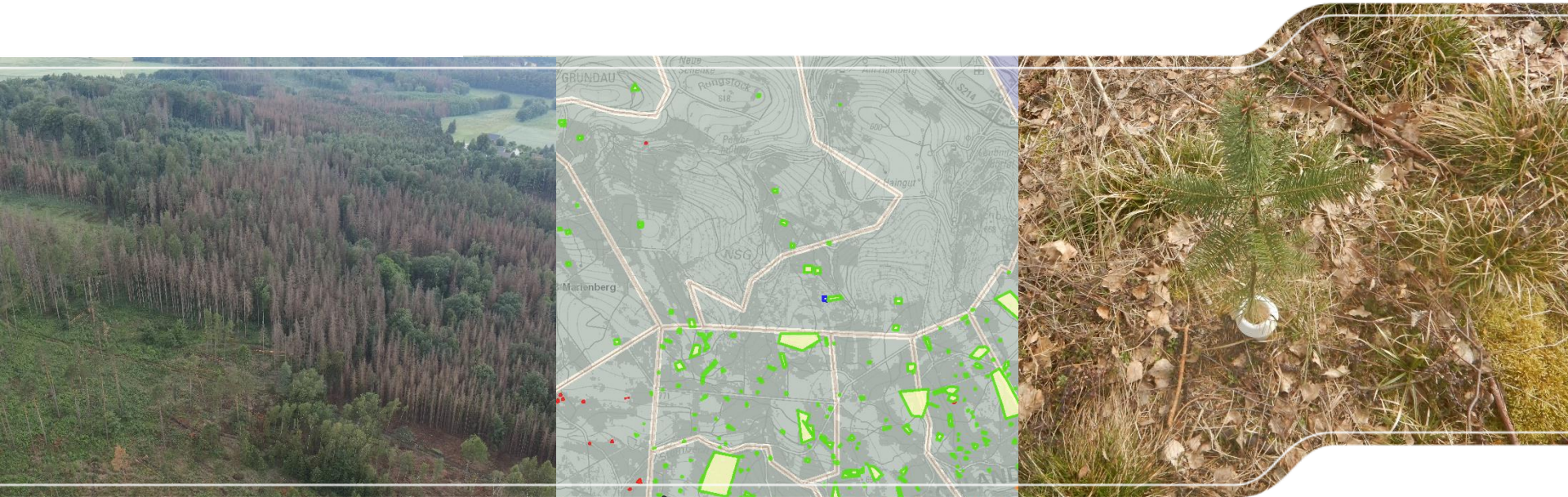


The forest protection situation in Saxony after four years of bark beetle calamity



