



DEPARTMENT OF PLANNING, INDUSTRY & ENVIRONMENT

# BAM Support for Accredited Assessors

A series of webinars to support the role of accredited BAM assessors in the Biodiversity Offset scheme (BOS)



For more information, go to the [BAM Support Webinar webpage](#) or contact us via the [BOS Online Enquiry Form](#)



Department of Planning, Industry and Environment

# BAM SUPPORT WEBINAR 6

## Eastern NSW revised PCT classification update and tools to assist with PCT identification



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Thursday 5<sup>th</sup> December 2019  
12:00pm - 1:00pm

For more information, go to the [BAM Support Webinar webpage](#) or contact us via the [BOS Online Enquiry Form](#)



# Overview

TIME	ITEM	DESCRIPTION	DURATION
12:00	Introduction	Acknowledgment of Country Introduction and house keeping	10 mins
12:10	Content Presentation	<ul style="list-style-type: none"> <li>Update on the Eastern NSW revised PCT classification</li> <li>Update on tools to assist with PCT identification</li> </ul>	25 mins
12:35	Q&A session	Presenter and SME panel address participants' questions	20 mins
12:55	Wrap-up and Close	Closing remarks Upcoming sessions Post-webinar feedback	5 mins



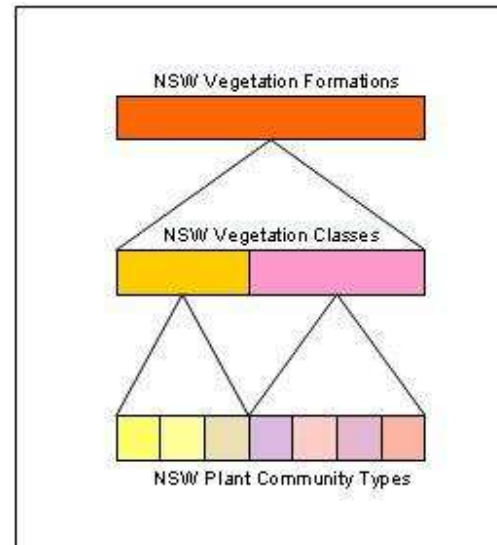
- **Rationale** for revision of the eastern NSW Plant Community Types (PCTs)
- **Approach** taken to derive the PCT classification
- **Progress** to date
- **New tools** to assist with identification of PCTs





# NSW Vegetation Classification Hierarchy

- Vegetation Formation
- Vegetation Class
- Plant Community Type (PCT)





## Current PCTs in the BAM tool

Floyd rainforest alliances or suballiances

Regional quantitative classifications

TEC determinations

Synthesis of multiple classification sources

Current PCTs

- Differences in scale
- Overlap between PCTs
- Lack of transparency to original source
- Gaps in data coverage



Rationale

Approach



Count the total number of species that match the list?

Match the dominant species in each stratum only?

Use the data from the PCT source?

Phone a friend?





