Spruce bark beetle in Finland – abundance, damage + monitoring methods

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FIN-SWE webinar on I.typographus
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Outline

- *I.typographus* damage in Finland
- *I.typographus* monitoring in Finland
- Summary

On the basics

- Spruce bark beetle is NOT as severe pest in Finland as it is in Sweden.
- Our damage are most often related to wind-thrown trees, snow damages, clear-cut edges…

- This is the perfect time to prepare

On the damage

- In Finland, forest damage as such are not systematically collected – except for the NFI.
- How do *I.typographus* damage compare to other damage agents in the NFI (2014-2018)

Forests of Finland 2014–2018 and their development 1921–2018

SILVA FENNICA
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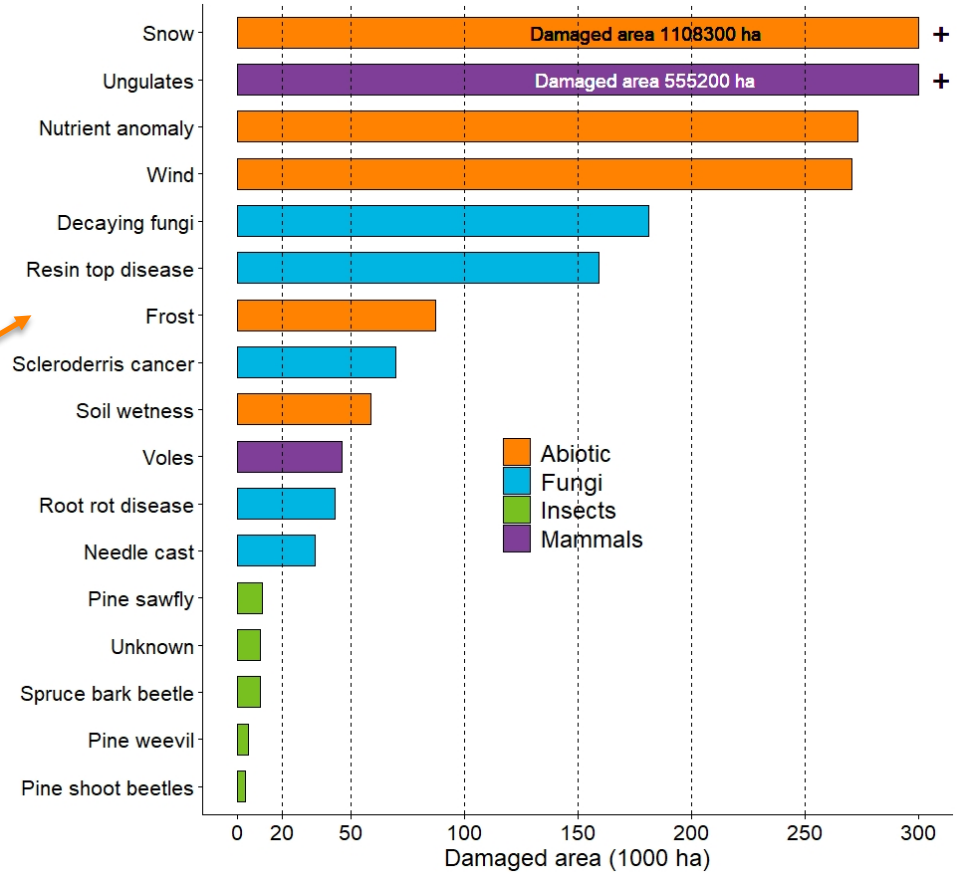
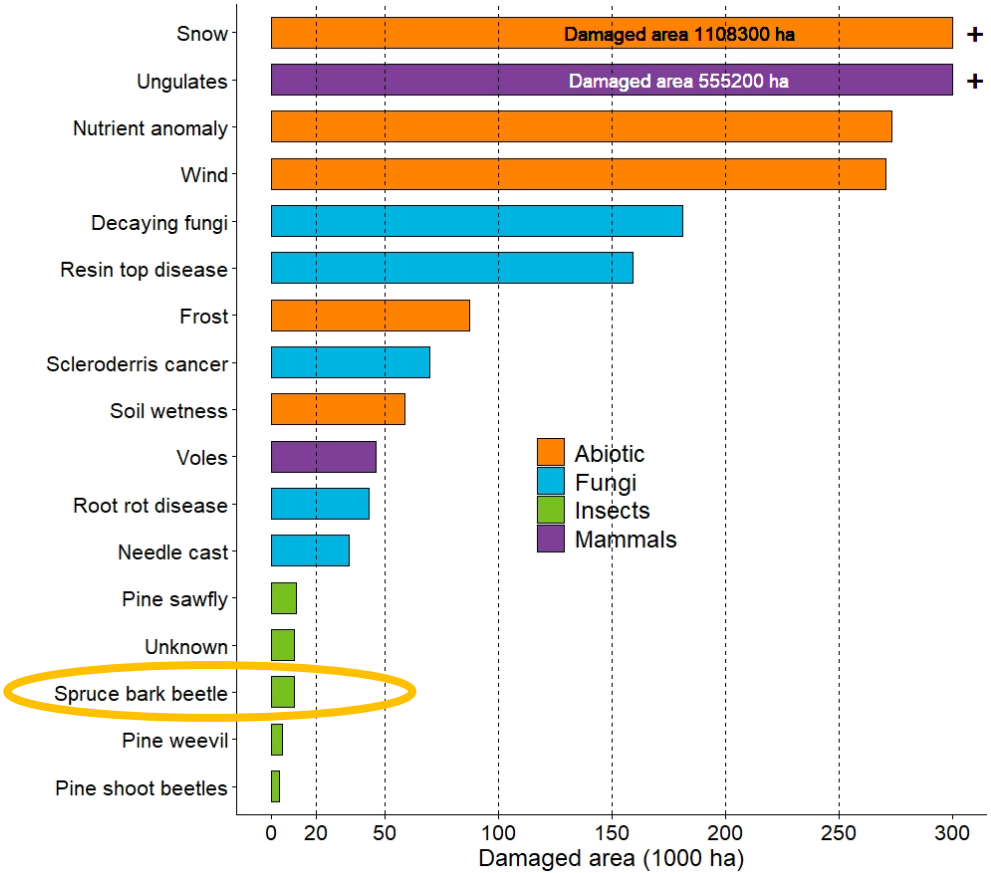


