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Partner in the
GREIFSWALD MIRE CENTRE

Paludiculture on former bog grassland:
sustainable biomass production and benefits of a Sphagnum farming site in NW Germany

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Foto: Uni Greifswald

09.03.2021, RRR2021 Conference, virtually

What is Sphagnum farming?

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- paludiculture on degraded bogs
- aimed cultivation as an agricultural plant
- harvest and use of *Sphagnum* biomass

What is Sphagnum farming?

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Sphagnum farming/ paludiculture

→ aims to cultivate *Sphagnum* biomass for harvest = agriculture

Sphagnum gathering

→ aims to collect *Sphagnum* biomass from wild populations

Sphagnum vegetation restoration

→ aims to re-establishment of *Sphagnum* dominated vegetation on degraded bogs

potential areas for Sphagnum farming

cut-over bogs

→ first field trial 2004 – 2014

→ area potential in Germany: ~500 ha

bog grassland

→ field trial since 2010

→ area potential in Germany: ~90.000 ha

Sphagnum farming field trial

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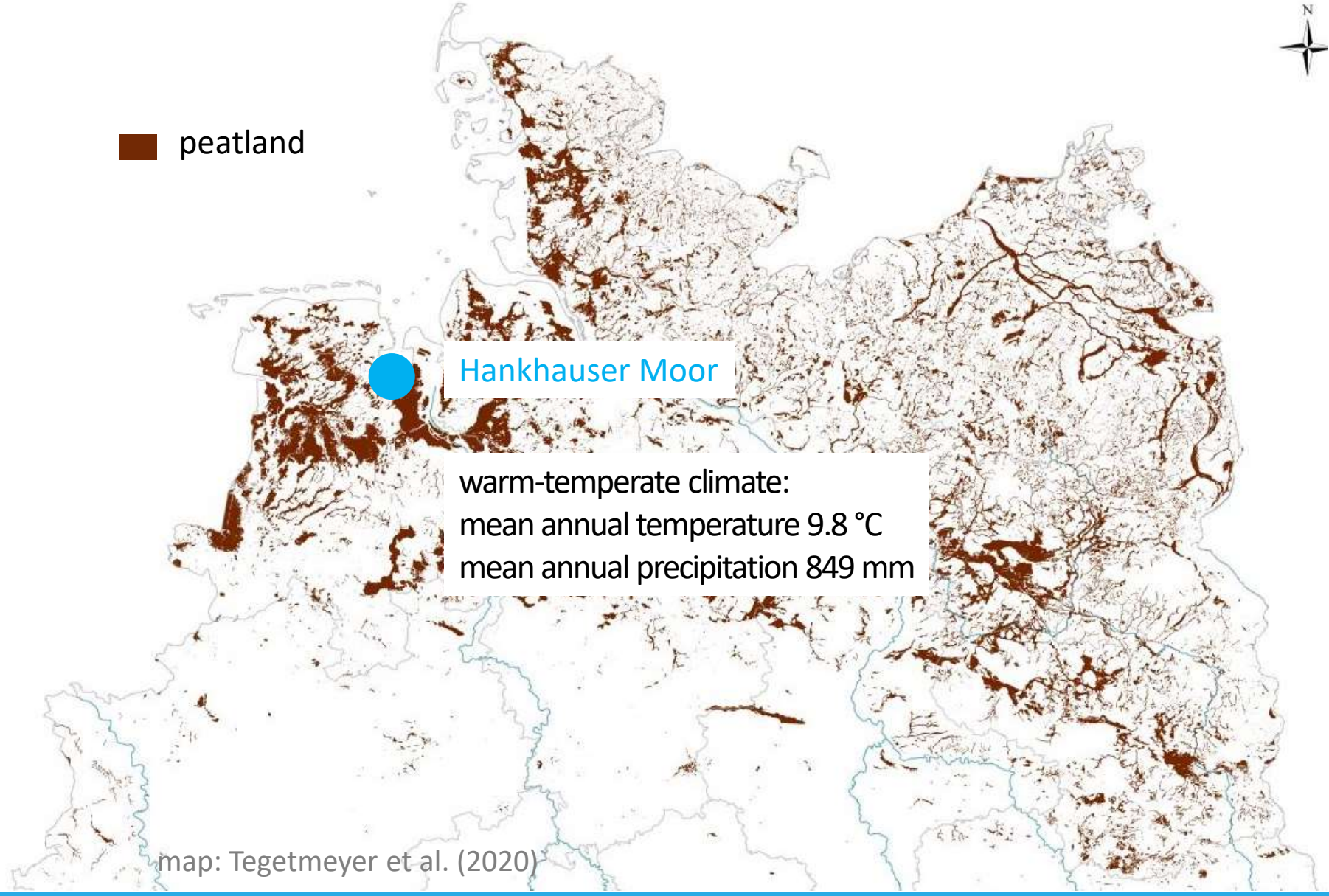

