



Adapting Ukrainian Forestry to Climate Change: Integrating Native Tree Species and Invasive Species Management in Restoration Efforts

Iryna Vyshenska, Olena Kozak
National University of Kyiv-Mohyla Academy
Kyiv, Ukraine

Invasive species as a threat to biodiversity

- The main factors: Climate Change and uncontrolled introduction and spreading of new plant species
- Consequences: loss of biodiversity
- The threats of invasive species are recognized in many international documents:
 - ***Convention on Biological Diversity¹, 1992***
 - ***Sustainable Development Goals², 2015***
 - ***Kunming-Montreal Global Biodiversity Framework³, 2022***

¹ <https://www.cbd.int/doc/legal/cbd-en.pdf>

² <https://www.un.org/sustainabledevelopment/biodiversity/>

³ <https://www.cbd.int/article/cop15-final-text-kunming-montreal-gbf-221222>

The state and gap in prevention and control invasive species in Ukraine

- In Ukraine, 3 documents concerning invasive species have been adopted:
- 1. *Action plan for the implementation of the Biosafety and Biological Protection Strategy for 2022-2025*¹ (8 out of 12 measures concern invasive species:
- 2. *State forest management strategy of Ukraine until 2035*²
- 3. *List of invasive tree species prohibited for reforestation*³, 2023
(13 tree species included)
- • on April 19, 2023 - approved
- • on October 10, 2023 - canceled

¹ <https://zakon.rada.gov.ua/laws/show/573-2022-%D1%80#Text>

² <https://zakon.rada.gov.ua/laws/show/1777-2021-%D1%80#Text>

³ <https://zakon.rada.gov.ua/laws/show/z0641-23#Text>



Quote: The Minister of Environmental Protection and Natural Resources of Ukraine, **Ruslan Strilets**¹:

- *“Three million hectares of forests in Ukraine were damaged by Russian aggression and need to be restored. The approval of the List of Invasive Species is a **historic environmental step** that will allow to restore climate-resistant forests with high protective properties and without aggressive alien species in Ukraine”*

¹ <https://mepr.gov.ua/mindovkillya-zatverdyllo-perelik-chuzhoridnyh-vydiv-derev-zaboronenyh-u-vidtvorenni-lisiv/>

Arguments¹ of Ukrainian forest sector representatives for using invasive trees in forestry

Currently, **73²** introduced species and subspecies of trees and shrubs grow in the forests of the State Forestry Agency with a total area of **351,000 hectares**, which is **5.2%** of the total area of forested lands.

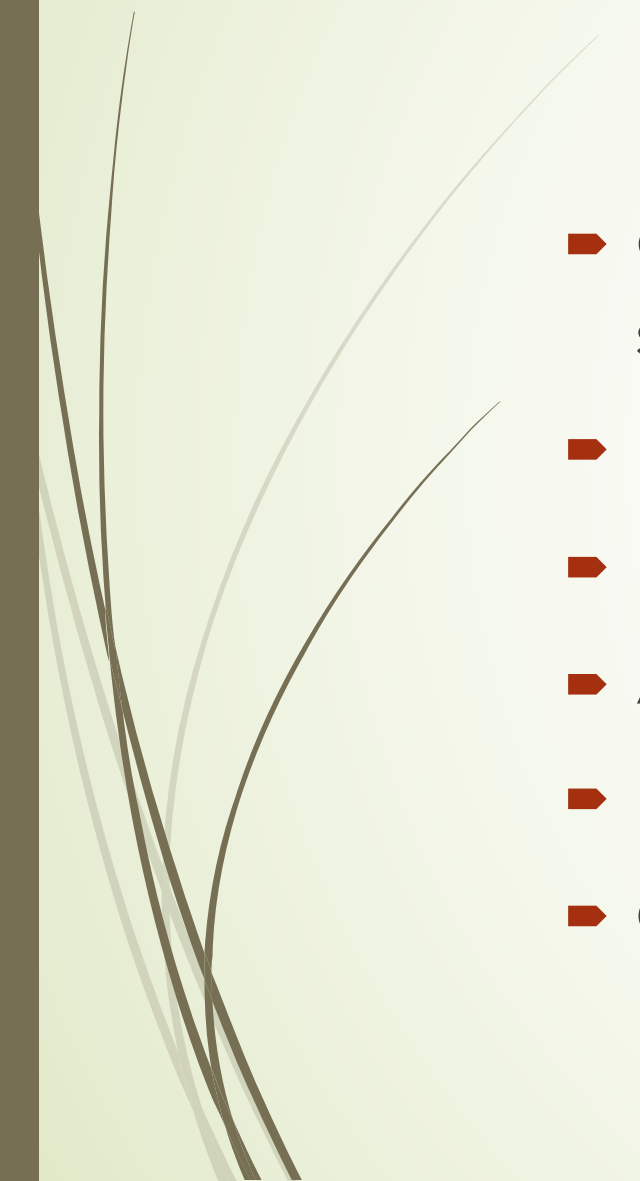
• High biotic resistance in arid conditions	Gleditsia triacanthos, Robinia pseudoacacia, Prunus serotina,
• Valuable wood	Juglans sp., Robinia pseudoacacia, Prunus serotina,
• Fast growth	Quercus rubra, Paulownia sp.,
• Ameliorating properties	Quercus rubra,
• Recultivation	Robinia pseudoacacia,
• Resilient to pathogens	Fraxinus pennsylvanica,

