



# Ways of silvicultural treatment on large-scale areas after wind calamity in northern Poland

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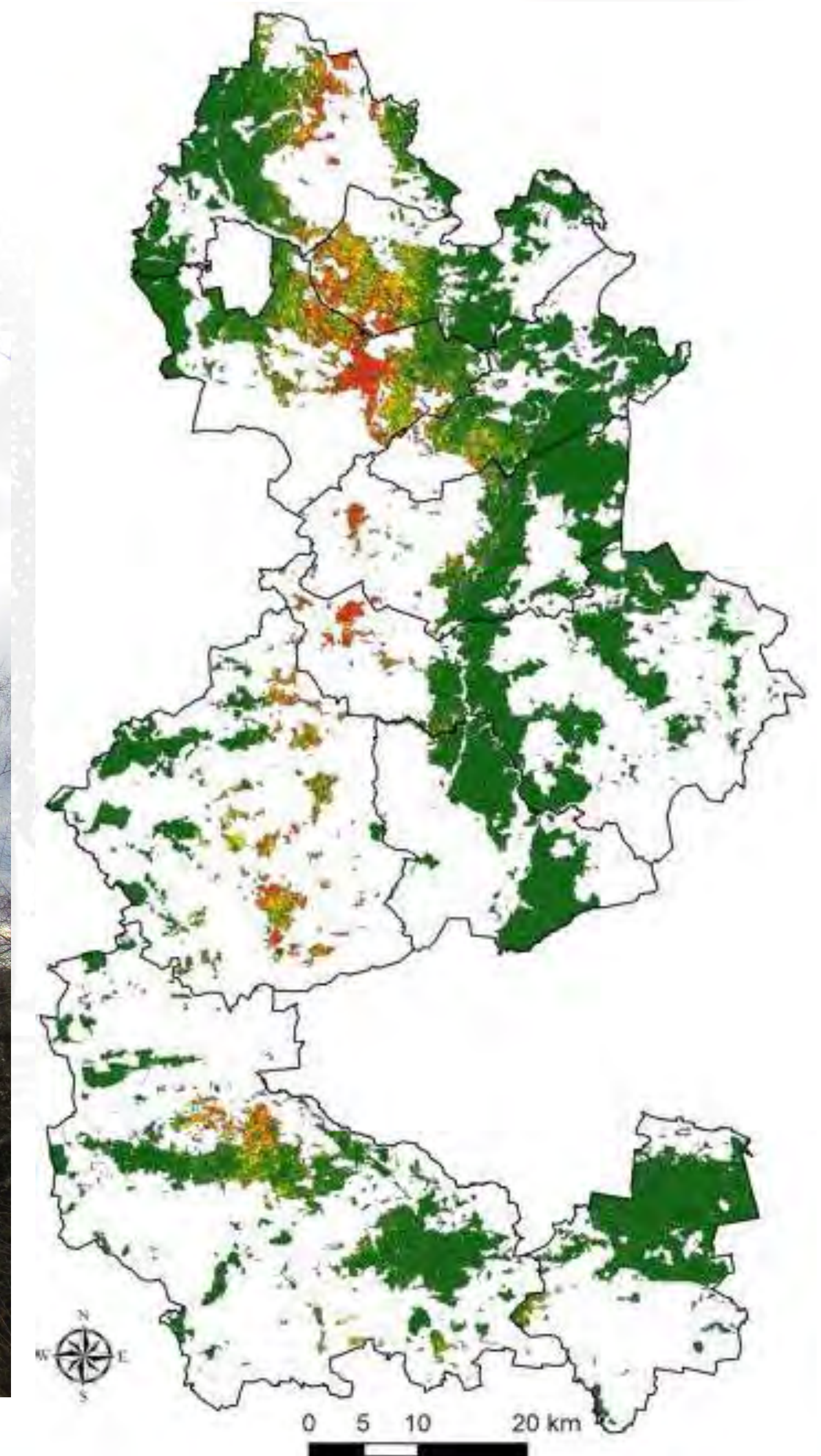
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The hurricane which passed over the northern part of Poland in the night 11th/12th of August 2017 destroyed the forest ecosystems on area of more than 40 thousands hectare.