map: Tegetmeyer et al. (2020)

conversion of a bog grassland to a Sphagnum farming site

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topsoil removal + irrigation ditches → application of founder material → (straw mulch cover +) rewetting

- ~30-50 cm topsoil removal
- 10 m ditch interval

- ~80 m^3 per hectare

production system of the Sphagnum farming site in the peatland Hankhauser Moor, Germany

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Foto: ASEA aerial 2017

establishment of a *Sphagnum* lawn

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after 3 years

establishment of a *Sphagnum* lawn

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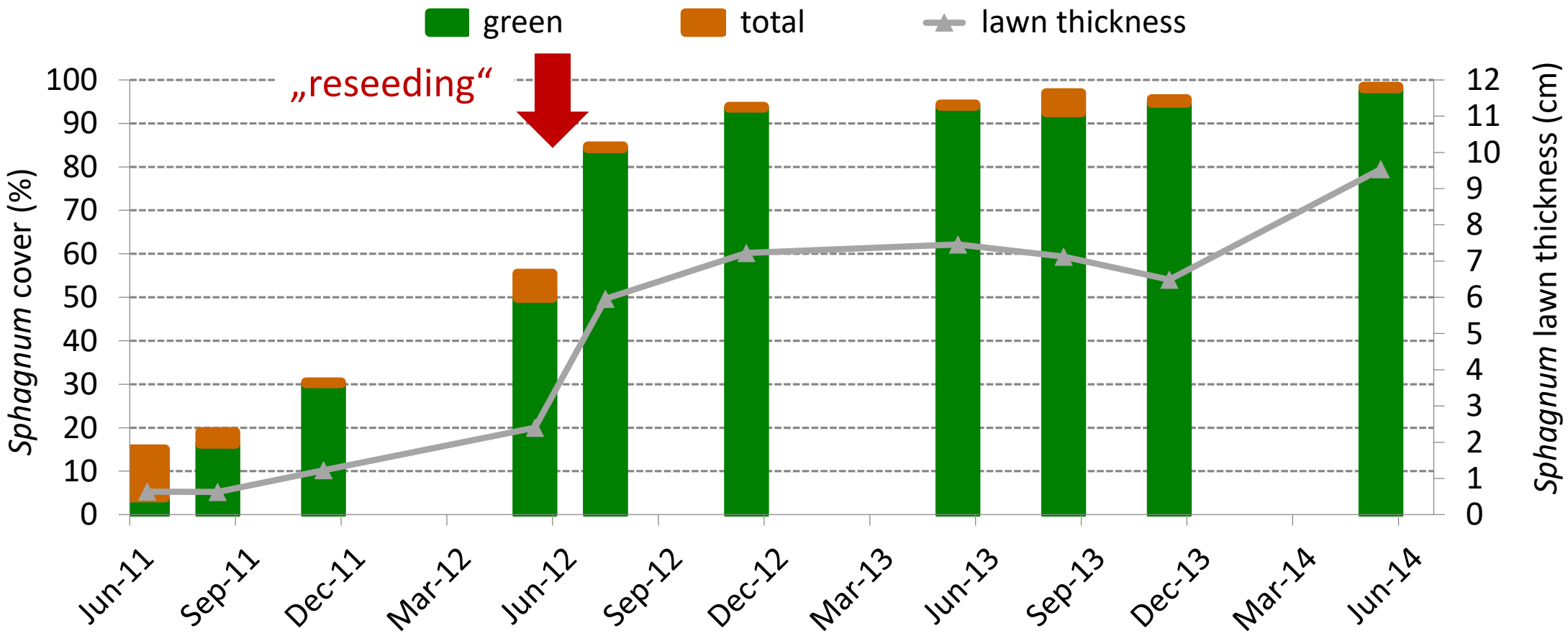
- establishment of the *Sphagnum* lawn within 1.5 years



