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## **Mapping Riverine Habitat with High-Resolution Imagery**

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# Study team

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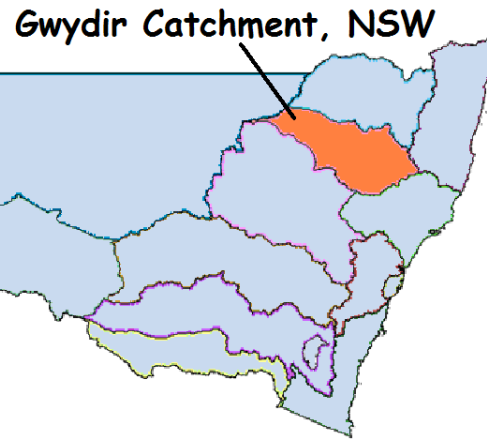
# Project Aim

To determine optimal methods for monitoring the interaction between flow variability, in-channel habitat inundation and ecological response.

Phase 1: High-resolution 3D mapping of riverine habitat features

# Location

Mid-Gwydir River, NSW



# How and how well can we map riverine habitats

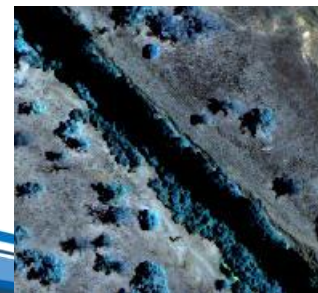
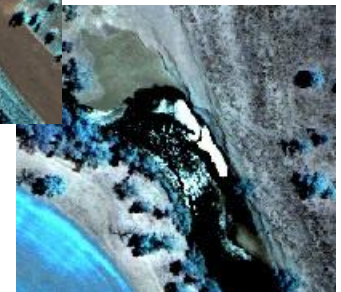
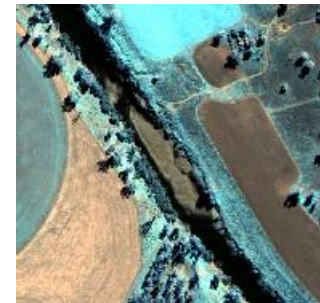
## Data

- Quickbird imagery (at 5 flow levels)
- DGPS mapping
- Cross-sections



## Methods

- Co-register images (quantify problems)
- Trial analysis and mapping techniques
- Quantify results



# Results

## Registration

- Without ortho-rectification – **good registration can be achieved by picking ground control points along the river, not spread about the image.**

## Mapping using Quickbird

Image	Benefits	Limitations
<i>Multispectral (MS)</i>	Feature spectral qualities readily discerned	Spatial resolution Inundation extent inaccurately estimated due to satellite view angle distortions
<i>Normalised difference water index (NDWI)</i>	Automated classification of inundation extent	
<i>Density sliced</i>		
<i>Panchromatic (Pan)</i>	Higher spatial resolution Greater accuracy delineating features	Spectral qualities of features more challenging to discern
<i>Pansharpened (Brovey Transform)</i>	Advantages of Pan image yet spectral qualities also readily discerned Feature distortion due to view angle more easily controlled for	Only LWD >5m in length could be delineated from Quickbird imagery, due to low contrast with background habitat

# Conclusions

Quickbird sequences can be used to provide high-resolution habitat maps.

These data can be used to accurately map:

- water level
- sand bars
- trees in the riparian zone

However, LWD and vegetated benches were difficult to map reliably without field data.

