

11 – 16 April 2010

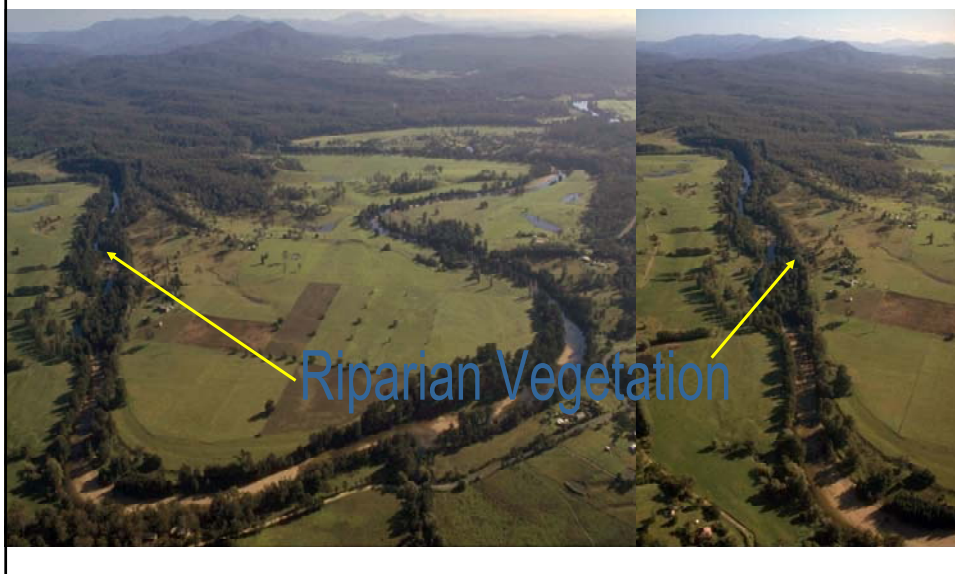
Building the capacity to access spatial information about the extent of riparian vegetation in New South Wales, Australia

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What is riparian vegetation???



Objectives

- Extract extent of riparian vegetation within 30m of stream orders ≥ 3
- Develop additional stream order data for state
- Generate riparian vegetation statistics
- Assess accuracy of derived products including the riparian buffers

Why NSW Office of Water has undertaken this project?

- Riparian vegetation provides important functions for the health of river ecosystem, such as
 - Improving water quality
 - Reducing stream bank erosion
 - Terrestrial habitat for biodiversity
- Government agencies require better information to plan and manage riparian conservation and restoration works along rivers.

Rationale

- Enable community access to riparian vegetation spatial information
- Monitor riparian vegetation condition
- Generate statewide spatial datasets of riparian vegetation
- Set baseline for riparian vegetation extent
- Tool for regional reporting

