

# Invasive fungal species causing needle blight in Scots pine (*Pinus sylvestris* L.) stands in Latvia

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# Importance of understanding the pathogens associated with Scots pine

- Scots pine *Pinus sylvestris* is an abundant and **economically important** tree species in Baltic Sea region.
- **Climate change** plays a critical role in the **spread of invasive pathogens** and posing significant risks to forestry.
- A better understanding of the distribution, impact, and contributing factors of invasive pathogens is essential for developing **effective management strategies**.

# *Dothistroma* Needle Blight (DNB)

- Caused by *Dothistroma sapinea* and *Dothistopma pini*
- Affects over 80 conifer species and is a major global pine disease
- Can cause significant needle loss and reduce tree growth
- Symptoms: Yellow and brown bands on needles, that later turns red



# *Diplodia sapinea*

- Increasingly spreading across the Northern Hemisphere due to climate change
- Has a broad host range, but it primarily affects conifers
- Exists as an endophyte in pine shoots, becoming an opportunistic pathogen when the tree is under stress conditions, such as drought, insect damage, or frost
- Causes collar rot, root disease, seedling damping-off, and blue stain in sapwood.
- Symptoms: needle browning, shoot blight, twig and branch dieback, crown wilt and bark cankers in mature trees

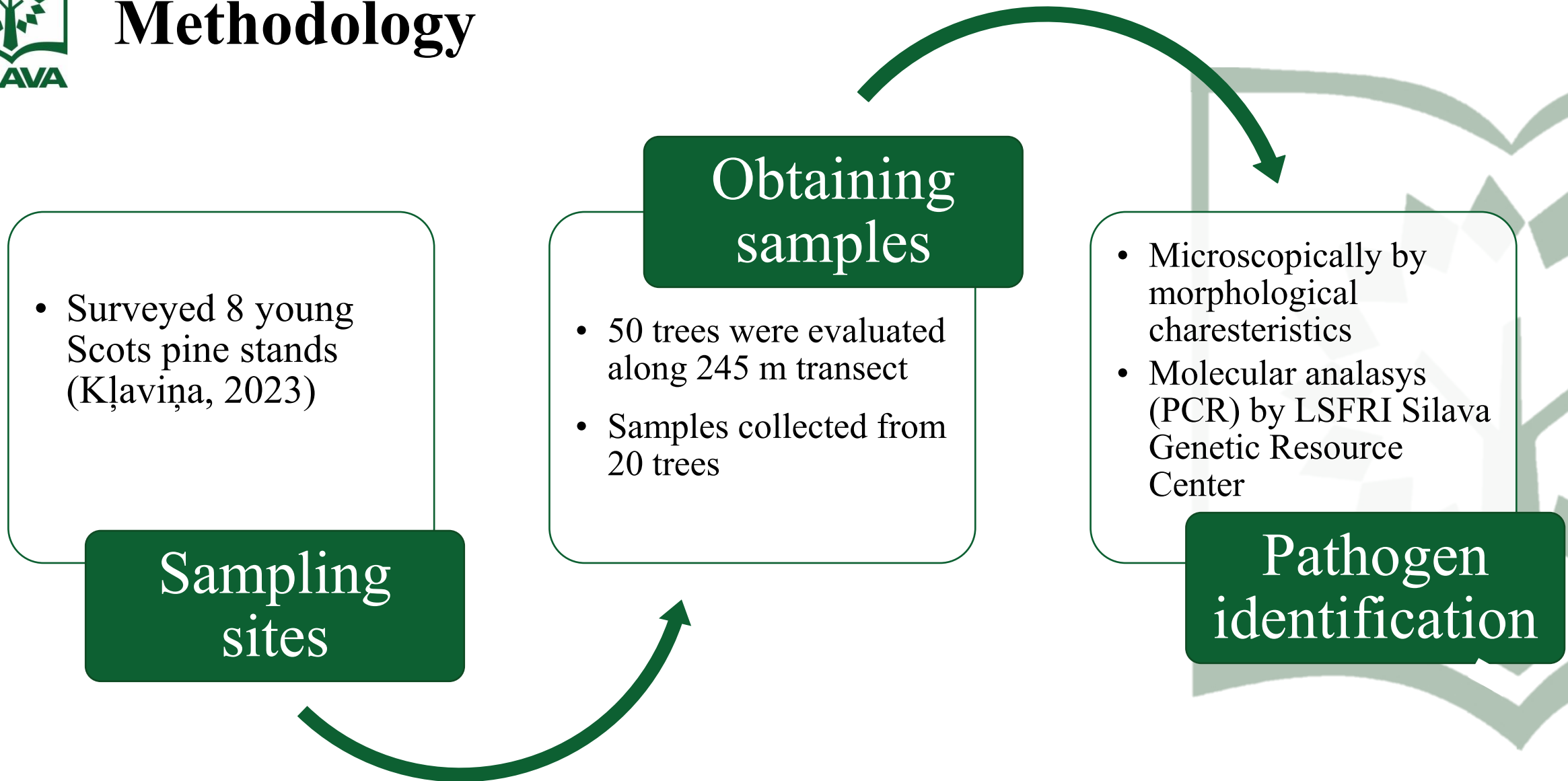


## *Lecanosticta acicola* (BSBN)

- Rapid spread in Europe over the last decades
- Found on up to 70 conifer taxa
- Causes brown-spot needle blight
- Symptoms: appear as small, irregular circular spots with well-defined margins, initially yellow or light gray green, later turning brown with a yellow halo

