NACIONĀLAIS ATTĪSTĪBAS PLĀNS 2020

EIROPAS SAVIENĪBA
Eiropas Reģionālās attīstības fonds

IEGULDĪJUMS TAVĀ NĀKOTNĒ

LATVIJAS VALSTS MEŽI

SILAVA

Carbon, diversity indicators and structure of old-growth stands: what do we actually know?

Āris Jansons,

Laura Ķēniņa, Oskars Krišāns, Endijs Bāders, Māra Kitenberga, Guntars Šņepsts, Andis Lazdiņš, Raitis Riekstš-Riekstiņš, Roberts Matisons, Didzis Elferts, Juris Katrevičs, Jānis Donis, Andis Adamovičs, Una Neimane, Mārtiņš Zeps, Valters Samariks, Anete Garanča, Daiga Zute, Silva Sēnhofa

Online conference
Old-growth forests in the context of climate policy: information for decision-makers
16th of December 2021

Assessment of old-growth stands in Latvia

- *Stands*: 82 (507 plots);
- *Age:*

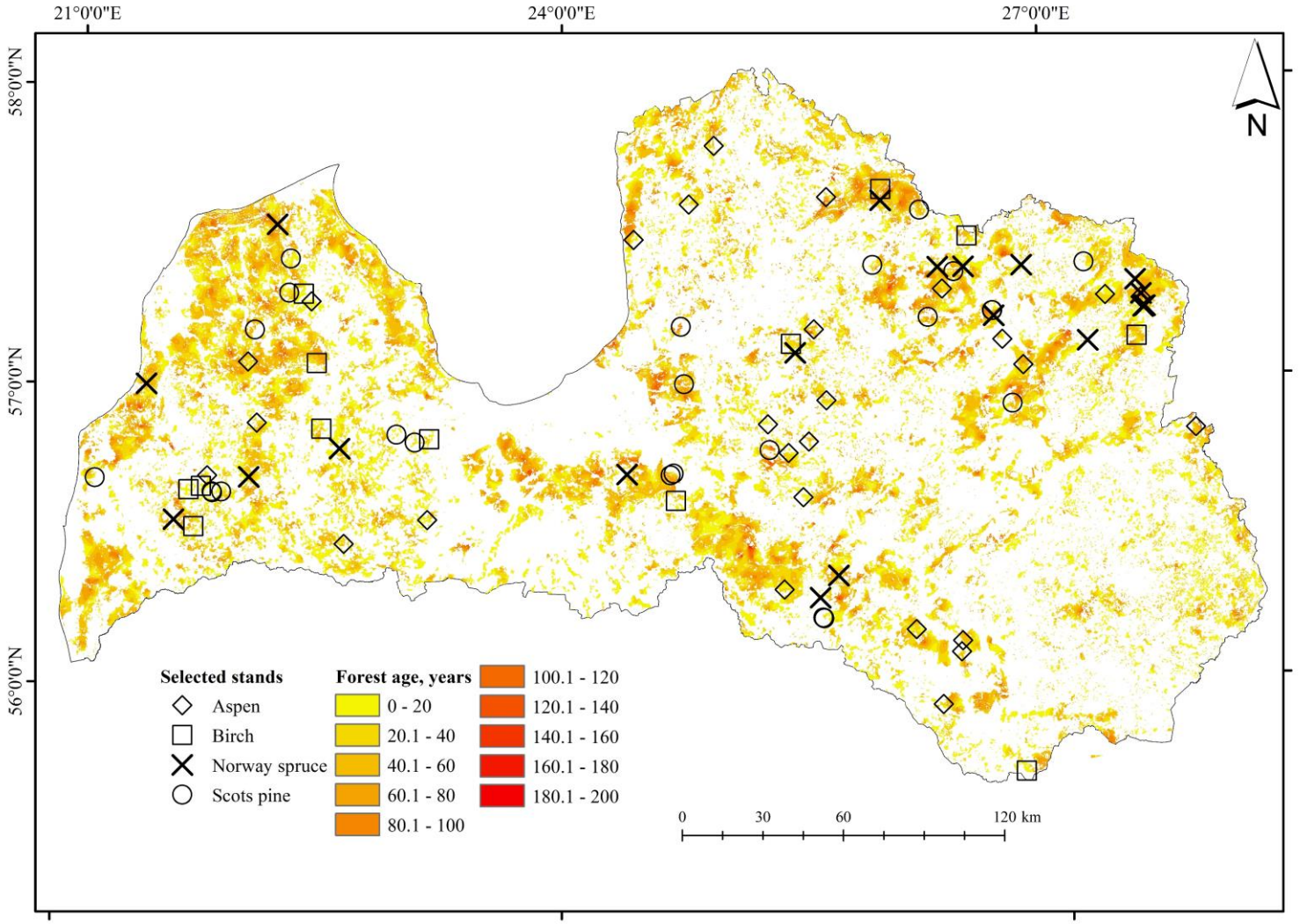
Pine 163 - 218 years
Spruce 170 - 205 years
Birch 123 - 148 years
Aspen 104 - 135 years

- *Forest on mesotrophic and oligotrophic mineral soils:* Dm, Vr.

