

Economic aspects of introduced tree species - opportunities and risks

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Economic aspects of introduced tree species - opportunities and risks

- 1. Introduction**
- 2. Opportunities and risks**
- 3. Introduced species and Climate Change**
- 4. Portfolio analysis**
- 5. Conclusions**

- **Economics: the main driver to introduce new tree species**
- **Perception of these species has changed over time**
- **Multiple stakeholders involved – including direct beneficiaries**
- **Opportunities and risks – “a dichotomous view” (Dickie et al. 2014)**
- **Managing invasive species means strategic (risk) management**

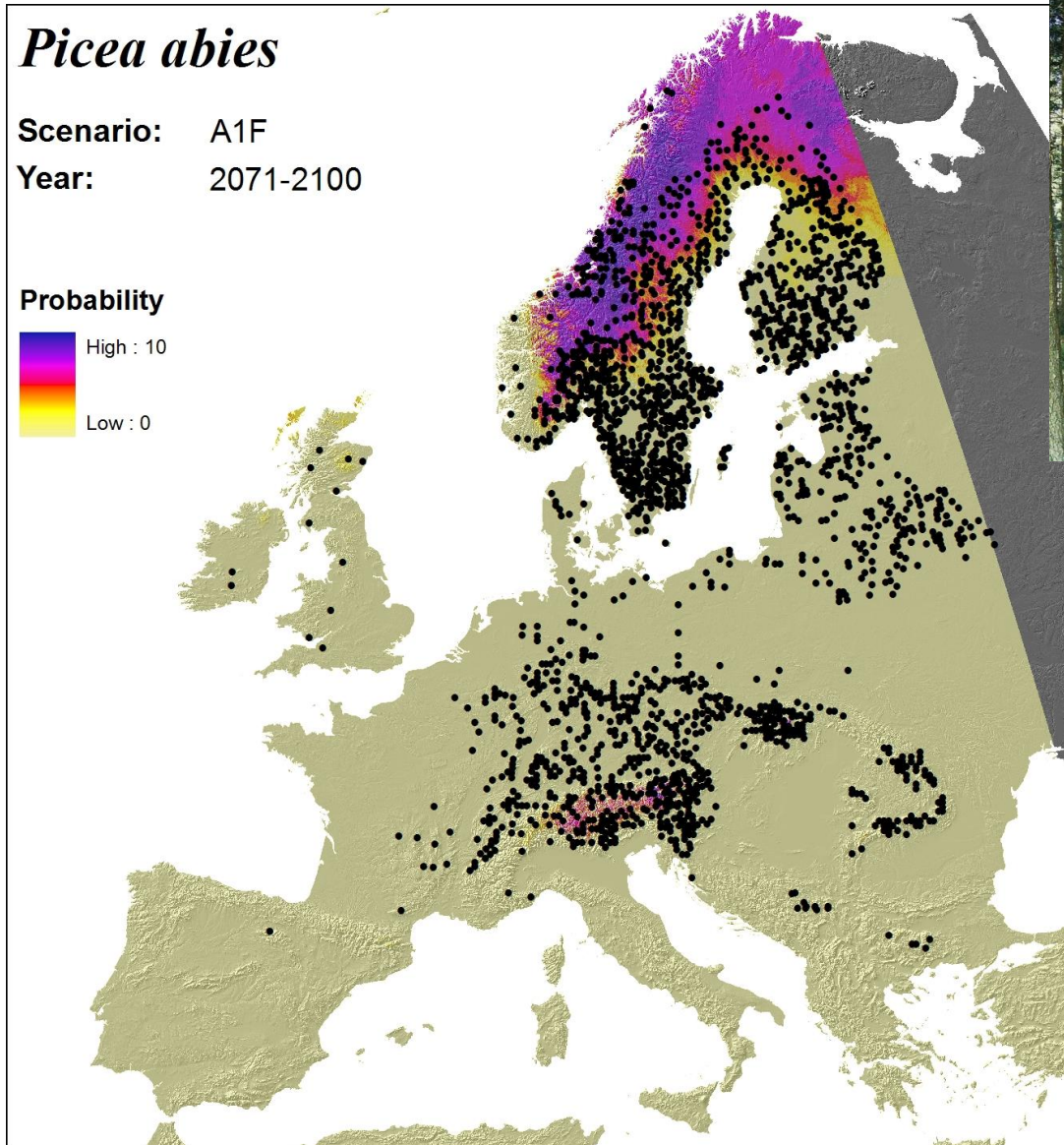
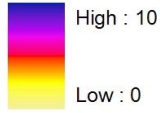
- **Opportunities:** a multitude of goods and services delivered by introduced species
 - Timber, honey, medicinal products, protection, amenity...
 - High productivity compared to native species (*Pseudotsuga*, *Picea sitchensis*, *Eucalyptus*...)
 - Even the “worst” invasive species deliver goods and services
- **Risks:** loss of biodiversity and indigenous species,...
- **High costs of risk control (eradication...)**
 - US\$ 80 M (5 yrs) *Tamarix* control (US riverbanks)
 - Total: between US\$ 14.45 (China) and US\$ 128 billion/yr (US)
- **Attitude towards risk differs very much:**
 - Urban vs. rural
 - Rich vs. poor
 - Lay public vs. experts

