



## Assessment of Plant Community Type (PCT) Mapping in Byron Shire October 2022

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### Objective

Assess accuracy of latest PCT mapping. Assessment to be primarily based on desk top analysis and local knowledge, with targeted ground truthing to validate site boundaries where required.

### Methodology

#### Datasets Used:

Byron Shire Council Vegetation 2021 mapping.

Eastern NSW State Vegetation Type Map v1.1 (sourced from DPIE).

#### Steps:

- Target areas identified:
  - High development area (Skinners Shoot and Byron Bay).
  - Fragmented landscape (Myocum and Mullumbimby)
  - Hinterland landscape (Huonbrook and Wilsons Creek)
  - Northern area (Yelgun, The Pocket, Billinudgel)
  - Big scrub remnants
- Random Points generated to validate the mapping using QGIS tools.
- Random Points that were not mapped in the PCT mapping but were in the BSC 2021 Vegetation mapping were assessed using NearMaps aerial photography.
- Random Points within the PCT mapping were assessed through ground truthing. The following data was collected:
  - Spatial Location
  - PCT Validation - Correct, Partially Correct, Not Correct, Inaccessible.
  - Validation Type - Random Point, Opportunistic
  - Validation Form - Groundtruthed (date), Site visit by Ecologist < 3 years, Aerial photography (SIX maps) and BSC 2017 Veg Mapping, Distance Assessment (date).
  - Comments
- Additional Opportunistic Points were collected during ground truthing.

#### Results:

238 sites were assessed and mapped in an ESRI shapefile. Table 1 shows the validation results by PCT validation type.

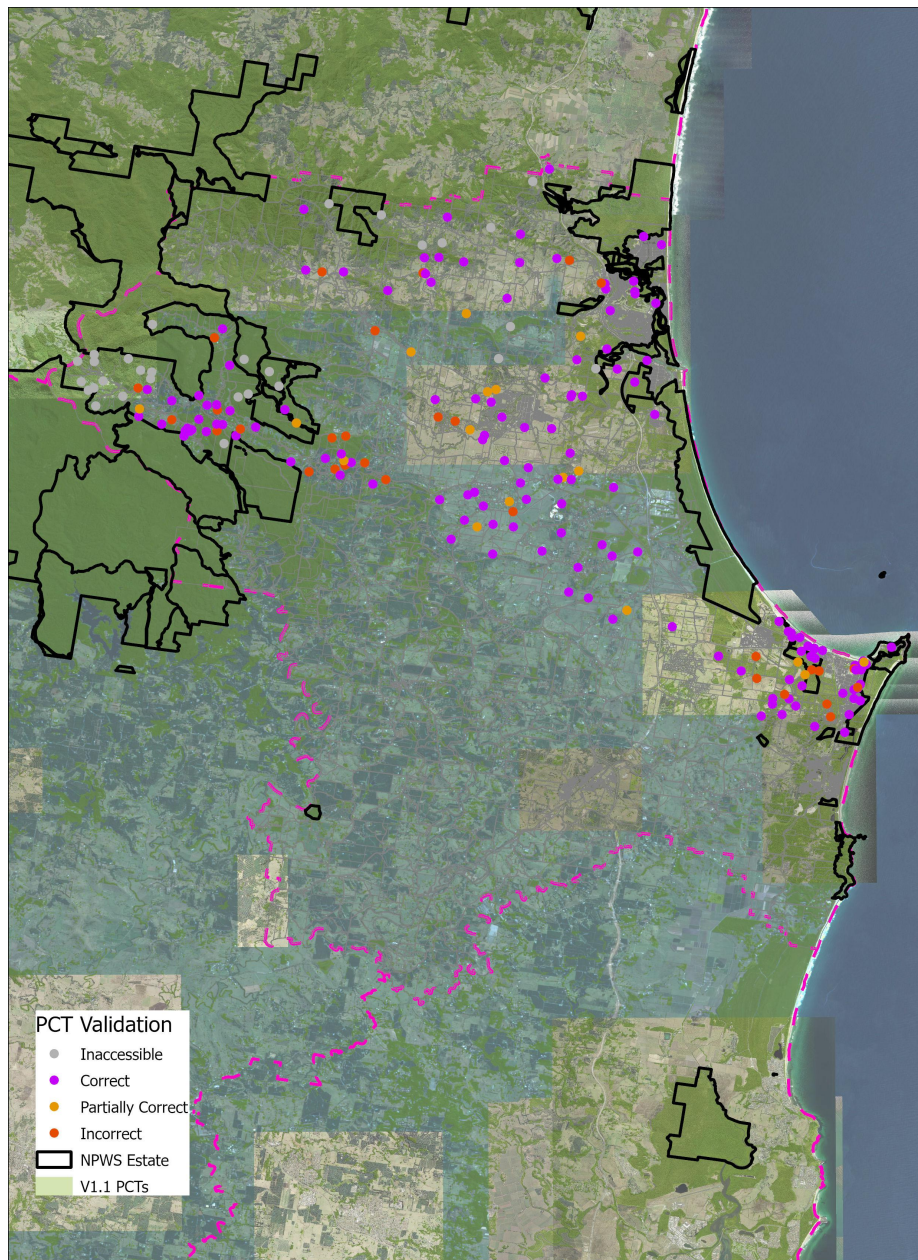
PCT Validation	Count	Percentage
Correct	150	63.0
Partially Correct	21	8.8
Not Correct	38	16.1
Inaccessible	29	12.1