after Gaudig et al. 2014, Mires and Peat

development of the *Sphagnum* lawn

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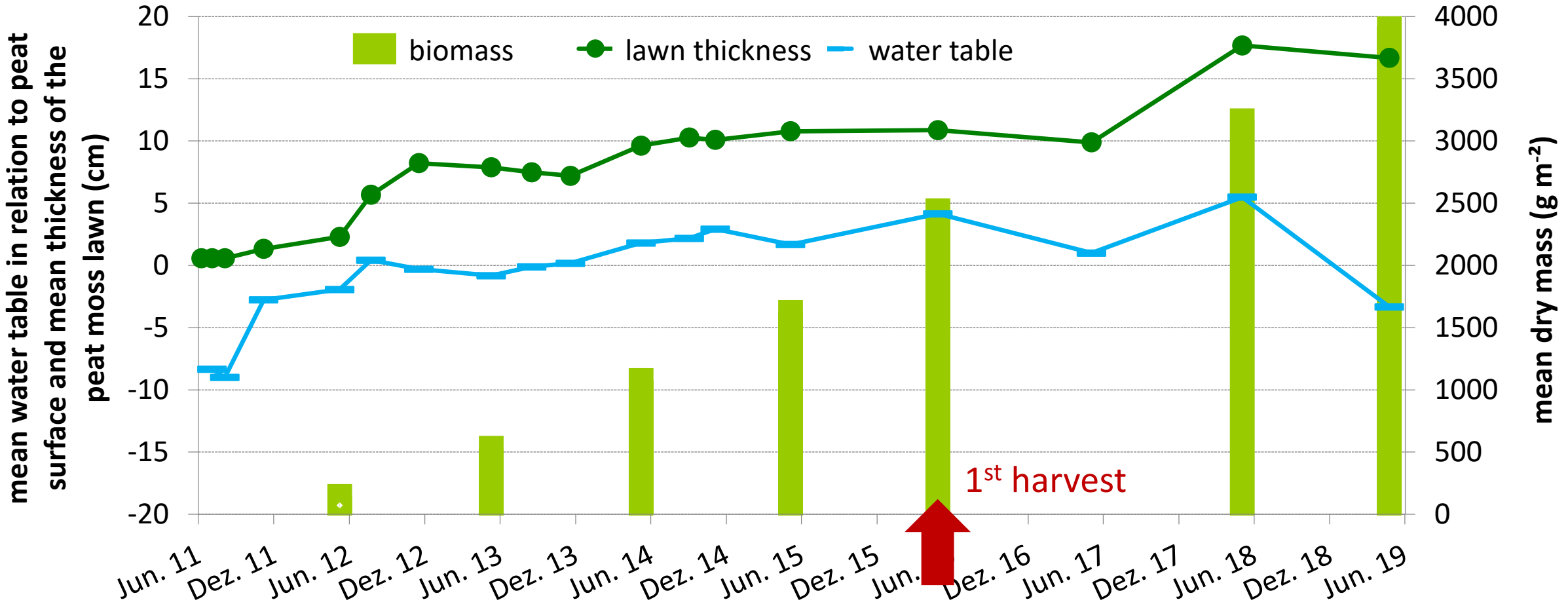
- continuous increase in lawn thickness and biomass over 8 years
- after 8 years: 40 tons *Sphagnum* dry mass per hectare (= 5 tons ha^{-1} yr^{-1} → ~200 m^3)
- water table is raised with *Sphagnum* growth



first mechanical harvest of the *Sphagnum* lawn

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- Excavator + mowing basket
- cutting of the top part (good experiences from small-scale experiments)

Foto: G. Block 2016

regrowth of the *Sphagnum* lawn

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- slow, especially of the *S. palustre* variant (higher proportion of *S. fallax*)
- slower than the simultaneous establishment

September 2016

November 2018

regrowth of the *Sphagnum* lawn

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→ parameters for successful regrowth

