Review of the Impacts of Peatland Restoration (rewetting, revegetation and vegetation management)

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Presented by Dr Paul Lunt

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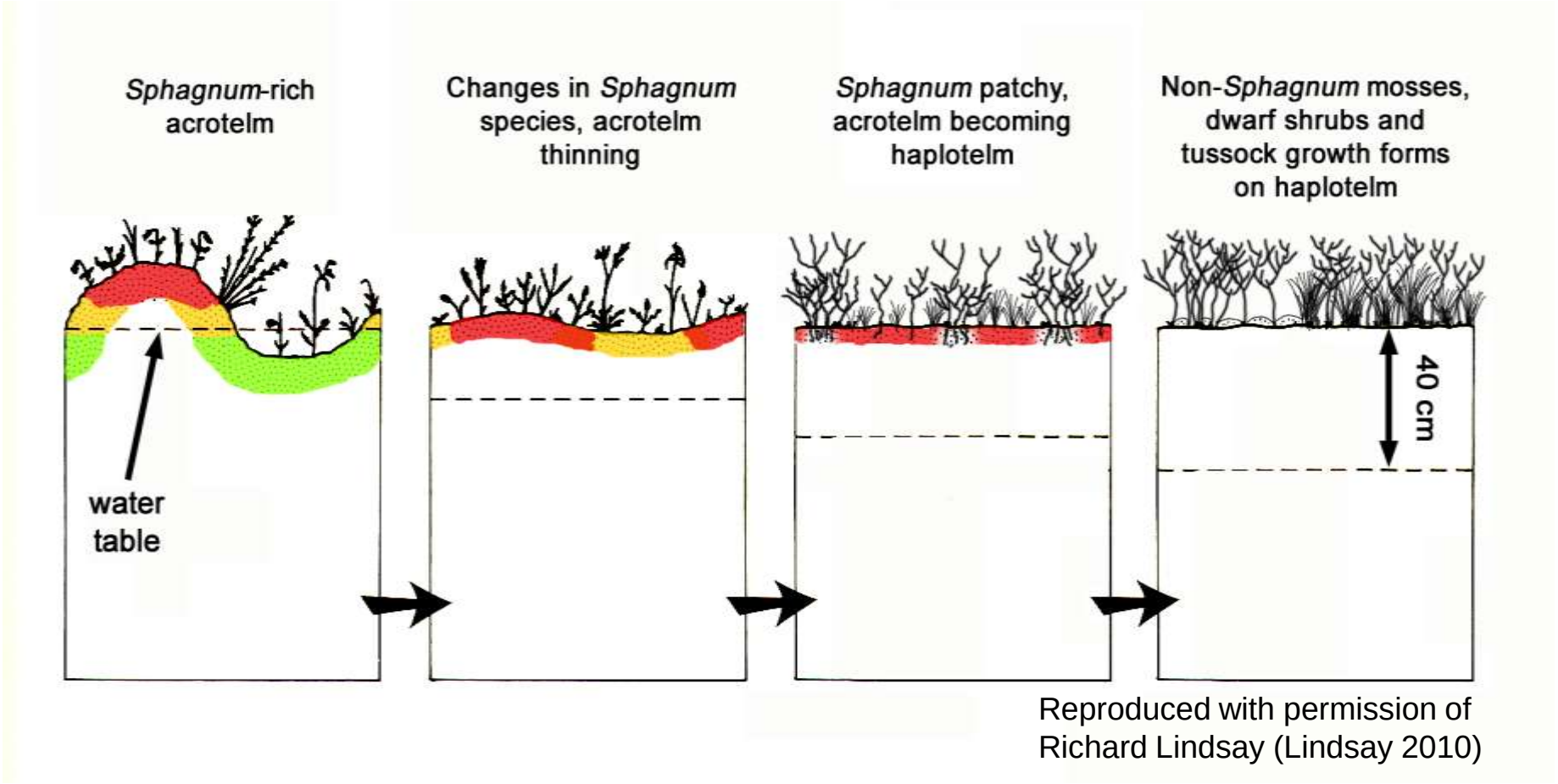
Typical Degradation Following the Drainage of a Peatland