Table 1 - PCT Validation Results

Correct - Vegetation species composition agrees with PCT description.  
Partially Correct - Either the boundary is only partially correct or the vegetation only partially agrees with PCT description.  
Not Correct - Vegetation species composition does not agree with PCT description.  
Inaccessible - Unable to verify the PCT because of road closures or private land where access has not been agreed to.

Figure 1 shows the distribution of sites in Byron Shire.

Note, areas with a high density of Flora Plots (eg. Broken Head) were not assessed. National Parks were also not included as they were outside of the scope of the BSC project. The south-west of the Shire was not assessed as this area is largely cleared with very little PCT mapping.



Validation of PCT (V1.1) Mapping in Byron Shire

Figure 1 - Distribution of assessment sites in Byron Shire.

## Discussion

### 1. Summary of mapping accuracy

As Table 1 and Figure 1 indicate, the PCT mapping is generally accurate. There are some exceptions, such as the Scribbly Gum Forest on Koonyum Range which is mapped as PCT 3924 Sydney Coastal Upland Swamp Heath (see Figure 2).

The existing vegetation mapping of Byron Shire is both accurate and current. It was undertaken by local experts with extensive local experience and expertise and is of a very high quality.

Whilst the PCT mapping is a useful resource it's boundaries and attributes are not as accurate as the BSC vegetation mapping. For many Shires in northern NSW this mapping will be an improvement in vegetation mapping and represent a uniform mapping of vegetation across LGAs.



*Figure 2 - Example of incorrect PCT community on Koonyum Range. Byron Vegetation mapping is shown in yellow.*

### 2. Data that has not been mapped

A key difference between the PCT mapping and the 2021 BSC vegetation mapping is that Camphor laurel has not been mapped (see example in Figure 3). Whilst this is non native vegetation it is still considered important habitat for some fauna species and can include > 50% native vegetation species or be part of a regeneration project for subtropical rainforest.

In addition, water and plantations have not been mapped in the PCT mapping.

