

# Biodiversity map

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Finland is a country covered in forests.

People value forests for different reasons: as material, an energy source, recreation and for their natural values

→ Forest conflicts



Focus: Central Finland

National Land Survey's laser scanning point clouds

Old-growth conservation areas from the Finnish Environment  
Institute & the Centre for Economic Development, Transport and  
the Environment

Areas in forestry use from the Finnish Forest Centre

# Laser scanning data



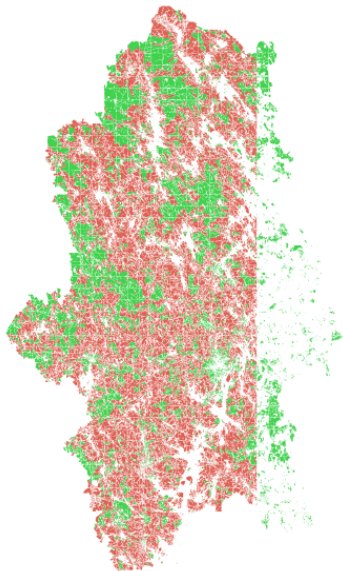
# Laser scanning data



# Conservation areas



# Forest Mask



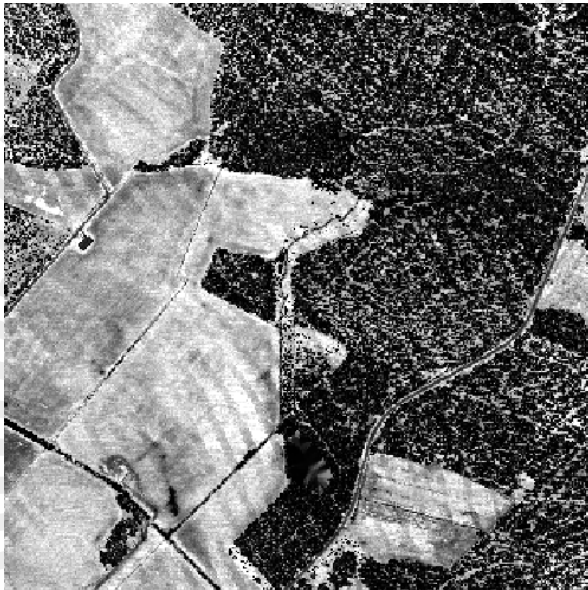


Transforming point clouds into variables of forest structure

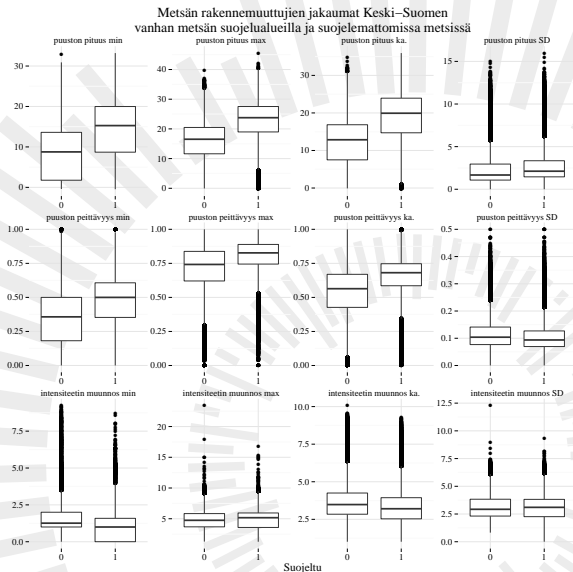
Fitting a MaxEnt model with old-growth conservation areas as "presences"

Projecting the model to other forests to identify "old-growth conservation area-like" forests

## Variables of forest structure



# Variables of forest structure



## MaxEnt model

Variable	Percent contribution	Permutation importance
mh_minimum	62.9	7.7
cc_average	10.6	11.1
mh_average	8.4	73.1
cc_maximum	7.9	0.7
cc_minimum	6.5	0.7
in_minimum	2.5	5.7
mh_stddev	1	0
cc_stddev	0.1	0.8
mh_maximum	0.1	0
in_average	0	0
in_maximum	0	0
in_stddev	0	0



