

Juvenile height development of spruce, pine and birch

Simone Bianchi

PUUVA-webinaari 31.10.2024



Euroopan unionin
rahoittama
NextGenerationEU



Objectives



Simone Bianchi, PUUVA-webinaari 31.10.2024 3

Data



Simone Bianchi, PUUVA-webinaari 31.10.2024 6

Results



Simone Bianchi, PUUVA-webinaari 31.10.2024 11

Conclusions



Simone Bianchi, PUUVA-webinaari 31.10.2024 19



Objectives

Objectives

Does spruce still suffer competition from other species in recently established mixed species stands?

More recent silvicultural methods = container spruce of improved material; spot mounding; timely juvenile stand management (early cleaning, pre-commercial thinning)

List of paper published



Scandinavian Journal of Forest Research

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/sfor20

Development of young mixed Norway spruce and Scots pine stands with juvenile stand management in Finland

Simone Bianchi, Saija Huuskonen, Jari Hynynen, Teppo Oijala, Jouni Siipilehto & Timo Saksa

To cite this article: Simone Bianchi, Saija Huuskonen, Jari Hynynen, Teppo Oijala, Jouni Siipilehto & Timo Saksa (2021) Development of young mixed Norway spruce and Scots pine stands with juvenile stand management in Finland, Scandinavian Journal of Forest Research, 36:5, 374-388, DOI: [10.1080/02827581.2021.1936155](https://doi.org/10.1080/02827581.2021.1936155)

One more manuscript submitted to
Scandinavian Journal of Forest Research



SILVA FENNICA



Silva Fennica vol. 58 no. 3 article id 23075

Category: research article

<https://doi.org/10.14214/sf.23075>

<http://www.silvafennica.fi>

ISSN-L 0037-5330 | ISSN 2242-4075 (Online)

The Finnish Society of Forest Science

Special issue: Climate resilient and sustainable forest management

Lauri Männistö¹, Jari Miina² and Saija Huuskonen¹

How to utilize natural regeneration of birch to establish mixed spruce-birch forests in Finland?

Männistö L., Miina J., Huuskonen S. (2024). How to utilize natural regeneration of birch to establish mixed spruce-birch forests in Finland? Silva Fennica vol. 58 no. 3 article id 23075. 29 p. <https://doi.org/10.14214/sf.23075>



forests



Article

Growth Dynamics of Young Mixed Norway Spruce and Birch Stands in Finland

Saija Huuskonen^{1,*} , Tuulia Lahtinen¹, Jari Miina² , Karri Uotila³, Simone Bianchi¹ and Pentti Niemistö⁴

