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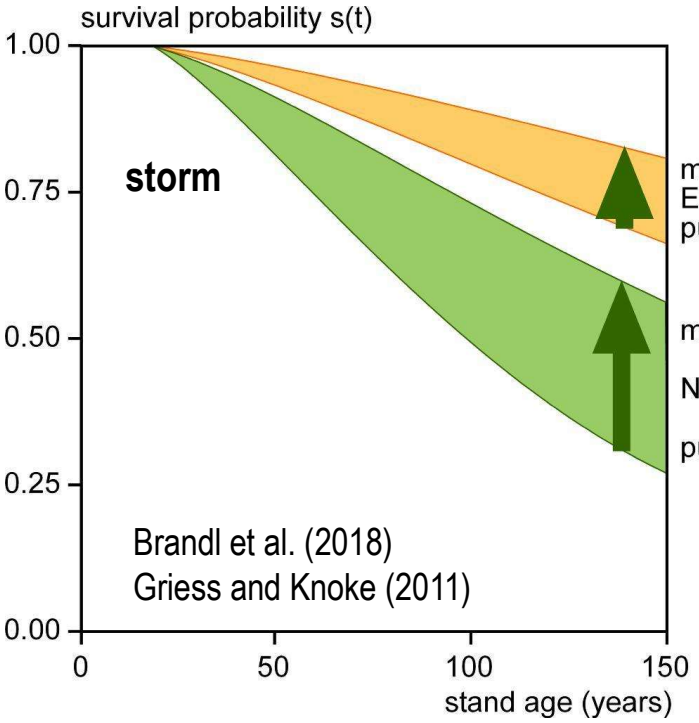
Systemanalyse

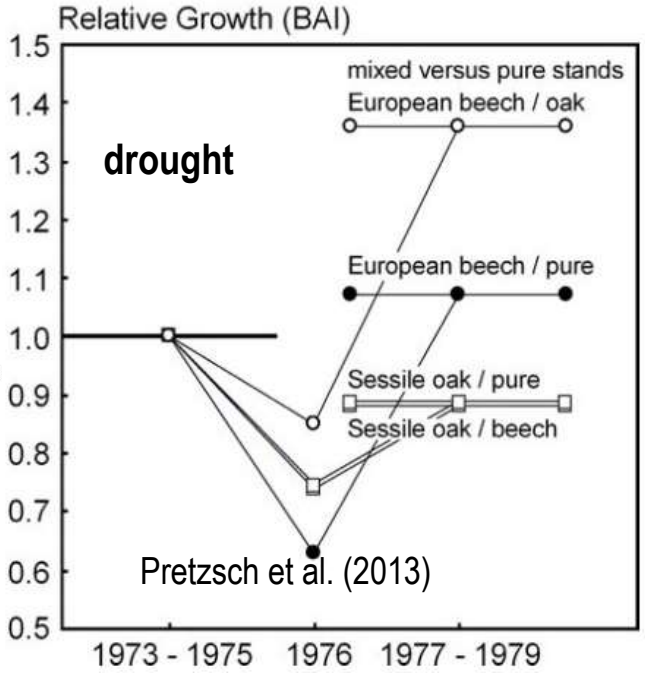
Extension of mixed stand research on diverse forest stands in general