***Sphagnum* species**	poorer regrowth with fast-growing species
Cover of remaining capitula (growing points)	as much as possible → partial harvest or application of new capitula
Site conditions	water table: avoid inundation

→ alternative to cutting: total harvest and new installation

17 ha Sphagnum farming site in Hankhauser Moor

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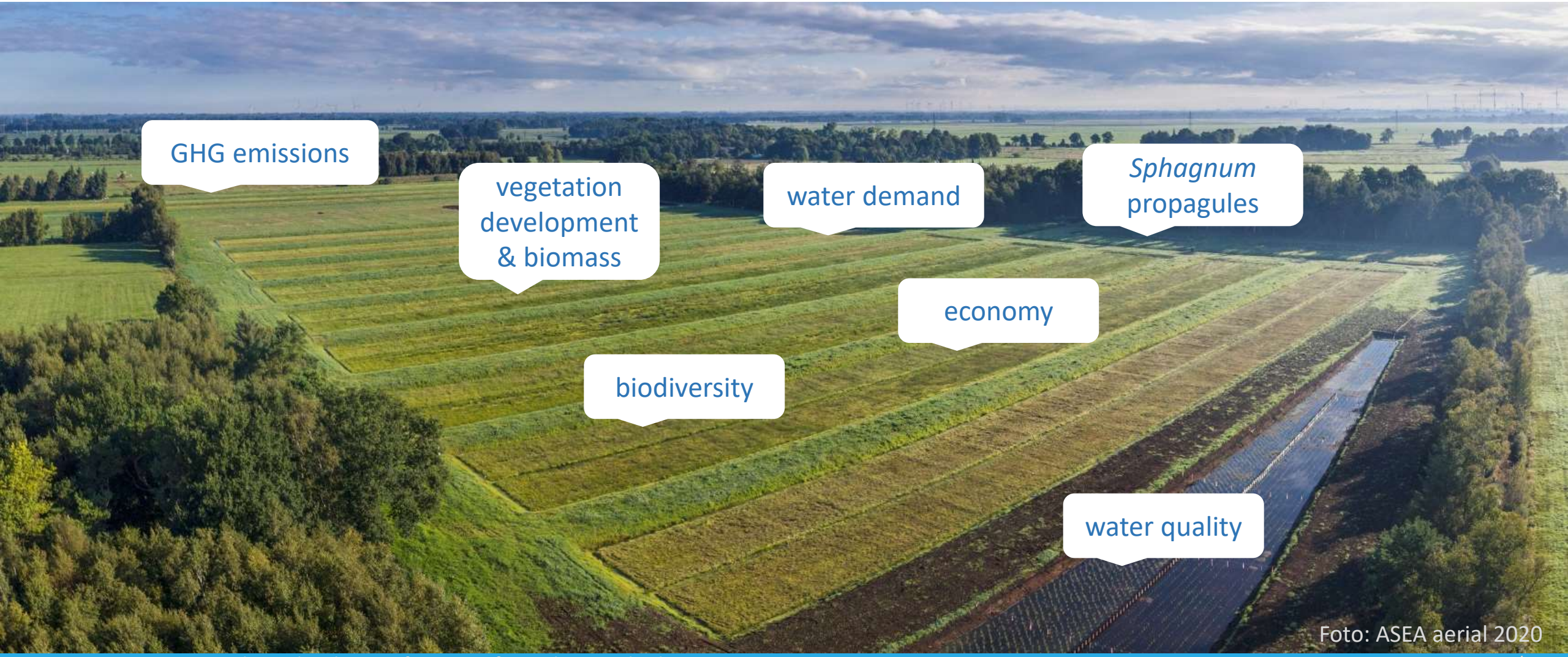
→ versatile investigations since 2010