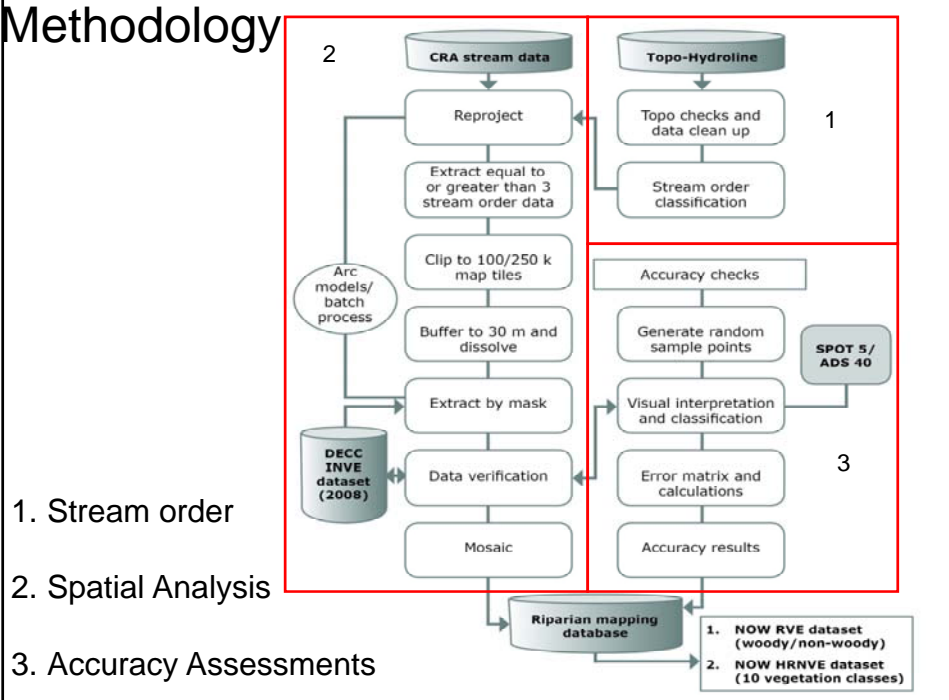
Primary Data Sources

- Interim Native Vegetation Extent layer (DECC, 2008)
- Coastal stream order data
- New stream order data generated from LPMA Topo-Hydroline
- Best available imagery - SPOT5 satellite, ADS40 aerial

Why use INVE layer?

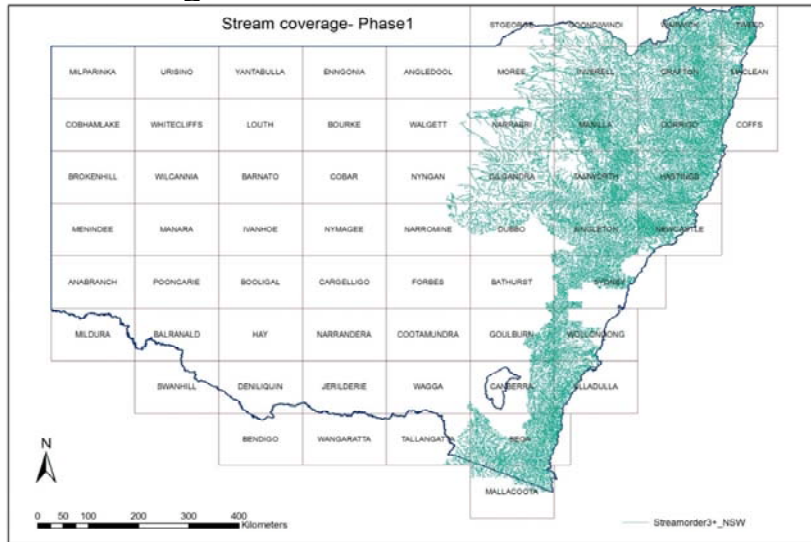
- Interim Native Vegetation Extent layer (DECC, 2008)
 - Statewide vegetation extent layer
 - Landsat 25m resolution
 - Readily available statewide dataset
- Consistent vegetation reporting
- Time series potential