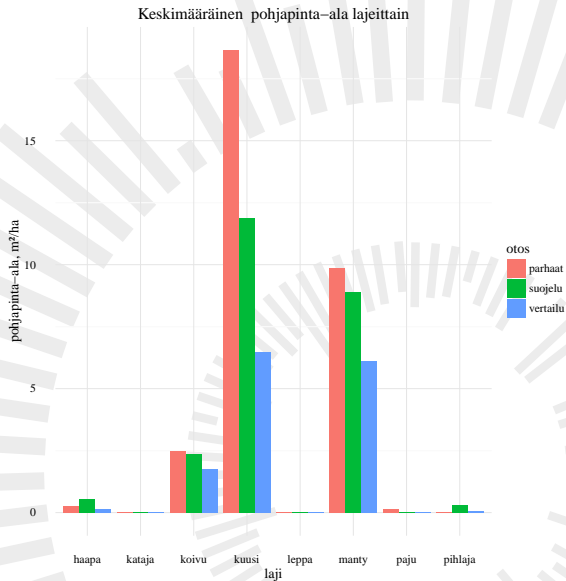
# Validation



Basal area for dead and alive standing trees

Lying deadwood on transects: count, diameter, stage of decay

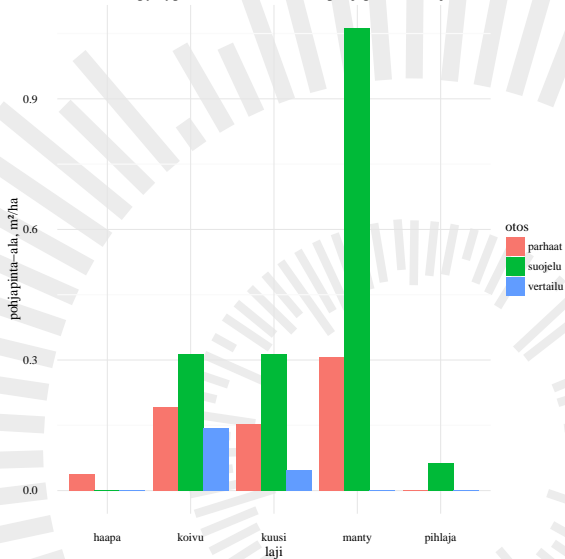
# Results



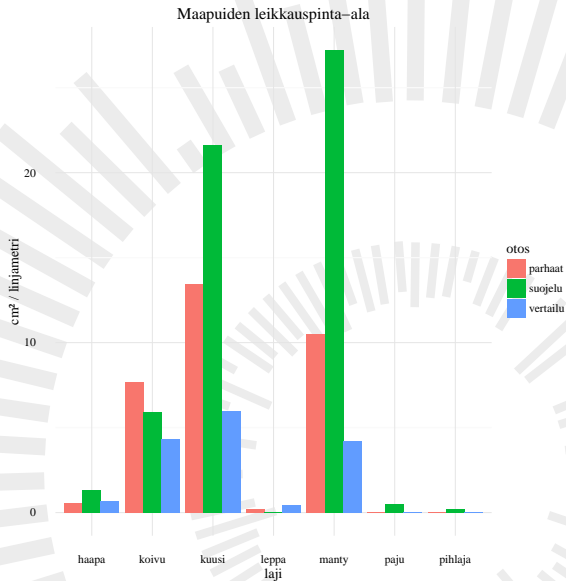


# Results

Kuolleiden pystypuiden keskimääräinen pohjapinta-ala lajeittain

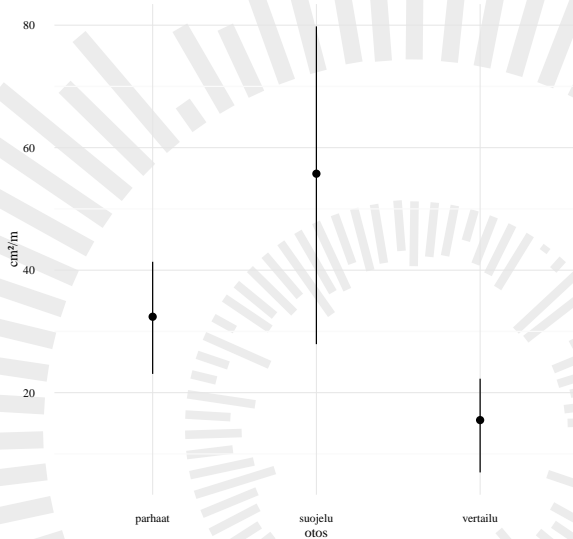


# Results

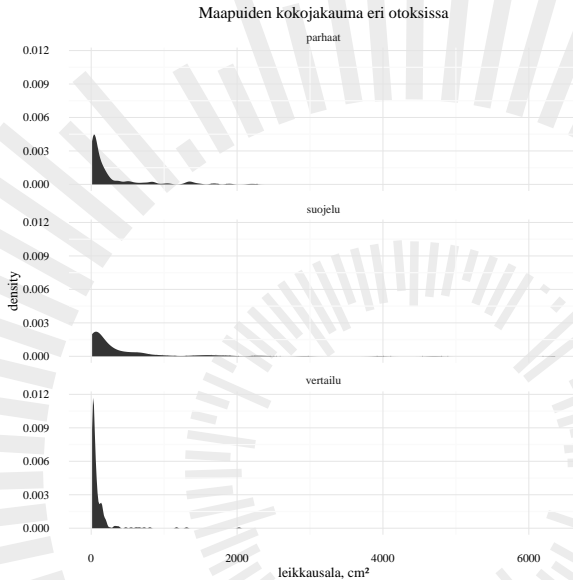


# Results

Keskimääräinen maapuiden leikkausala/linjametri eri  
otoksiin kuuluvilla mittauspisteillä

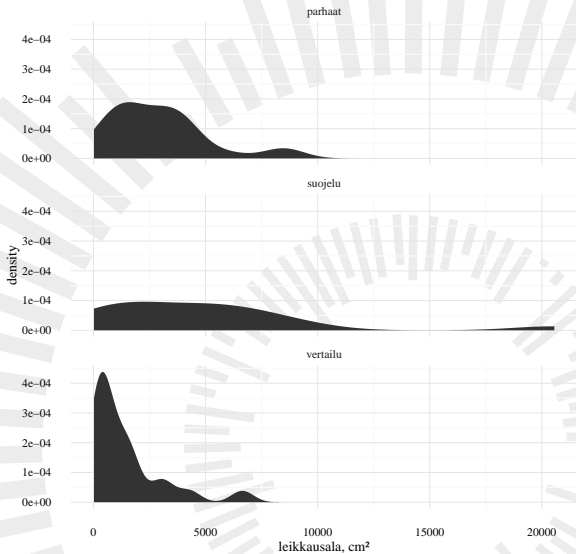


# Results

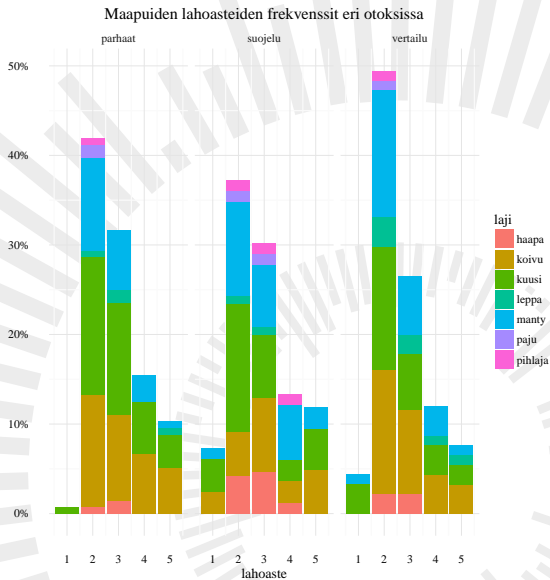


