cm with small oval shaped leaves measuring to 1.5cm long. Flowers are pink followed by a round fruit.

Its preferred habitat is open grassy forest or grassland on low fertility soils, and threats come mainly from grazing and forestry.

Stylidium uliginosum

The Swamp Trigger Plant was identified at Plot 9 and must be considered to be significant with “Flora of NSW”, Coffs Harbour Herbarium and the NSW Wildlife Atlas showing no records of the species south of Tweed Heads (see photograph page 30).

The recording of one species, a small 'wet area' plant the Swamp Trigger Plant (*Stylidium uliginosum*), must be considered to be significant with “Flora of NSW”, Coffs Harbour Herbarium and the NSW Wildlife Atlas showing no records of the species south of Tweed Heads.



Zornia floribunda

Other common names: Nil.

Status: Regionally uncommon.

An uncommon species, the *Zornia floribunda* has only been recorded at Bingara on the tablelands, and in and the Clarence Valley where it has been recorded on sandstone at Banyabba and Chambigne Nature Reserves.

A small erect perennial herb, growing to 40cm high, the *Z. Floribunda* has the typical two leaflet leaves, and small yellow to orange pea flowers which appear in summer.



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Later this year, fauna surveys are planned for the new reserve additions which, together with the information provided in the Clarence Environment Centre's flora report, will provide valuable data to guide the Department's management of the nature reserve into the future.

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