- *Dominant species and age class*

> 50% from basal area of first layer;

Thus we are assessing the maximum, rather than the average: the specific case, where old-trees dominate the old-growth forests



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Assessment of old-growth stands in Latvia

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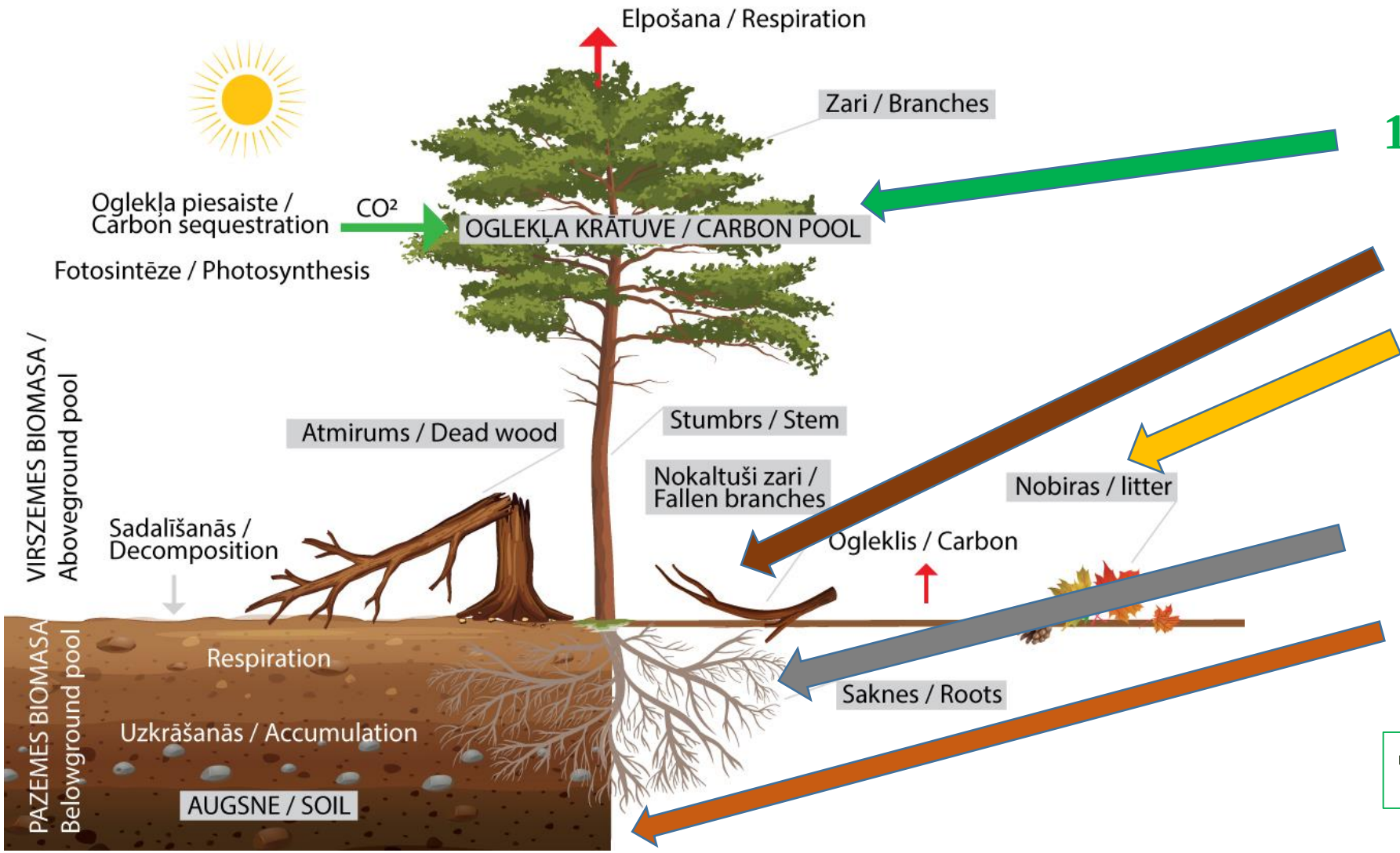