## Share of destroyed areas in Forest Districts administered by RDSF Toruń:

- Rytel – 62,5 %
- Runowo – 47,6 %
- Czersk – 40,2 %
- Przymuszewo – 32,6 %
- Szubin – 30,5 %
- Zamrzenica – 21,3 %
- Woziwoda – 15,6 %
- Tuchola – 8,4 %
- Solec Kujawski – 4,8 %
- Różanna – 2,7 %



## Risk dispersion – diversity of species and regeneration methods: planting, sowing, self-seeding; avoiding of schematism



## Restoration of mono-species forest stands;



## Natural regeneration where is it possible



## Use of native species according to site fertility



## Use of native species and provenances climate-adapted







- **Soil preparation;**
- **Planting effectiveness;**
- **Browsing;**
- **Late frosts on open areas;**
- **Shaping of species composition**

**„Elaboration of silviculture practices on regenerated large-scale calamity areas in Regional Direction of State Forests Toruń” (financed by General Directorate of State Forests)**

**Time of realization: 2022-2026**

**Goal of the project: Rules of regeneration and tending new forest cultures in difficult conditions of open areas focused on their resistance to different harmful factors**

**Special tasks:**

- **Influence of different soil preparation methods and seedlings type for regeneration effectiveness;**
- **Possibility of use of natural regeneration in restoration of damaged areas;**
- **Shaping species composition in a time and space according to soil and climatic conditions;**
- **Tending methods taking into account protection against drought, frosts and browsing**

## Area of research: newly regenerated areas in Forest Districts of RDSF Toruń

### Methods:

- 1) Observations in already regenerated objects (temporal research plots)
- 2) Series of experiments with different regeneration and tending methods (permanent research plots)



Block I	Block II	Block III	Block IV
1	2	3	4
3	4	1	2
2	1	4	3
4	3	2	1

## Treatments:

1. 1-year-old Scots pine seedlings, bareroot – planting autumn 2022
2. 1-year-old Scots pine seedlings, bareroot – planting spring 2023
3. 1-year-old Scots pine seedlings, containers – planting autumn 2022
4. 1-year-old Scots pine seedlings, containers – planting spring 2023

Unit area – 900 m<sup>2</sup> (30 m x 30 m)

Block I	Block II	Block III	Block IV
1	2	3	4
3	4	1	2
2	1	4	3
4	3	2	1

## Treatments:

1. Reduction of all admixture species
2. Leaving birch in a number of 100 pcs ha<sup>-1</sup>
3. Leaving birch in a number of 20 pcs ha<sup>-1</sup>
4. Control – leaving all admixtures

Unit area – 2500 m<sup>2</sup> (50 m x 50 m)

# Plan of experiment with regeneration methods (Forest District Runowo)



		Each unit - 6 planting rows					
Treatments		1	2	3	4	5	6
120 m	Block IV						
	Block III						
	Block II						
	Block I						
Planting method		Mechanic				Hand-made	
Soil preparation		no		yes (Plough LPZ)			
Seedlings		1/0	3/0	1/0	3/0	1/0	3/0
Planting time		Spring 2022					

**Oak plantation with different age of seedlings, soil preparation and planting methods (part I)**

**The second part with similar treatments will be established in autumn 2022**

- **It is necessary to control the species composition of regeneration, to shape stands more resistant to stress and stable, adapted to the site conditions.**
- **Species composition must be treated as dynamic, i. e. changing in time dependent on development phase and climatic conditions, taking into account specific situation on open areas.**
- **Under these conditions, achieving target species compositions of high stability stands is a multi-stage and long-term task.**

*Thank you for your attention! 😊*