Methodology



Data Issues

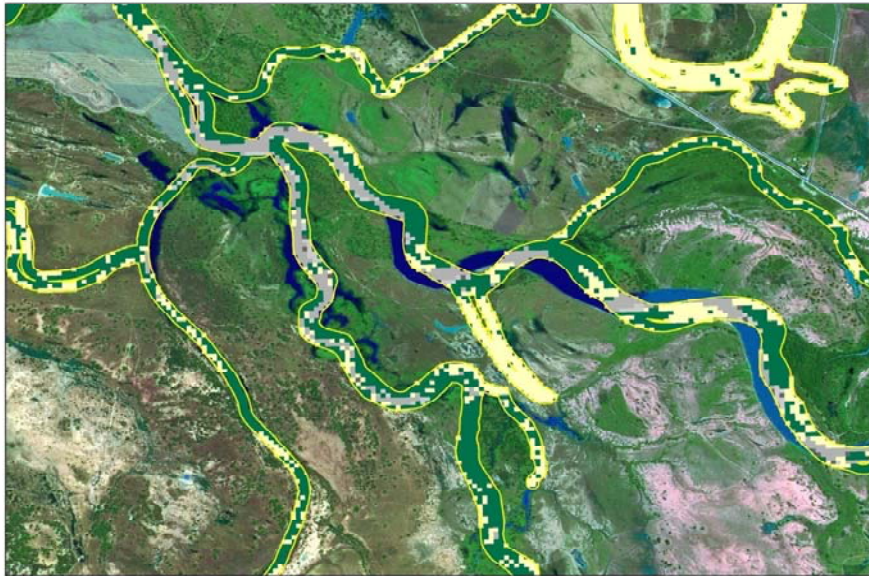
- Coverage and Stream order



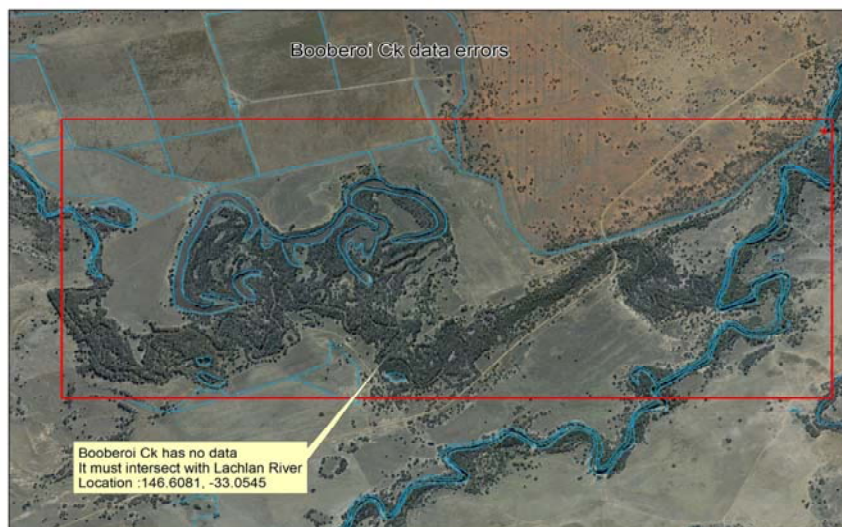
Geometry



Errors in riparian extraction

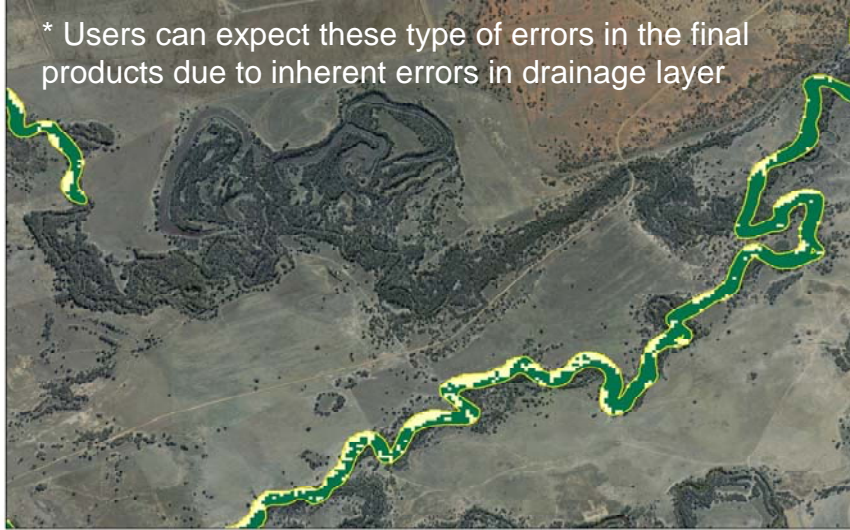


Missing drainage data



Missing riparian data

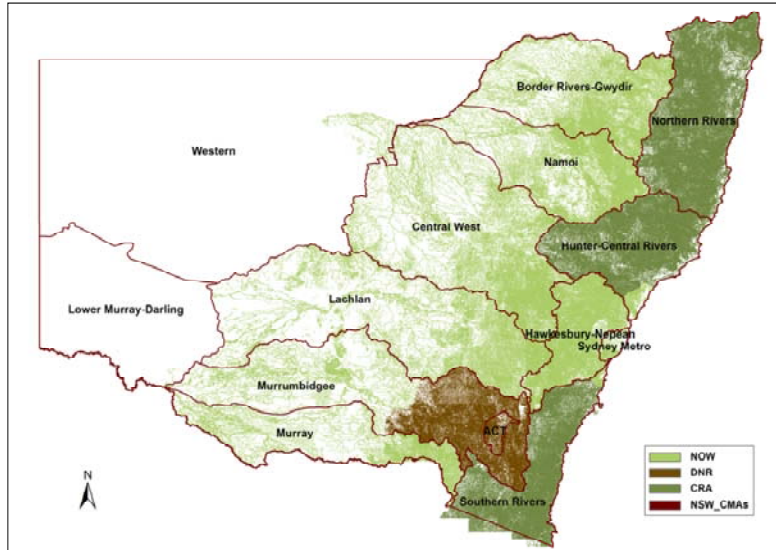