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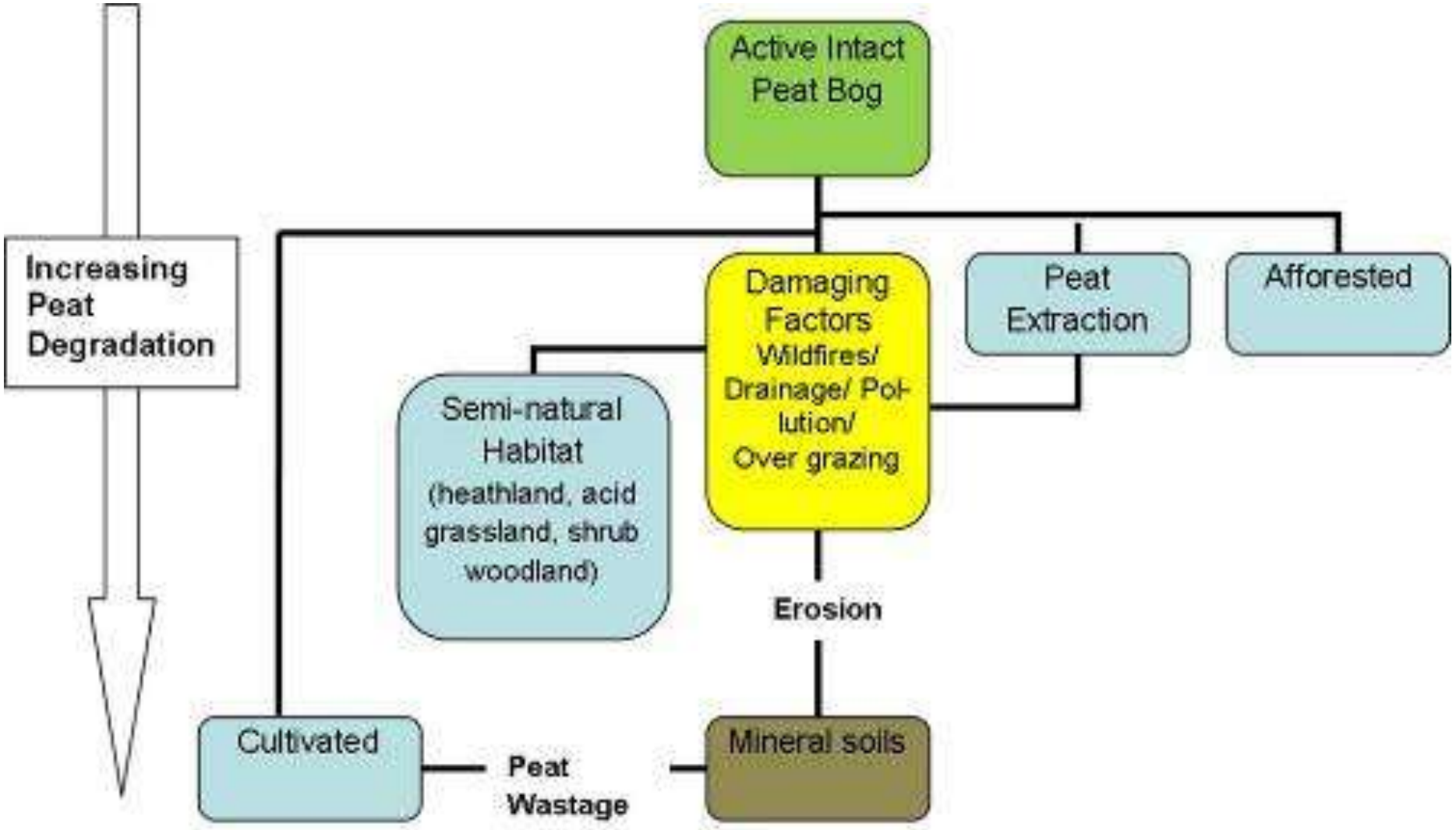
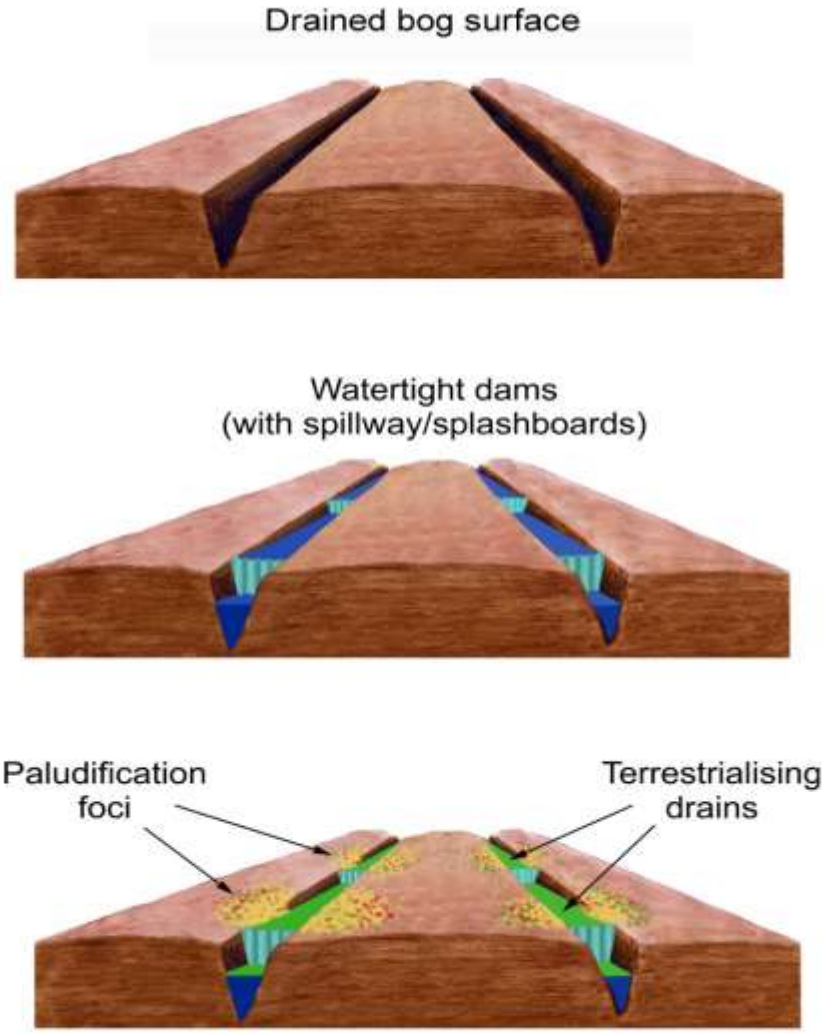
Effects of a lowering water table on vegetation. Pool and hummock structure of an intact active peat bog. Drawn down of water with loss of pool. Increase in dwarf shrubs and grasses. Loss of *Sphagnum* and functioning acrotelm layer