- **Climate change: a chance for introduced species?**
- **Under CC: In Europe a lack of economic alternatives mostly for productive conifers (*Picea, Pinus, ...*)**
- In the US: partly a different view (expansion of Southern Pines to the North seen as a chance)
- Introducing species: - strategic management
- Including careful risk management (invasiveness, pests)
- Intensification of controlled long-term research plots

Picea abies

Scenario: A1F
Year: 2071-2100

Probability

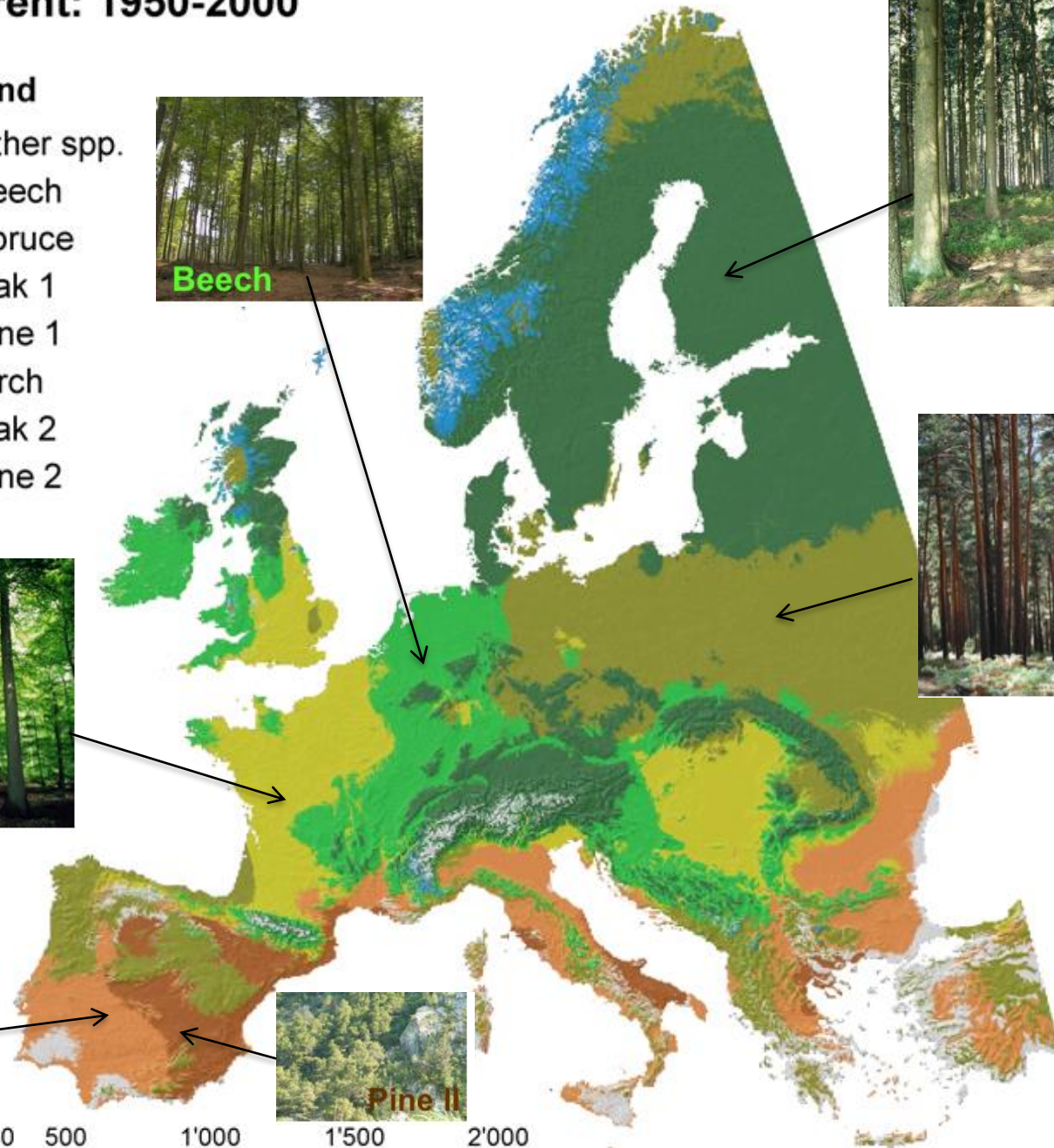


Potential future ranges

Current: 1950-2000