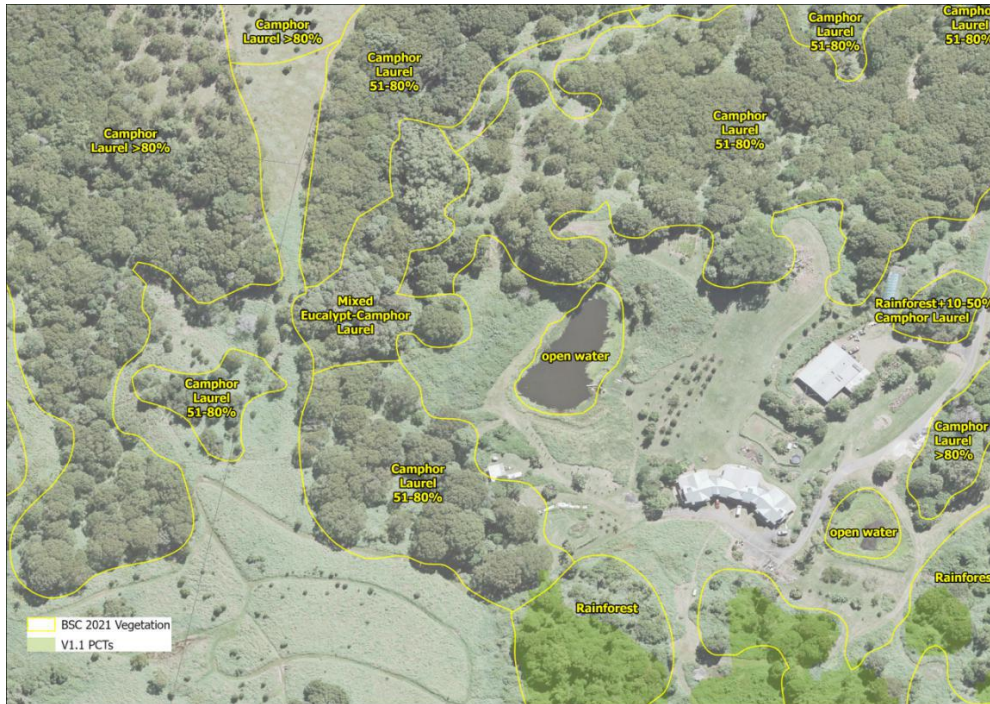


Figure 3 - Example of Camphor Laurel not mapped by PCT mapping. PCT mapping is shaded green.

Some areas that are a mix of Rainforest and Camphor Laurel have been mapped in the PCT mapping but the extents are much smaller than the BSC vegetation mapping (see example in Figure 4).

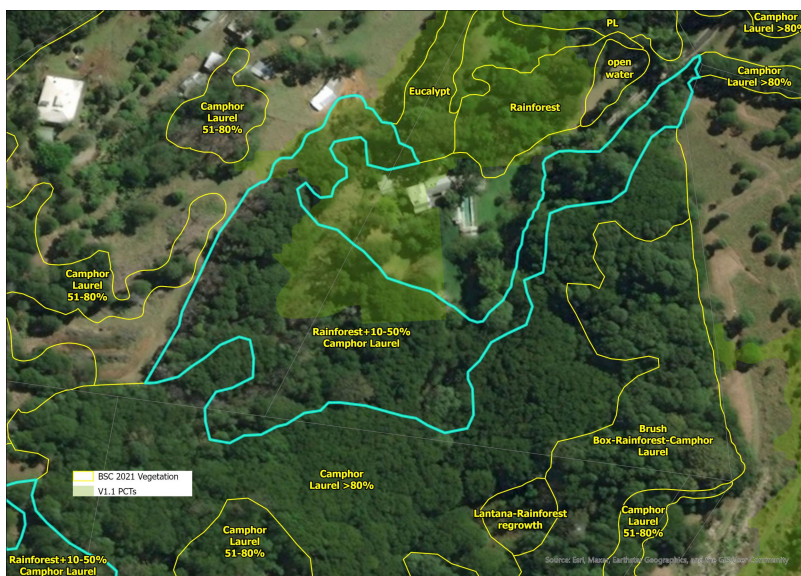


Figure 4 - Example of Camphor Laurel / Rainforest mapping. PCT mapping is shaded green.

### 3. Recent Events

It should be noted that neither the PCT or BSC vegetation mapping include the impacts on vegetation from the 2022 flood event and the 2019 bushfires.

### 4. Accuracy of Boundaries

Whilst the vegetation boundaries are generally accurate there are some exceptions as shown in Figure 5 below.