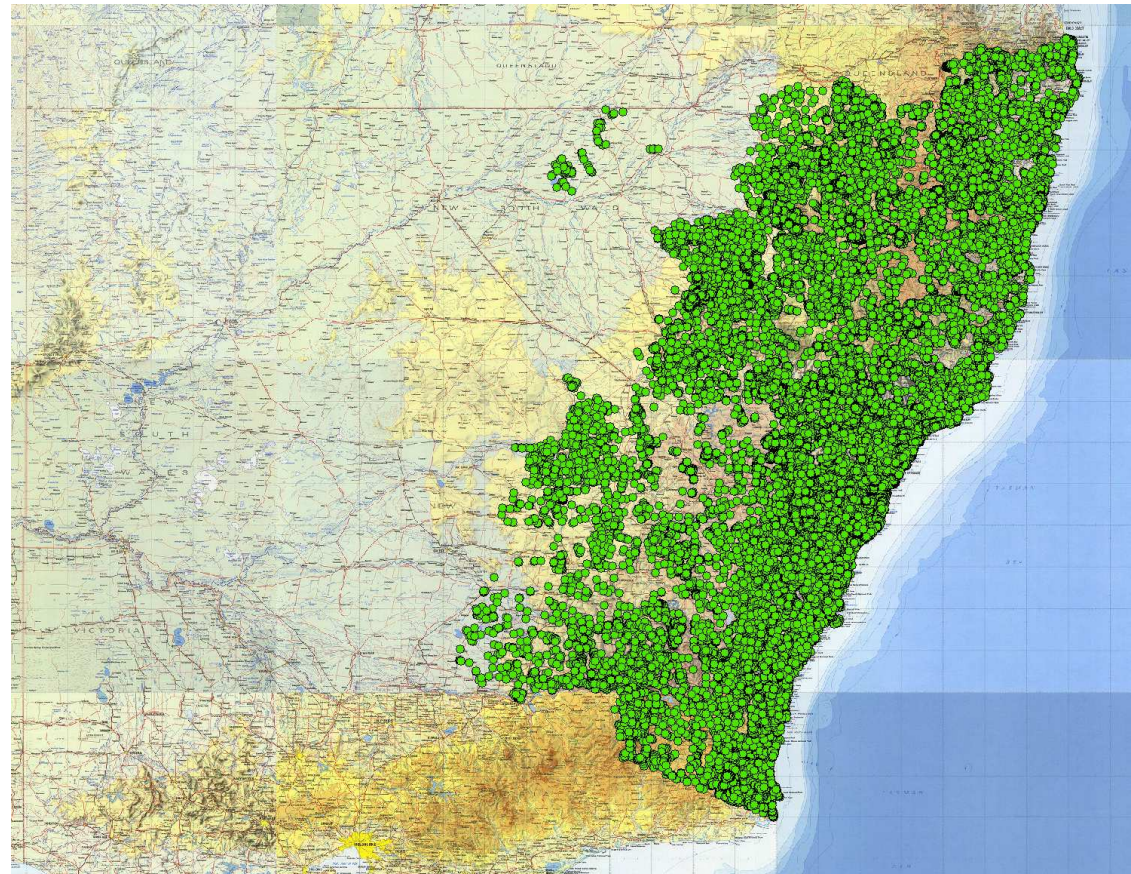
Rationale

Approach

Progress

New Tools

- Over 50 000 plots in eastern NSW and the western slopes have full floristic data with cover-abundance
- Targeted program to fill data gaps
- Numerical classification, built by K-means non-hierarchical clustering of plot data







Rationale

Approach

Progress

New Tools

## Quantitative PCTs

- Each PCT is represented by a unique and explicit group of standard samples (plots) which are spatially referenced
- The set of component plots for each PCT are stored and labelled within the BioNet Atlas database
- Environmental data has been used to help evaluate and classify the PCTs
- All PCT summary data is derived from the component plots
- There are traceable relationships to legacy classifications
- New standard plots can be assessed using the same classification algorithms