Intensity and Causes of Peatland Degradation



Phase 1 - Restoration of Damaged Hydrology



Upland peatlands – grip blocking

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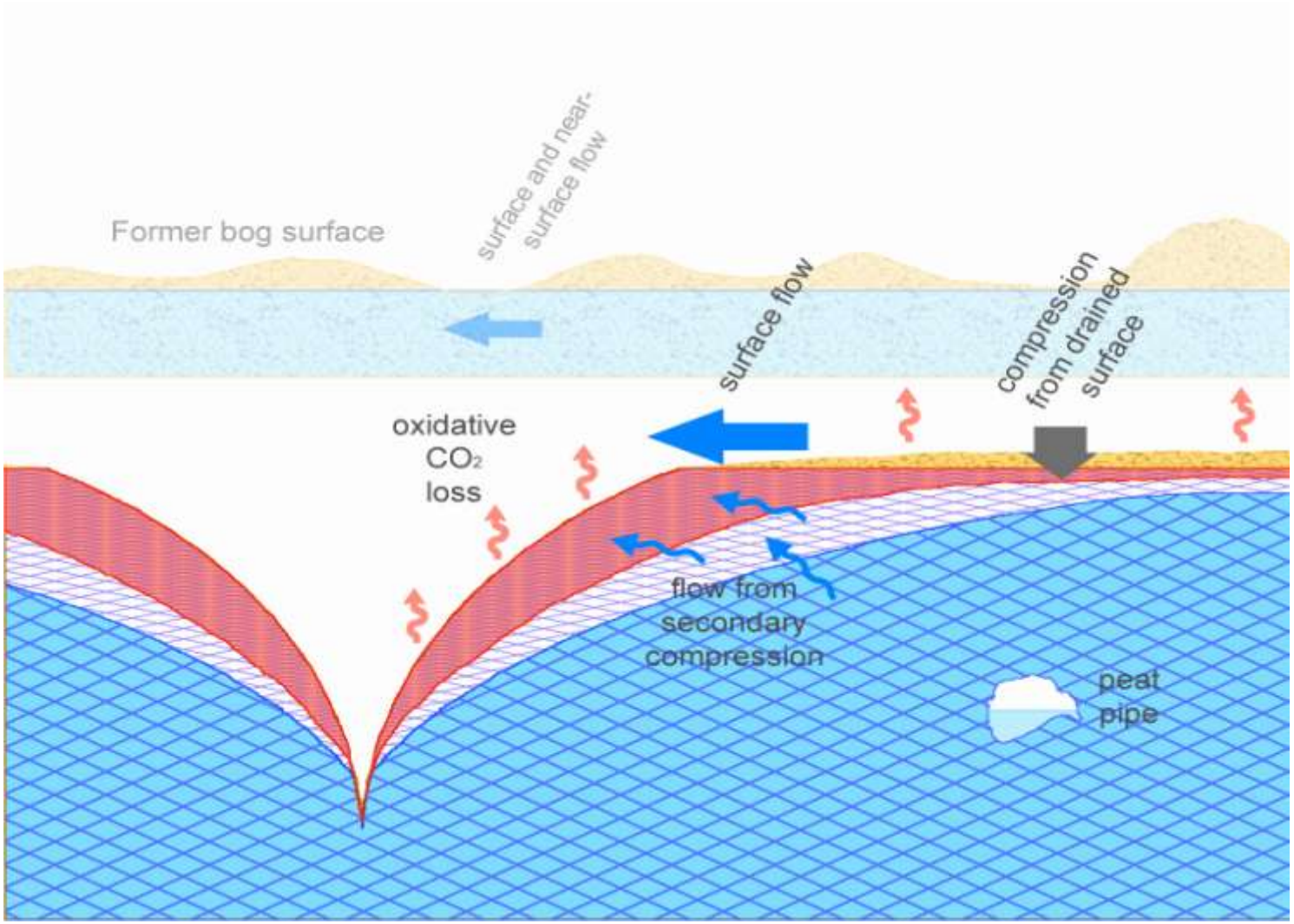
Cross Section of a Degraded Peatland - illustrating an eroding drainage channel or gully



