Recent bark beetle damages in Bavaria, Germany

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FORESTS´ FUTURE 2021 - Consequences of Bark Beetle Calamity for the Future of Forestry in Central Europe

Two days on-line meeting March 23rd – 24th

Bayerische Landesanstalt
für Wald und Forstwirtschaft

BAYERISCHE FORSTVERWALTUNG

ZENTRUM WALD FORST HOLZ
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Bark beetle damage in Bavaria

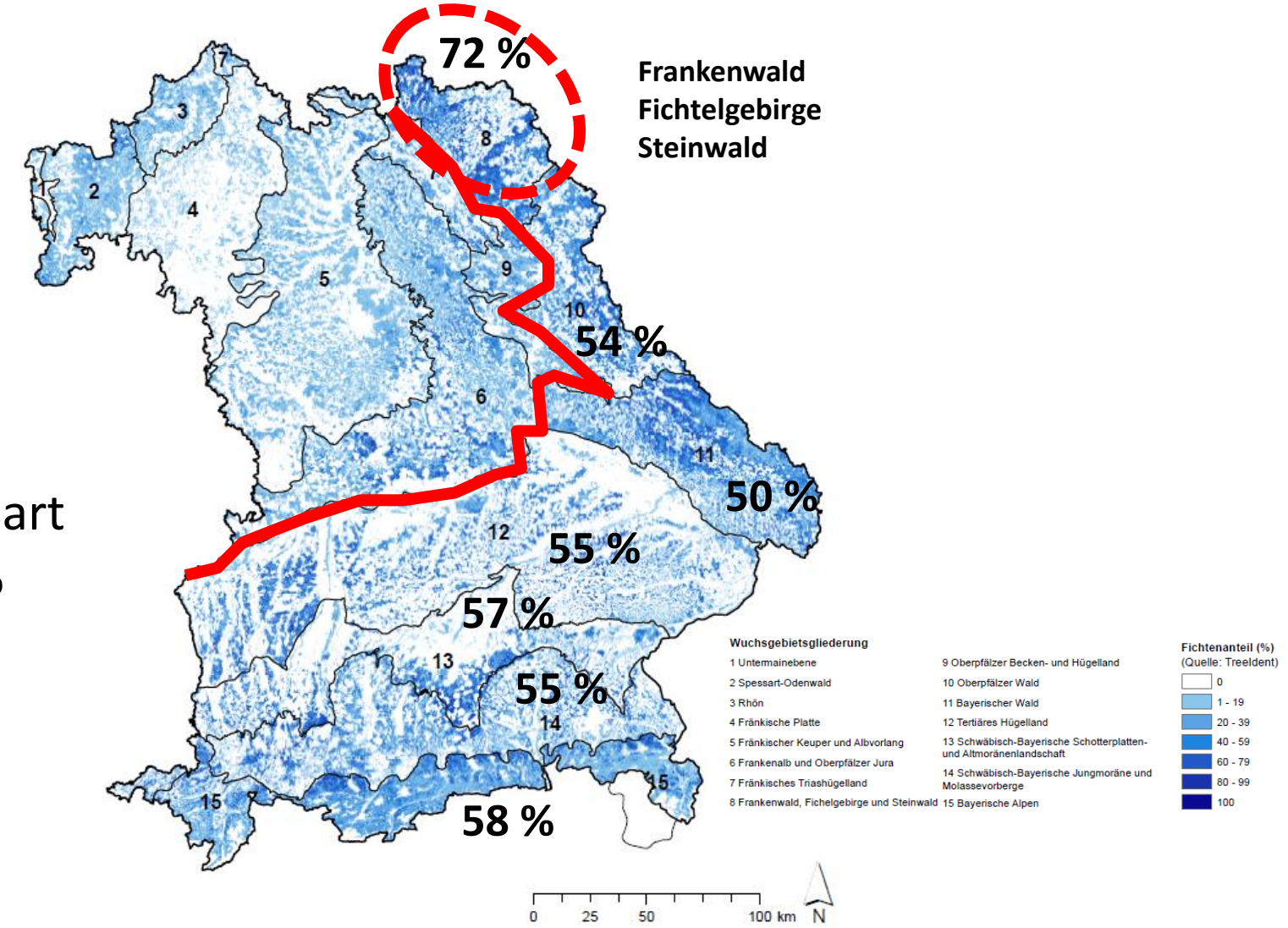
- Spruce in Bavaria
- Weather condition 2015 - 2020
- Monitoring of *Ips typographus*
- Damage in Bavaria

