Silver Fir - a good old link between Bavaria and Slovenia
Silver Fir - common problems in Bavaria and Slovenia
Successful conservation of Silver Fir (Abies alba Mill.) in managed forests of Bavaria – a balancing act between silviculture and hunting

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1) Silver Fir in Bavaria
2) Silver fir and Forest decline
3) Silver Fir and silviculture
4) Deer impact
5) Conclusions
Forests in Bavaria: about 2.5 Mio. ha
(30% of total area)
Natural Forests in Bavaria ...
... dominated by beech (Bu) and fir (Ta)
Characteristics of Silver Fir in Bavaria

• Natural participation or domination in 30 % of forests
• Mainly in mixed mountain forests and various beech vegetation types mostly in higher elevations
• Specific ecotypes: e.g. „dry fir“ in the vine region (climate change!)
Annual growth rings of firs and spruce

Site conditions:
500mm rainfall
8° temperature

nach Elling, mdl. Mitteilung
Why do we like Silver Firs?
Silver Fir, a tree of great ecological and economic importans

stability

growth

vitality
Why are we worried about Silver Fir?
Actual situation of Silver Fir in Bavaria

• Actual participation: 2,1 %
• More than 60 % of Firs are older than 100 years
• Still leadership of damaged tree species
• Sustainable regeneration?
Potenzielle und aktuelle Verbreitung der Tanne in Bayern

- Wuchsräume mit geringer oder fehlender potenzieller Beteiligung der Tanne
- Wuchsräume mit stärkerer potenzieller Beteiligung der Tanne
- Aktuelle Vorkommen der Tanne (Inventurpunkte BWi 1)
Let’s talk about the reasons
1) Forest decline
Average of annual growth rings of about 1000 Silver Firs in South Germany and amount of sulfureous air pollution from 1880 to 2004. A strong correlation between increment and air pollution is obvious. After reducing pollution the health of Silver fir increased quickly and the annual increment reached a high level even in the dry summer of the year 2003.
2) Silviculture

Bavaria: > 50 % of forests are dominated by spruce
... Clearcutting ...
... Windfall ...
... ecological disaster ...

... especially for regeneration of Silver Fir!

Late frost damage
22.05.2005
Actual thinning concepts for young forests after clearcut or windfall
Intensive reduction of tree density
(down to 1200 trees only in young stands!)

Is this thinning concept adjusted for Silver Fir?
Silver fir before thinning ...

... protected and dynamic!
Annual height growth of 10 – 20 years old Silver Firs compared to Spruce (Black Forest, Pfalzgrafenweiler).
...after thinning...
...shocked by light, heat, frost and damaged by deer!
3) Deer impact
Protected Silver Fir

Unprotected Silver Fir
„Christmas tree“ not damaged by deer (but by my wife) 12 years old
„Christmas tree var. Bonsai “ several times damaged by deer
12 years old
Silver Fir’s Problem:

If the terminal bud is damaged

1) a dormand bud must be regenerated,
2) the new bud becomes a lateral shoot,
3) the lateral shoot turns into a terminal shoot.

The consequence is a loss of 2 years height growth!
Costs of deer damage

€ 30 – 80 / y a

Plantation

Fences

No income, e.g. christmas trees
Hunting success in Bavaria
Percentage of Silver fir in 1 to 20 years old forests and hunting success in Bavaria for the last 150 years!
### Hunting success in Bavaria

| Laubbäume: die Gewinner; an der Spitze die Buche und die „Anderen Laubbäume“ |
| Fichte: trotz Rückgang wichtigste Wirtschaftsbaumart (1,06 Millionen Hektar) |
| Tanne: immer noch „Sorgenkind“ |

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<th>Flächentwicklung der Hauptbaumarten</th>
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<td>Summe Nadelbäume</td>
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¹ALH: Andere Laubbäume mit hoher Lebensdauer (Hainbuche, Esche, Bergahorn, Spitzahorn, Feldahorn, Linde, Ulme, Kirsche, Robinie, Kastanie, Elsbeere)
²ALN: Andere Laubbäume mit niedriger Lebensdauer (Büke, Efe, Pappel, Balsampappel, Weide, Vogelbeere, sonstige Laubbäume)
Talking about deer impact –
a never-ending story!
Conservation of Silver Fir requires

1) expert knowledge,
2) time for meditation and finding,
3) good education,
4) foresters,
Conservation of Silver Fir requires

5) ecological knowledge and research
6) forest management close to nature (stability)
7) uneven-aged forests with continuous regeneration
8) trust in biological automation
9) protected areas without utilization(?)
Conservation of Silver Fir requires 10) Hunting (or low deer populations)!
Thank you for your attention!

Bavarian poachers at work...