S. Sonnemann, L.-F. Otto, F. Matschulla

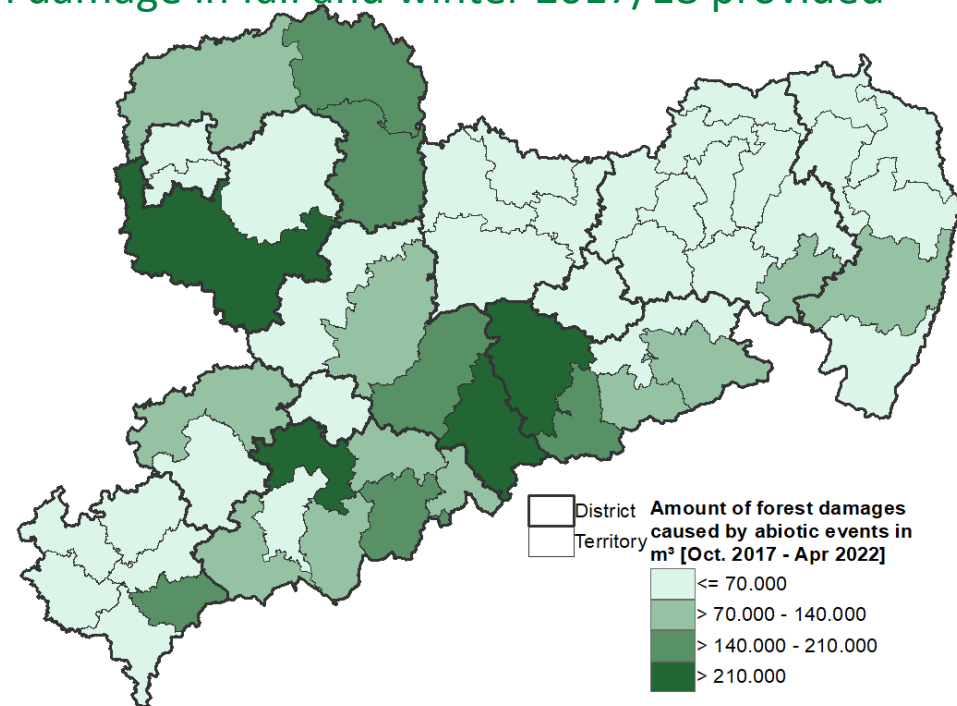
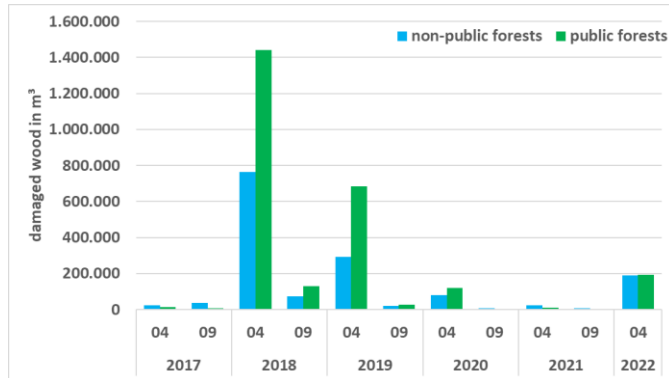
Bilateral Workshop of Forest Research Institutions from the Czech Republic and Saxony
September 21 – 22, 2022

- Causes of the calamity
- Forest damage situation in Saxony
 - The past years
 - The current situation
 - Other damaging bark and woodbreeding beetle species
- Forest protection situation on former damaged areas
 - Forest-damaging mice species
 - Large pine weevil (*Hylobius abietis* L.)
- Outlook

Causes of the calamity

Abiotic forest damage events

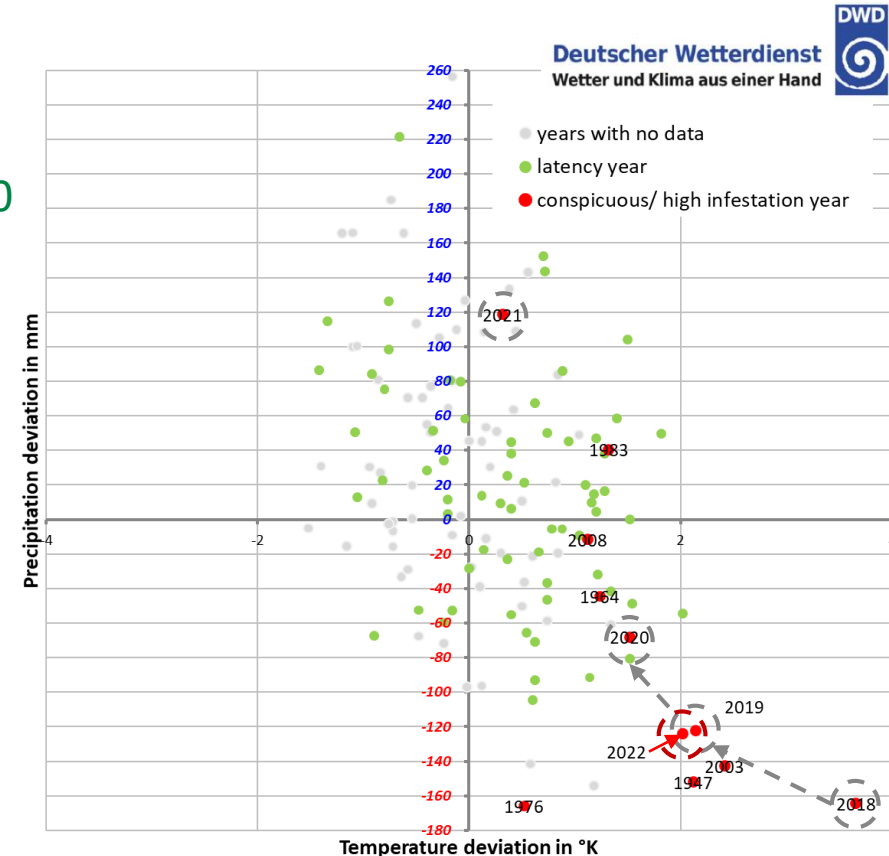
- Regionally differentiated massive storm damage in fall and winter 2017/18 provided sufficient breeding material in 2018
- Other minor events in 2019 and 2022
- Structures established in the meantime reduced the impact of the damaging events