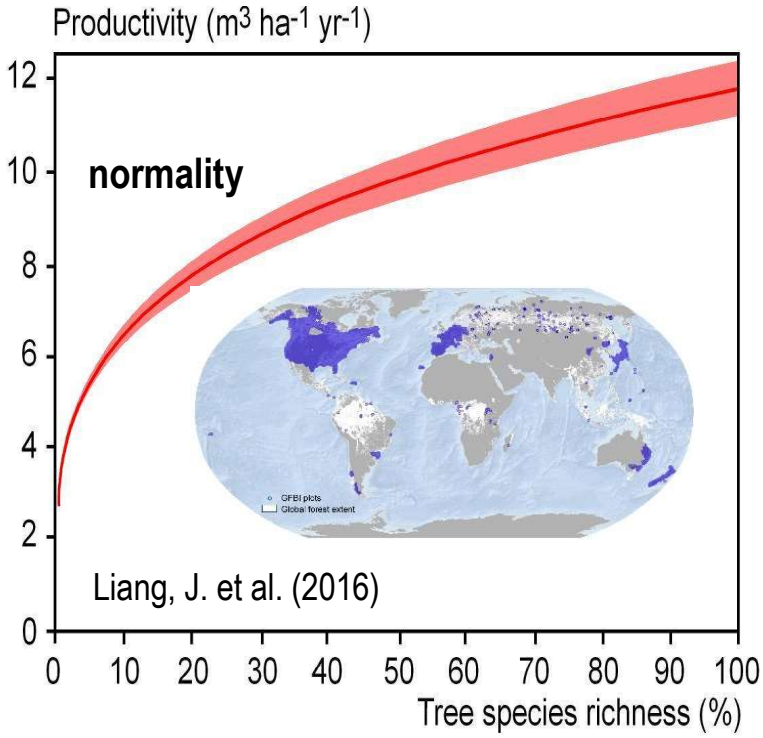
Hans Pretzsch

1 Continuum of genetic and structural diversity
2 Fact finding despite of imperfect data
3 Model development
4 Need of silvicultural prescriptions for diverse stands