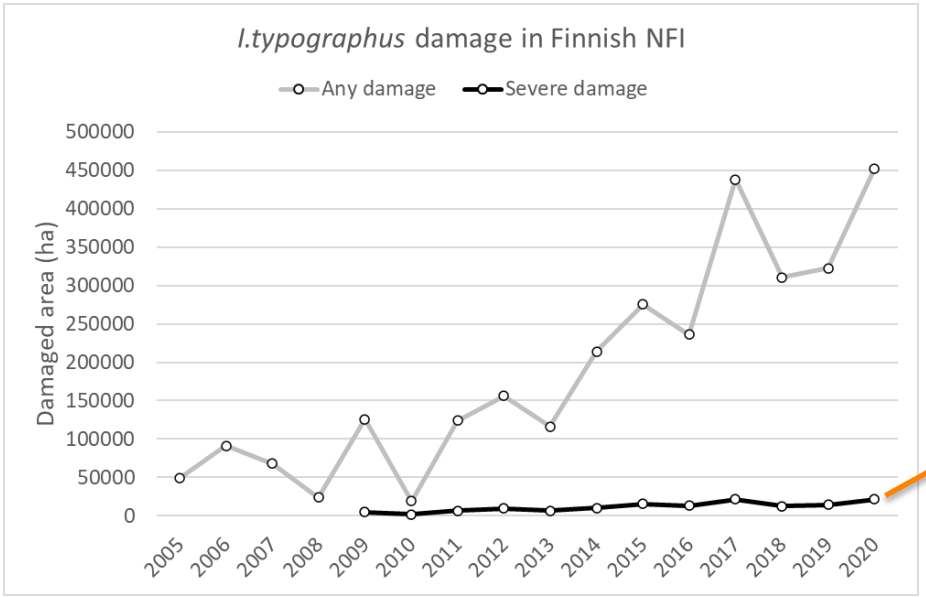
On the damage

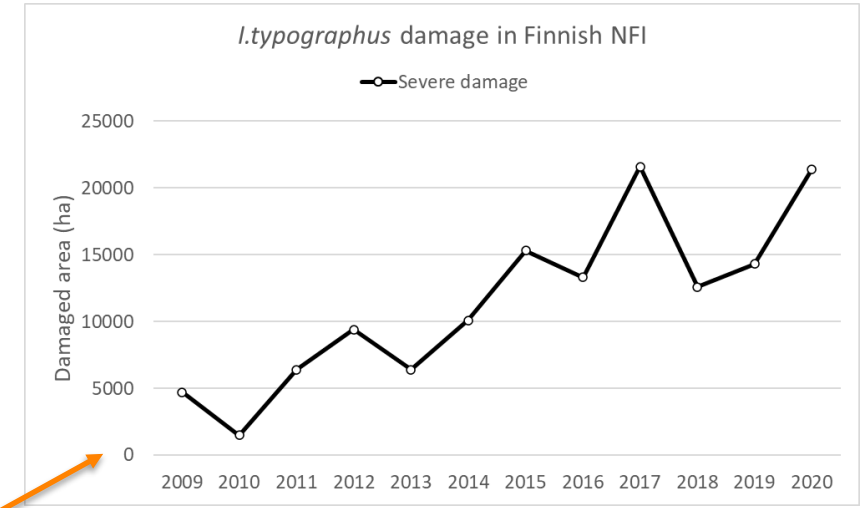
- That figure is an underestimate:
  - NFI field work is conducted during the whole snow-free period…
  - … i.e. also during times when the damage is not visible.
  - The damage are unobservable in large parts of the country – every year