Figure 5 - Example of PCT mapping over infrastructure (Koonyum Range).

## 5. PCT Definitions

The Plant Community Types (PCTs) are determined by floristic composition, and by frequently co-occurring species, including combinations of trees, shrubs and/or ground cover plants. In some cases, species may vary or not be present at a local level due to the fact that PCTs are defined and mapped across NSW

(<https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/nsw-plant-community-type-classification>)

Investigation and Ground truthing of the PCT types indicated that the PCTs are generally broader than the current BSC vegetation mapping. Ground truthing of the PCTs showed that in some cases the PCTs descriptions were more general in description and include a broad list of species. The community description can be applied from species present, but species abundances may vary considerably at a site level and in some cases some of the dominants may not be present. This could be due to disturbance factors such as logging for timber production or removal of species such as Tallowwood (*Eucalyptus microcorys*) for fenceposts. The Byron Vegetation mapping is very detailed in description due to assessment at a site level in most areas. Table 2 provides a comparison of the additional detail in the BSC vegetation mapping.

Table 2 - Example of greater breakdown of community types in BSC vegetation mapping.



PCT Mapping.



BSC Vegetation Mapping.

## 6. Landscape Condition, Canopy and Vegetation Species.

The PCT mapping is based on survey plots done in the remnant and good condition native vegetation with mid and understorey present. Factors such as levels of disturbance from grazing and clearing for other landuse practices i.e. development, affect the accuracy of the mapping.

The BSC vegetation mapping includes categories and information on the Condition and Canopy of the vegetation at a local level, which isn't included in the PCT mapping (Landmark 2016). The Byron vegetation mapping categories for the landscape condition are from 1 Old Growth/ Excellent condition to 4 Regrowth, which provides information on the status of the community under threatened species legislation. The canopy is graded from A 81-100% to D 10-30%, which also provides information for the threatened plant community status, especially subtropical rainforest, under threatened species legislation. Regrowth vegetation and areas and percentages of Camphor Laurel, (50-80%, 80%) are included in the mapping which is important for identifying restoration sites, such as the example in Figure 6).

In contrast, the PCT mapping spreadsheet provides an extensive list of canopy, midstorey and understorey species that are present or may be present in each type, which is useful in restoration practice.



Figure 6 - Example of regrowth mapped in BSC Vegetation Mapping.

## 7. Big Scrub

There are only 31 Big Scrub remnants remaining in Byron Shire (DPE mapping). The main PCT describing Big Scrub remnant is 3001 called “Lismore Basalt Subtropical Rainforest”. Due to the immense value and so little remaining it is recommended that each Big Scrub remnant be considered on a site by site basis. The descriptions and difficulties of classifying Big Scrub under the PCTs are discussed below.

Further investigation is required of the allocation of PCT 3001 to Hayters Hill. The PCT notes in the spreadsheet discuss that PCT 3064 is floristically intermediate between PCT 3003 in mainly cooler or drier sites and PCTs 3001 and 3002 in warmer or wetter sites and it may grade into one of these PCTs where they occur in proximity. It includes areas within intact forests, remnants in cleared areas, and vegetation on the fringes of extensively cleared valleys. In the latter two cases, sites may be difficult to assign with confidence and relationships with other PCTs may be obscured by disturbance effects.