From mixed stand research benefit of diversity is well known

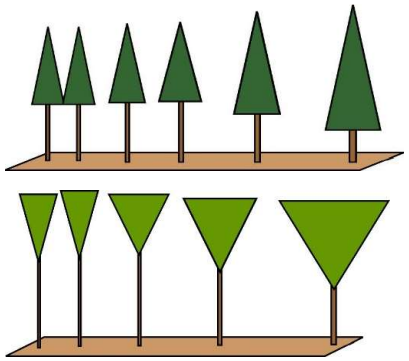




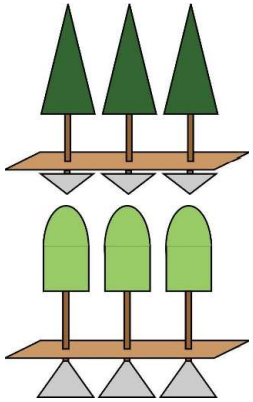


Species diversity. Source of competition reduction, facilitation, resistance

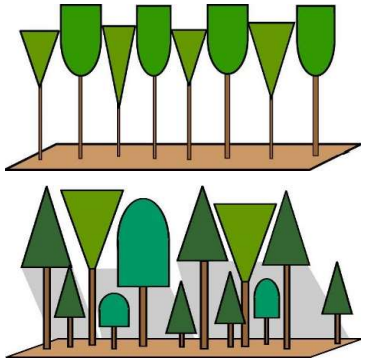
inplastic - plastic



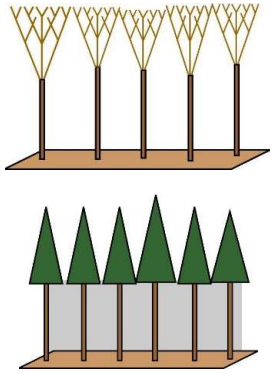
shallow – deep rooting



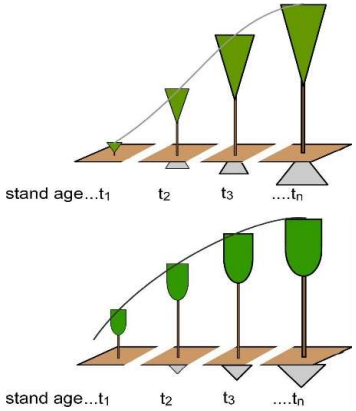
light demanding - shade tolerant



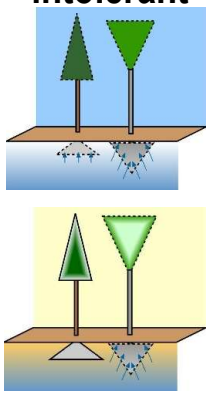
seasonal - evergreen



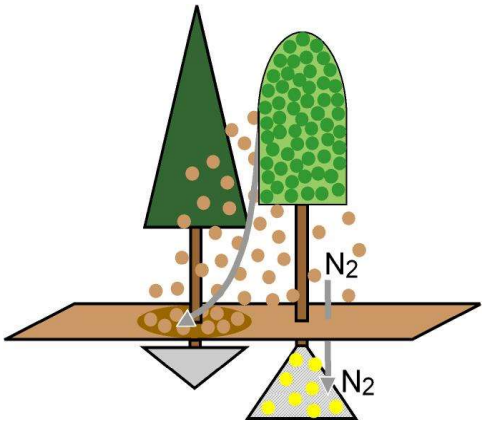
slow - fast growing



drought tolerant-intolerant

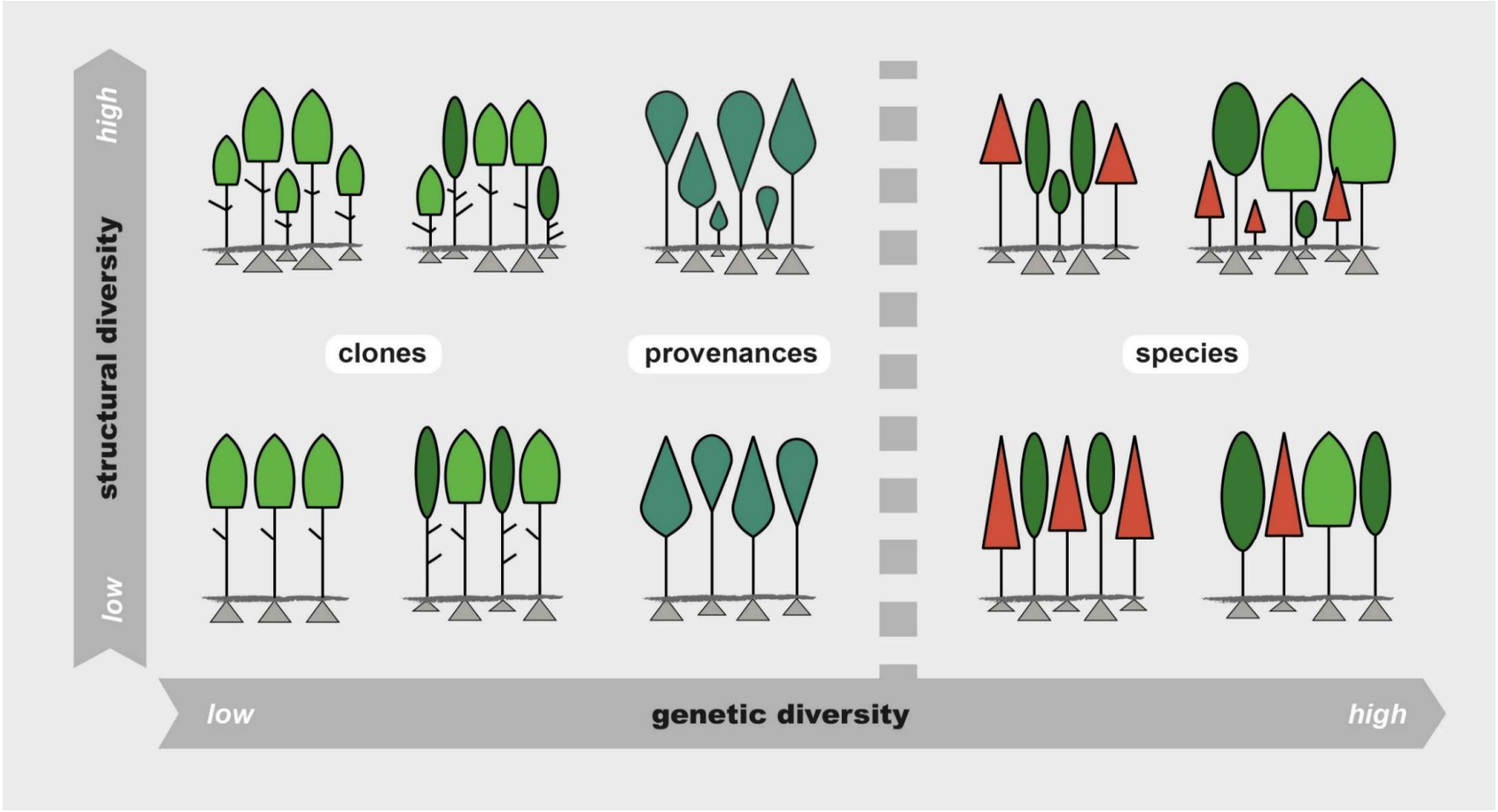


N-fixing - non N-fixing



Ammer (2018), Pretzsch et al. (2017), Ellenberg and Leuschner (2010), Larcher (2003)