# Results

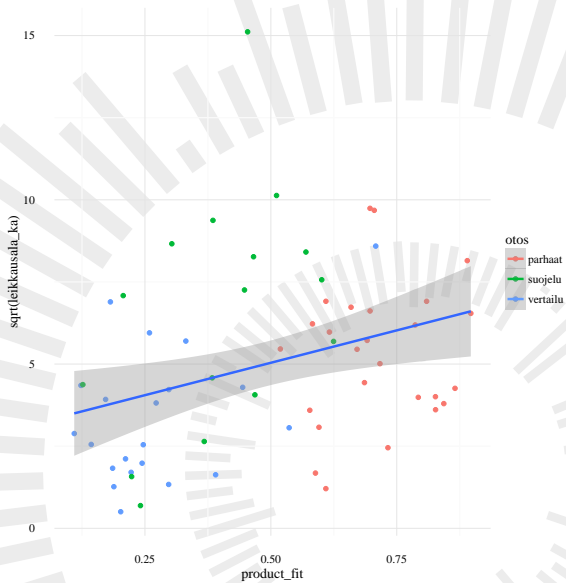
Maapuuleikkausalojen jakauma eri otoksissa



# Results



# Results



# Results

A single prediction point is not very accurate.

However, large contiguous areas with high predicted values had significantly more deadwood than random forests.

Protected areas still had the most deadwood of all.

Validation sampling did not focus on forests with absolutely highest predicted values.



# Results

Results of the project are free to use by all.

<http://fi.okfn.org/projects/biodiversity-map/>

<https://zenodo.org/record/163765>