



Basal Area from Photopoints.....

Is it possible?

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www.tern.org.au

TERN Ausplots

Ways it is currently obtained

Basal Wedge

DBH Measurement

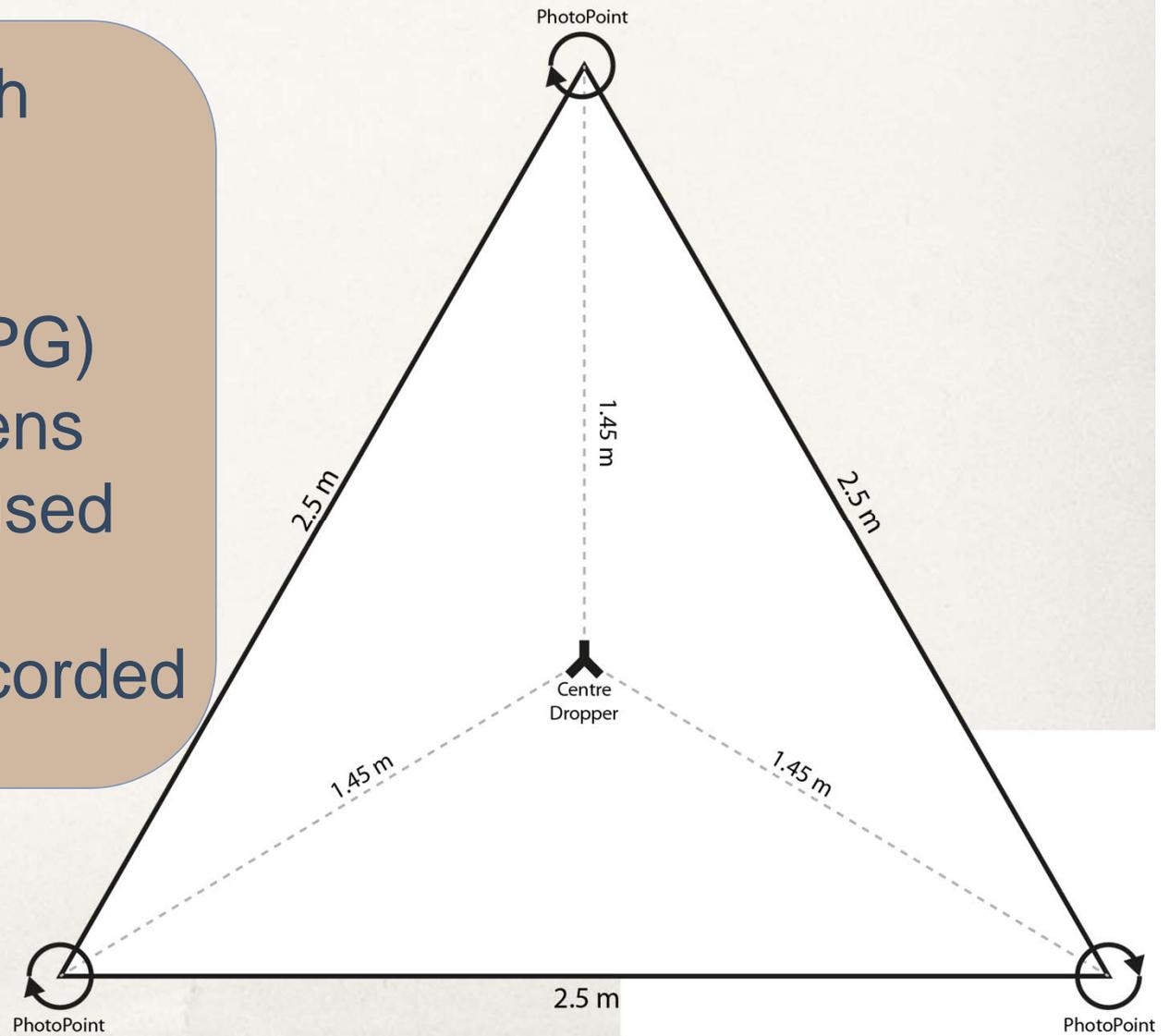
Terrestrial LiDAR



An Alternative: A New Photopoint method

Photo Layout

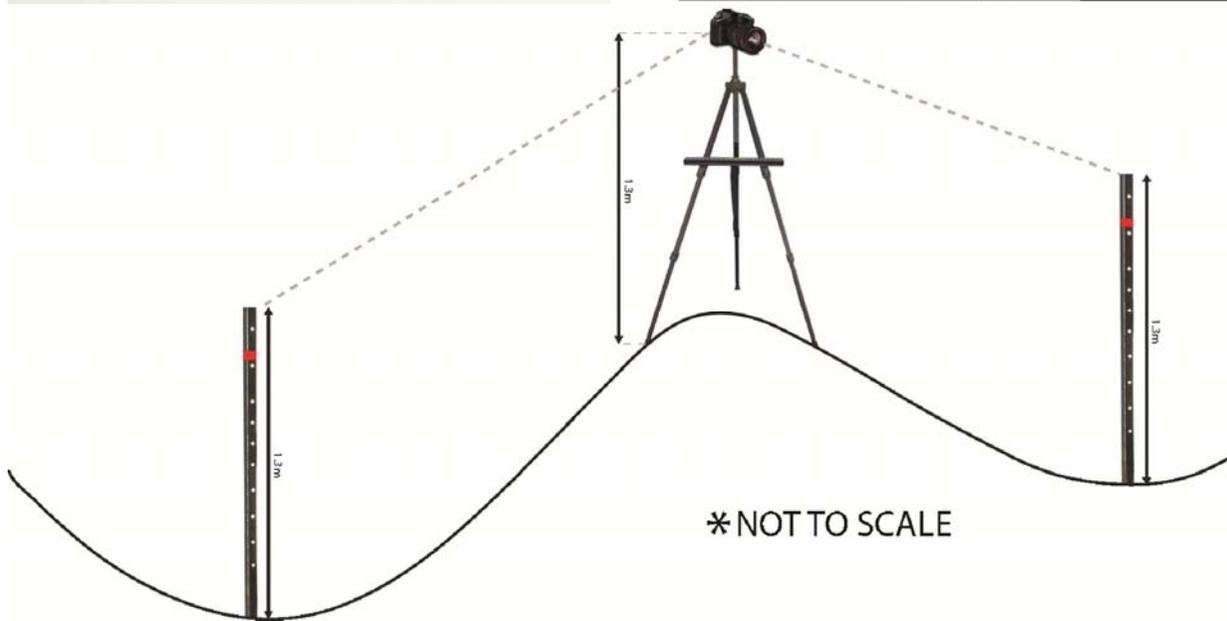
- 24mm Focal Length
- Aperture = F11
- ISO 100
- Raw Format (+/- JPG)
- 1.3m to centre of lens
- Calibration target used
- 2.5m Baseline
- DGPS Location recorded



A New Photopoint method

The Tripod

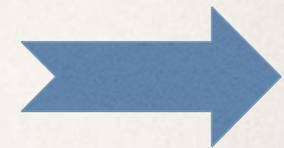
Tripod and Star
Picket setup



If terrain not flat then