Description from PCT spreadsheet-

“PCT 3001 is very tall to extremely tall dense rainforest which occurs on fertile soils derived from basalt in the Lismore district, North Coast. Tree species richness is very high and the tree canopy is of variable composition, however *Heritiera trifoliolata* is almost always present and is often among the tree species with the highest foliage cover. Other very frequent canopy trees include *Castanospermum australe*, which commonly has high foliage cover, *Dysoxylum mollissimum* which occasionally has high cover and *Cryptocarya obovata*, *Diploglottis australis* and *Diospyros pentamera*, each rarely with high cover. A wide range of other rainforest tree species occur with lower frequency, and very rarely *Eucalyptus grandis* may occur in the canopy. The mid-stratum is commonly of very mixed composition with no single species dominant, however it almost always includes *Wilkiea huegeliana*, very frequently with *Arytera distylis* and *Cordyline rubra*. Vines are abundant and almost always include *Calamus muelleri*, very frequently *Ripogonum album*, *Trophis scandens*, *Flagellaria indica* and *Carronia multisepealea*. The climbing epiphyte *Pothos longipes* is almost always present and may be abundant. This PCT occurs mainly in very wet, very warm locations receiving over 1500 mm mean annual rainfall, at low to moderate elevations of less than 200 metres asl. It occurs only on soils derived from Lismore basalt, and on such soils, the vegetation has been very extensively cleared. It is by far the predominant native vegetation of the rainforest remnants on

Lismore basalt, however now exists only as scattered, often very small, remnants. PCT 3002 (Lower Richmond Hills Dry-Subtropical Rainforest) also occurs in some remnants on Lismore basalt, however to a much more limited extent and usually on more exposed or sometimes previously cleared site”

**Description of PCT 3002**

Tall to very tall, rarely extremely tall, dense rainforest which occurs mostly on fertile soils derived from basalt, in the coastal hills and valleys of the Brunswick-Ballina district, North Coast. Native tree species richness is moderate to high, however there is also usually a high to very high proportion of exotic species. The canopy almost always includes *Guioa semiglauca* and very frequently *Mallotus philippinensis*, both of which often have the highest cover. Other tree species, some of which may have a high cover, very frequently include *Jagera pseudorhus*, *Pittosporum undulatum* and *Cryptocarya obovata*, commonly *Diploglottis australis* and *Flindersia schottiana*, occasionally *Alphitonia excelsa*, rarely with *Elaeocarpus grandis* and *Eucalyptus grandis*, the latter as an extremely tall emergent. Scramblers and vines, *Maclura cochinchinensis* and *Cissus antarctica*, are almost always present and may be locally abundant, especially in disturbed sites. The ground layer is variable, however commonly includes ferns such as *Adiantum hispidulum* and forbs such as *Alpinia caerulea*. PCT 3002 occurs mainly in very wet, very warm locations typically receiving over 1600 mm mean annual rainfall, at low to moderate elevations of less than 150 metres asl, however up to 250 metres for isolated western occurrences. It often occurs at the fringes of basalt, close to lithological boundaries with metasediments, or on more exposed sites on basalt or, rarely on or close to alluvium on soils derived from metasediments. Most occurrences are at low elevations north-east of Lismore and associated with Lismore basalt, however there are also limited isolated occurrences north-east of Kyogle at higher elevation, on Kyogle basalt. These latter areas are poorly sampled and further data may prove that they represent a separate PCT. This community grades into PCT 3001 in more sheltered sites on basalt or into PCT 3011 on adjacent metasediments. It occurs in a very extensively cleared area in which Camphor Laurel and other weeds are prolific. Many areas are highly disturbed or are regrowth following past clearing. At least some of the disturbed areas may have formerly been PCT 3001 and disturbed sites may be difficult to assign with confidence to one or other of these PCTs. Sites at lithological boundaries may be transitional with either PCT 3001 or PCT 3011 and may also be difficult to assign with confidence.

Table 3 - PCT Assessment of some Big Scrub Remnants in Byron Shire

Big Scrub Remnant	PCT	Assessment
Hayter's Hill	3001	Possible more like PCT 3002 or 3064, as previously considered dry rainforest in the <i>Drypetes-Araucaria</i> alliance
Cedarvale	3001 and Areas Not Mapped (Figure 7)	Correct
Eureka Soccer Ground	3001	Correct
Johnston's Scrub	3001	Correct
Booyong	3001	Correct
Snows Gully	3011,3148, 3035, 3021	Needs additional assessment





*Figure 7 Parts of Cedarvale are not mapped in the PCT mapping.*

On the ground assessment is required to confidently validate all the Big Scrub remnants in Byron Shire.

Outputs:

This mapping review includes a shapefile of points where the PCT data has been assessed.