Causes of the calamity

Weather conditions 1941 – 2022

- Comparison of spring and summer weather with the long-term average from 1961-1990
- **2018:** the warmest year since 1941 and as dry as 1976
- ideal conditions for mass propagation
- **2019 a. 2020:** also significantly too warm and too dry
- **2021:** mostly moderate course
- **2022:** same conditions as 2019



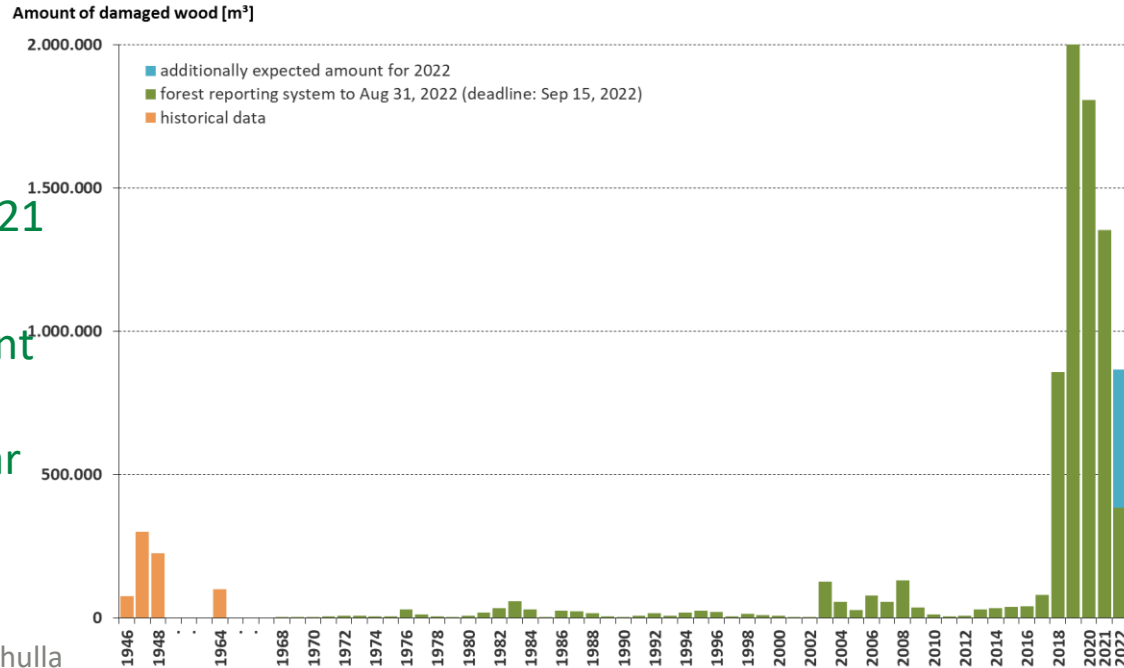
The past years

Time series of infestation development in Saxony since 1946

Over 6 Mio. m³ damaged wood caused by bark beetle between 2018 and 2021

Clearly declining trend since 2021