attempt to copy the
average slope.

A New Photopoint method

Raw outputs

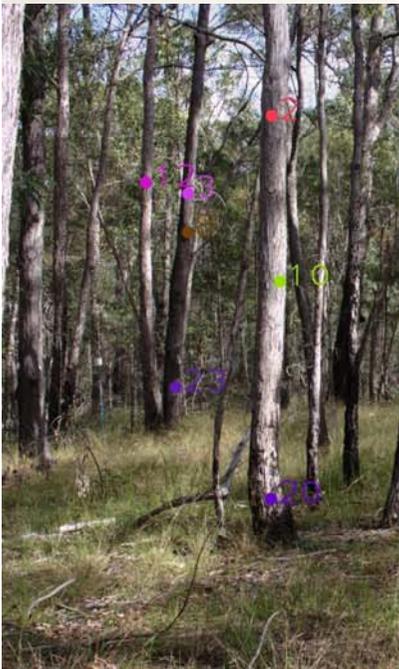


ETC.

The Scene Reconstruction Process

Identifies Like features in images pairs
Uses this to calculate camera location

Using Camera location information projects information into 3d space



DBH Calculations

Trunks then identified Spectrally, but including 3D information

A Cylinder is fitted to each trunk

The Cylinder is cut at 1.3m (DBH) and the area of the cross section is calculated (DBH for the individual tree)

These DBH's are then summed for the whole site.

Currently has a max depth of view, but improvements being worked on.