Data

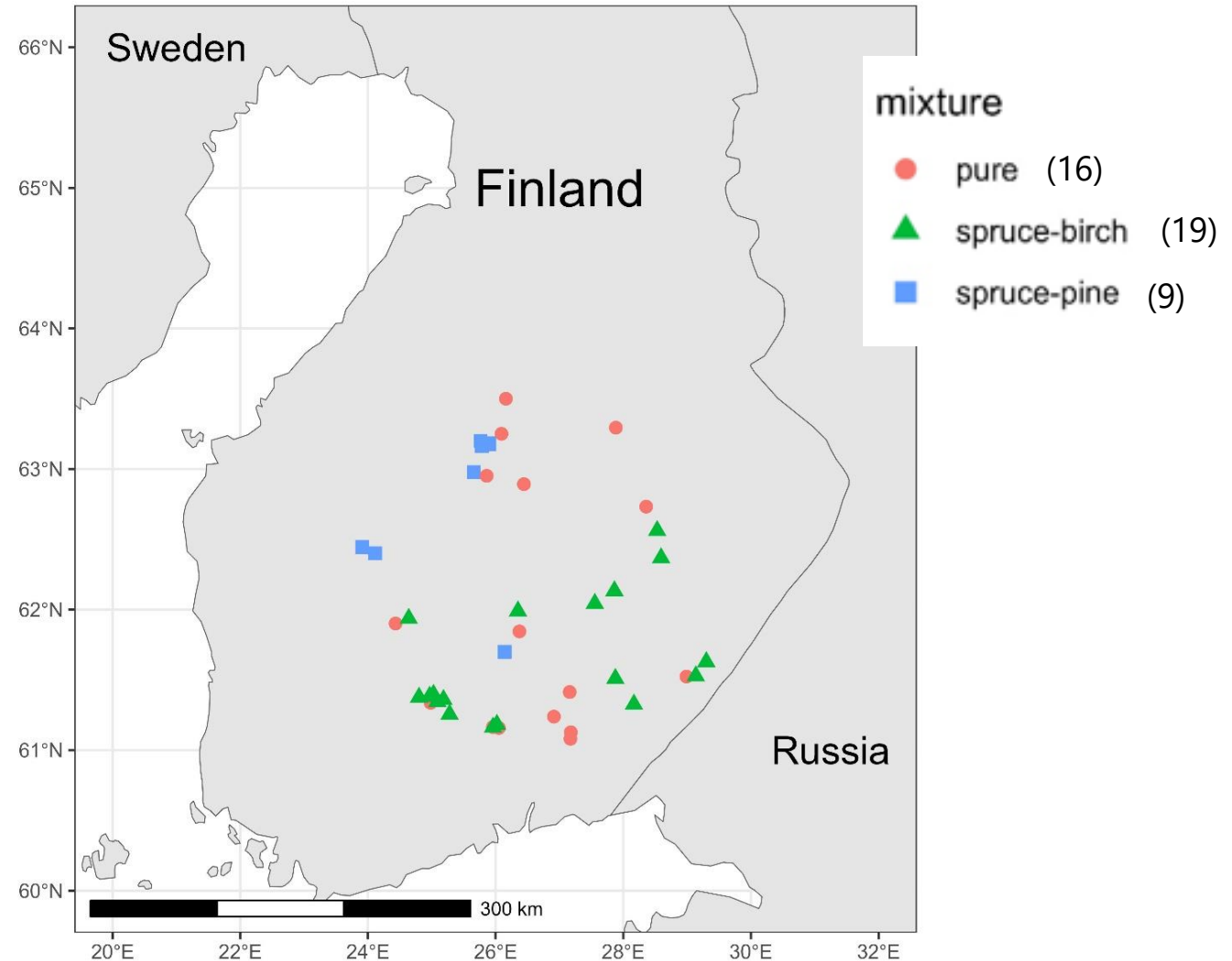
Location of stands

All stands:

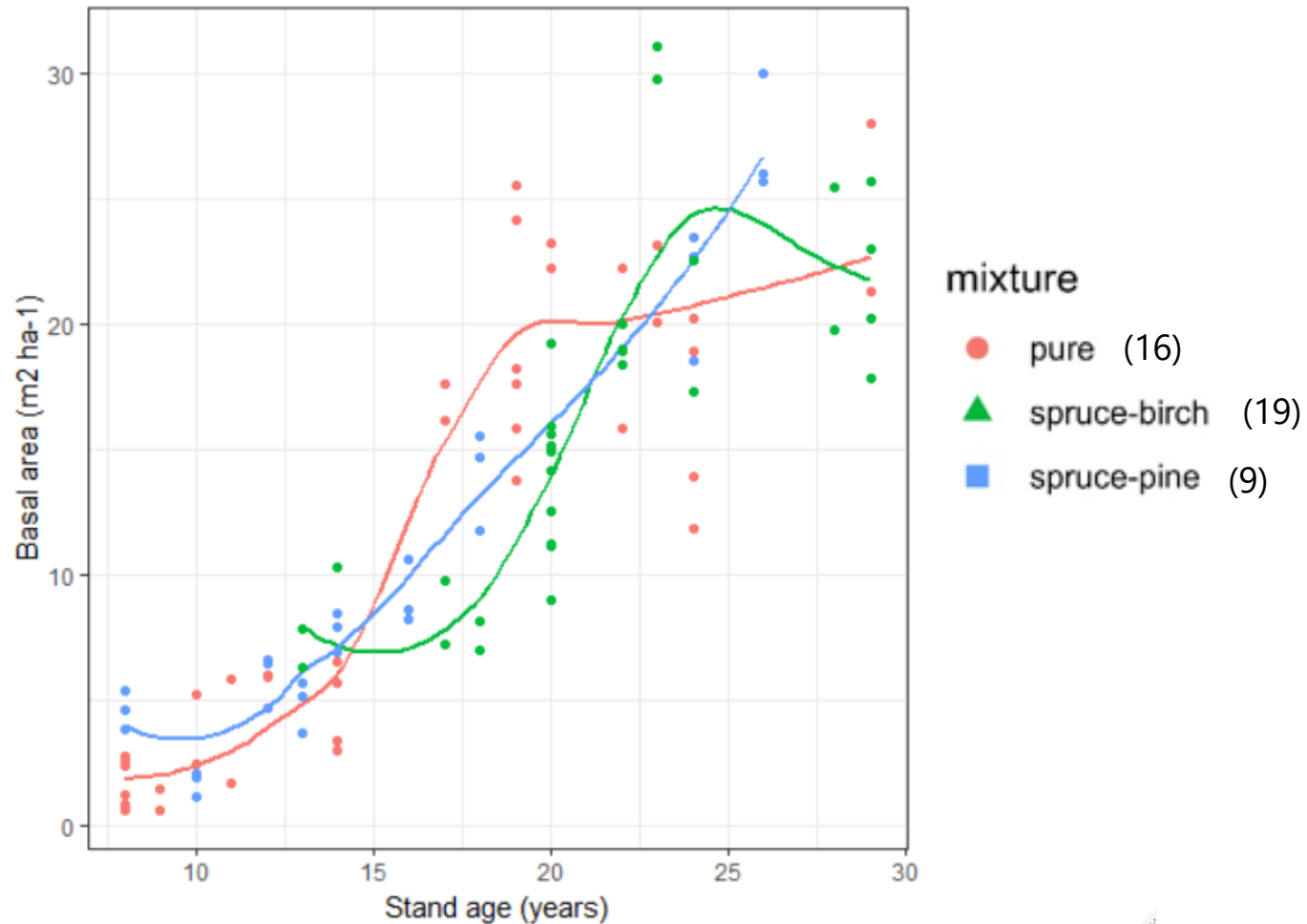
- Recently established stands
- Juvenile stand management carried out
- Spruce planted

Mixed species stands:

- Secondary species > 15-20%
- No species segregation
- Birch only: mean height difference < 3m