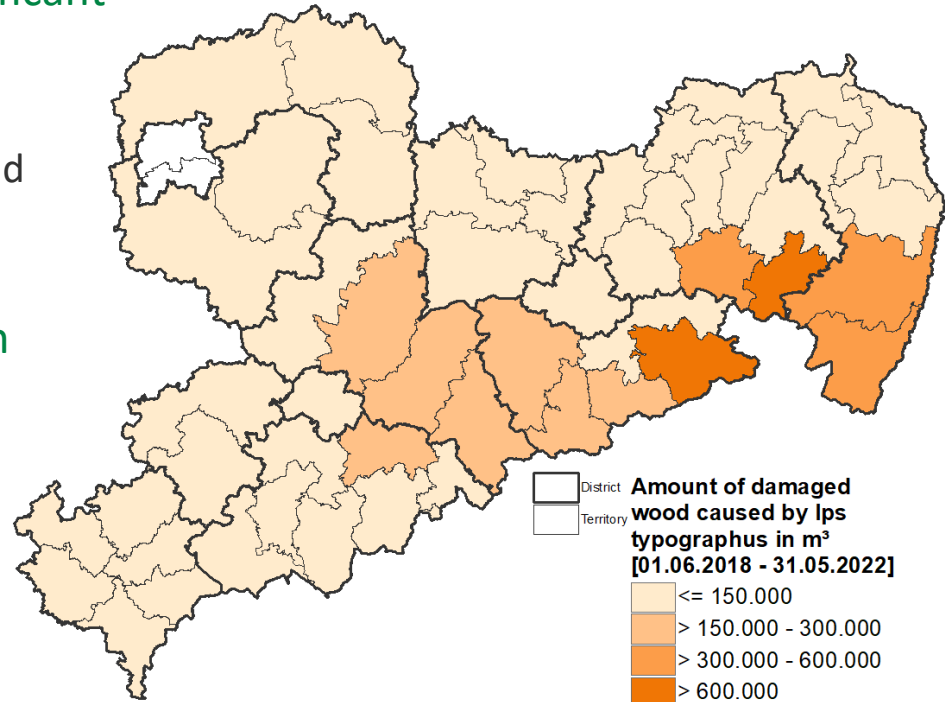
2022: despite good development conditions, smaller amounts of damaged wood registered so far (compared to previous years!)



The past years

Spatial distribution of damaged wood from 2018 to 2021

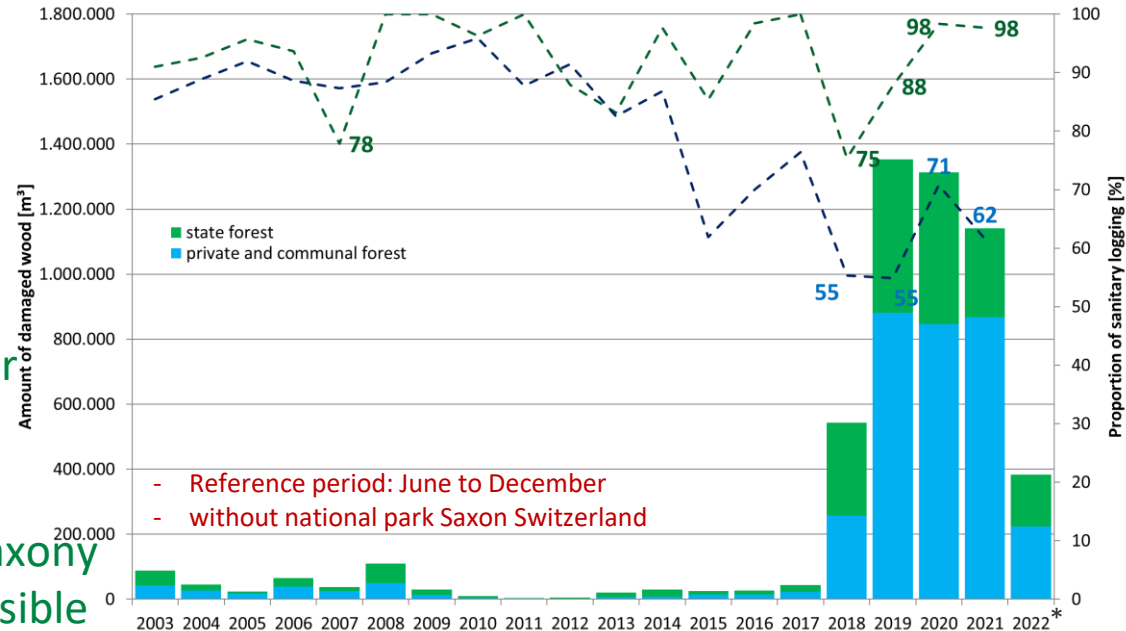
- **2018:** infestation in all regions with significant spruce proportions
 - with a focus on the hilly country, the National Park Saxon Switzerland and eastern Saxony
- **2019 – 2021:** Continued concentration in central and eastern parts of the country, beginning decline in western Saxony
- Almost the complete loss of spruce in some regions