On the damage

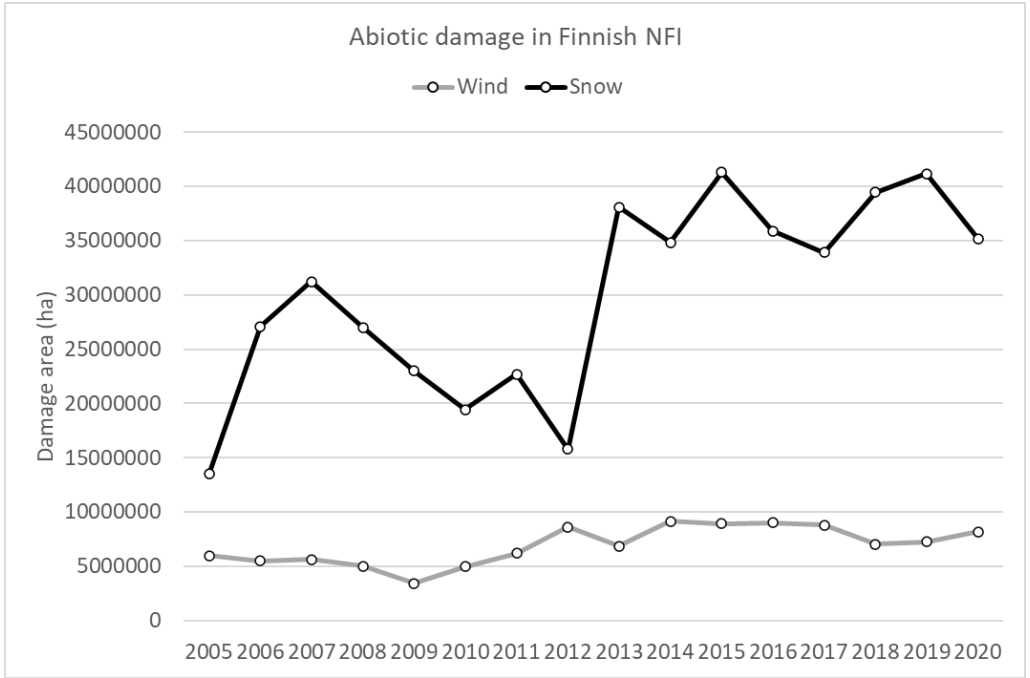
- Still, the NFI shows a trend in *I.typographus* damages:





On the damage

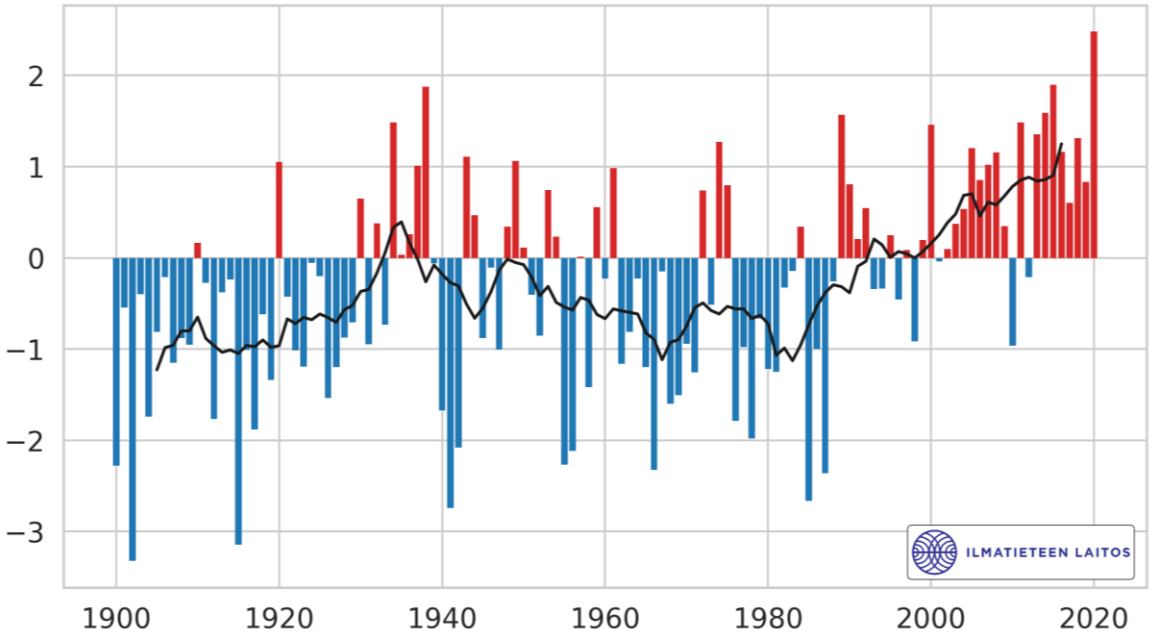
- **Remember!** The *I.typographus* damage are secondary.
- What has happened with the catalysts…
- No obvious trend.