137 ± 6,7 C t ha^{-1}

12 ± 1,4 C t ha^{-1}

18 ± 2,9 C t ha^{-1}

36 ± 1,4 C t ha^{-1}

109 ± 18,5 C t ha^{-1}

Total: 313 C t ha^{-1}

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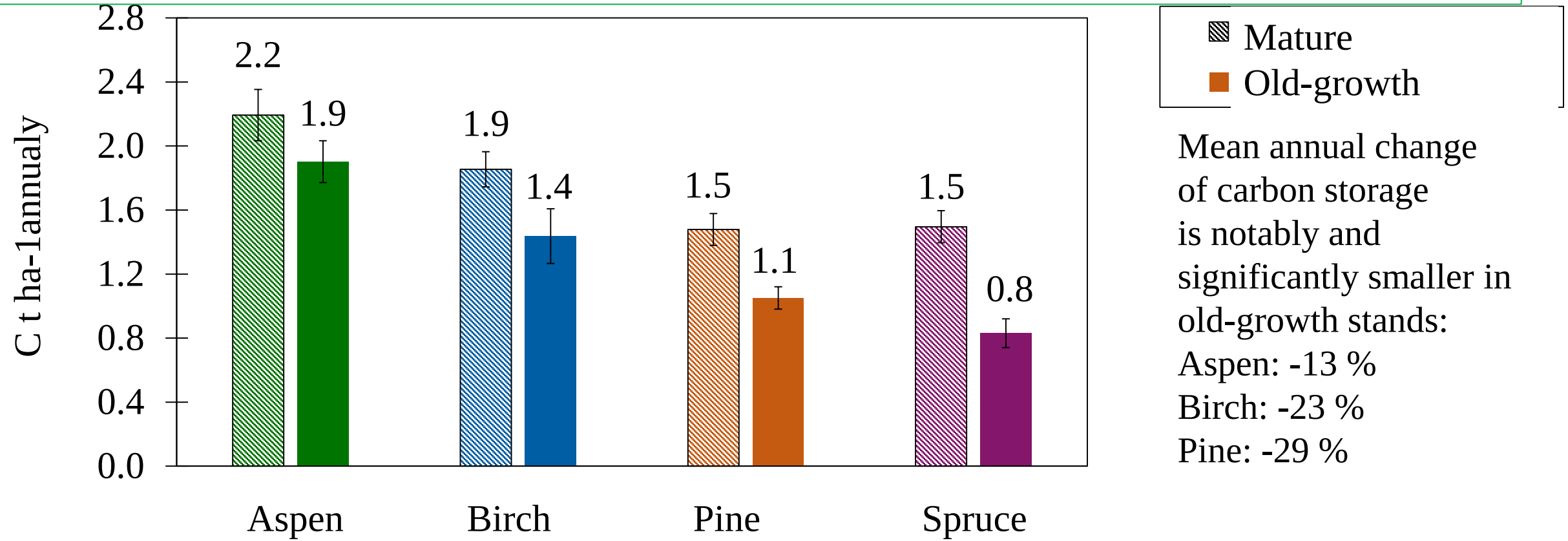
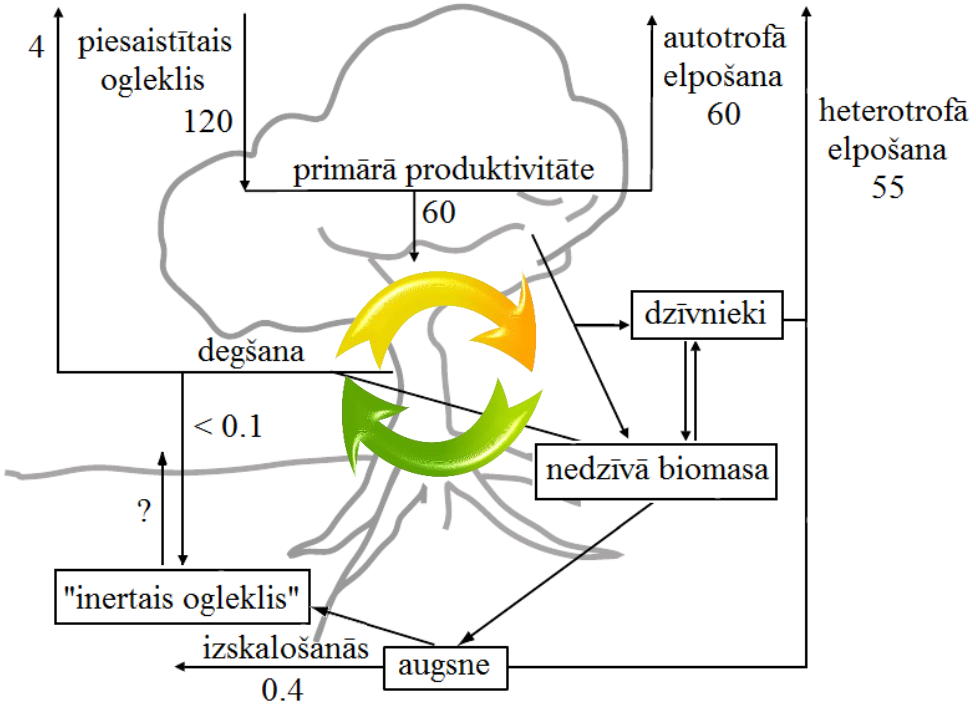
Close to double the age had resulted in 20-40% increase in biomass and 20-38% increasing in deadwood carbon. Soil: fluctuations in ±10%.



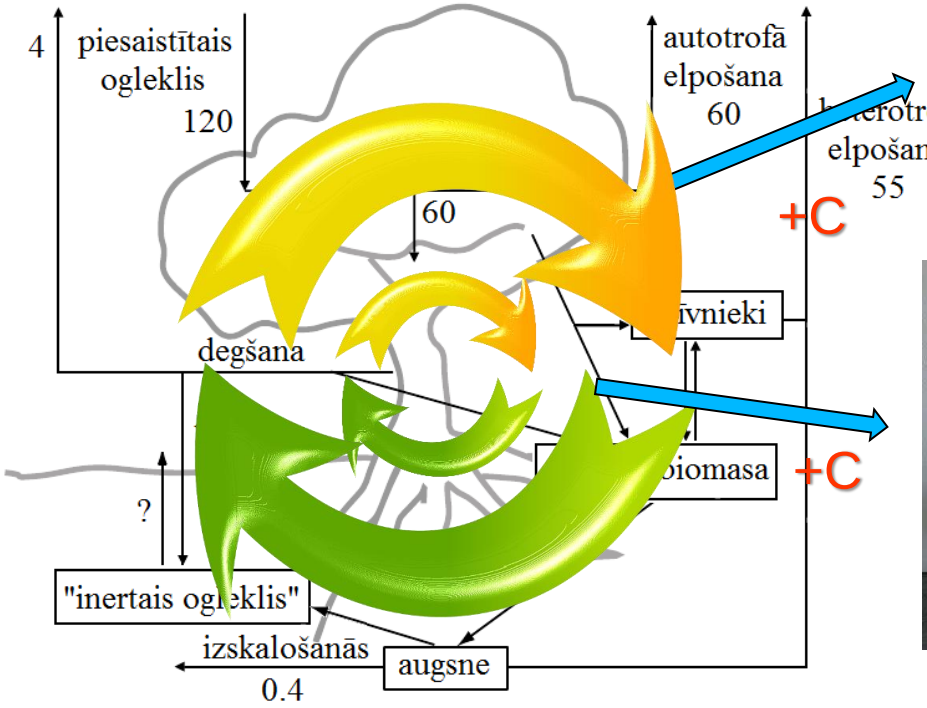
Mean annual change of carbon storage is notably and significantly smaller in old-growth stands:
Aspen: -13 %
Birch: -23 %
Pine: -29 %