The past years

Development in forests with different forms of ownership

- Private and communal forests with higher amounts despite lower spruce area
- Reduction of infestation dynamics in the state forest significantly earlier and stronger
- Recording of infestation and sanitary measures in eastern Saxony no longer comprehensively possible



* Reporting status: September 09, 2022

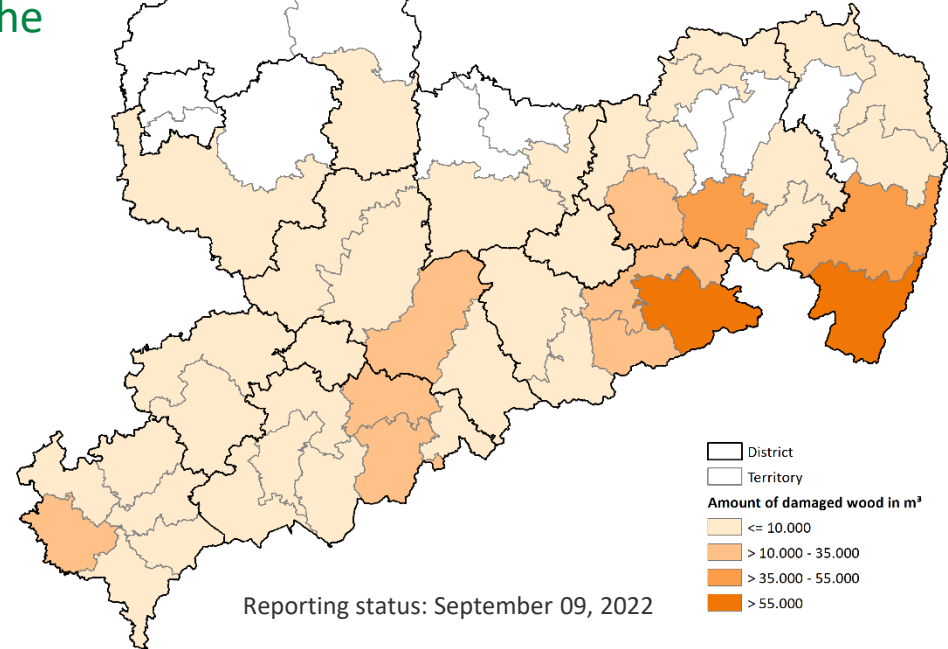
Current situation in 2022

Spatial distribution of damaged wood

- Main damage area still mainly in the East of the river Elbe
- Almost the complete loss of spruce in the Lusitian uplands is probable



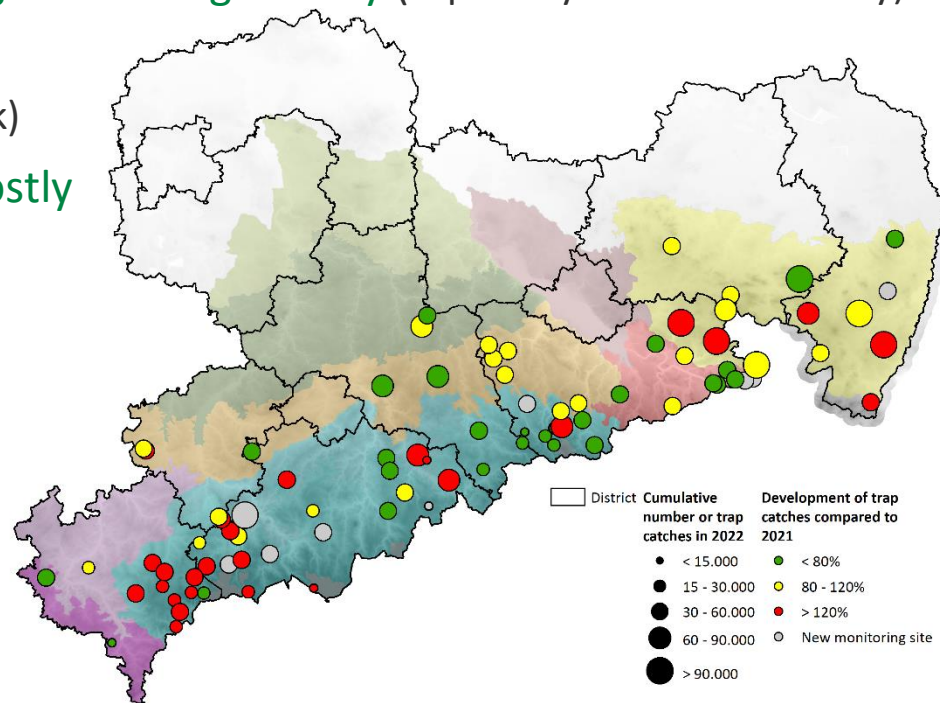
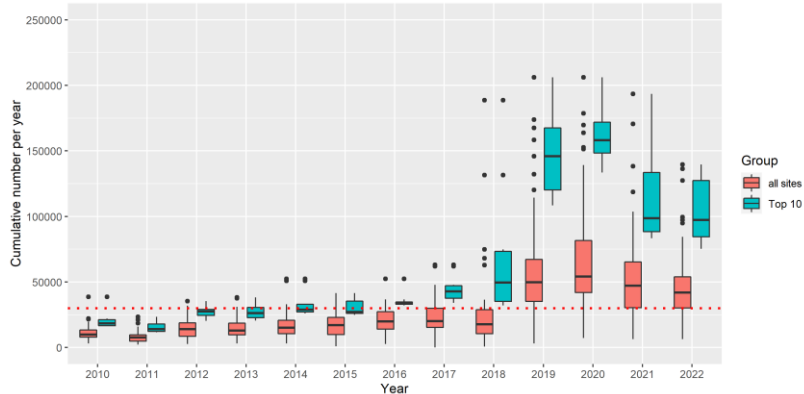
- slightly increase in some regions in western Saxony