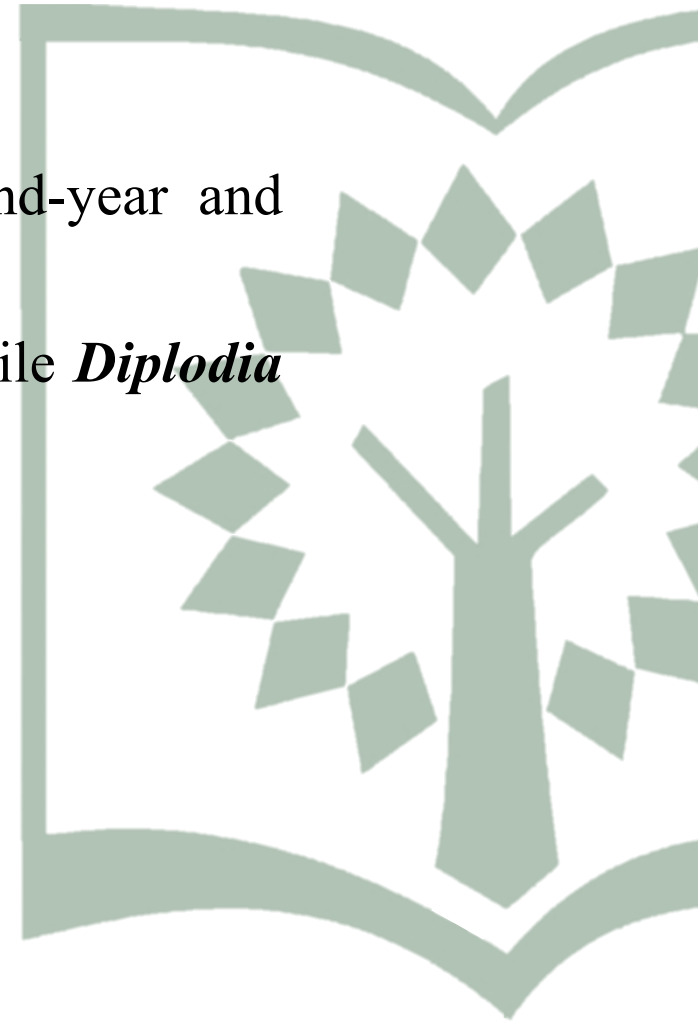


# Methodology



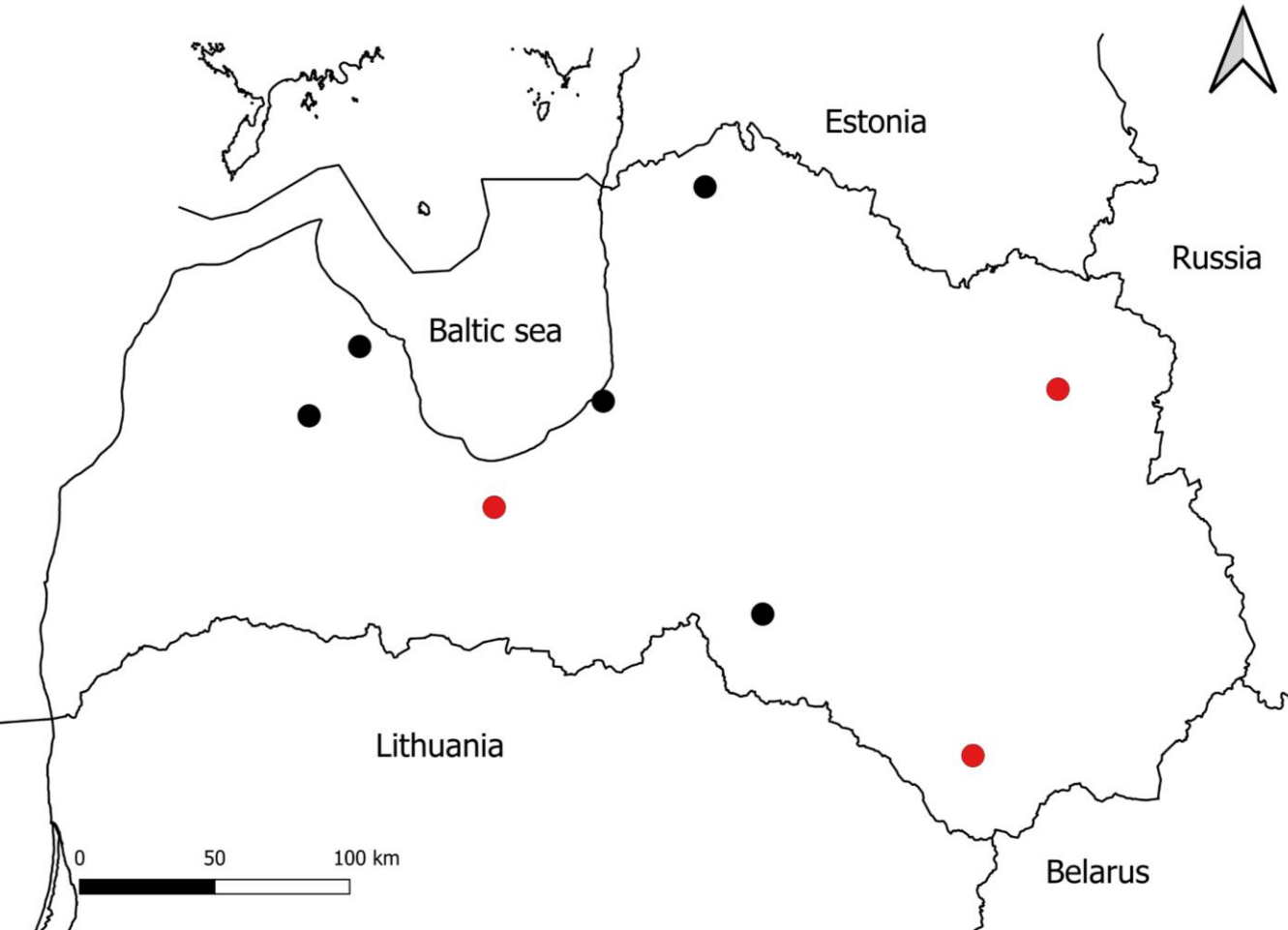
# Results (1)

- Average needle cast intensity: **Partial damage** observed in second-year and current-year needles with **no significant needle loss in the crown.**
- Detected pathogens: *Dothistroma* spp. were found in **all stands**, while *Diplodia sapinea* appeared in **6 stands** and *Lecanosticta acicola* in **3 stands**.