On the damage

- Ips like it hot!
- **What about temperature**
- Increased temperatures in summer, but even more in winter
- Summer warming aids the life and development
- Winter warming will result in more wind damage (no frost)

Temperature anomaly compared to the average (1981-2010)



On the damage

- So, the probability of *I.typographus* damage has increased – esp. after wind damage
    - Probability of wind **damage** has also increased – due to warming winters

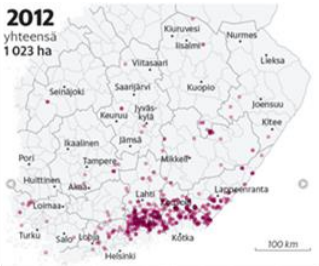
- NFI does not show this, but we have other data as well.

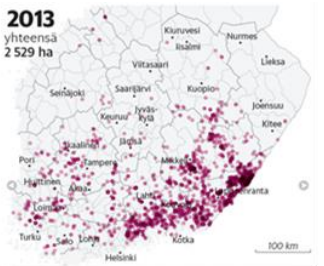
- The Finnish Forest Centre collect information on damage cuttings
    - Harvesting done because of *I.typographus* damage

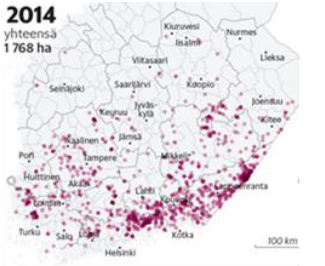
- What do the data show?

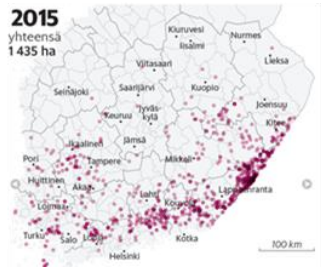
On the damage

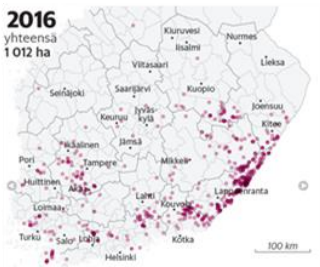
- Annual harvesting of *I.typographus* damage in Finland (2010-2019)

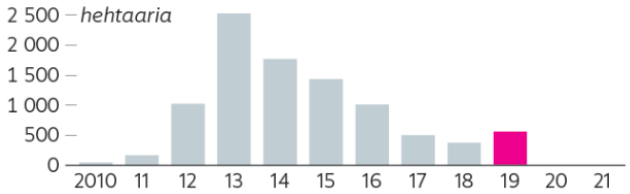












Source: Metsäkeskus Forest Centre

Compiled by Petja Pelli / Helsingin Sanomat & Graphics: Pertti Salmén / HS

On the monitoring

- After the big storms of 2010, Luke started to develop systematic monitoring of *I.typographus*
- Joint effort between Luke, Finnish Forest Centre and local “Metsänhoitoyhdistys”
- Done with pheromone traps
- 30-45 trapping sites per year in Southern and Central Finland
    - Future will see us expanding the network northwards
- Let´s check the basics of how we do it

