

Supplementary Material

Individual tree detection and classification from RGB satellite imagery with applications to wildfire fuel mapping and exposure assessments

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Supplementary Tables

Table S1: Manual annotation breakdown

Tile ID	Annotation Count
Bragg Creek	
BC1	576
BC2	389
BC3	486
BC4	928
BC5	118
Redwood Meadows	
RW1	412
RW2	284
RW3	258
RW4	295
RW5	201
Seba Beach	
SB1	609
SB2	894
SB3	465

Table S2: Training details and hyperparameters

	Parameter	Pretraining Value	Training Value	Notes
Training	Epochs	200	500	The maximum number of epochs the model trains for
	Patience	200	200	If no improvement is seen for 50 consecutive epochs, training is stopped early
	Optimizer	SGD	SGD	Stochastic Gradient Descent
	Initial Learning Rate	0.01	0.01	Learning rate to aid in convergence
	Image Size	800	800	Image size in pixels
	IoU	0.5	0.5	Threshold for non-max suppression
	Batch Size	8	8	Number of samples per pass
Augmentations	Vertical Flip	0	0	Probability of vertical flip
	Horizontal Flip	0.5	0.5	Probability of horizontal flip
	HSV (Hue)	0.015	0.015	Amount of hue variation (affecting colors)
	HSV (Saturation)	0.7	0.7	Amount of saturation variation (affecting intensity)
	HSV (Value)	0.4	0.4	Amount of value variation (affecting brightness)
	Translation	0.1	0.1	Fraction of image size to translate the image by
	Scale	0.5	0.5	Scales the image to build robustness to objects of different sizes
	Mosaic	1	1	Combines training images into a larger composite

Table S3: Land cover proportion bins from Beverly *et al.* (2010)

Exposure Class	Proportion of Hazard Fuel Landcover
Nil	0
Low	> 0 - 0.15
Moderate	0.15 - 0.30
High	0.30 - 0.45
Extreme	> 0.45