Rationale

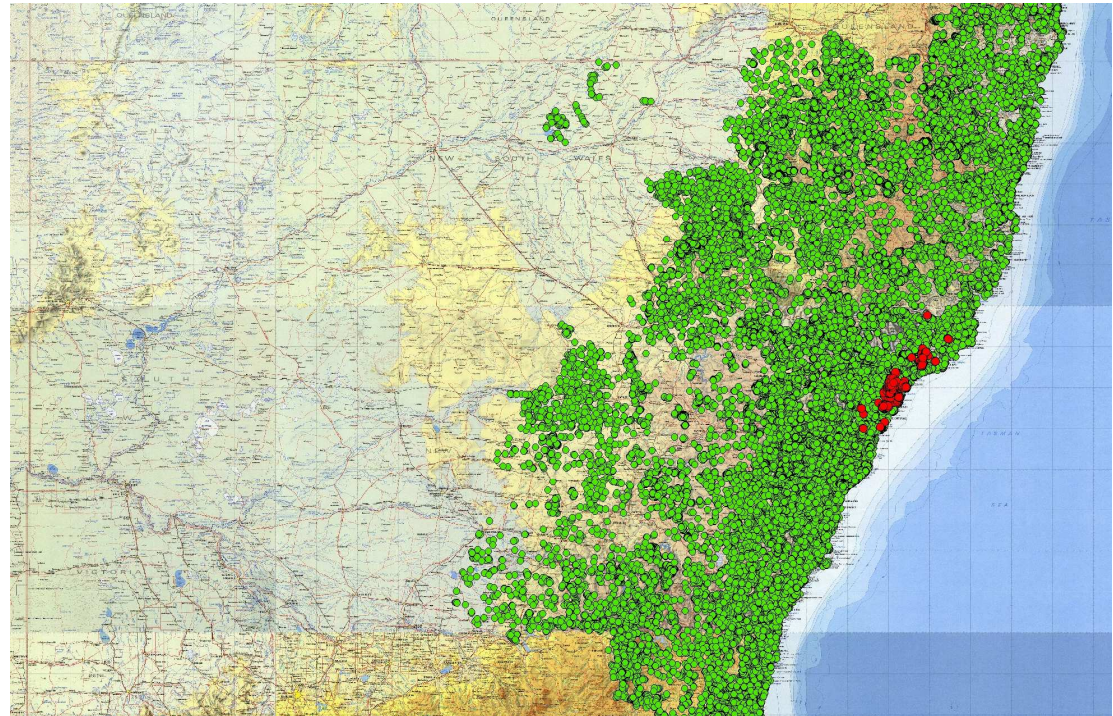
Approach

Progress

New Tools

## Where are we up to?

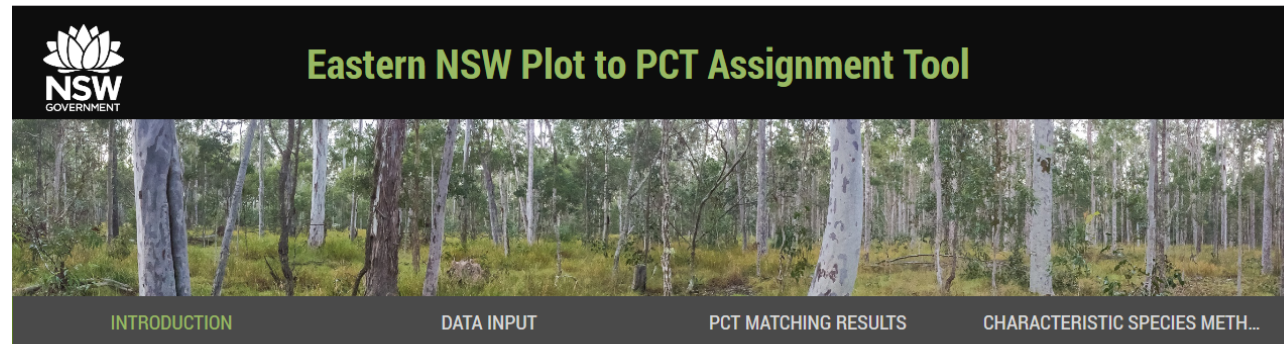
- 1107 new quantitative PCTs drafted for eastern NSW, from classification of 40 952 plots
- Vegetation descriptions for each PCT are being written
- BioNet modifications underway to enable housing of quantitative PCT data
- PCT summary data derived from plot data





New online tool designed to assess new sites that are collected using BAM survey standards

Tool developed by DPIE and UNSW



### Welcome to the Plot to PCT Assignment Tool

This tool helps identify NSW Plant Community Types (PCTs) using the standard flora survey methods required under the [NSW Biodiversity Assessment Method \(BAM\)](#) and promoted by the [NSW Vegetation Survey Standards](#).

New flora survey sites collected using standard methods can be evaluated against most approved PCTs in eastern NSW using a combination of floristic, environmental and spatial attributes. This tool does not provide definitive answers, but rather assists in the assessment of PCT options. Decisions on PCT identity must also incorporate user knowledge, consideration of site conditions and other relevant factors.

A small set of PCTs in eastern NSW cannot be identified using this tool as they are defined by qualitative data that cannot be incorporated into metric-based assessments. This includes some PCTs that are associated with Threatened Ecological Communities, such as Elderslie Banksia Scrub Forest. PCTs occurring outside the eastern NSW region cannot be identified using this tool.

This tool is part of the BioNet data collections. Data on all NSW PCTs is stored in the [BioNet Vegetation Classification](#) database. Systematic flora survey site data is stored in the [BioNet Atlas Systematic Surveys](#) database.

A Plot to PCT assignment tool [User Guide](#) is available. Detail on the statistics underpinning this tool can be found in the [Eastern NSW PCT Classification Methodology](#) paper.

The eastern NSW Plot to PCT assignment tool was developed by the Department of Planning, Industry and Environment (DPIE) and the University of New South Wales (UNSW) with funding from the Australian Research Council (ARC) grant number LP150100972.