Trunk Identification and Basal area calculation



Tree Number	M ²
0	0.217951
1	0.265467
2	0.049395
3	0.147526
4	0.107676
5	0.0922043
6	0.184324
7	0.205605
8	0.256496
9	0.310039
10	0.0370053
11	0.265851
12	0.165407
13	0.252271
14	0.15115
15	0.164469

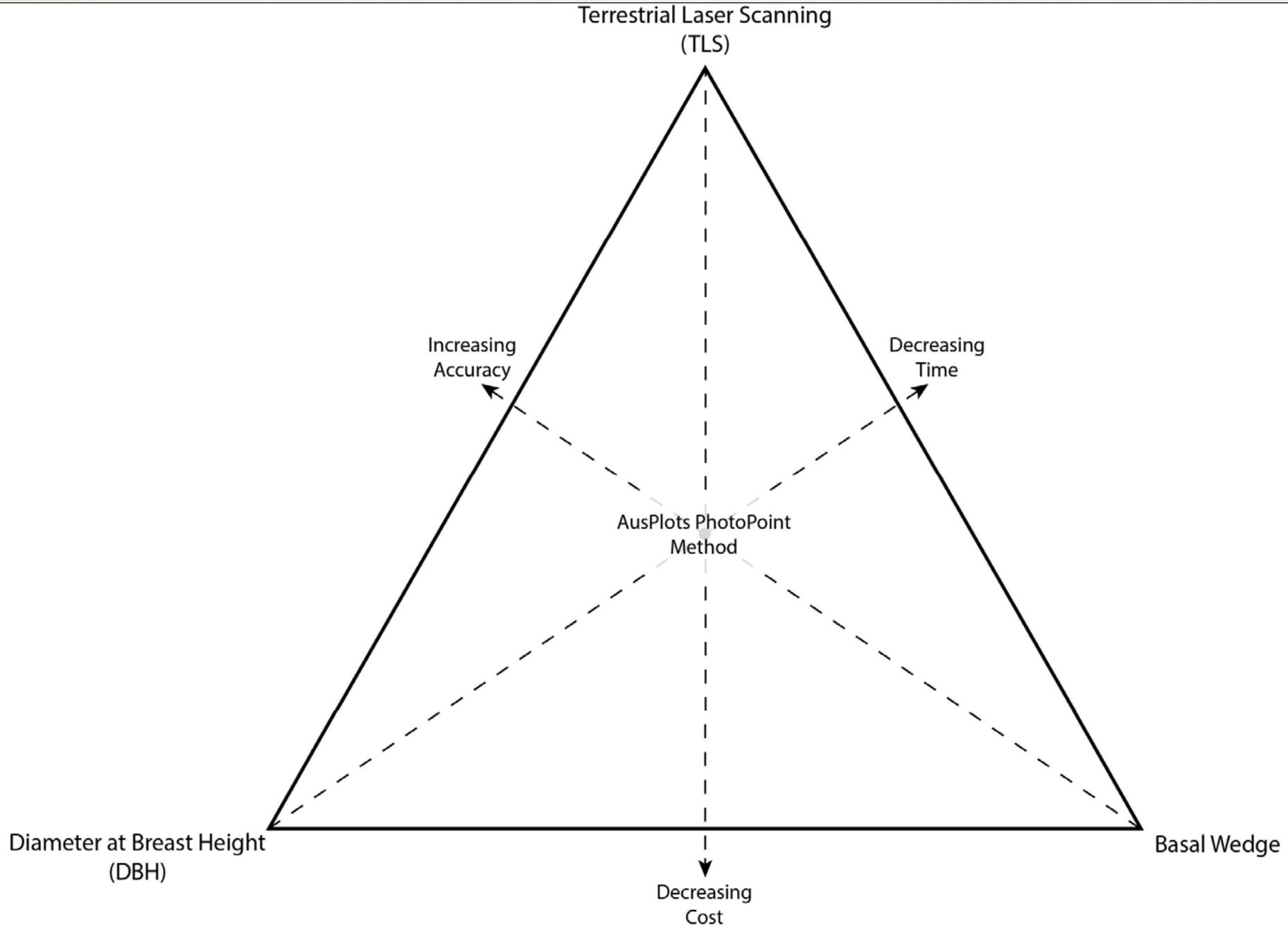
Other outputs: pointclouds



Other Outputs: Panoramas



Benefits



Benefits

Method	Cost Equipment	Cost Staff	Time	Accuracy
Direct Harvesting	*	***	***	***
Basal Wedge	*	*	*	*
DBH measures	*	***	***	***
LIDAR	***	***	***	***
Photopoints	**	*	*	**

Future work

Take account of Occlusion

Trial and accuracy assess in a variety of ecosystems

Determine method variation needed for different environments

Automate processing (Work Commenced)

– Submission for the public using a web interface

Manage Huge Datasets

Process our archive of 300+ Sites

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Thanks to Co-authors/ More Information:

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Field Application – Nikki Thurgate and Andrew Lowe.

Combination with Lidar – John Armston, Mick Schaefer,
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