Current situation in 2022

Results of bark beetle monitoring

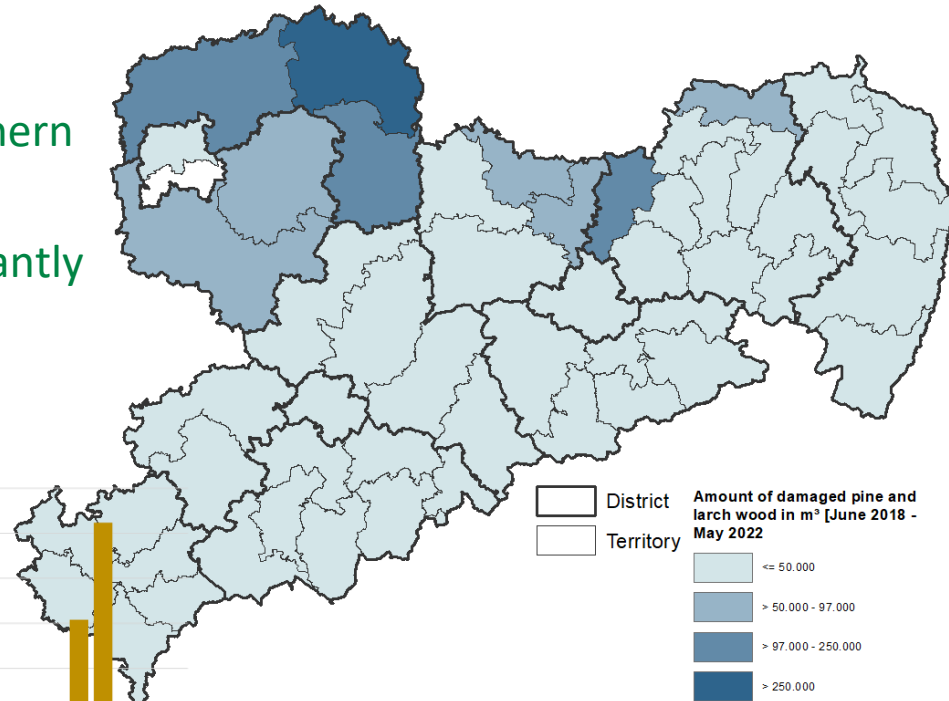
- As in previous years, there was very high swarming activity (especially in eastern Saxony)
- Multiple exceedances of the warning threshold at all sites (3.000 bb/trap*week)
- But cumulative Trap catch numbers mostly a little bit lower than in 2021 (except the western Ore Mountains!)