Spruce in Bavaria - I

	Bavaria	Germany
Forest area [Million ha]	2.6 (23 %)	11.4 (100 %)
Picea abies area [Million ha]	1.0 (37 %)	2.7 (100 %)
Ratio *Picea abies* on Forest Area [%]	41	25.4
Source: National Forest Inventory 2012 (BWI 3)		

Spruce in Bavaria - II

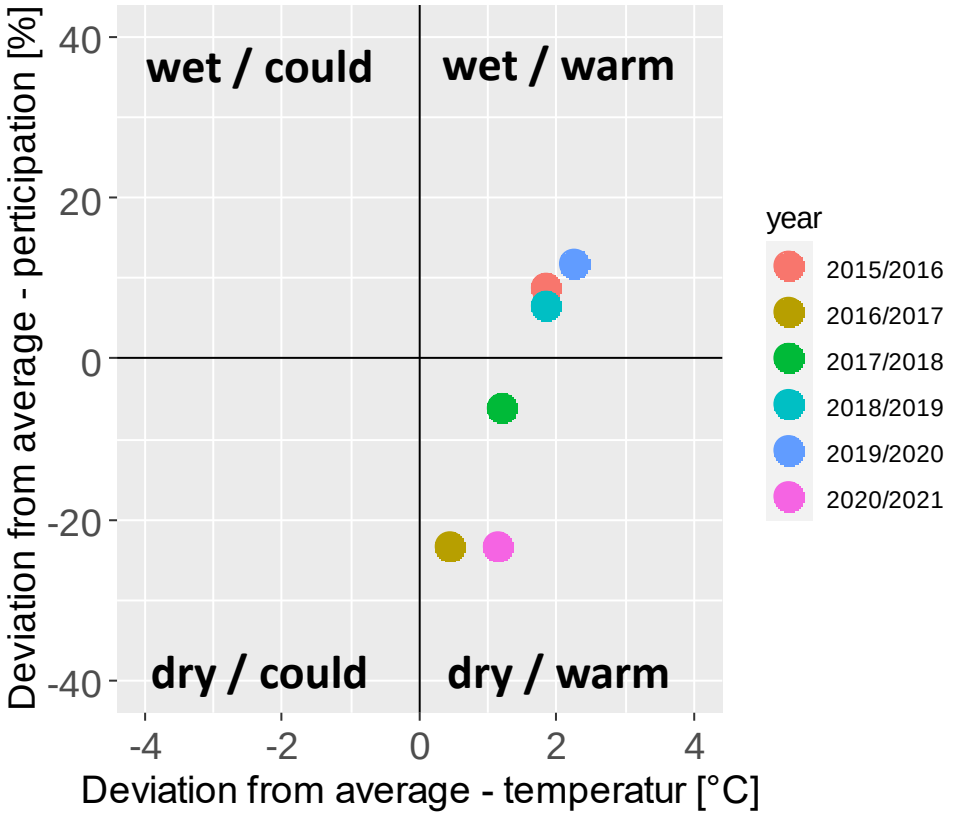
- regional differences in Spruce distribution
- Eastern, central and southern part of Bavaria with more then **50 %** **Spruce ratio**