Stand density

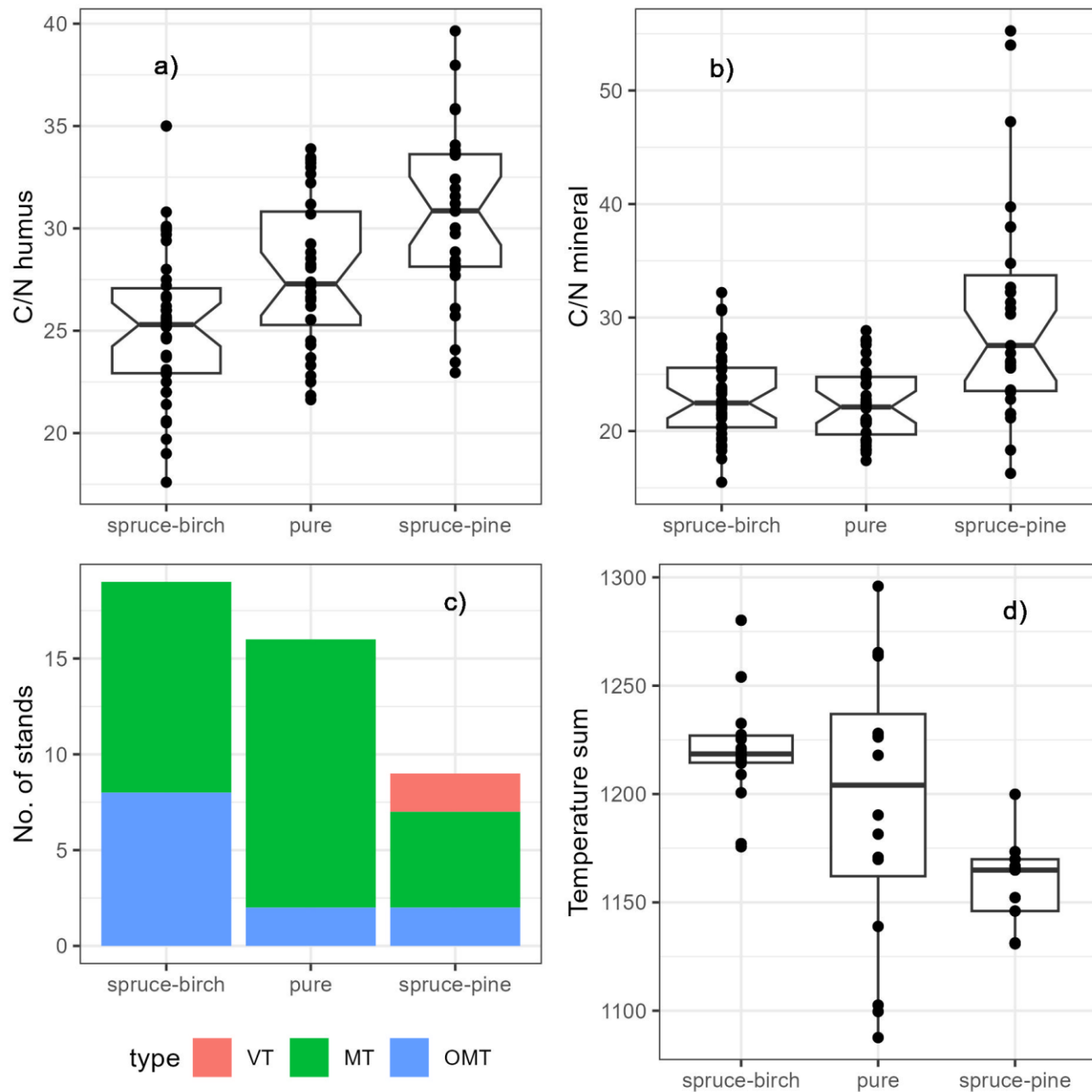


Spruce-pine: established deliberately as mixed species stands

Spruce-birch: birch likely filled the gaps of missing spruces

Growth potential

Decreasing growth potential (soil nutrients, vegetation type, temperature sum) from spruce-birch to pure to spruce-pine stands.