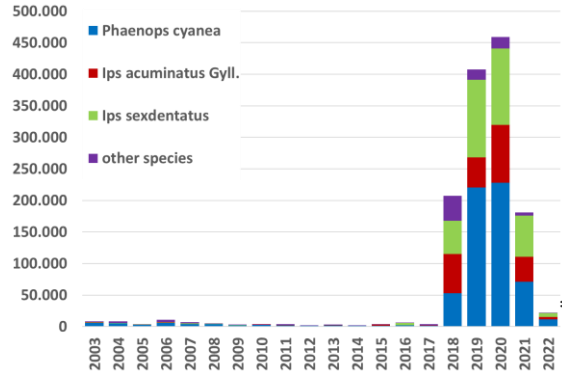
Other damaging bark and woodbreeding beetle species

Damage in Scots pine and Larch stands

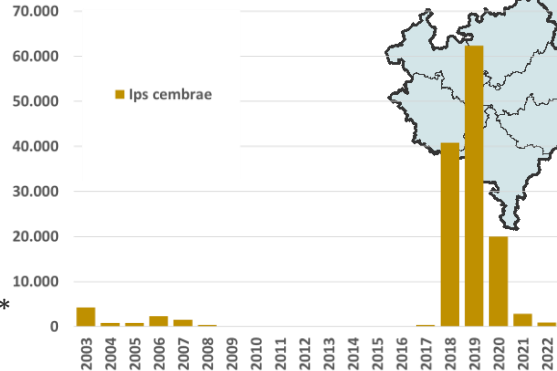
- Focus on the Scots pine regions of northern Saxony
- Damage incidence at Scots pine significantly declining since 2021
- Peak at larch already reached in 2019



Amount of damaged wood in m³



Amount of damaged wood in m³

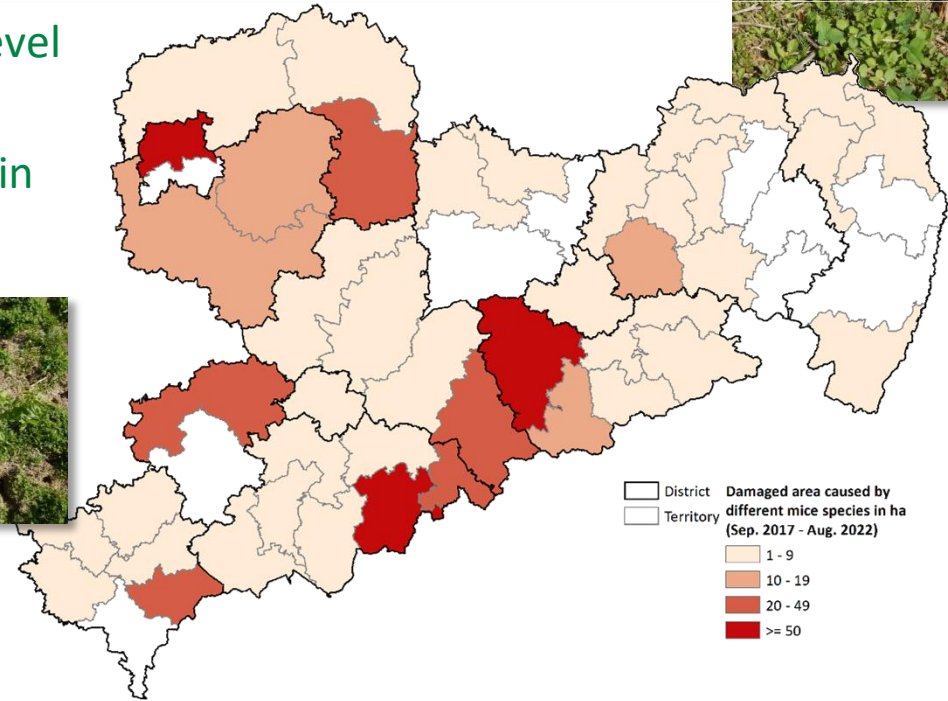
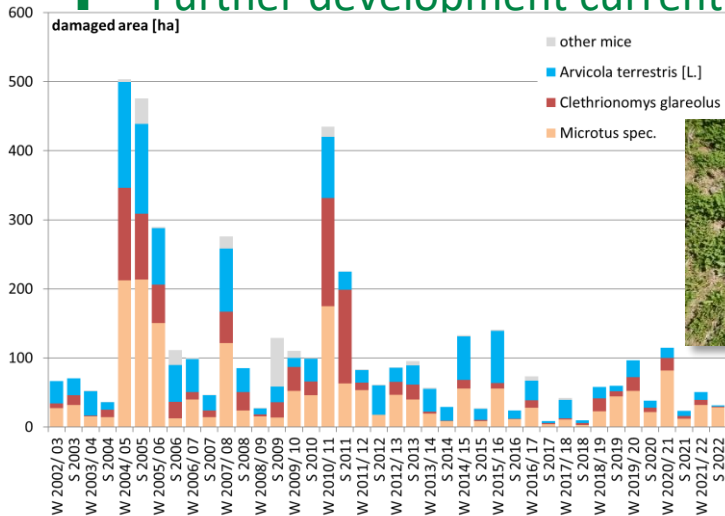