challenges of Sphagnum farming

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Economic viability

Session 6.3
Sabine Wichmann

founder material

Session 4.3
Mira Kohl
Melanie Heck
Neal Wright

benefits of Sphagnum farming for

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climate protection

Session 3.2
Caroline Daun
Laura Panitz
Anna Keightley

water filtration and retention

Session 5.2
Renske Vroom
Adam Koks

biodiversity

Session 3.3
Daniel Brötzmann
Gert-Jan van Duinen

Sphagnum farming in Germany – current situation

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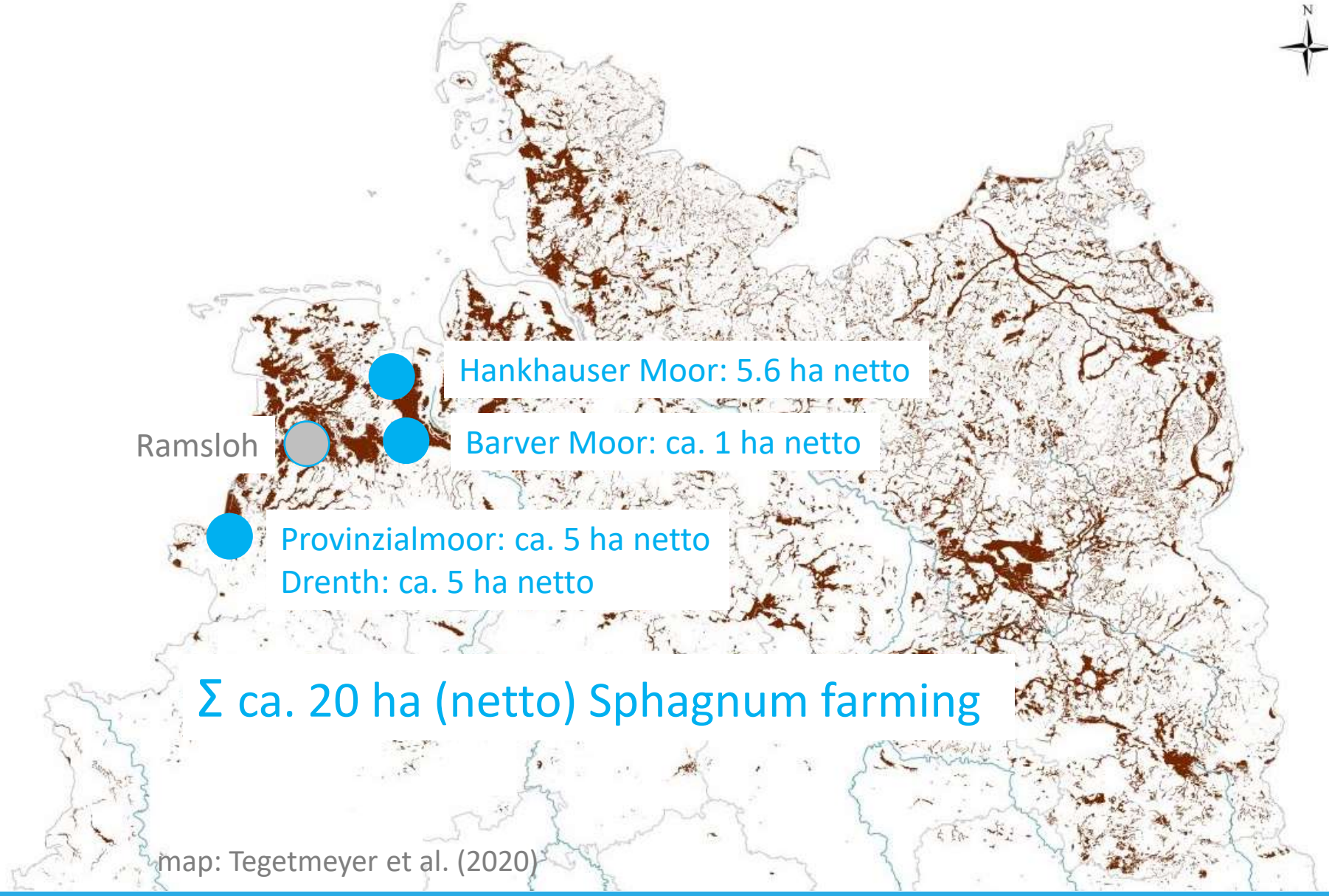

map: Tegetmeyer et al. (2020)

Sphagnum farming in Germany

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→ 35,000 ha necessary to substitute 3 Mio. m³ ‘white peat’ in growing media

Foto: ASEA aerial 2020


Foto: M. Krebs 2020

Let‘s bring Sphagnum farming now into the field!

Foto: ASEA aerial 2020