From species mixtures to genetical/structural diversity in general



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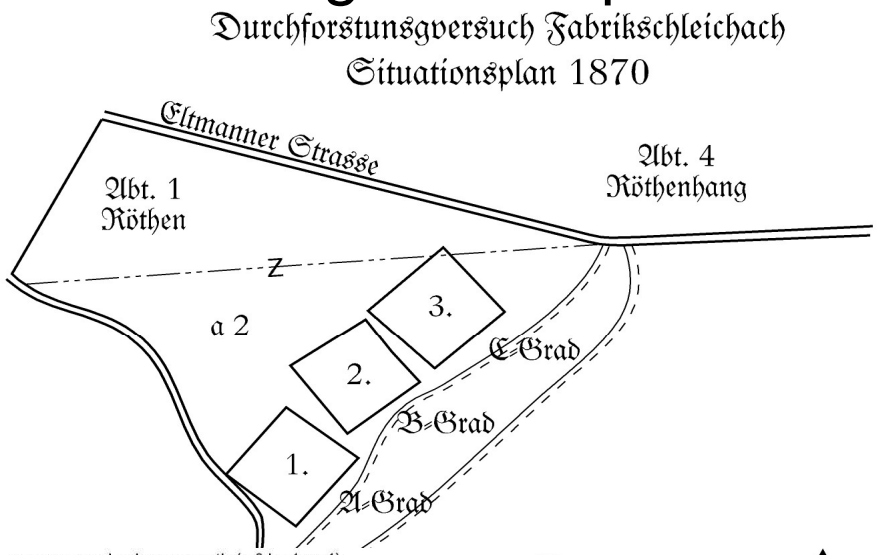
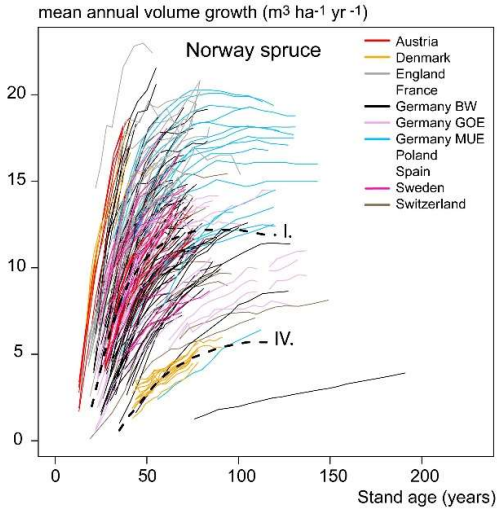
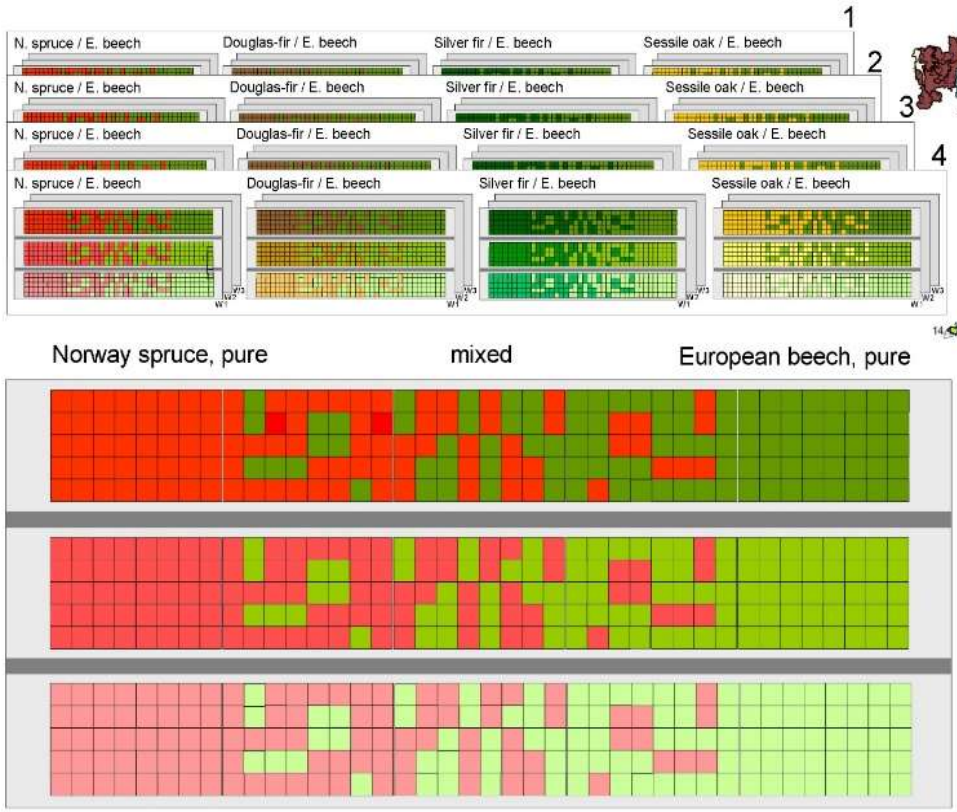
Long-term experiments needed as standard as standard