* Reporting status: September 09, 2022

Situation on former damaged areas

Forest-damaging mice species in broadleaved reforestations

- Damage mainly on former storm damaged areas
- damaged areas have remained at the level of the last 10 years
- Further development currently uncertain



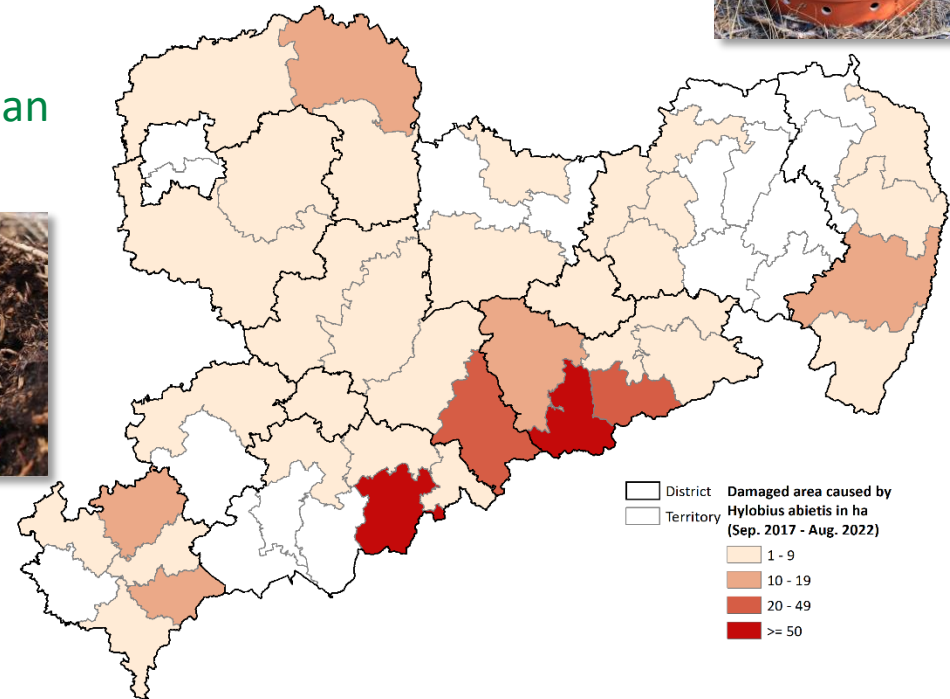
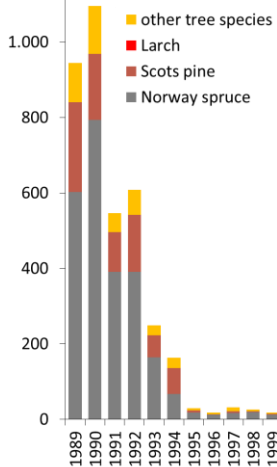
Situation on former damaged areas

Large pine weevil (*Hylobius abietis* L.) in coniferous reforestations

- Focal points in areas with a high proportion of conifers in the future tree species composition
- Damage situation is less pronounced than expected



damaged area [ha]





Expected development in the next years

- Bark and woodbreeding beetle species
 - a reversal of the current trend is not expected
- Reforestation areas
 - Direction of development currently unclear
- Climate
 - Weather conditions of recent years are becoming more frequent
 - Faster and more unplanned change in tree composition

A landscape photograph of a forest. In the foreground, there are several tall, thin, bare trees. The middle ground is filled with a dense forest of young trees. In the background, a large, dark rock formation rises above the trees under a cloudy sky.

Thank you for your attention!