Legend

- Other spp.
- Beech
- Spruce
- Oak 1
- Pine 1
- Birch
- Oak 2
- Pine 2



0 250 500 1'000 1'500 2'000

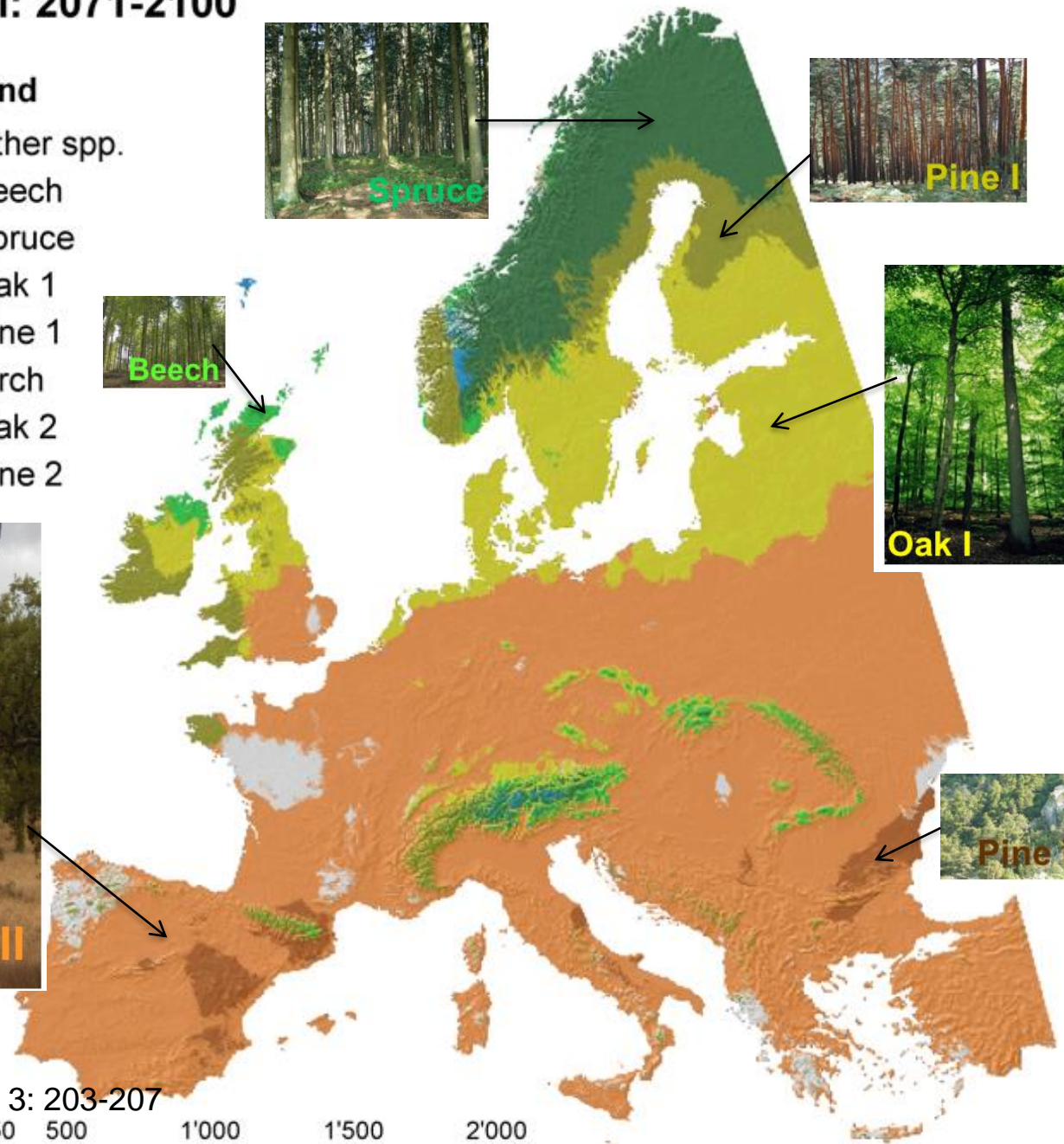


HadCM3-A1FI: 2071-2100

„extreme“

Legend

- Other spp.
- Beech
- Spruce
- Oak 1
- Pine 1
- Birch
- Oak 2
- Pine 2



0 250 500 1'000 1'500 2'000 Kilometers

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Table 1: Non-native or potentially new species under climate change in Germany according to (a) Schmie­dinger et al. (2009) in Bavaria (southern Germany) and (b) Bolte et al. (2009) in north-eastern Germany.