Uhl et al. (2021), BaySTMINELF (2021), BaySF (2021)

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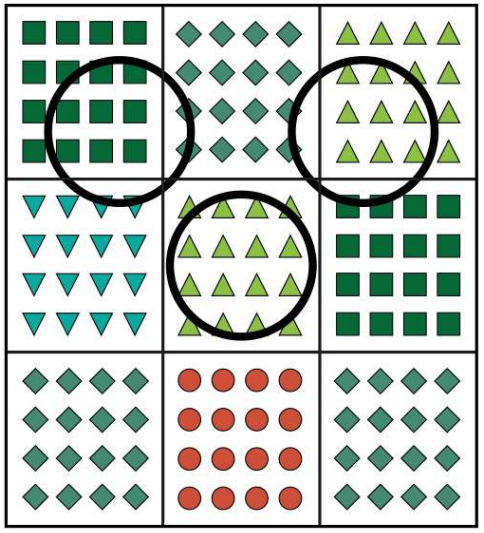
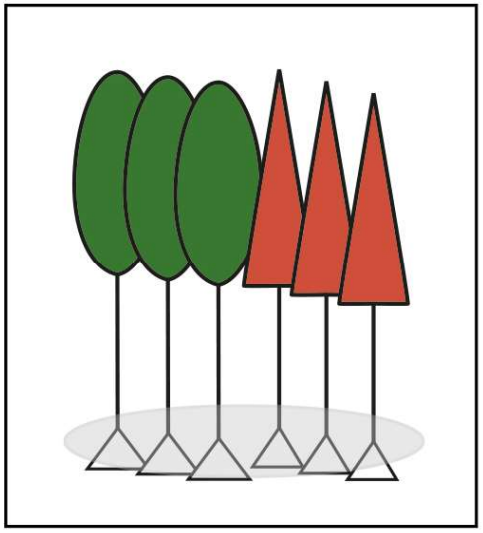
Fact-finding for species mixtures at stand level: Sampling at borders versus inner parts of stands

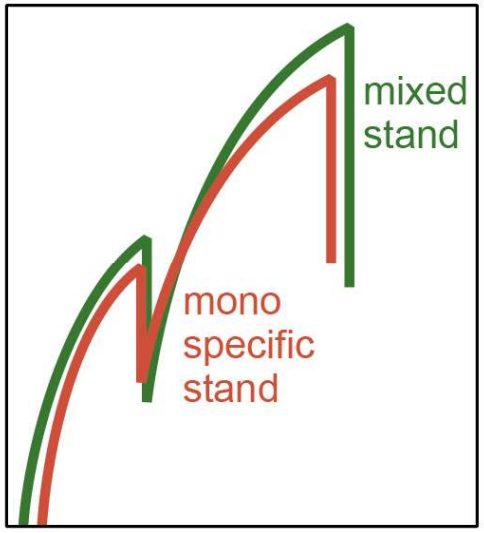
plot-overarching sampling



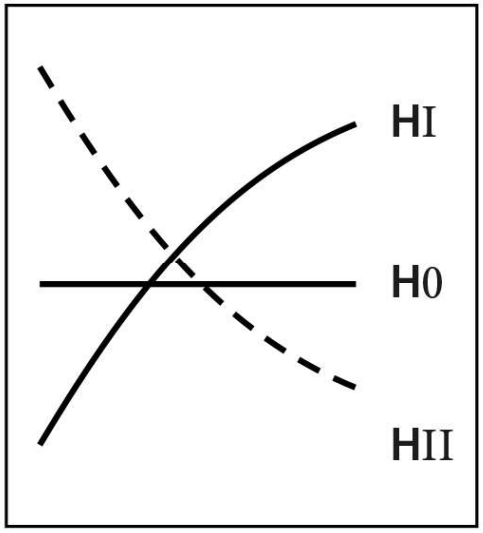
diversity on sample circle



stock of standing volume



stand growth



Pretzsch et al. (2022), Schütz (1989, 1997), Petri (1966)