PURE SPRUCE STAND



SPRUCE-PINE STAND

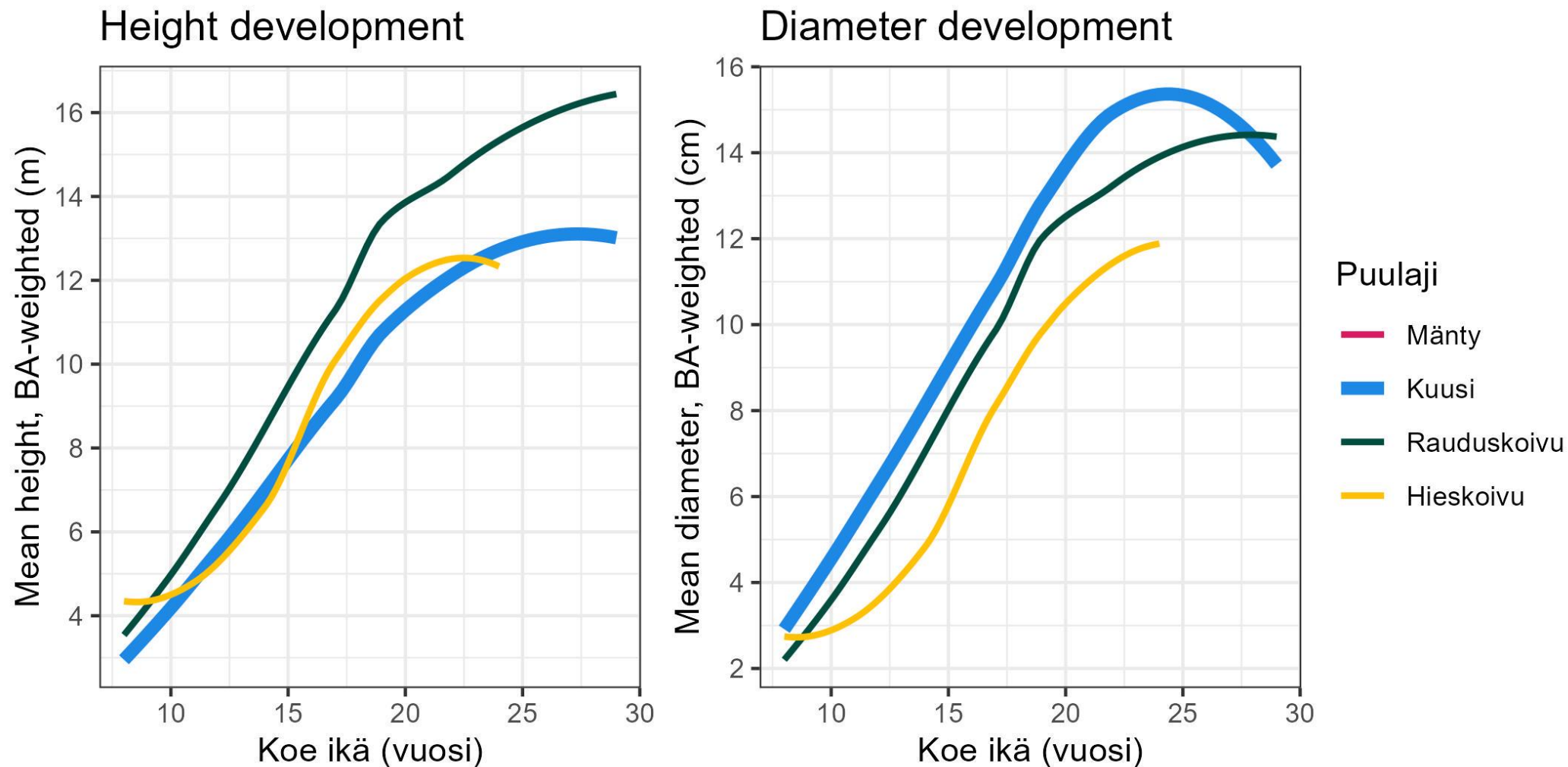


**SPRUCE-BIRCH STAND
(background)**

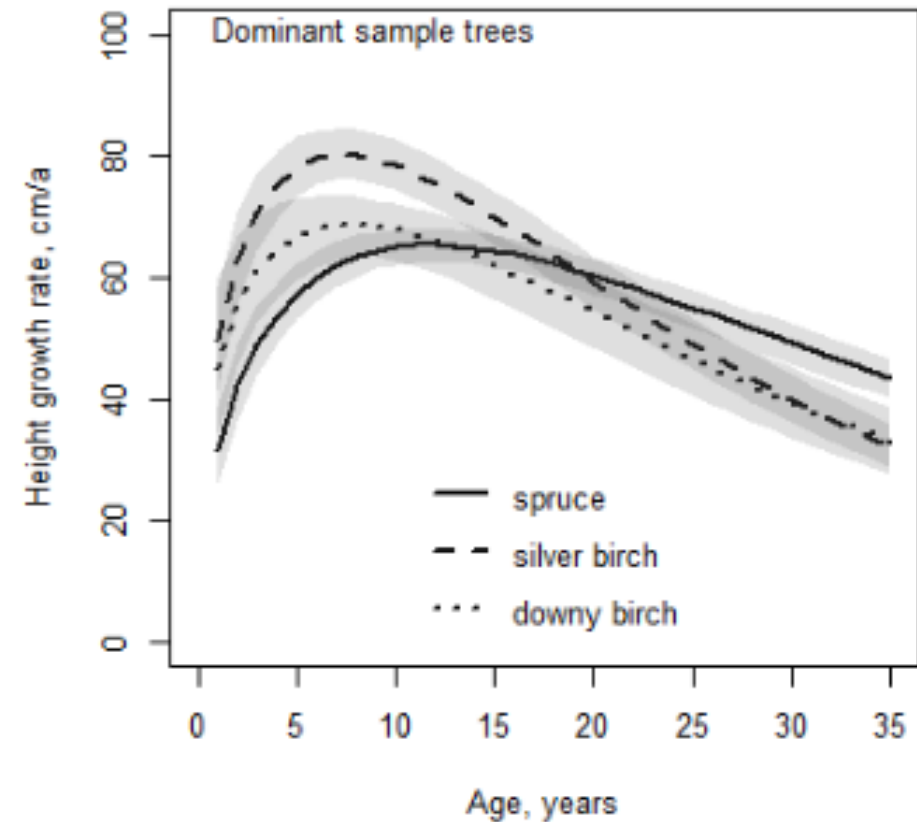