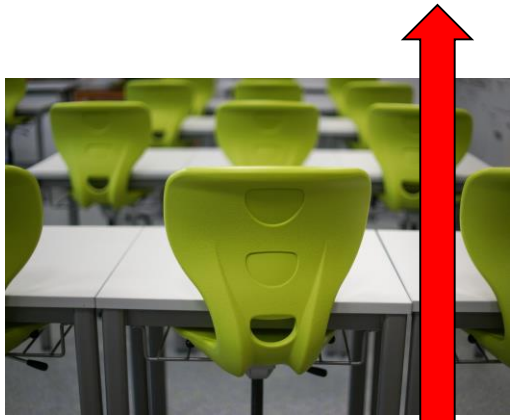
No-management is not an efficient mechanism to reach or sustain climate neutrality: the state, where current emissions are in balance with current sequestration (even if excluding the climate-amplified natural disturbances from the assessment)

How to increase climate change mitigation effect?



How to increase climate change mitigation effect?
Increase the carbon circle and do not add new fossil carbon into atmosphere





- Storage in forest (assessed per unit of time)
- Storage in products (assessed in volume and type):
  a) in products
  b) replacement effect (substitution)

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Stand (per ha of land) perspective

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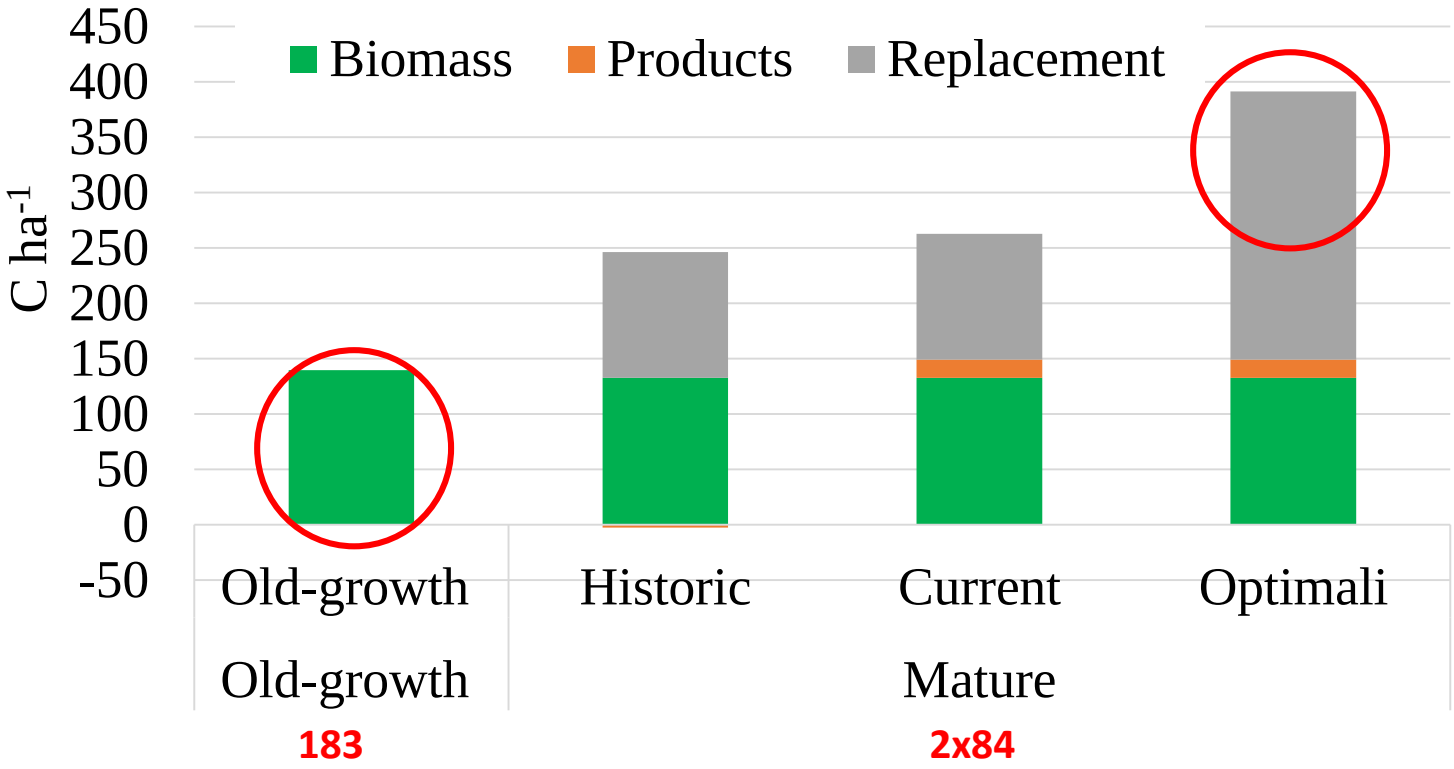
Development of a decision support tool integrating information from old-growth semi-natural forest for more comprehensive estimates of carbon balance(Nr. 1.1.1.1/19/A/130)