**\*\*Note that this tool is currently populated with revised eastern NSW draft PCTs as at 22nd March 2019.\*\***

App last updated: 24/06/2019 (Version: 1.0) PCT data last updated: 22/03/2019 (Version: 1)

[Disclaimer](#)



#### BioNet

BioNet is the major repository for NSW biodiversity data. It is the key system for managing native vegetation information including survey data, classification types and descriptions. Users of the Plot to PCT assignment tool are encouraged to develop a working understanding of BioNet. Contact [bionet@environment.nsw.gov.au](mailto:bionet@environment.nsw.gov.au) for assistance.

#### BAM

The [NSW Biodiversity Assessment Method \(BAM\)](#) is used to assess impacts on biodiversity under the



# Changes to BioNet Atlas Flora Surveys database

**Data maintenance** 59:47 [Reset timer](#)

**Search for flora surveys or sites**

Surveys Sites

**Criteria**

Site number:

Survey name:

Principal:

Observer:

Custodian:

Census key:

PCT ID:

PCT Name:

Entire area
  Select a geographic area
  Define my own area (Remember that you must select an area at least 10km x 10km. If you select a smaller area, the search area will be automatically extended to approximately 10km x 10km.)

Replicate date [?](#)

From date:  To date:

[Search](#) [Reset](#)

Results 1-13 of 13

Site number	Locality description	PCT ID	PCT Name
<input type="checkbox"/> BYR01CBR	Plot located midway between Shirley Street and Gordon Street Byron Bay. Plot located about 100 metres west of Grassed area west of Somerset Street.	3983	UAT3.2.3_DummyENSWPCTs_Far North Sands Swamp Turpentine-Paperbark Forest
<input type="checkbox"/> CDG09Q5F	Crown land south of Bogangar Public school approx 40 metres east of back of houses on Ti Tree Avenue.	3983	UAT3.2.3_DummyENSWPCTs_Far North Sands Swamp Turpentine-Paperbark Forest
<input type="checkbox"/> CUD20CBD	Swamp Forest to the north of sports oval off Round Mountain Road	3983	UAT3.2.3_DummyENSWPCTs_Far North Sands Swamp Turpentine-Paperbark Forest
<input type="checkbox"/> POT01EST	Off Eucalyptus trail Tweed Environmental Park near bridge	3983	UAT3.2.3_DummyENSWPCTs_Far North Sands Swamp Turpentine-Paperbark Forest
<input type="checkbox"/> POT02CBR	Diagonally opposite Koala Beach School Pottsville, 150 metres into forest along track to South of track	3983	UAT3.2.3_DummyENSWPCTs_Far North Sands Swamp Turpentine-Paperbark Forest

Search for a PCTID to see all sites assigned to the PCT



# Changes to BioNet Atlas Flora Surveys database

**Replicate**  
 Survey name: CCAFNCVEG  
 Site number: BYR01CER (1)  
 Census key: CPJGI0064321

**PCT Information**  
 PCT ID: 3983  
 PCT Name : UAT3.2.3\_DummyENSWPCTs\_Far North Sands Swamp Turpentine-Paperbark Forest  
 Class : Coastal Swamp Forests

**Species options**  
 Floristics  Non-site spp.

Results 1-20 of 34

Sub plot	Sighting Key	Status	Species name	Assigned name	Cover score	Abund score	Stratum	Growth form	Field no.	Review	Remove
1	SPJGI3176997	V	1106 Centella asiatica	1106 Centella asiatica	2					Review	Remove
1	SPJGI3176998	V	11731 Syagrus romanzoffiana	11731 Syagrus romanzoffiana	1					Review	Remove
1	SPJGI3176999	V	1234 Marsdenia rostrata	1234 Marsdenia rostrata	1					Review	Remove
1	SPJGI3177000	V	1925 Pratia purpurascens	14415 Lobelia purpurascens	1					Review	Remove
1	SPJGI3177001	V	2022 Casuarina glauca	2022 Casuarina glauca	3					Review	Remove
1	SPJGI3177002	V	2203 Hypericum japonicum	2203 Hypericum japonicum	1					Review	Remove

Within a site view the PCT details



# Changes to BioNet Atlas Flora Surveys database

Analysis set: EM\_BAMAssessorsWebinarDemo

Filters:

