Managing complexity –evolution, resilience and human nature interactions in forests and what we can learn from it

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Structure of this presentation

➢ **6 min on forest ecosystems**

➢ **4 min on human – forests interrelations**

➢ **2 minutes on lessons for managing knowledge (eco-)systems**

I Exploring Forest Ecosystems

- **Forests – an evolutionary success story**

Exploring Forest Ecosystems –success factors

1. Ability to optimally explore natural space (long term, niches)

2. Diverse evolutionary strategies and complementarity of Species

3. Ability to adapt and respond to shocks

→ Diversity is key for efficiency and resilience (Liang et al, 2016): On average, a 10% loss in biodiversity leads to a 3% loss in productivity.

Exploring Forest Ecosystems –success factors

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II Human – Forest – Interrelations

The Forest Transition Curve (Mather et al, 1998)

Human – Forest – Interrelations

Forest management paradigms in the Pacific Northwest...

Management paradigm	Policy problem	Governance arrangement	Relevant types of knowledge	Actors
Industrial forestry	Profitability of the forest sector	Global free markets	Economics	Timber industry, private (corporate) forest owners
Sustained yield /multiple use forestry	Timber supply & socio-economic stability of rural communities	Scientific forestry based planning	Forest growth ecology; economics	(Former) National Forest Service, Forest Scientists
Ecosystem Management	Destruction of (old-growth) forests through harvesting	Ecosystem management based planning	Science (conservation biology)	Scientists and environmental movement
Social forestry	Exclusion of local stakeholders	Local participation	Local knowledge	Local stakeholders, social (science) activists

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Source: Winkel (2014): Global Environmental Change

Human – Forest – Interrelations – key points

➢ Human development has dramatically impacted forest ecosystems around the globe

➢ Forest management paradigms "co-evolve" with forest ecosystem state and societal needs, and are connected to changing world views and knowledge

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III Lessons for managing knowledge (eco-)systems

1. **Nurture evolution of the knowledge (eco-)system:** network of (niched) specialists and generalists to most efficiently manage the complexity of knowledge

2. **Maintain knowledge (paradigm) diversity:** to increase options for learning and response to shocks (resilience)

3. **Manage productive interrelations:** from competition to "niched collaboration" and learning networks

4. **Mind the difference between trees and people**

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!Thank you!

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