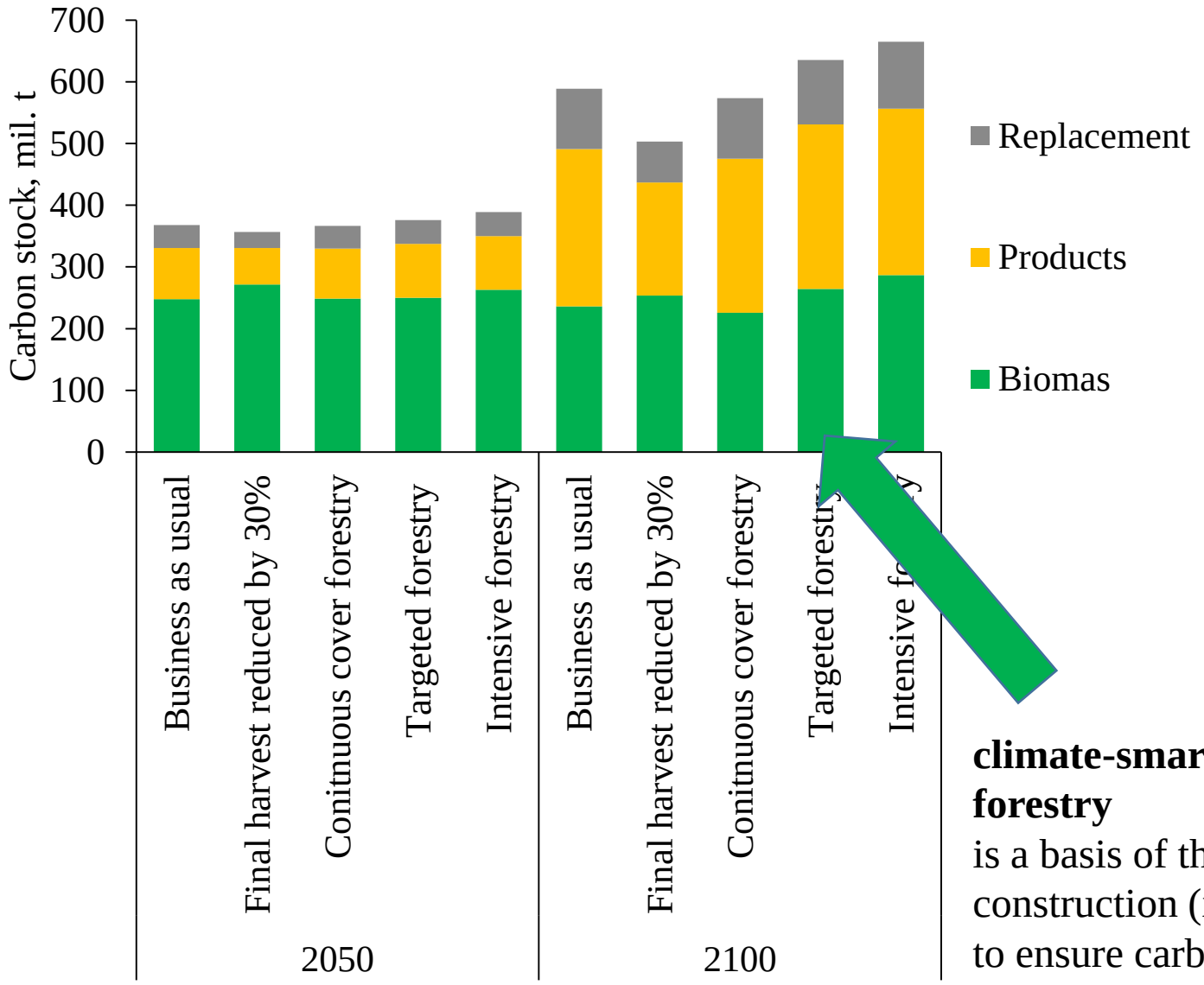


-Larger area without management = smaller contribution to climate change mitigation and climate neutrality!
+Investments in chemical processing wood and development of advanced products from wood are essential to reach climate change mitigation targets!

Efficient forestry + mechanical and chemical wood processing = higher climate change mitigation effect *(also from the emission accounting perspective!)*

Jansons et al., in prep.

State perspective



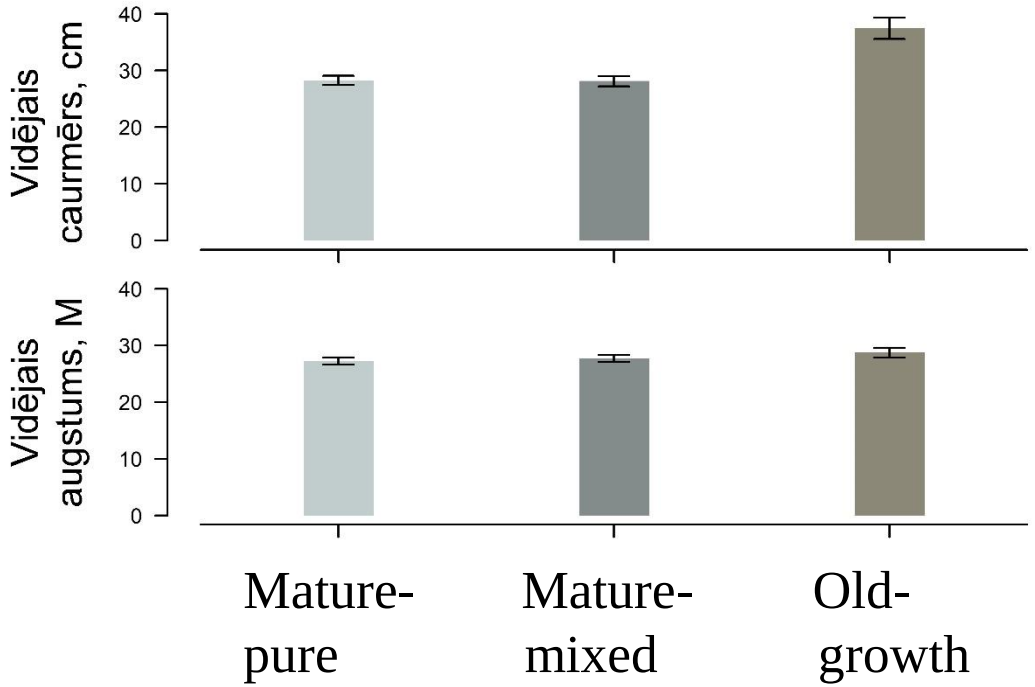
climate-smart forestry is a basis of this construction (i.e. basis to ensure carbon stock in growing trees)