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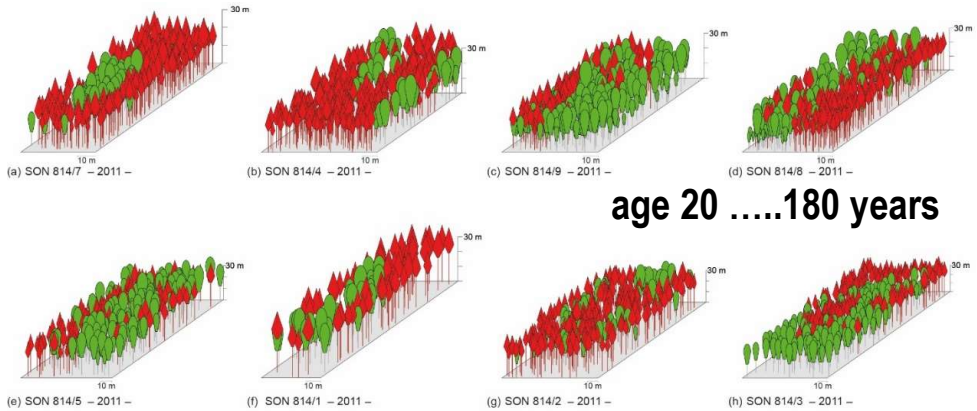
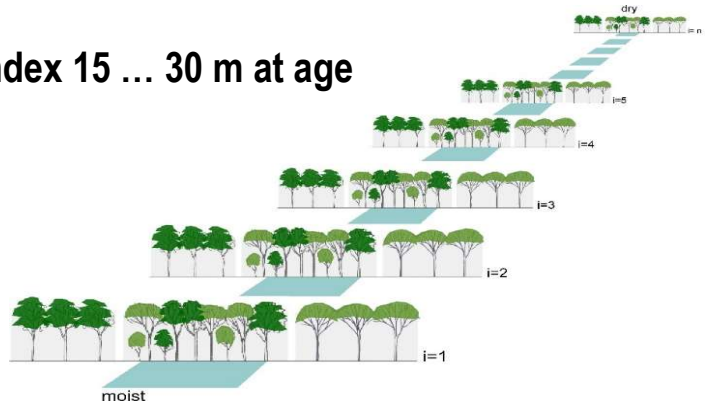
Fact-finding at tree level: Sampling individual tree structure and growth depending on neighborhood