On the monitoring

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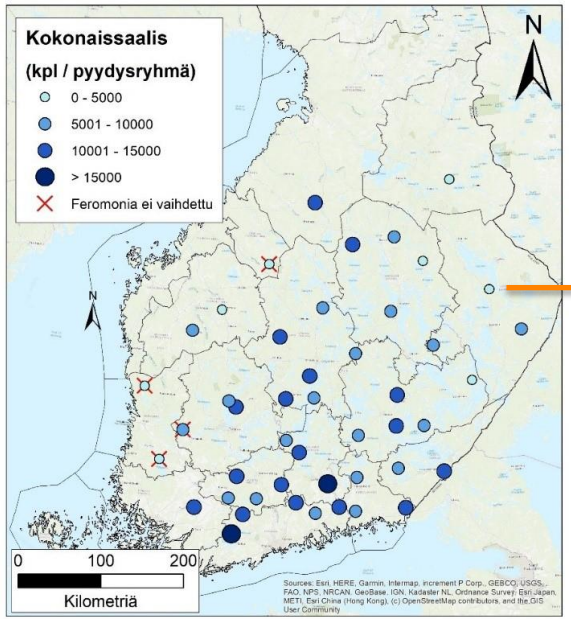
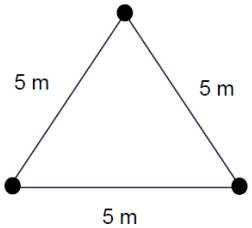
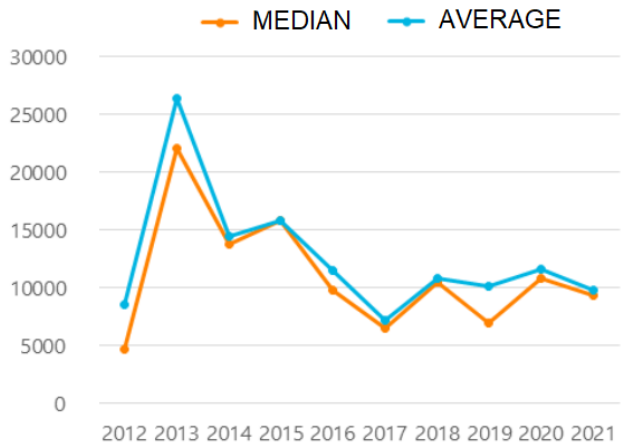




- From 2020 →
- ~40 traps in fresh clear-cuts (harvested in previous winter)
- **X** number of traps in "basic forests" to monitor the population without disturbance

On the monitoring

- Catch numbers so far:



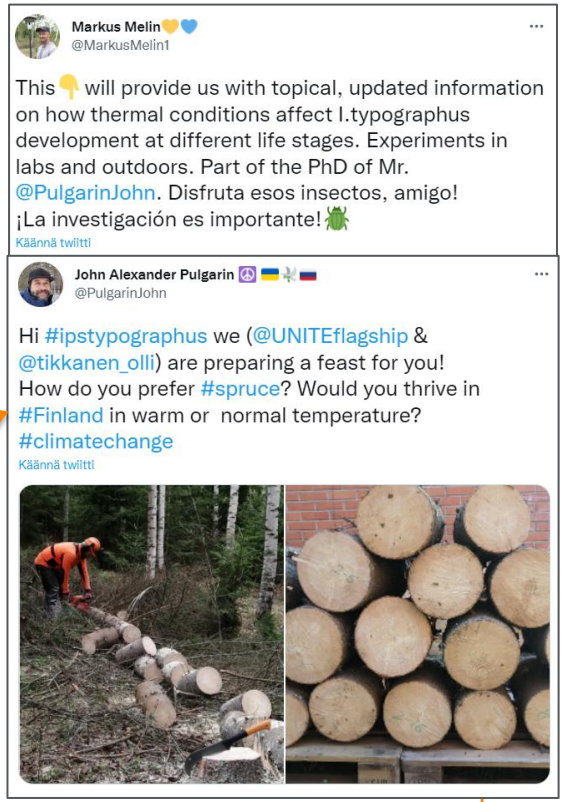
- Max. numbers ca. 60 000 – 70 000 (2013)

- Does the trap type affect? The future will tell…

Summary

- Situation comparably good – but getting worse
  - Trends in NFI and *I.typographus*
  - Trends in temperature
- Monitoring done via
  - NFI, damage harvestings
  - The pheromone monitoring
- What do we need more – in my subjective opinion
  - Research on thermal conditions and *I.typograhus* development (a PhD thesis in progress)
  - Research on relationship with abiotic damage and edge effect (a PhD thesis in progress + snow damage research in progress)

Co-operation with our dear colleagues from SWE and NOR!




Cheers from Eastern Finland!