* Users can expect these type of errors in the final products due to inherent errors in drainage layer



Riparian Vegetation products

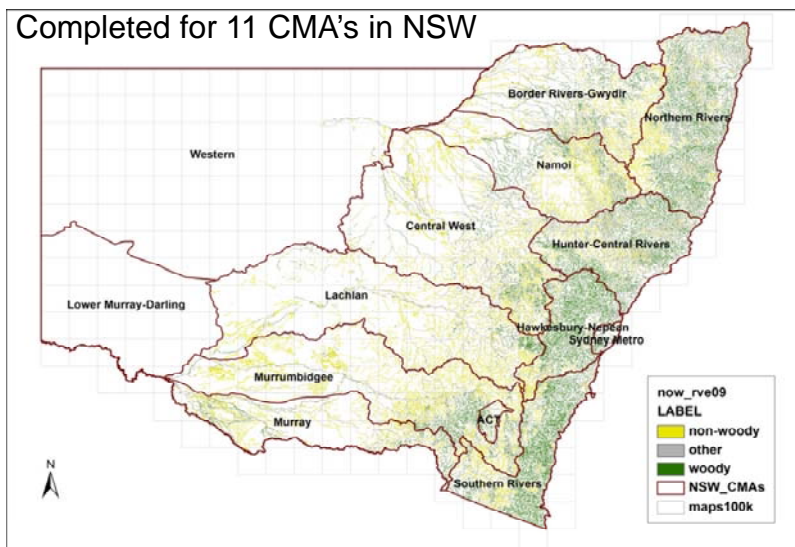
- Riparian Vegetation Extent
- Enhanced stream order data coverage
- Riparian vegetation statistics
- Accuracy assessment values