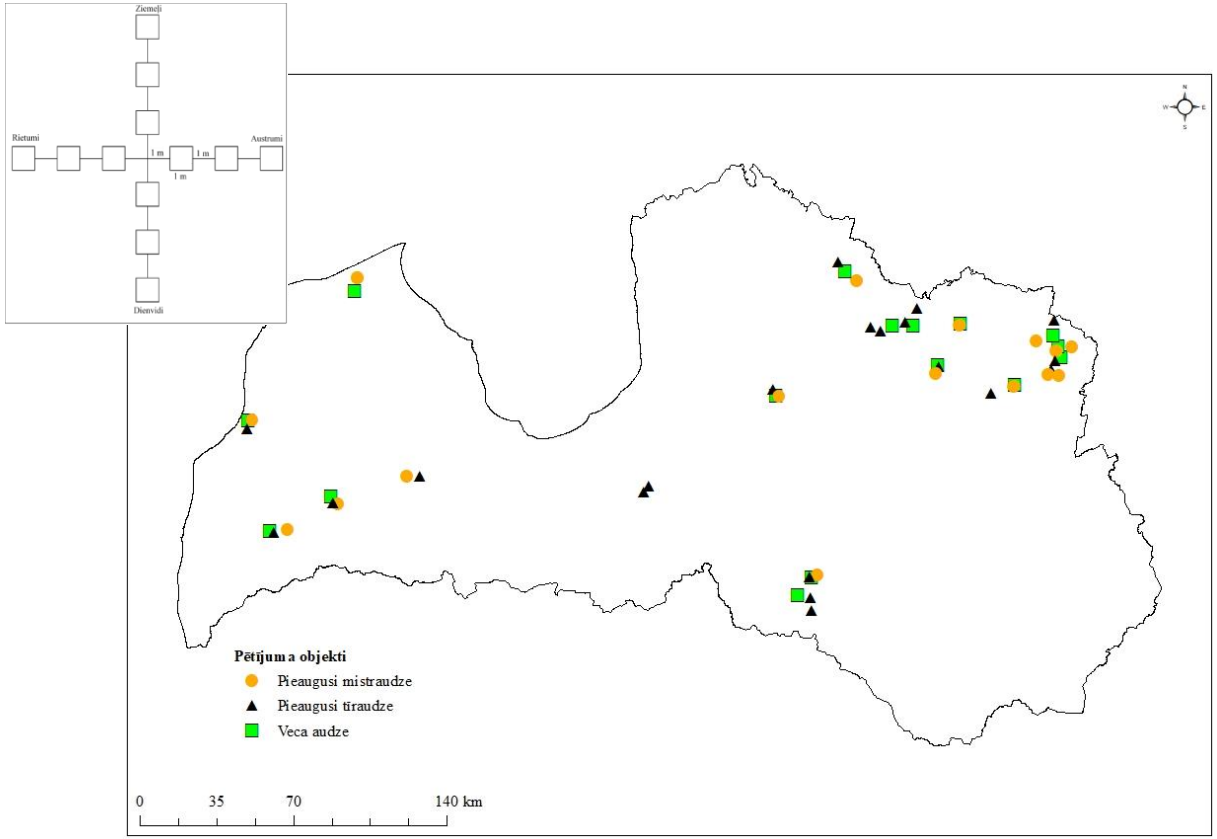
- Reduction of final harvest level will ensure increased carbon storage in tree biomass, however, will reduce the total climate change mitigation effect of the forest sector in short (2050) and long (2100) term (even without considerations of potential increased replacement effect)

Jansons et al., in prep.

Old-growth stands and biodiversity: ground vegetation

The impact of forest management on forest and related ecosystem services, 5-5.9.1_007n_101_21_76