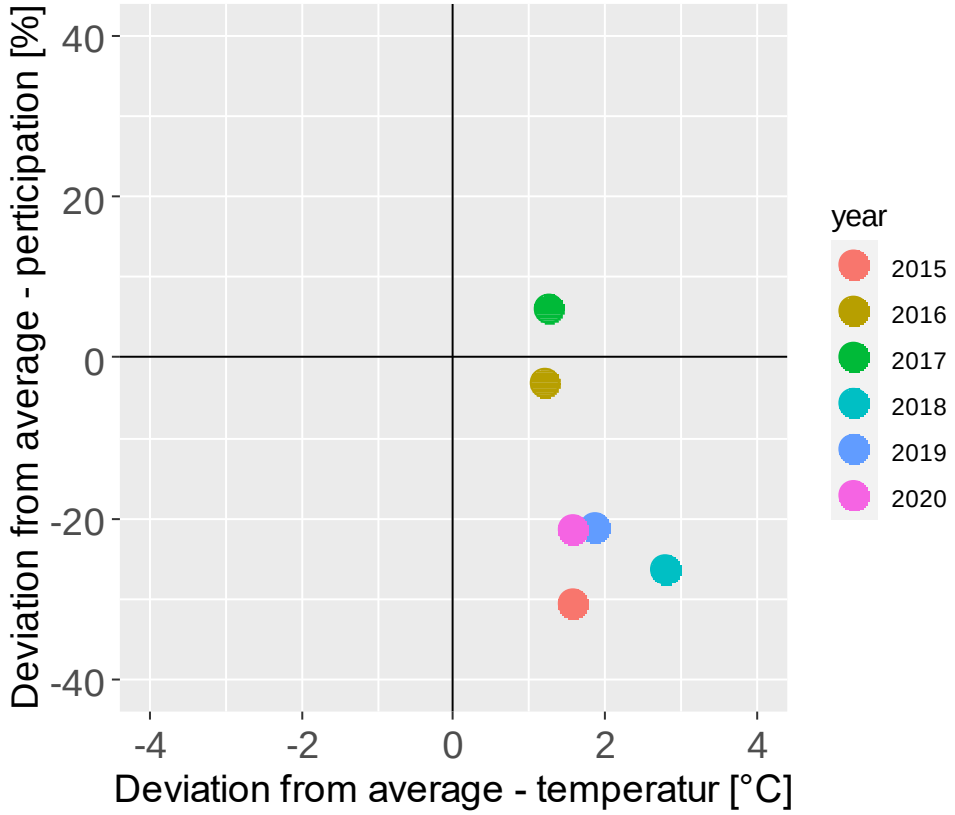
Spruce ratio in Bavaria

Weather conditions 2015 to 2020

non-vegetation period (Oct. – March)



vegetation period (April – September)



Deviationen from long-termed average, based on data of Bavarian forest climate station from 1961– 1990