Select columns: Include all Exclude all Reset

Target view:  Included  Excluded  Both

Results 1 - 10 of 10

Census DB ID	Survey name	Site no	Rep no	Location description	View history	PCT ID	PCT Name	PCT Assignment Category	Elevation	Rainfall	Temperature
<input checked="" type="checkbox"/>	ALLWOLL	CRC06N8U	1	West of Mt Monundilla, central Wollemi NP/Adjacent Hunter Main Trail	<a href="#">View history</a>	3688	UAT3.2.3_DummyENSWPCTs_Upper Blue Mountains Moist Forest	Primary	867.33	877.01	12.73
<input checked="" type="checkbox"/>	ALLWOLL	CRN62N3G	1	North east Wollemi Coricudgy Area. AMG updated by Renee Woodward 4/4/11 as site was not in Wollemi NP	<a href="#">View history</a>	3688	UAT3.2.3_DummyENSWPCTs_Upper Blue Mountains Moist Forest	Secondary	636.17	786.63	13.44
<input checked="" type="checkbox"/>	CRAHUN	CRC15N7V	1	Wollemi NP, Hunter Main, Headwaters of Blackwater Creek,	<a href="#">View history</a>	3688	UAT3.2.3_DummyENSWPCTs_Upper Blue Mountains Moist Forest	Secondary	877.51	935.67	11.70
<input checked="" type="checkbox"/>	CRAHUN	CRC18N2C	1	Wollemi NP, Hunter main Trail, Hanging Rock	<a href="#">View history</a>	3688	UAT3.2.3_DummyENSWPCTs_Upper Blue Mountains Moist Forest	Primary	854.85	849.14	12.79
<input checked="" type="checkbox"/>	DT_BMUPSWAMPS	1014_20	1	Upland swamp, in and adjacent to, the Greater Blue Mountains World Heritage Area, Australia	<a href="#">View history</a>	3688	UAT3.2.3_DummyENSWPCTs_Upper Blue Mountains Moist Forest	Primary	942.89	1024.66	11.75
<input checked="" type="checkbox"/>	WARRAGAMBA	BUR20H1V	1	Laceys Tableland , Reilly Creek channel	<a href="#">View history</a>	3688	UAT3.2.3_DummyENSWPCTs_Upper Blue Mountains Moist Forest	Primary	662.26	1018.04	12.70

View PCT details and environmental variables in site attributes



# Changes to BioNet Atlas Flora Surveys database

Export site data in a format ready for direct import into the new 'Plot to PCT' online identification tool

Analysis set: EM\_BAMAssessorsWebinarDemo

Data analysis | Site report

Output formats

- PATN (text archive format)
- R or S-Plus (tab delimited matrix with labels)
- Primer (tab delimited matrix with title and labels)
- PC-ORD (comma delimited matrix with header)
- CANOCO (condensed cover list format)
- Plot to PCT assignment tool

File name\*: EM\_BAMAssessorsWebinarDem

Data to export

- Score
- Abundance
- Percent cover
- Presence absence

Include exotic species

NO

- Exclude non site species
- Exclude genus only records

Append the following

- Analysis set description
- Census list
- Taxonomic list

Replicates Sub plots

1 1

Data transformation

Cover 1 to 6

Generate



# Changes to BioNet Vegetation Classification database

Spatial and environmental summary data derived from plot locations





# Changes to BioNet Vegetation Classification database

**Plot data**

Adequacy of plot sampling guide

Adequacy plot sampling: --choose--

Total no. of replicates: 46  
 No. of Primary replicates: 46  
 No. of Secondary replicates: 0

SurveyName	SiteNo	ReplicateNo	PCT Assignment Category
GAP_EAST	CPR05A6F	1	Primary
GAP_EAST	WCH06A1V	1	Primary
SFDATA	NDCH001	1	Primary
StateForestsEEC	MRK01A1F	1	Primary
WFGRF	WF06	1	Primary
WFGRF	WF07	1	Primary
WFGRF	WF09	1	Primary
WFGRF	WF10	1	Primary
WFGRF	WF11	1	Primary
WFGRF	WF12	1	Primary

Component plots listed within the PCT information tabs



# Changes to BioNet Vegetation Classification database

Species list derived from plot data, listed by Growth Form Group and with frequency and median cover score

**BioNet Vegetation Classification**

HOME PCT DATA ADMINISTRATION LOGOUT LOGGED IN AS : CLASSIFICATIONEDITUSER1 (CLASSIFICATION EDIT USER)

Plant community  
**Edit plant community** Print PCT Save

Use this page to edit a vegetation community.