¹<https://tlu.kiev.ua/pro-nas/novini-zakhodi/novina/article/rekomendaciji-za-rezultatami-vseukrajinskogo-kruglogo-stolu-perspektivi-vidtvorennja-lisiv-ukrajini.html>

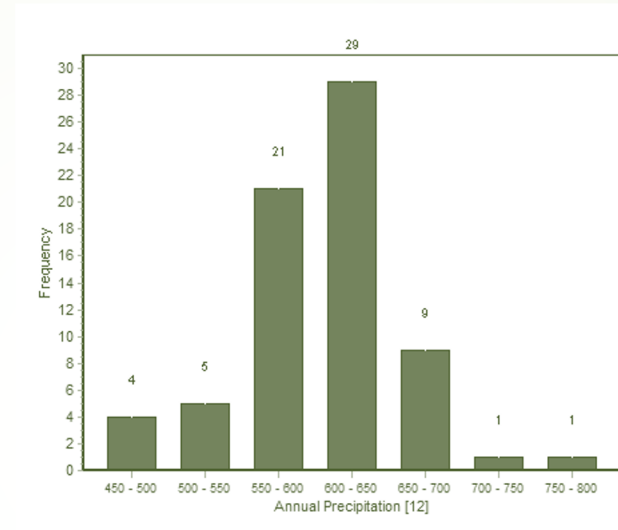
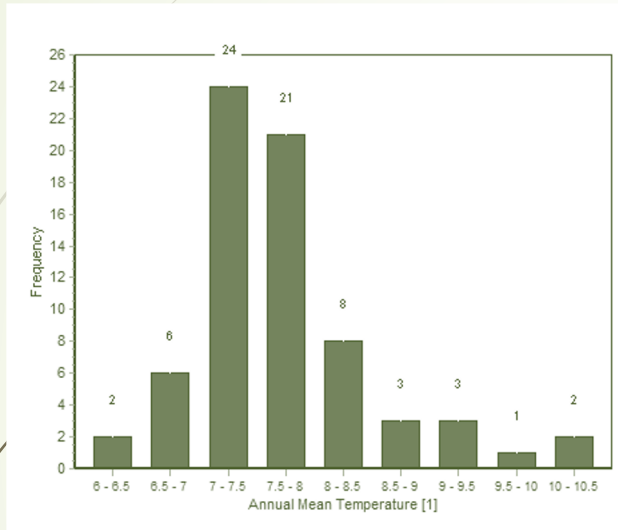
²<https://mepr.gov.ua/mindovkillya-razom-z-naukovtsyamy-ta-ekspertamy-obgovoryly-dotsilnist-vykorystannya-introdukovanyh-vydiv-derev-u-vidtvorenni-lisiv/>