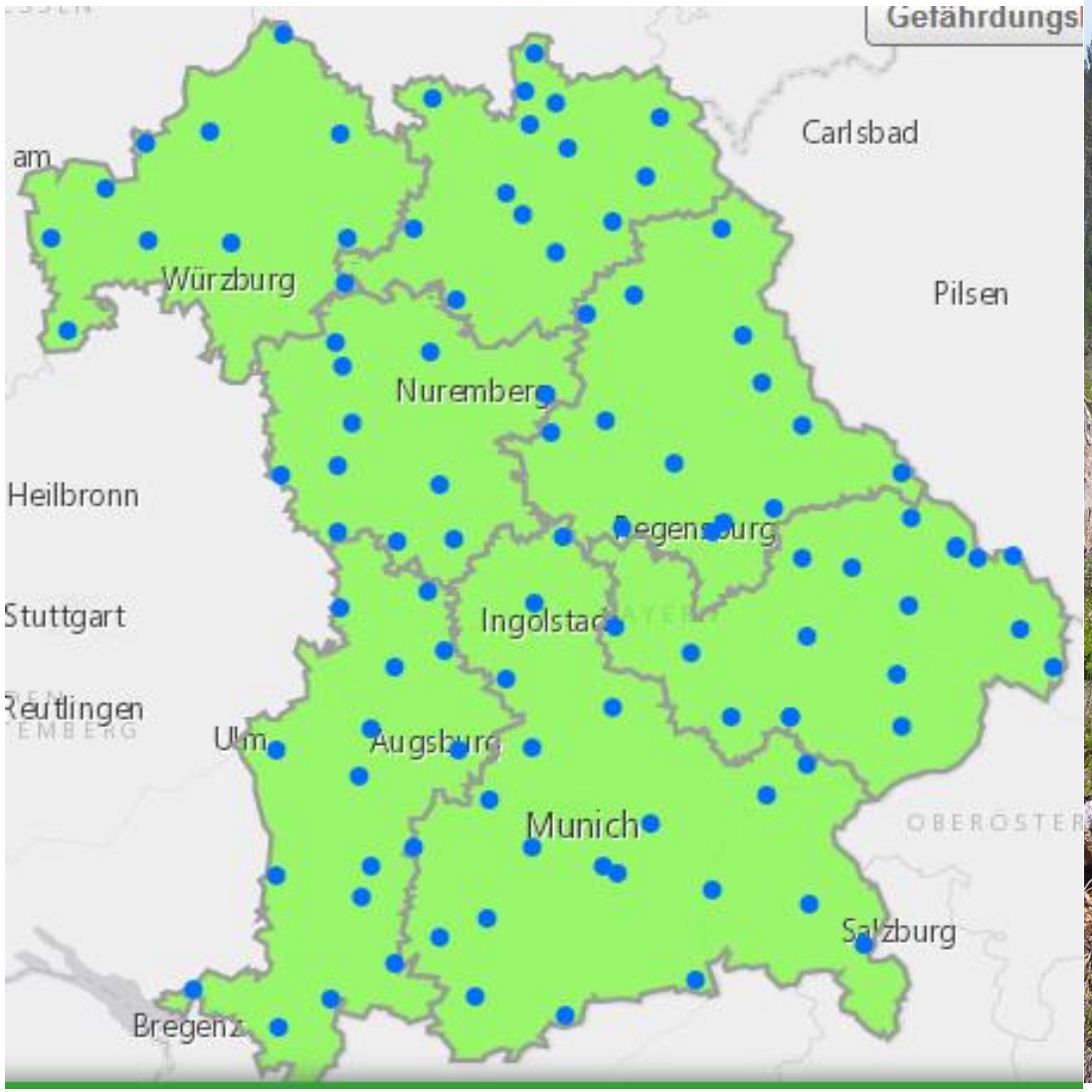
Monitoring *Ips typographus*

- started **2006**, after the drought 2003
- 120 monitoring on fixed sites consisting of

  2 traps ***Ips typographus***
  2 traps *Pityog. chalcographus*
  1 trap *Ips duplicatus* (since 2019)

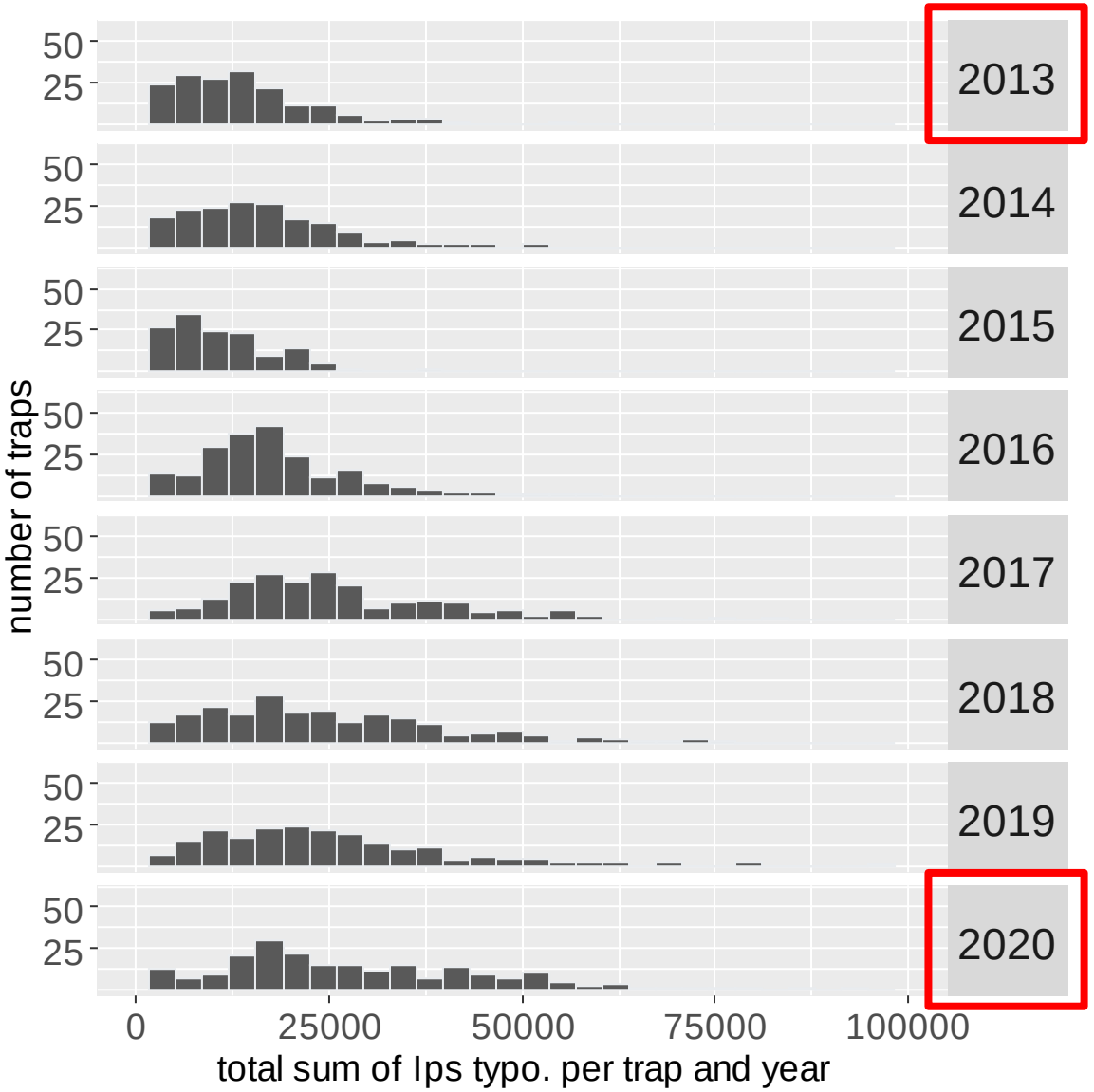
- Lures for ***Ips typographus*** produced by BASF®