Supplementary Figures

SB1

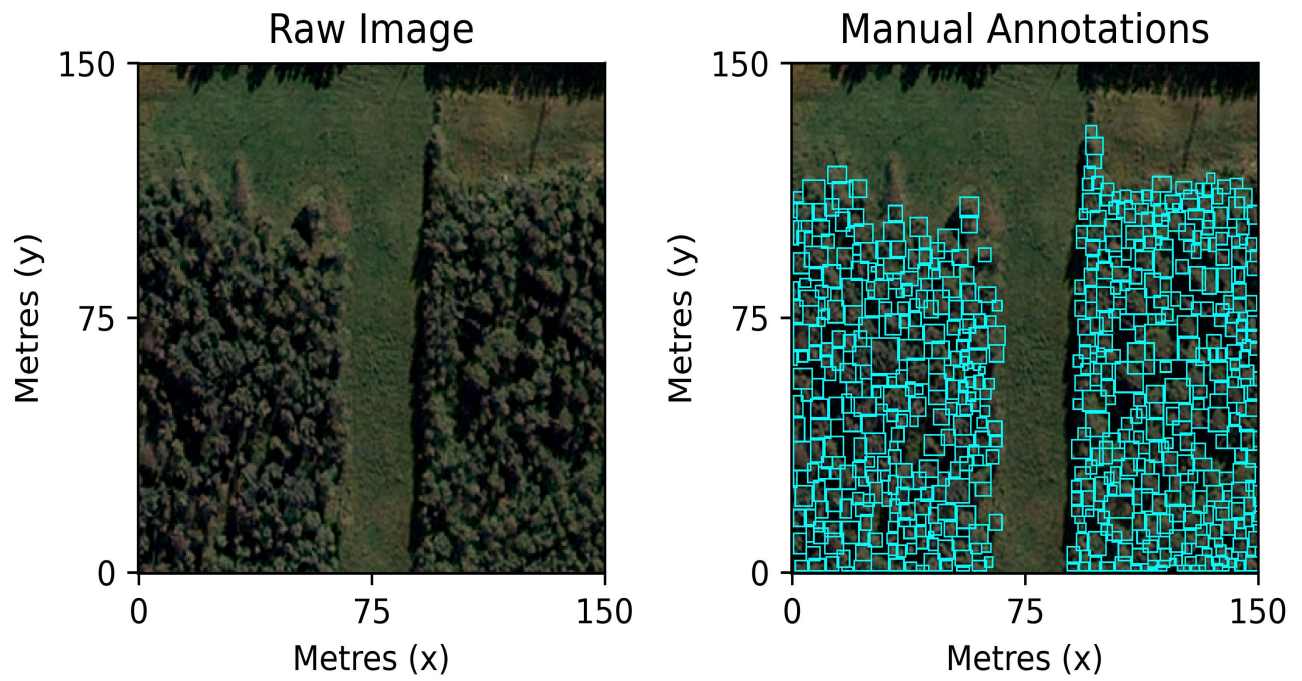


Figure S1: Sample of manual annotations.

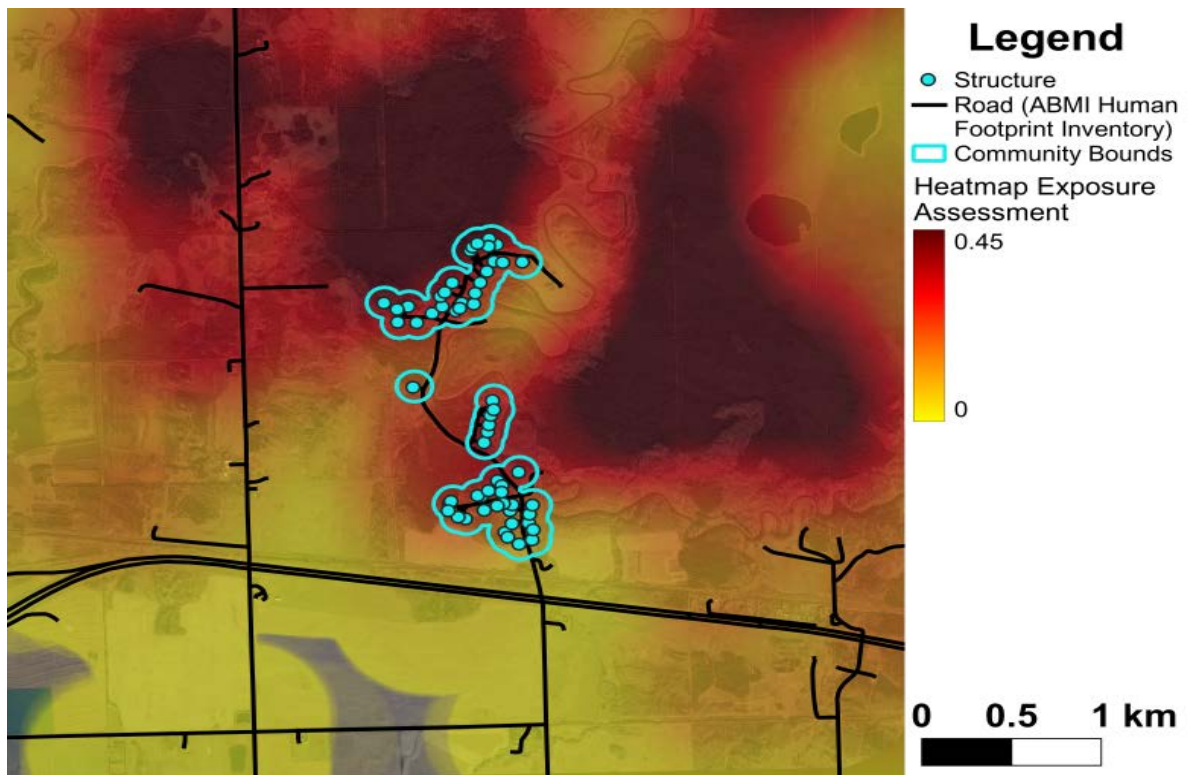


Figure S2: Exposure to long-range spotting for entire area.