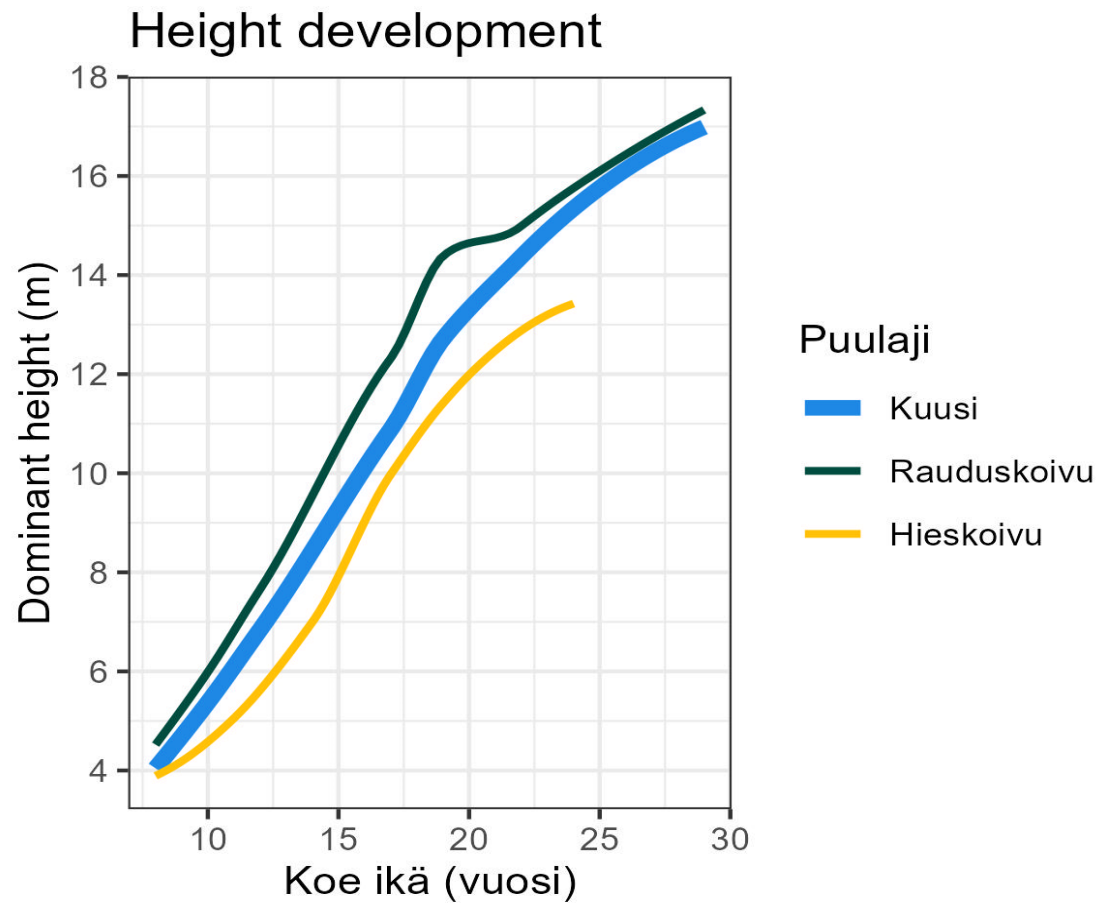
Results

Spruce compared to companion species (birch)

Spruce compared to companion species (birch)