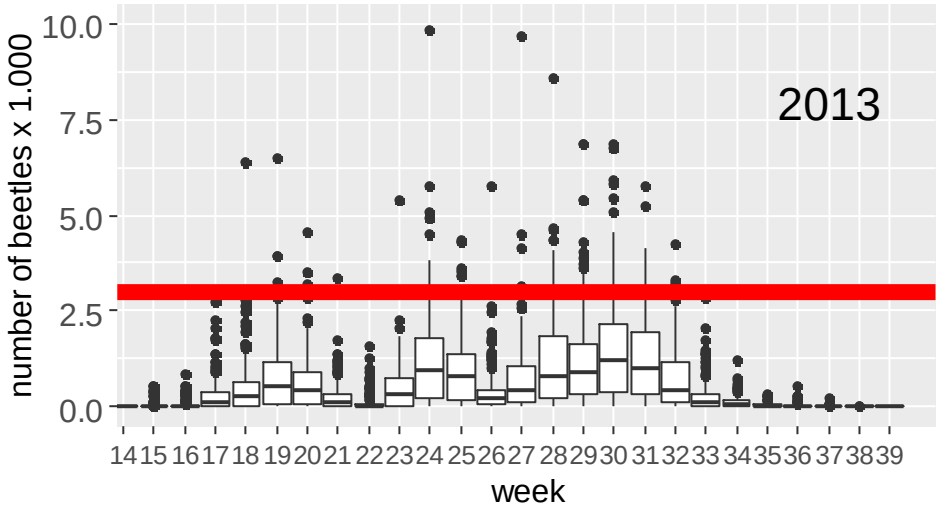
- Flight Phenology of bark beetles

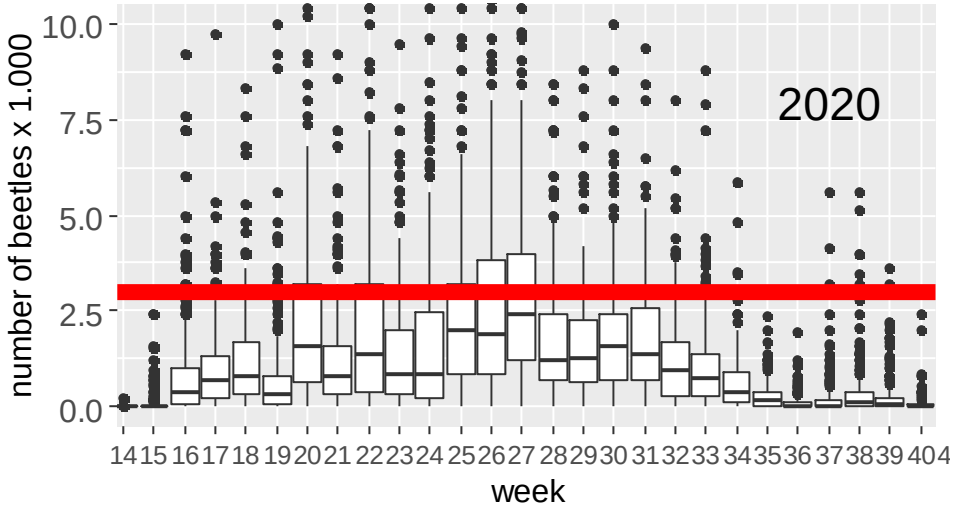


https://www.fovgis.bayern.de/borki/ or www.borkenkaefer.org

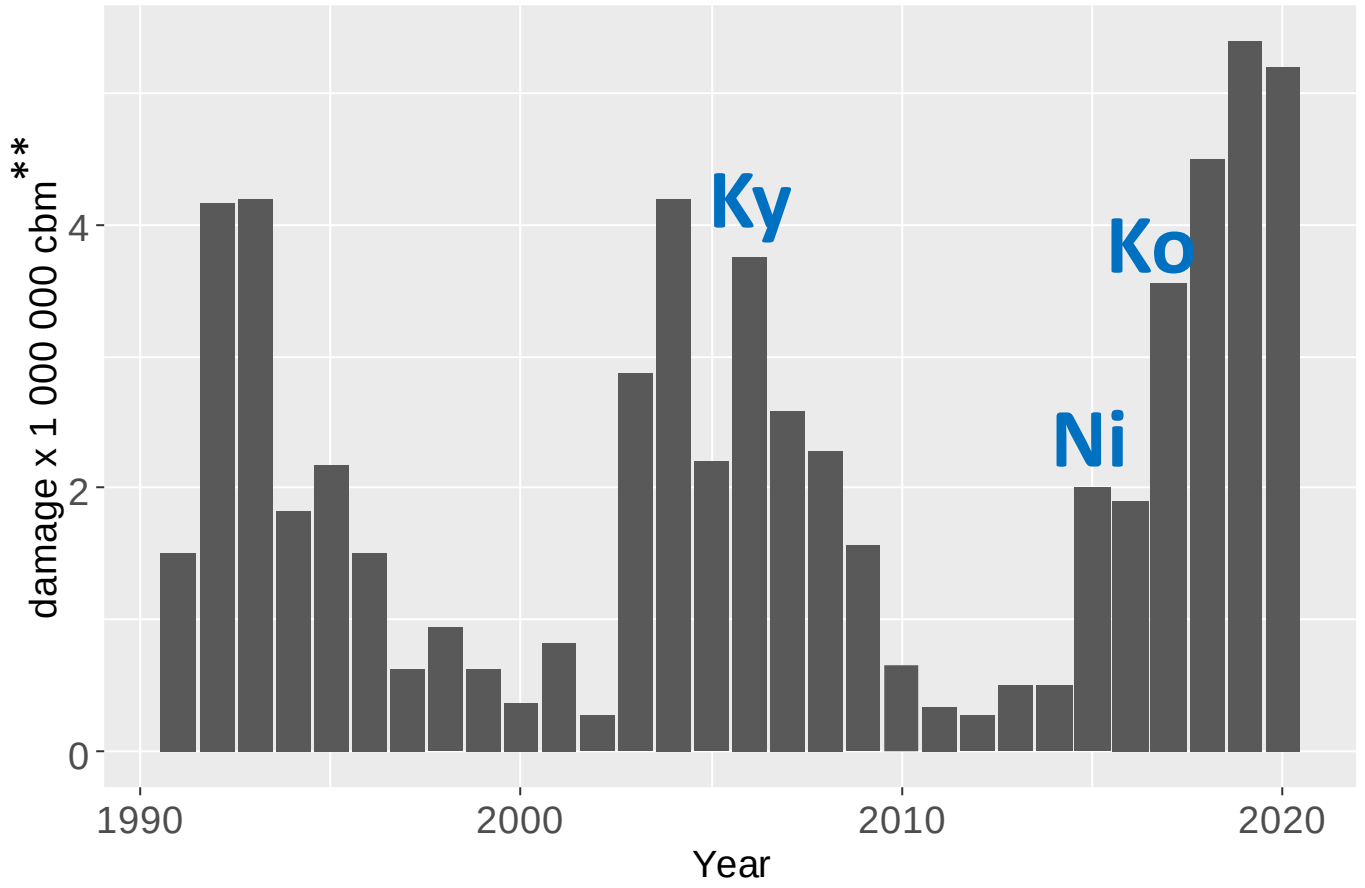
Monitoring *Ips typographus*







Bark beetle damage in Bavaria



storms in Bavaria