PCTID : 3089 VCAID : 0 PCT Name : UAT3.2.3\_DummyENSWPCTs\_Lower North Waterhousea Riparian Rainforest

Classification Type : Quantitative  
PCT Definition Status : Approved PCT Benchmark Calculation level : Class/IBRA Status : 0 out of 1 IBRA regions Approved  
PCT % Cleared Status : Undefined PCT Threatened Ecological Communities Association Status : Undefined  
Classification confidence level : 2 High Authority : Sydney Basin

Vegetation community details Scientific description Distribution information Extent Threatened Biodiversity, TECs & Benchmarks Spatial information Image management Status Lineage history

**Species by Growth Form Group**

Median Native Species Richness per plot : 37 Refresh

Growth_Form_Group	Species	Median_cover_score	Frequency
Tree (TG)	Waterhousea floribunda	5	100
Tree (TG)	Streblus brunonianus	2	59
Tree (TG)	Glochidion ferdinandi	1	50
Tree (TG)	Notelaea longifolia	1	50
Tree (TG)	Guioa semiglauc	2	46
Tree (TG)	Tristaniopsis laurina	4	46
Tree (TG)	Cryptocarya glaucescens	2	42
Tree (TG)	Cryptocarya microneura	1	42

Community Structure  
Descriptive Attributes



# Coastal Sand Bangalay Forest as an example of the change

**BioNet Vegetation Classification**

HOME PCT DATA ADMINISTRATION LOGOUT LOGGED IN AS : CLASSIFICATIONEDITUSER1 (CLASSIFICATION EDIT USER)

**Plant community**  
 Edit plant community Print PCT Save

Use this page to edit a vegetation community.

PCTID : 659 VCAID : 0 PCT Name : Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion

Classification Type : Qualitative  
 PCT Definition Status : Approved PCT Benchmark Calculation level : Class/IBRA Status : 2 out of 2 IBRA regions Approved  
 PCT % Cleared Status : Approved PCT Threatened Ecological Communities Association Status : 18/06/2015  
 Classification confidence level : 3 Medium Authority : PADACS - archive

Vegetation community details Scientific description Distribution information Extent Threatened Biodiversity, TECs & Benchmarks Spatial information Image management Status, Lineage history

**Species by Stratum**

Guide to [Structural Terms](#)

Diagnostic species :  Diagnostic species are added from (and can be edited in) the species by stratum fields.

Diagnostic species method : --choose--

Species upper stratum :  Edit

- Eucalyptus botryoides (Bangalay)
- Banksia serrata (Old-man Banksia)
- Banksia integrifolia subsp. integrifolia (Coastal Banksia)
- Eucalyptus pilularis (Blackbutt)
- Angophora floribunda (Rough-barked Apple)
- Corymbia gummifera (Red Bloodwood)
- Eucalyptus robusta (Swamp Mahogany)

Species middle stratum :  Edit

- Allocasuarina littoralis (Black She-Oak)
- Breynia oblongifolia (Coffee Bush)
- Glochidion ferdinandi (Cheese Tree)
- Macrozamia communis (Burrawang)
- Platysace lanceolata (Shrubby Platysace)

Current Qualitative PCT 659

**BioNet Vegetation Classification**

HOME PCT DATA ADMINISTRATION LOGOUT LOGGED IN AS : CLASSIFICATIONEDITUSER1 (CLASSIFICATION EDIT USER)

**Plant community**  
 Edit plant community Print PCT Save

Use this page to edit a vegetation community.

PCTID : 659 VCAID : 0 PCT Name : Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion

Classification Type : Qualitative  
 PCT Definition Status : Approved PCT Benchmark Calculation level : Class/IBRA Status : 2 out of 2 IBRA regions Approved  
 PCT % Cleared Status : Approved PCT Threatened Ecological Communities Association Status : 18/06/2015  
 Classification confidence level : 3 Medium Authority : PADACS - archive

Vegetation community details Scientific description Distribution information Extent Threatened Biodiversity, TECs & Benchmarks Spatial information Image management Status, Lineage history

**Mapping**

**Plot data**

[Adequacy of plot sampling guide](#)

Adequacy plot sampling : --choose--

Total no. of replicates : 0  
 No. of Primary replicates : 0  
 No. of Secondary replicates : 0

No records found!