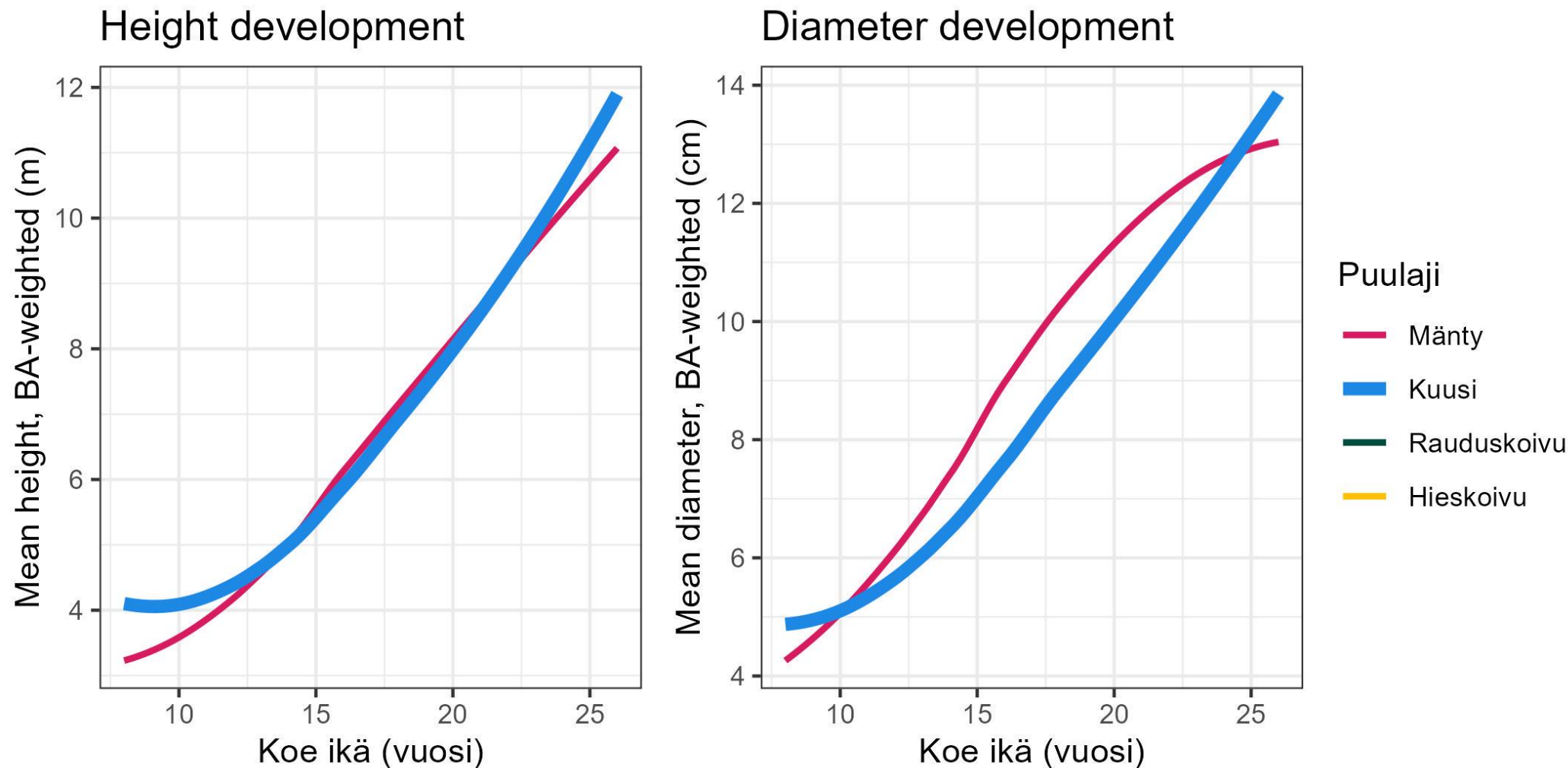


Spruce compared to companion species (birch)