1991 Vivien/Wiebke

2007 **Kyrill** – 4,0 Million cbm

2015 **Niklas** – 2,5 Million cbm

2017 **Kolle** – 2,3 Million cbm

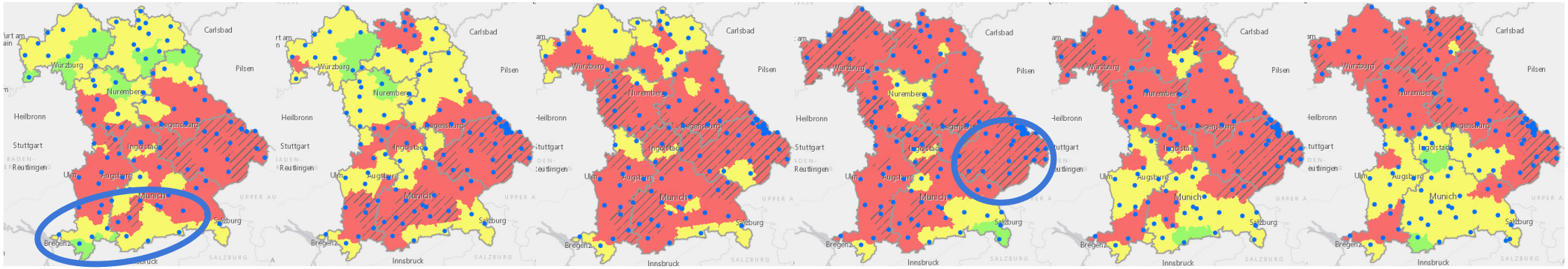
average salvage* of **all tree** species per year **22 Million cbm**

average salvage of **Spruce** and **Fir** per year **16 Million cbm**