# Coastal Sand Bangalay Forest as an example of the change

## New Quantitative PCT 3634

**BioNet Vegetation Classification**

HOME PCT DATA ADMINISTRATION LOGOUT LOGGED IN AS : CLASSIFICATIONEDITUSER1 (CLASSIFICATION EDIT USER)

**Plant community**  
 Edit plant community  
 Use this page to edit a vegetation community. PCTID : 3634 VCAID : 0 PCT Name : South Coast Sands Bangalay Forest

Classification Type : Quantitative  
 PCT Definition Status : Draft-Working PCT Benchmark Calculation level : Class/IBRA Status : 0 out of 2 IBRA regions Approved  
 PCT % Cleared Status : Undefined PCT Threatened Ecological Communities Association Status : Undefined  
 Classification confidence level : 4 Low Authority : Eastern NSW Classification Tool Ready : No

Vegetation community details Scientific description Distribution information Extent Threatened Biodiversity, TECs & Benchmarks Spatial information Image management Status Lineage history

**Species by Growth Form Group**  
 Median Native Species Richness per plot : 30

Growth_Form_Group	Species	Median_cover_score	Frequency
Tree (TG)			
Tree (TG)	Eucalyptus botryoides	3	85
Tree (TG)	Banksia serrata	3	73
Tree (TG)	Banksia integrifolia	2	56
Tree (TG)	Eucalyptus pilularis	3	47
Tree (TG)	Allocasuarina littoralis	2	36
Tree (TG)	Angophora floribunda	3	21
Tree (TG)	Acacia maidenii	2	21
Tree (TG)	Glochidion ferdinandi	2	21
Tree (TG)	Corymbia gummifera	3	21

Community Structure  
 Descriptive Attributes  
 References

**BioNet Vegetation Classification**

HOME PCT DATA ADMINISTRATION LOGOUT LOGGED IN AS : CLASSIFICATIONEDITUSER1 (CLASSIFICATION EDIT USER)

**Plant community**  
 Edit plant community  
 Use this page to edit a vegetation community. PCTID : 3634 VCAID : 0 PCT Name : South Coast Sands Bangalay Forest

Classification Type : Quantitative  
 PCT Definition Status : Draft-Working PCT Benchmark Calculation level : Class/IBRA Status : 0 out of 2 IBRA regions Approved  
 PCT % Cleared Status : Undefined PCT Threatened Ecological Communities Association Status : Undefined  
 Classification confidence level : 4 Low Authority : Eastern NSW Classification Tool Ready : No

Vegetation community details Scientific description Distribution information Extent Threatened Biodiversity, TECs & Benchmarks Spatial information Image management Status Lineage history

**Mapping**

**Plot data**  
 Adequacy of plot sampling guide  
 Adequacy plot sampling : --choose--  
 Total no. of replicates : 58  
 No. of Primary replicates : 54  
 No. of Secondary replicates : 4

SurveyName	SiteNo	ReplicateNo	PCT Assignment Category
EA_BOOD	BD0000F1	1	Primary
EA_BOOD	BD0000F2	1	Primary
EA_BOOD	BD0000F3	1	Primary
EA_BOOD	BD0000F4	1	Primary
EA_BOOD	BD0000F9	1	Primary
EA_BOOD	BD000F18	1	Primary
EA_BOOD	BD000F19	1	Primary
EA_BOOD	BD000F20	1	Primary
ELA_GARRAD	ELAGAR01	1	Primary
ELA_GARRAD	ELAGAR04	1	Primary
ELA_GARRAD	ELAGAR05	1	Primary



# Q&A

This session will not be included in the webinar recording.

Important and frequently asked questions will contribute to the development of the [Assessor Q&A page](#), future webinars and other BOS support resources.



# Thank you for your participation

Webinar recordings will be available to view online on the BOS Vimeo Showcase at [vimeo.com/showcase/6271450](https://vimeo.com/showcase/6271450) and via the [BAM Support Webinar webpage](#)

Contact us at [www.environment.nsw.gov.au/biodiversity/bos-help-advice](http://www.environment.nsw.gov.au/biodiversity/bos-help-advice)