Enhanced stream order coverage for NSW



Riparian Vegetation Extent

Completed for 11 CMA's in NSW



Riparian Veg Classes

1. NOW RVE

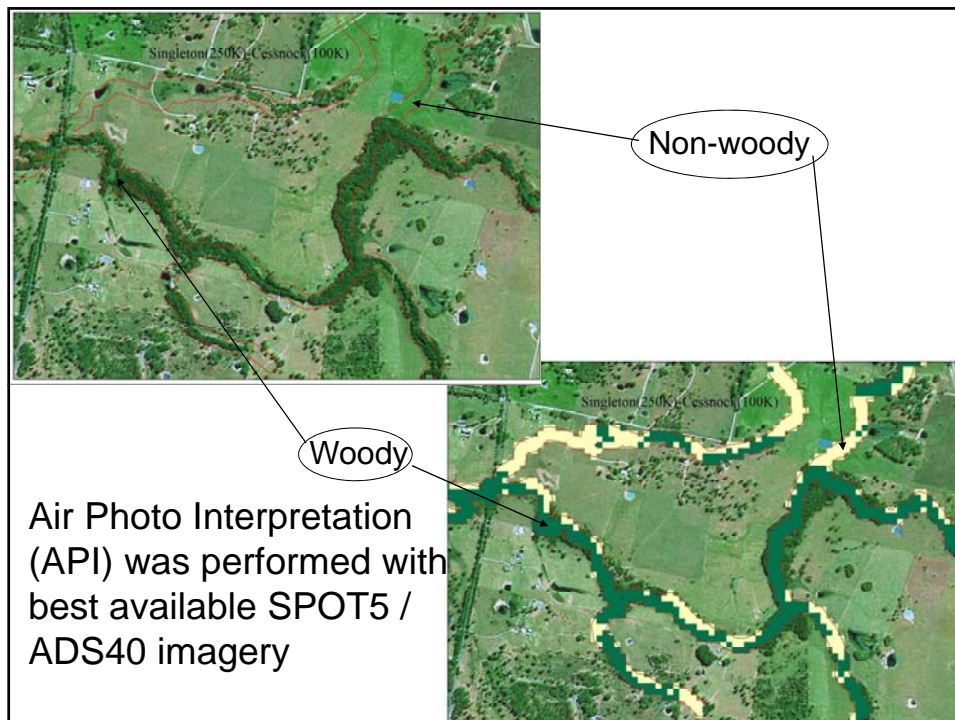
CODE	LABEL
3	woody
7	non-woody
0	other

2. NOW HRNVE

CODE	LABEL
0	other
1	non-woody - (most likely) native
2	non-woody - (most likely) non-native
3	non-woody - (likely) native
4	non-woody - (likely) non-native
5	non-woody (K&S) - native
6	woody - (most likely) native
7	woody - (most likely) non-native
8	woody - (K&S) native
9	woody - (likely) native
10	woody - (likely) non-native

Accuracy Assessments



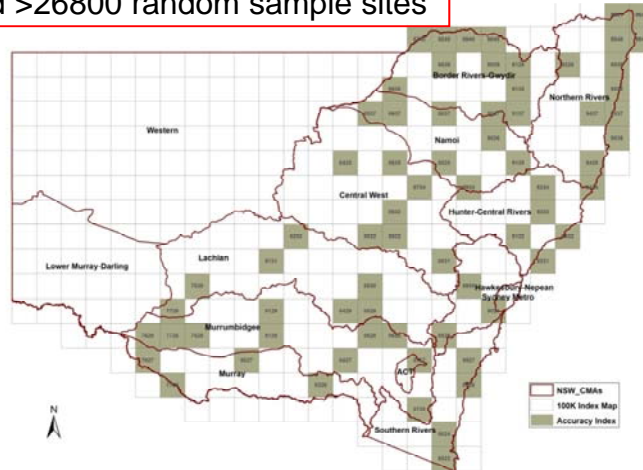


Accuracy results

- Accuracy values can be used for INVE data updates
- Provide substantial savings in time to improve the future products
- Accuracy database to improve the drainage layer
- Accuracy reports that value-add to the DECCW and NOW datasets.