* periode: 2002 – 2012; ** only damage due to bark beetle

Bark beetle damage in Bavaria

Bark beetle risk assessment* (map 30th September)



2015 2016 2017 2018 2019 2020

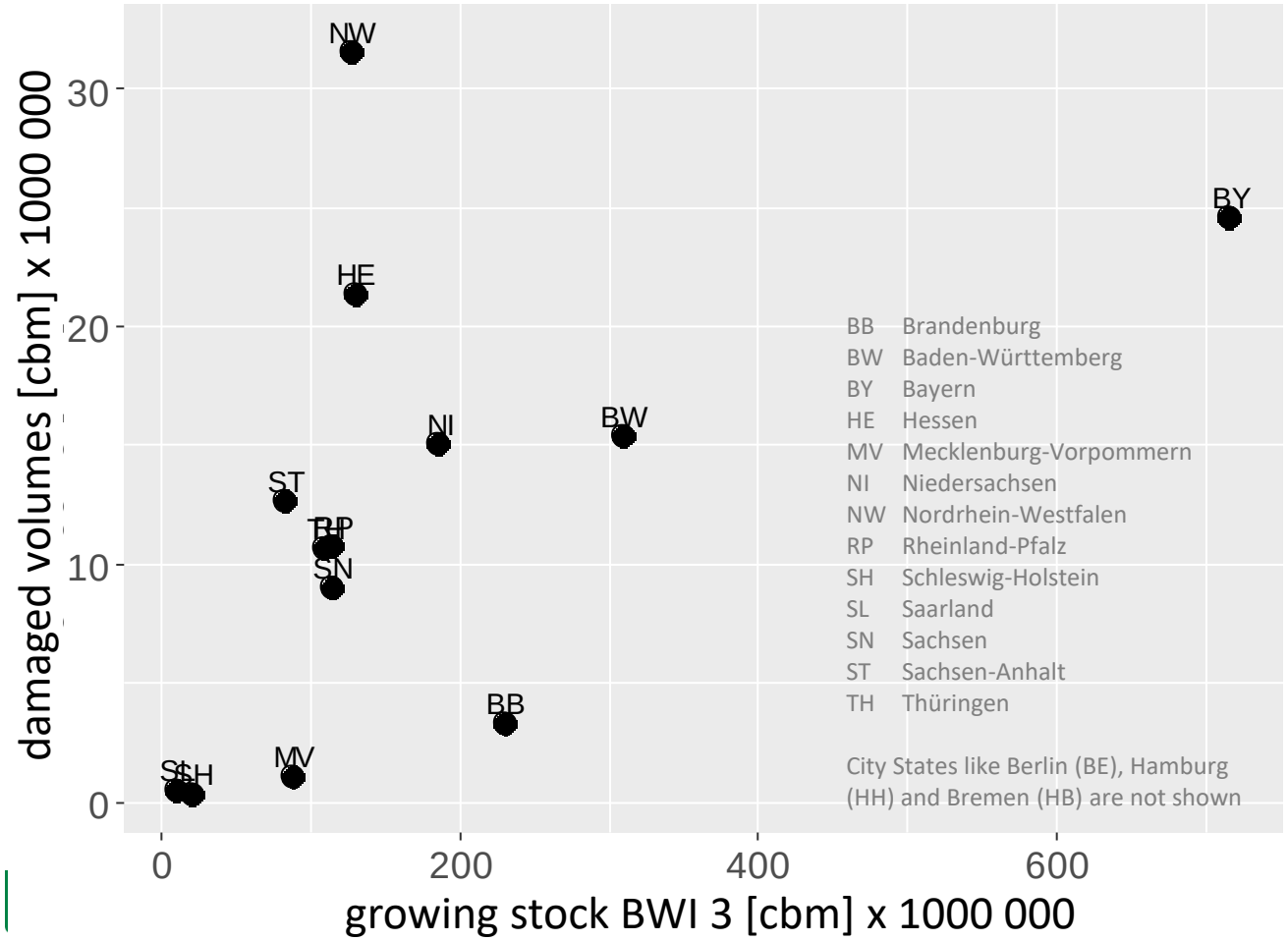
- spacial shift of bark beetle damage from 2015 to 2020
  drought + (regional storm Niklas) → drought