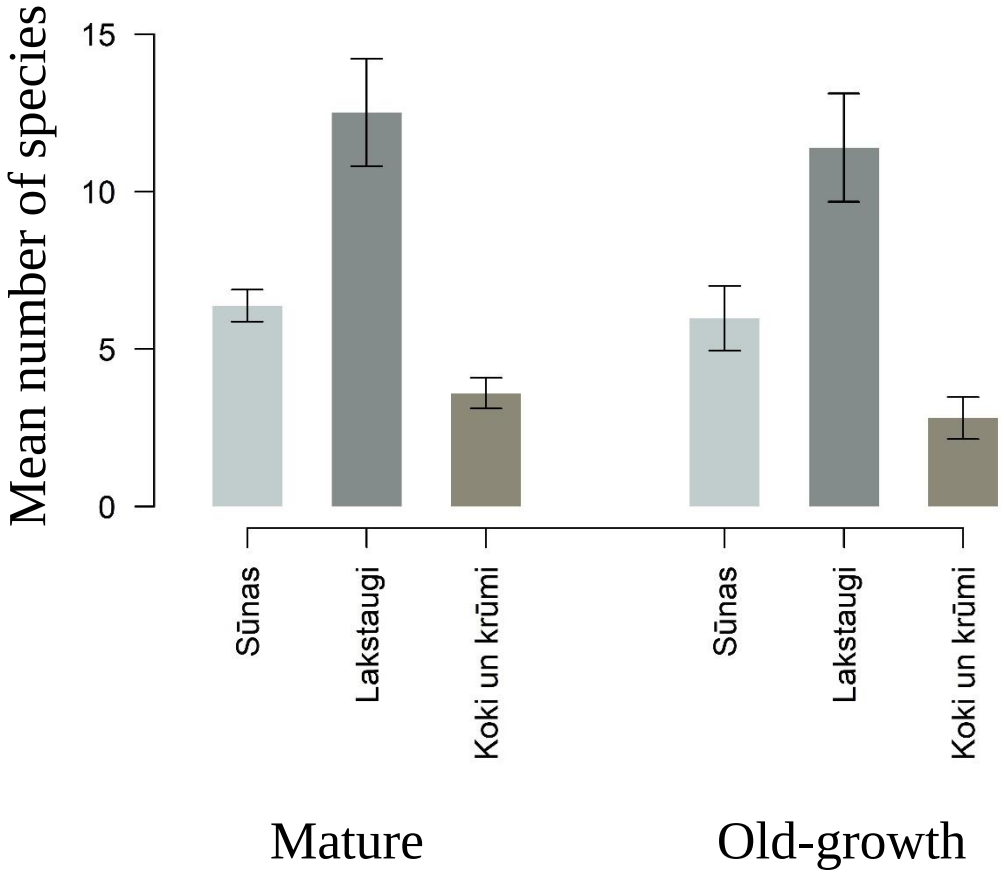


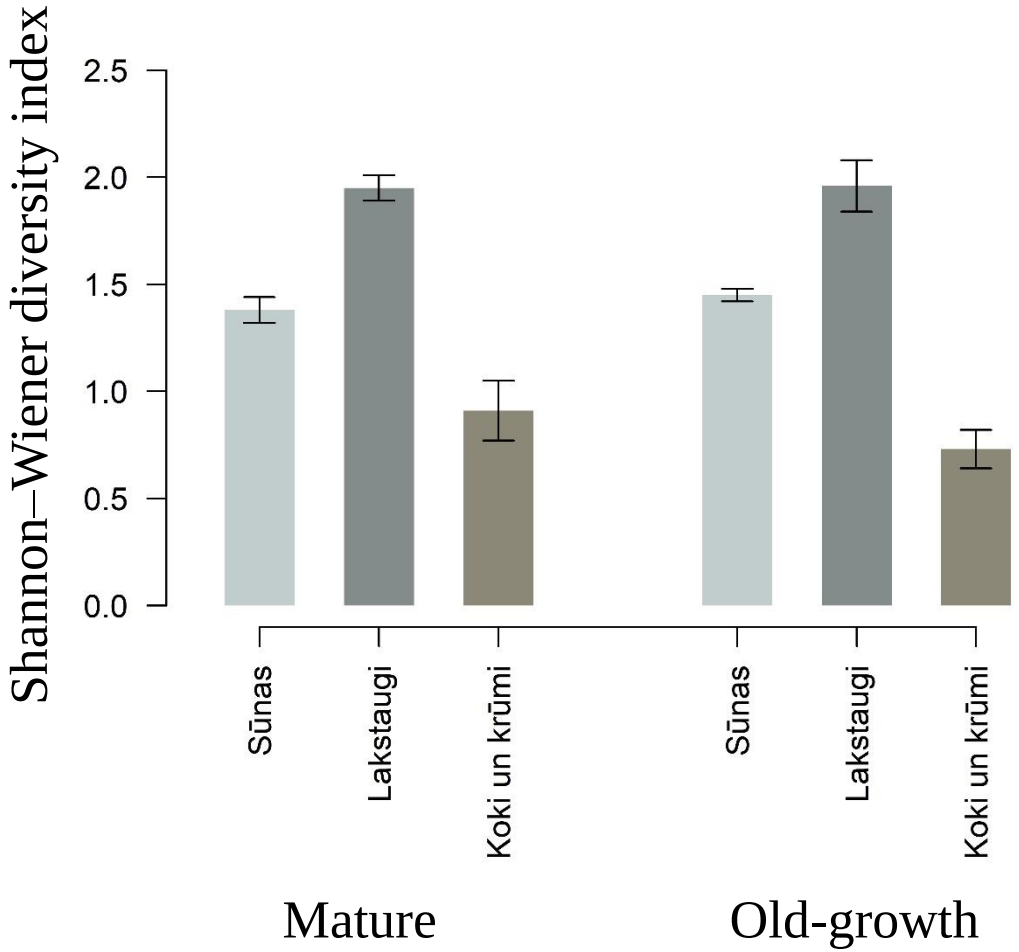


Direct comparison between mature and old-growth Norway spruce stands

Jansons et al., in prep.