Accuracy Coverage Index

➤ Verified >26800 random sample sites



Accuracy values cover 73 (1:100,000 topographic maps) in NSW

Accuracy report

100k Maps	Total Random Samples	Producers Accuracy		Users Accuracy		Overall Accuracy	Errors of Commission		Errors of Omission	
		Woody	Non-Woody	Woody	Non-Woody		Woody	Non-Woody	Woody	Non-Woody
Ashford	401	79.8%	87.9%	78.7%	88.6%	85%	21.5%	11.2%	20.1%	12%
Ballina	92	60.8%	79.7%	50%	85.9%	75%	60.8%	13%	39.1%	20.2%
Barepoint	240	79.6%	82.2%	84.8%	76.5%	80.8%	14.2%	25.2%	20.3%	17.7%
Boomi	160	50%	96.7%	28.5%	98.6%	95.6%	1.2%	1.2%	50%	3.2%

Riparian buffers assesment

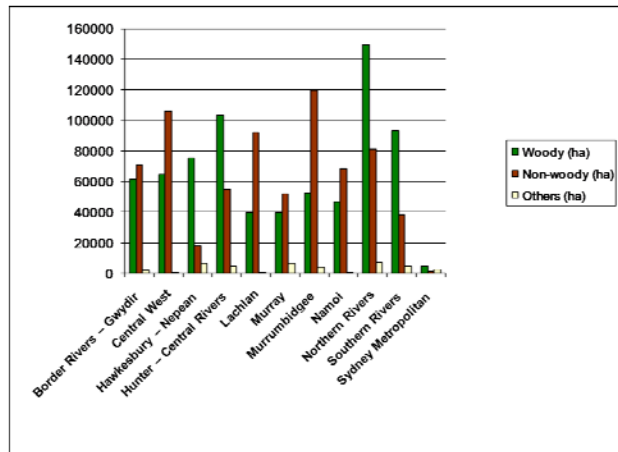
1:100,000 topographic maps	Exact (%)	Over (%)	Under (%)
Lake Macquarie_9231	88.0	11.1	0.0
Bathurst_8831	91.3	7.8	1.0
Mendooran_8734	88.8	6.6	4.6
PeakHill_8532	92.0	4.8	3.3
Cessnock_9132	94.0	3.7	2.2
Dubbo_8633	88.7	8.2	3.0

Extent of Woody/Non-woody Riparian Vegetation

CMA	Riparian (ha)	Woody (ha)	Woody (%)	Non- woody (ha)	Non- woody (%)	Other (ha)	Other (%)	Coverage
Border Rivers – Gwydir	134403.9	61424.9	46.8	71096.9	52.9	1882.1	1.4	Full
Central West	171389.6	64510.5	37.6	106002.9	61.8	876.2	0.5	Full
Hawkesbury – Nepean	100101.8	75791.6	75.7	18124.2	18.1	6186.0	6.2	Full
Hunter – Central Rivers	163490.7	103843.4	63.5	55054.3	33.7	4592.9	2.8	Full
Lachlan	132627.9	39881.5	30.1	92087.8	69.4	658.6	0.5	Full

Statistics generated for 11 CMA's as a part of evaluation

Extent of Woody/Non-woody in 11 CMA's



Extent of Native riparian vegetation

CMA	Border Rivers – Gwydir		Namoi	
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
Non-woody—(most likely) native	38055.1	28.3	44350.4	38.5
Non-woody—(most likely) non-native	9217.4	6.8	7824.1	6.8
Non-woody—(likely) native	19655.4	14.6	14244.4	12.4
Non-woody—(likely) non-native	3980.8	3.0	2036.2	1.8
Non-woody—(K&S) native	2.3	0.0	3.4	0.0
Woody—(most likely) native	25931.9	19.3	18798.7	16.3
Woody—(most likely) non-native	56.6	0.0	113.0	0.1
Woody—(K&S) native	311.3	0.2	127.5	0.1
Woody—(likely) native	34960.1	26.0	27595.3	23.9
Woody—(likely) non-native	39.1	0.0	6.8	0.0
Other	2351.8	1.7	212.6	0.2
TOTAL	134561.6	100	115312.5	100

Conclusions

- For the remainder of the state
 - Generate stream order classification
 - Complete riparian veg extent
 - Accuracy checks
- Investigate use of high resolution imagery to enhance the baseline riparian vegetation layer
- Generate an accurate drainage layer for NSW
- Drainage layer must have stream order classification and improve network connectivity and geometry.