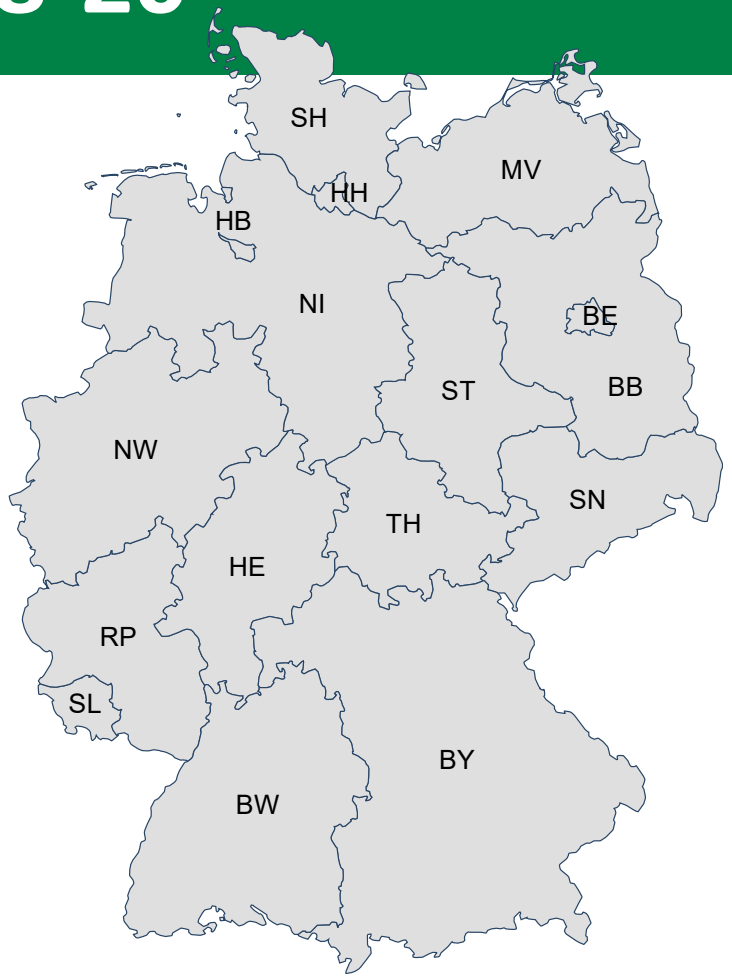
- storms regional scale
- hit the southern und southeastern part of Bavaria
  - 2015 March **Niklas** – 2,5 Million cbm
  - 2017 August **Kolle** – 2,3 Million cbm

* similar a traffic light system (green, yellow, red, red with hachures), classified by district rangers for privat forest owners showing the need for search of attacked Spruces by Bark beetles: https://www.fovgis.bayern.de/borki/

Damage inventory in Germany 2018-20

Damaged volumes of **all** coniferous tree species (*Picea*, *Pinus*, *Abies* + others) in 2018 – 2020 in federal states in Germany





David Liuzzo &Voland77, Wikipedia, States of Germany coded.svg

Sources: Damaged Volumes of **all coniferous** trees (*Picea*, *Pinus*, *Abies*) in 2018, 2019 and 2020 due to abiotic and biotic factors, **including Bark beetles** in Germany, Source: Bundesministerium für Ernährung und Landwirtschaft, data for 2018 and 2019 see press release 40 - 2020 02 26; growing stock of **all coniferous** tree species: National Forest Inventory 2012 (BWI 3)

Summary

- **historic high level** of damage, but not extrem catastrophic (regional exception in Bavaria: Frankenwald)

- switch from **storm** driven → **drought** driven bark beetle dynamics