## Results (2)

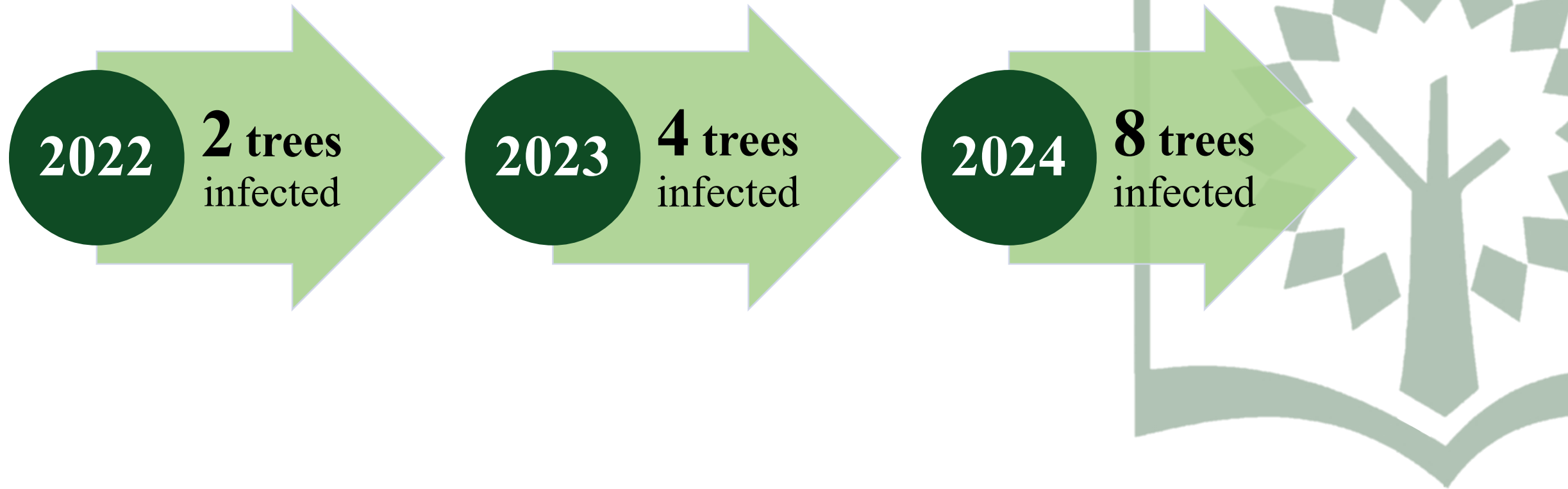


### Distribution of *Lecanosticta acicola* (2024):

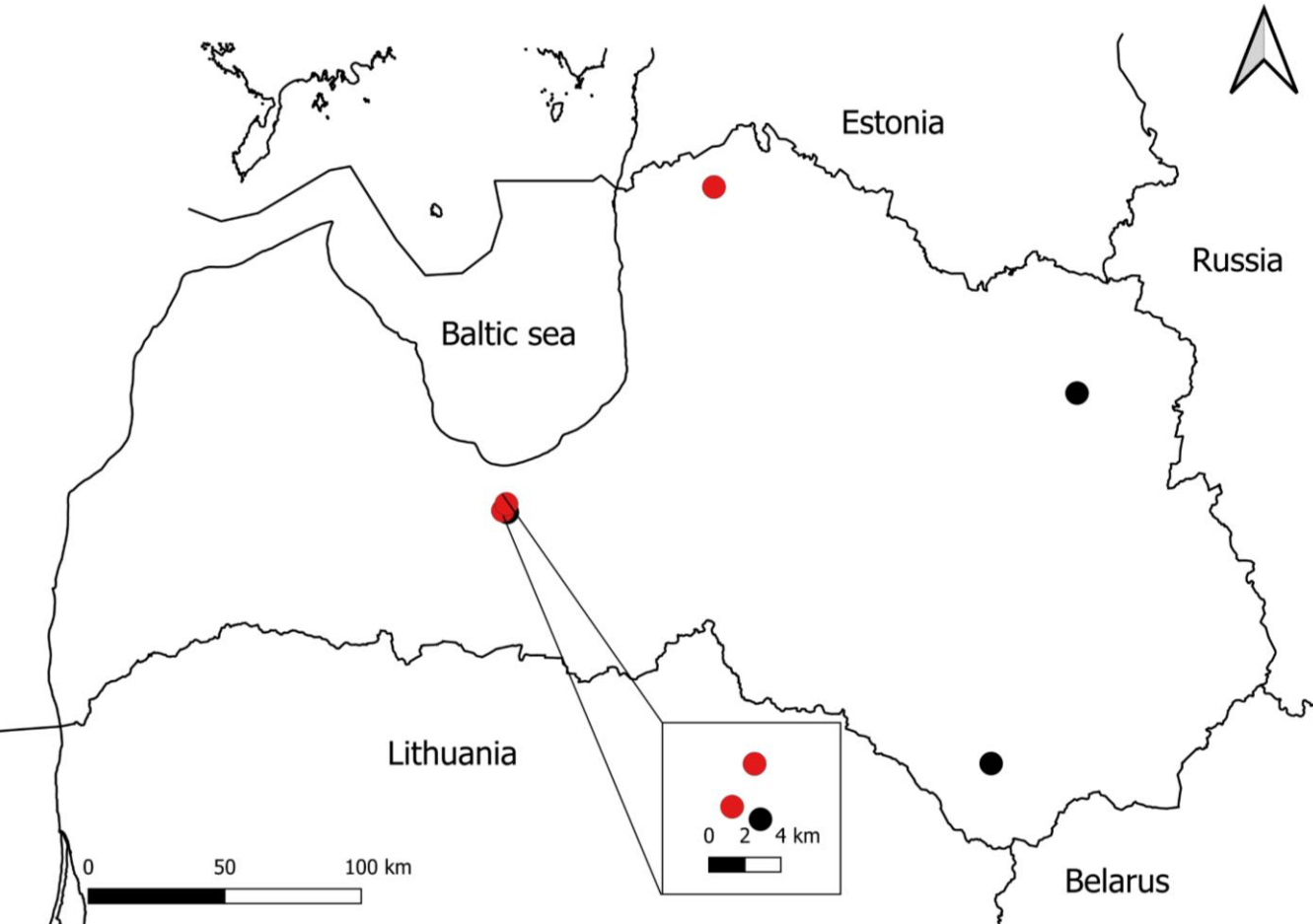
- – Forest stands where *L. acicola* was found
- – *L. acicola* was not found



## Results (3)



## Results (4)



### Distribution of *Lecanosticta acicola*:

- – Forest stands where *L. acicola* was found in **2024**
- – Forest stands where *L. acicola* was found in **2025**

# Conclusions

- *Dothistroma* spp. was the dominant pathogen detected in all surveyed stands, while *Lecanosticta acicola* was repeatedly found in three stands.
- Only one surveyed stand showed an increase in *Lecanosticta acicola* infected trees.
- Invasive needle blight fungi had minimal impact on pine health, causing partial damage to current-year and second-year needles without significant needle loss.
- An inverse correlation was observed between tree height and occurrence of *Lecanosticta acicola* with higher occurrence in trees with lower height.
- In 2025, *Lecanosticta acicola* was detected in two new stands, neighboring some infected ones from 2024 survey.

# Thank you for your attention!



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