Old-growth stands and biodiversity: ground vegetation

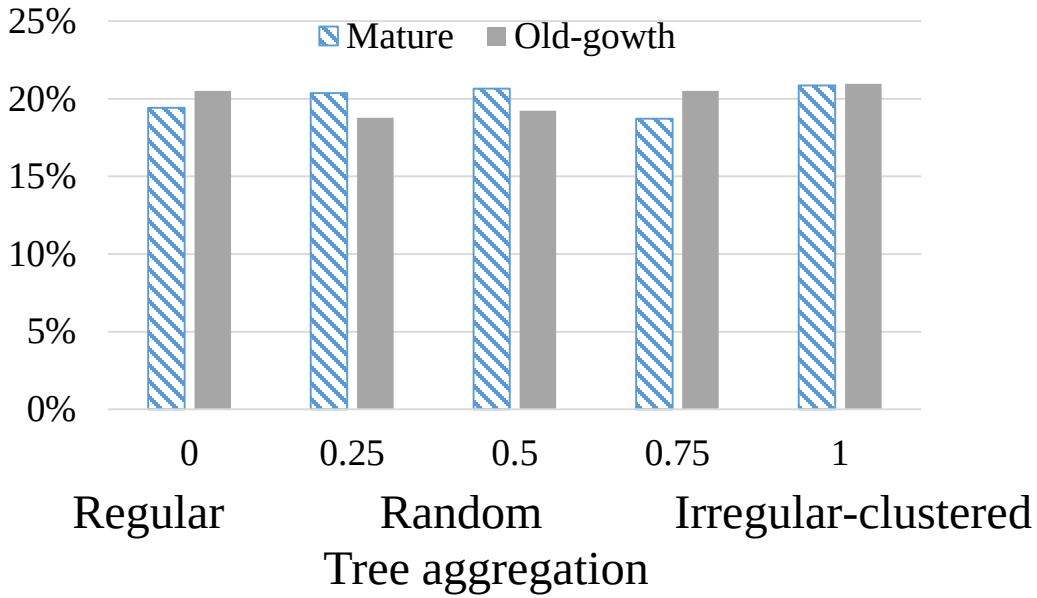


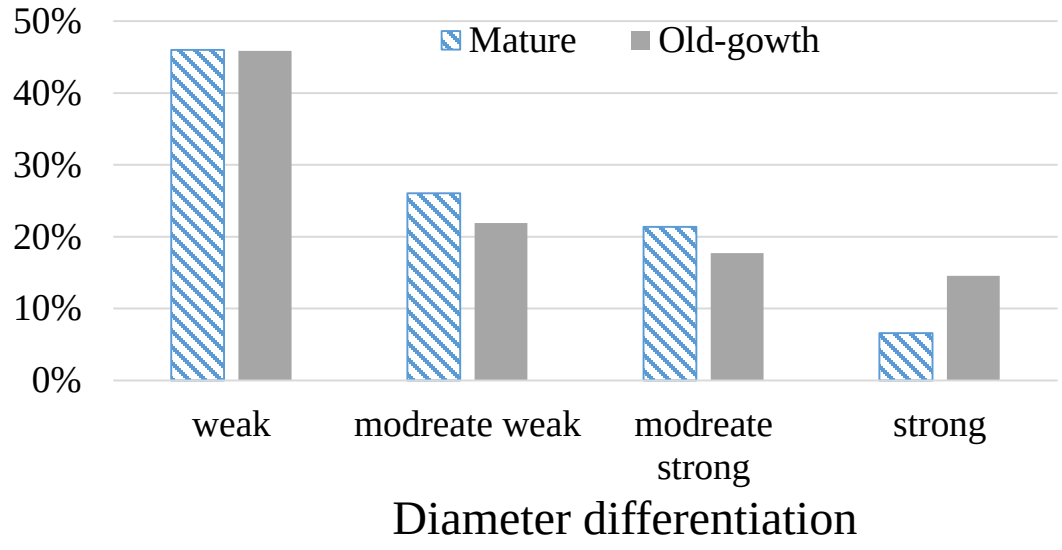


Jansons et al., in prep.

Old-growth stands and biodiversity: trees

Trends of tree aggregation, species mingling (0.34 *vs.* 0.37) and size differentiation (trees >6cm measured) are similar between Mature and Old-growth stands





What does “biodiversity” need?

Age is a very weak (yet attractive) proxy for the traits that are actually important for biodiversity.

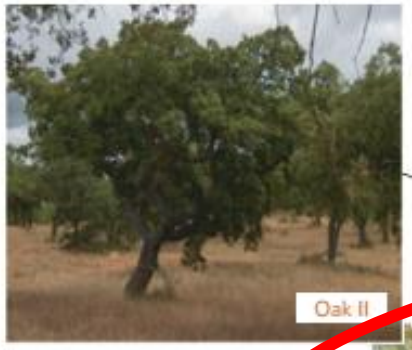
Detailed analysis are important to help shape the forest management, incorporating biodiversity (reforestation) rather than deliberately causing a conflict between "protection" and bioeconomy.

Jansons et al., in prep.

Where in the Europe forest will ensure basis for Union-wide bioeconomiy and climate change mitigation?

Prognosis 2100

Suitable for commercial forestry



34% Unsuitable for commercial forestry

Hanewinkel, M., Cullmann, D. A., Schelhaas, M. J., Nabuurs, G. J., & Zimmermann, N. E. (2013). *Nature Climate Change*, *3*(3), 203.

Research and policy cooperation in our region is essential

Implementation of research results and sector-wide approach can ensure realization of aims of climate-smart forestry: forest adaptation and contribution to climate change mitigation, while increasing productivity and bioeconomic value!

Looking forward to research and policy cooperation!

Thank You!

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