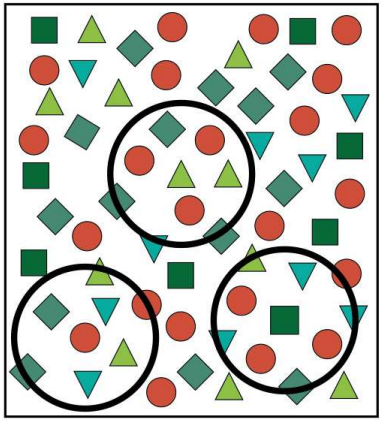


age 20 …..180 years

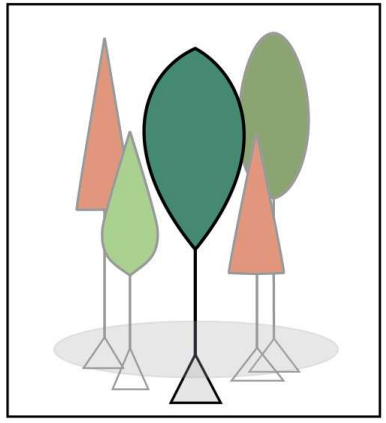
site index 15 … 30 m at age 100



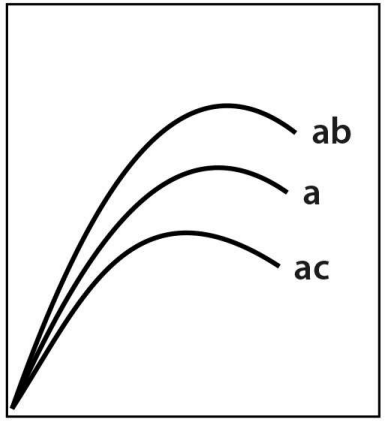
individual tree analysis



competition analysis

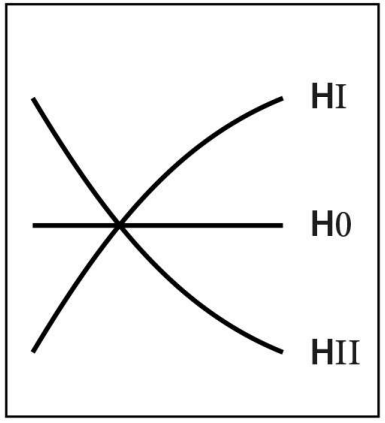


tree growth and resilience



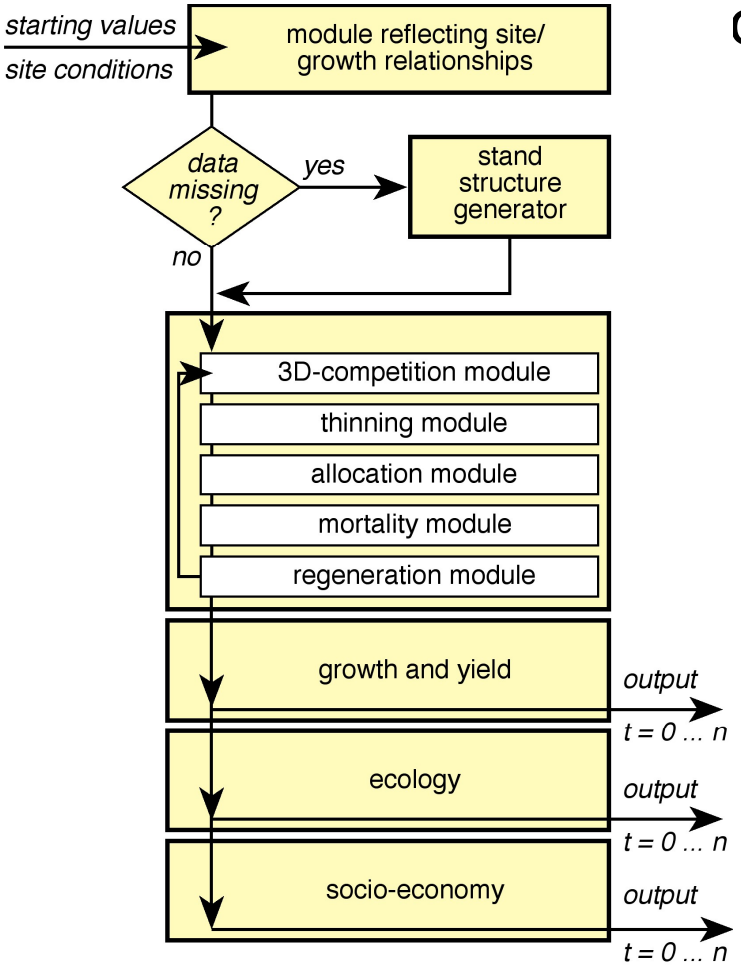
neighborhood

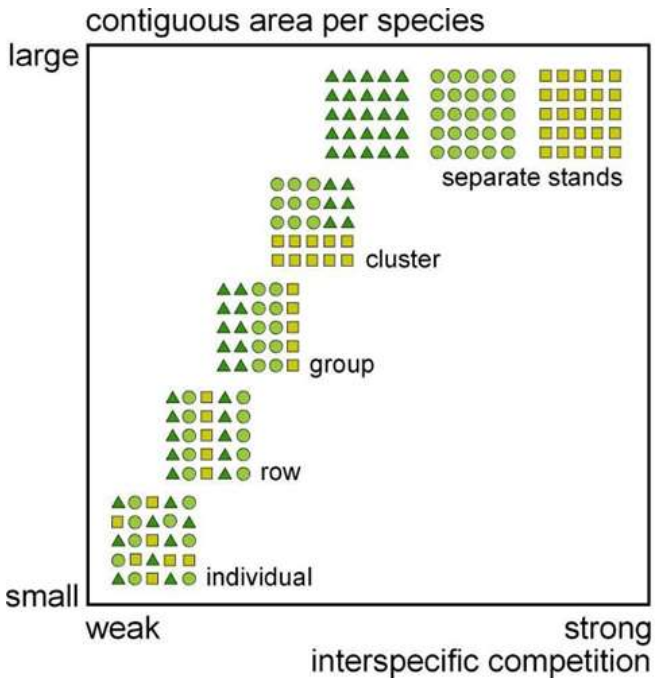
tree growth, resilience, allonety

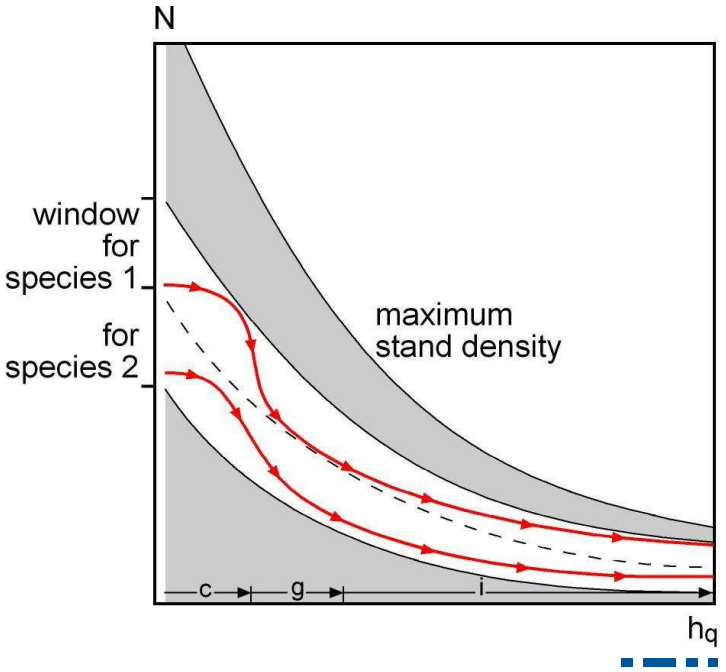