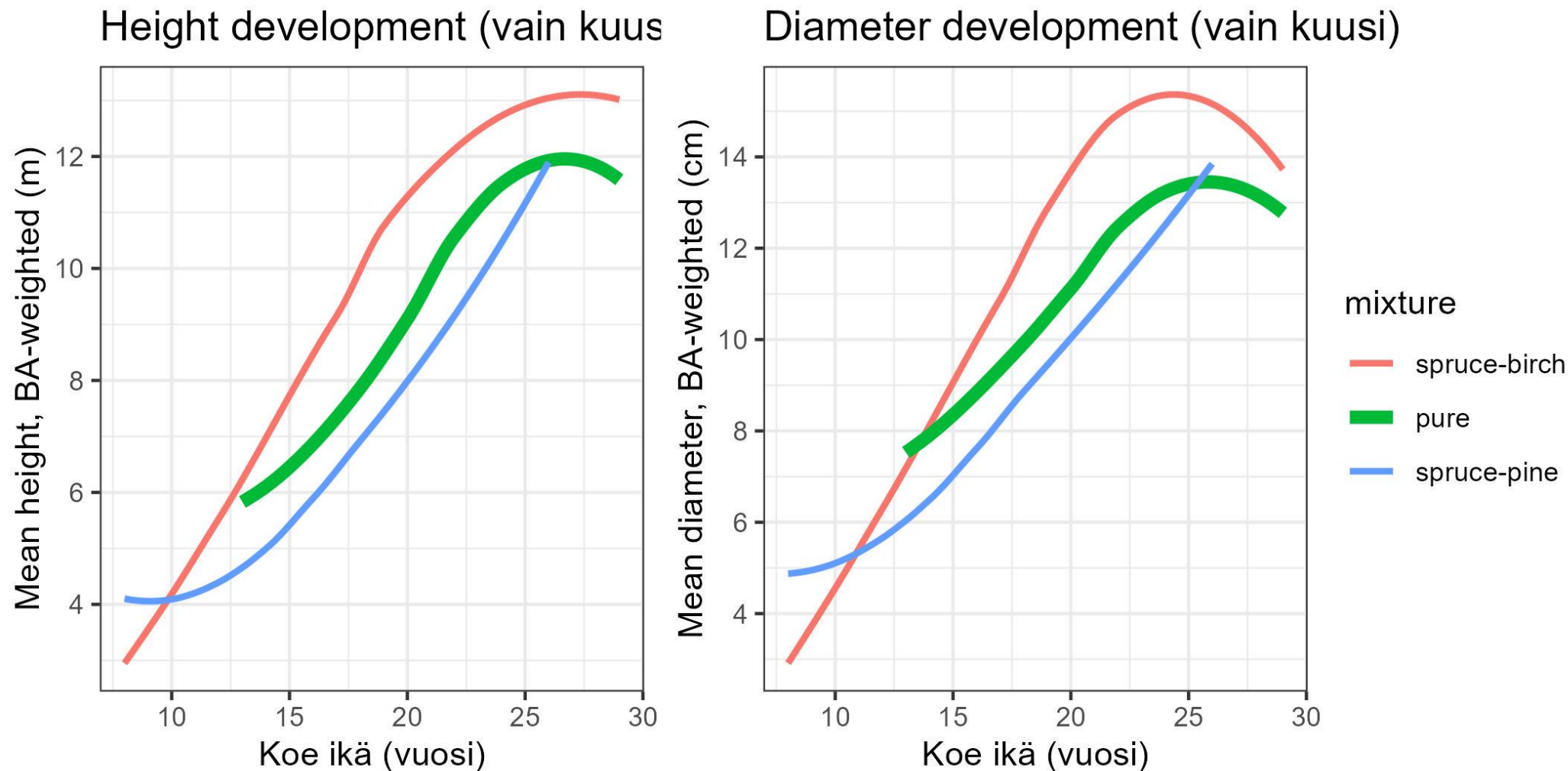
Spruce compared to companion species (pine)

Spruce compared to companion species (pine)



Spruce comparison across pure & mixed species stands

Spruce comparison across pure & mixed species stands



Conclusions

Conclusions

- **Spruce-pine mixture:** no major differences across species.
- **Spruce-birch mixture:** birch tended to be taller than spruce, but gap was closing soon.
- No major differences for **spruce** across pure & mixed species stands (confounding effect of site fertility).

Conclusions

- **Spruce-pine mixture:** no major differences across species.
- **Spruce-birch mixture:** birch tended to be taller than spruce, but gap was closing soon.
- No major differences for **spruce** across pure & mixed species stands (confounding effect of site fertility).

Thus, given proper care (regeneration methods, juvenile stand management), spruce could coexist with other species in one storey without losses in production.

Conclusions

- **Spruce-pine mixture:** no major differences across species.
- **Spruce-birch mixture:** birch tended to be taller than spruce, but gap was closing soon.
- No major differences for **spruce** across pure & mixed species stands (confounding effect of site fertility).

Thus, given proper care (regeneration methods, juvenile stand management), spruce could coexist with other species in one storey without losses in production.

Reminder: our data are not representative of **all** recently established & properly tended mixed species stands in Finland.

Kiitos! Kysymyksiä?



luke.fi