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Restoration of Damaged Hydrology - Grip Blocking

Restoration of Gully Erosion

Upland peatlands – gully blocking

MOORS FOR THE FUTURE PARTNERSHIP

Restoration of Bare and Eroding Peat

- Seed with lime, fertilizer grasses and heather

- Stabilisation with geo-jute and heather brash

Penny Anderson Associates Ltd
Consultant Ecologists


May 2006


Sep 2008


Aug 2009


Aug 2009

Phase 2- Peatland Vegetation Restoration

Carrier out following or in association with hydrological restoration

- Sustainable grazing
- Cessation of burning
- Removal of scrub and woodland
- Restoration of a *sphagnum* rich surface layer

Grazing exclusion

1991

1999

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The Importance of *Sphagnum* – 'the engineer of peat growth'

Restoration of a *Sphagnum* rich surface layer

Requirements:

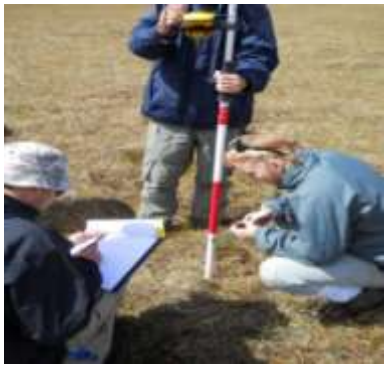
High, stable water table

Structured substrate for *Sphagnum* growth (straw mulch, heather brash, cotton grass transplants)

Inoculation with *Sphagnum* diaspores (lime, fertiliser?)

	Restoration	Stability and Height of Water Table			Peat Stabilisation / Carbon *Storage*			Biodiversity (Common Standards Monitoring Assessment Targets)		
		1 Year	1-5 years	5-20 years	1 Year	1-5 years	5-20 years	1 Year	1-5 years	5-20 years
Water Management	Grip blocking and gully blocking	↑	→	→	→	↑ with terrestrialisation	↑ with paludification	→	↑	→
Restoration of Bare Peat	Seed with lime, fertilizer grasses and heather	↑	↑	→	↑ reduced erosion	↑ (SCaMP)	↓ continued oxidation at a reduced level	↑	↑	↑→
	Stabilisation with geo-jute and heather brash	↑	↑SCaMP	→	↑ reduced erosion	↑(SCaMP)	↓ continued oxidation	↑	↑	↑→
Vegetation Management	Introduction of *Sphagnum*	→	↑	↑	↑	↑	↑	↑	↑	↑
	Removal of grazing	→	→	→	→	↑reduced trampling	↑	→	↓ reduced heterogeneity	↑Increased bog species
	Cessation of burning	→	→	↑	→	↑return of *Sphagna*	↑ further recovery	↑	↑	↑
	Removal of scrub and woodland	↑ reduced H_2O uptake	↑	→	↓ reduced Co_2 uptake	↑ with *Sphagna*	↑	↑	↑	↑

Knowledge Gaps



- How to restore active peatlands
- The success of restoration given future climate change predictions
- Requirements for management of active peatlands
- Constraints posed by atmospheric deposition of N
- How to match monitoring to restoration objectives

Key Summary Points

What we know?

•Grip blocking is an effective first measure in peatland restoration

•Peatland restoration is an effective means of reducing carbon loss on degraded sites

What we need?

•On severely damaged /modified peatlands funding needs to be available for phased restoration

•Methods for restoration of *Sphagna* rich surface layers require further development

•Research is required on the impacts of grazing, burning and trampling on active peatland.

•Funding is required for an organisation to act as a trainer and communicator of best practice

•Best practice guidance is required on the monitoring of peatland restoration

Recommendations

•Require greater protection from development on non designated deep peats

•Government targets need to be agreed for the restoration of peatlands for carbon storage and carbon sequestration

•Where carbon sequestration is a principal aim a *Sphagna* rich surface cover should be the ultimate objective