diversity

Towards models for scenario analyses, planning, development of silvicultural prescriptions

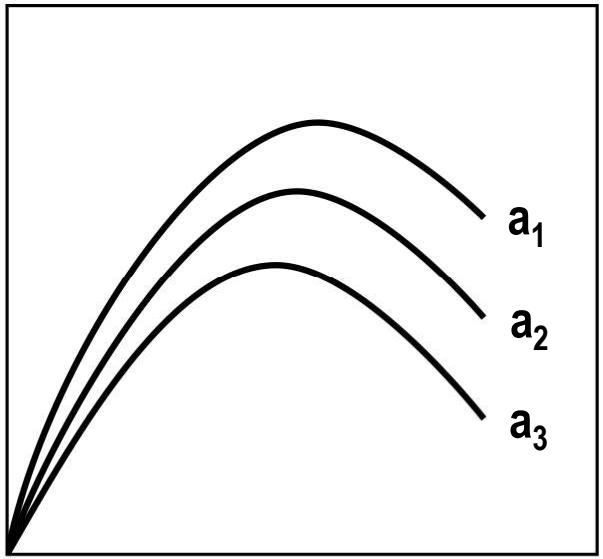


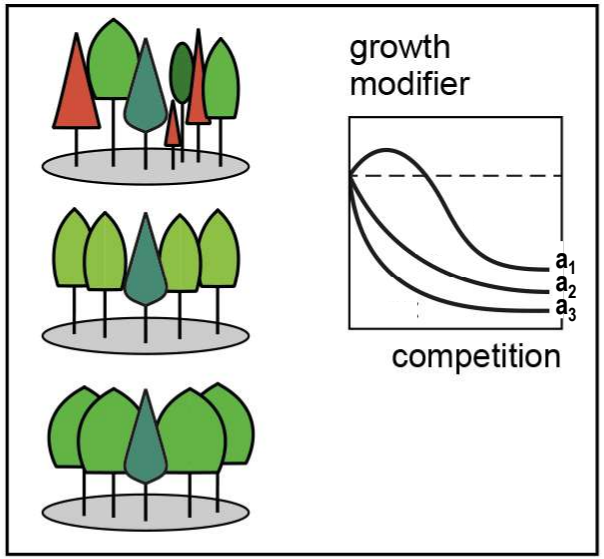




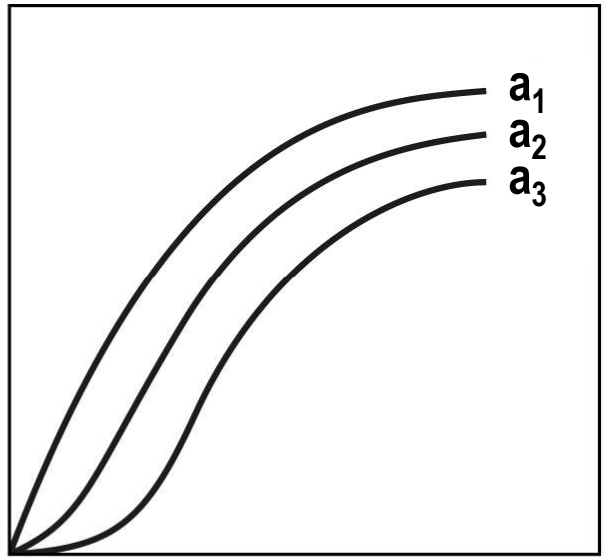
Integration of genetic mixtures in individual tree models. Representation of genotypes analogously to tree species

potential size growth





size growth prediction



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