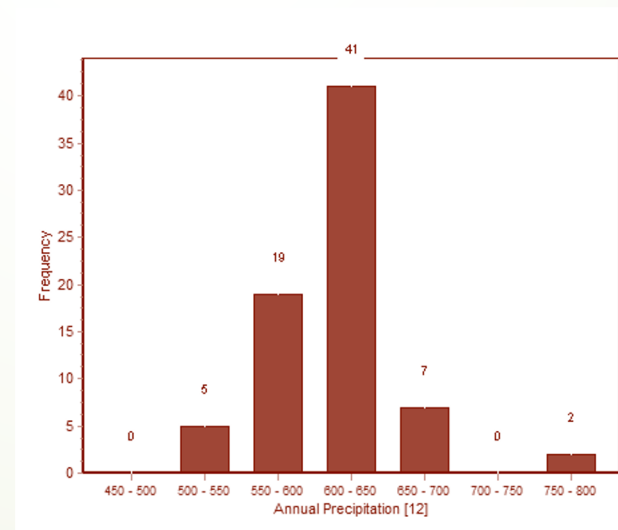
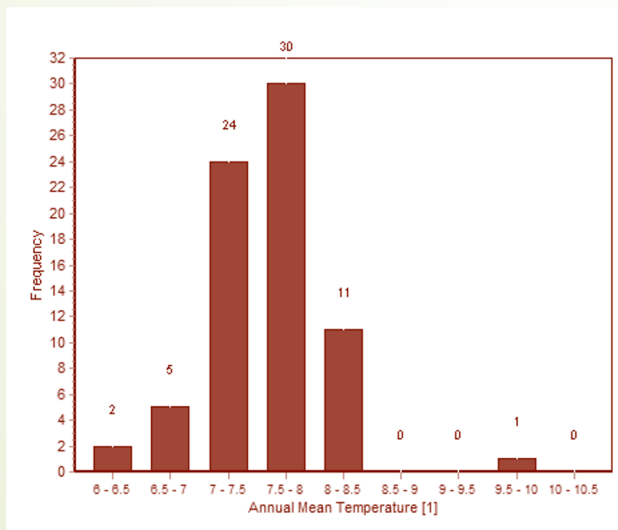
Research needs for invasive species

- Growth rate and sustainable harvesting of native and invasive species under different conditions
 - Effect of climate change
 - Pollution (oil, heavy metals, etc.) tolerance and accumulation
 - Ameliorating properties and soil remediation
 - Pathogen resistance mechanisms
 - Competitive interactions between native and invasive species
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Case Study: Climatic niche of *Quercus robur* and *Q. rubra* in Ukraine



Quercus robur



Quercus rubra

* Analysis based on BioClim and GBIF (2023) data, processed in DIVA-Gis

Center for Ecosystem Research, Climate Change and Sustainable Development at NaUKMA

The scientific tasks set by the Center for Ecosystem Research, Climate Change and Sustainable Development at NaUKMA include:

- conduct a comparative analysis of the speed of growth and biomass accumulation of introduced and native tree species;
- to study the resilience of natural tree species to climatic changes;
- assess the competitiveness of natural species and identify highly competitive species;
- evaluate potential ecosystem services from growing different tree species;
- provide recommendations of alternative native tree species for each natural zone in Ukraine.



Conclusions



- ▶ Providing recommendations of alternative native tree species for each natural zone in Ukraine that will be essential for preserving natural biodiversity, supporting ecosystem services provided by forest ecosystems, and facilitating ecosystem restoration, especially in the aftermath of the war.
- ▶ We are interested in receiving additional information on methods of monitoring and controlling the spread of invasive tree species in Europe.



Thank you for your attention!

We are open to collaboration!

Iryna Vyshenska

- ▶ PhD in Biology, Associate Professor
- ▶ National University of Kyiv-Mohyla Academy
- ▶ vyshenska@ukma.edu.ua

Olena Kozak

- ▶ PhD in Ecology, Senior Lecturer
- ▶ National University of Kyiv-Mohyla Academy
- ▶ o.kozak@ukma.edu.ua