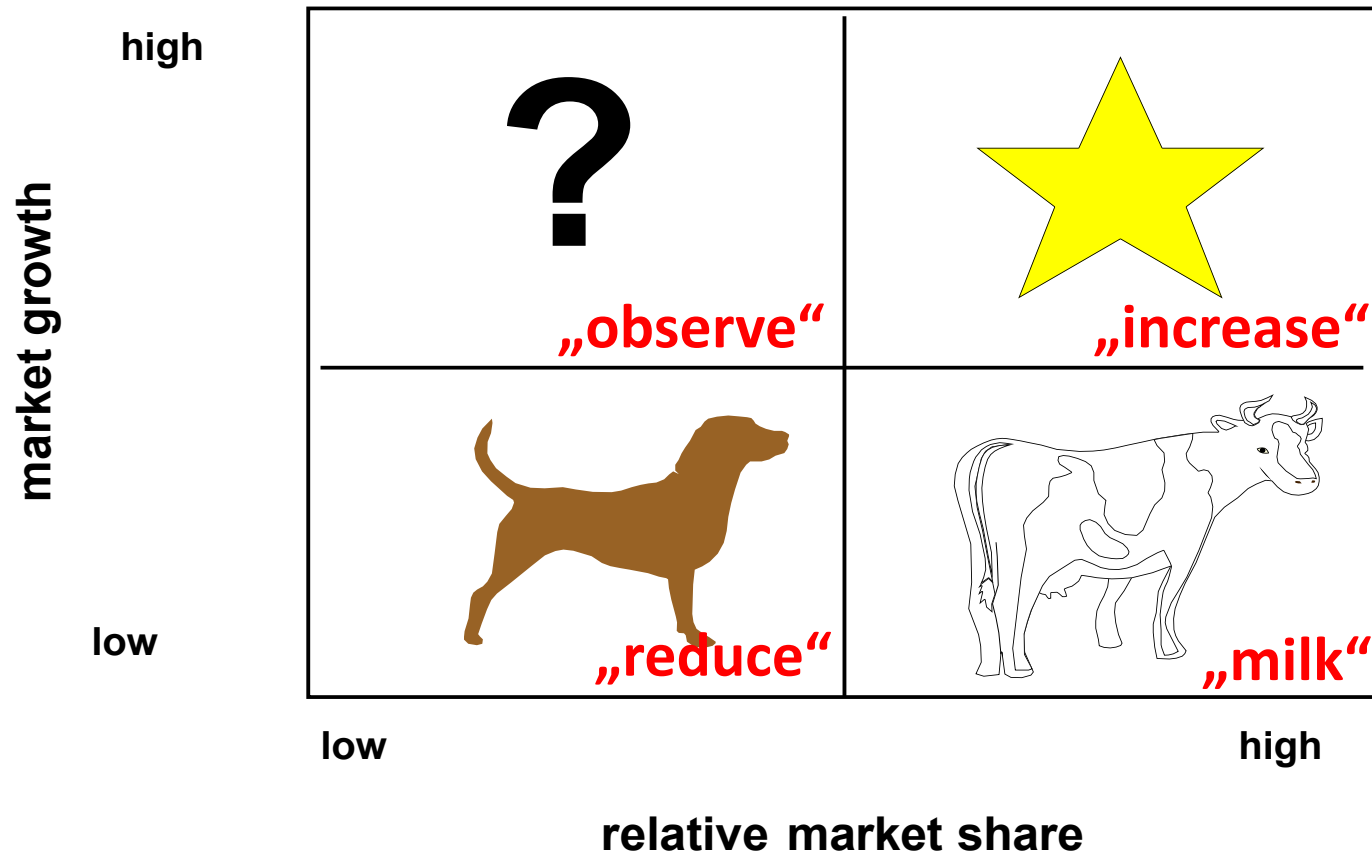
I: Adapted species with well-investigated growth according to (a) and (b)	II: Not yet adapted species with some information on growth following (b)	III: New species recommended for growth tests following (a)
<i>Abies grandis</i> (a)	<i>Abies nordmanniana</i> *	<i>Abies borisii-regis</i>
<i>Abies nordmanniana</i> *	<i>Abies procera</i>	<i>Abies bornmuelleriana</i> [<i>A. nordmanniana</i> subsp. <i>equi-trojani</i>]
<i>Acer saccharum</i> (a)	<i>Chamaecyparis pisifera</i>	<i>Abies cephalonica</i>
<i>Castanea sativa</i> (a)	<i>Juglans nigra</i>	<i>Carya glabra</i>
<i>Pseudotsuga menziesii</i> (a,b)	<i>Picea sitchensis</i>	<i>Fagus orientalis</i>
<i>Quercus rubra</i> (a,b)	<i>Prunus serotina</i>	<i>Pinus echinata</i>
<i>Robinia pseudoacacia</i> (b)	<i>Tsuga heterophylla</i>	<i>Pinus peuce</i>
<i>Thuja plicata</i> (b)		<i>Pinus ponderosa</i>
		<i>Pinus tabuliformis</i>
		<i>Pinus virginiana</i>
		<i>Quercus mongolica</i>
		<i>Tilia tomentosa</i>

* *Abies nordmanniana* was placed in category I by Schmie­dinger et al. (2009) and category II by Bolte et al. (2009)

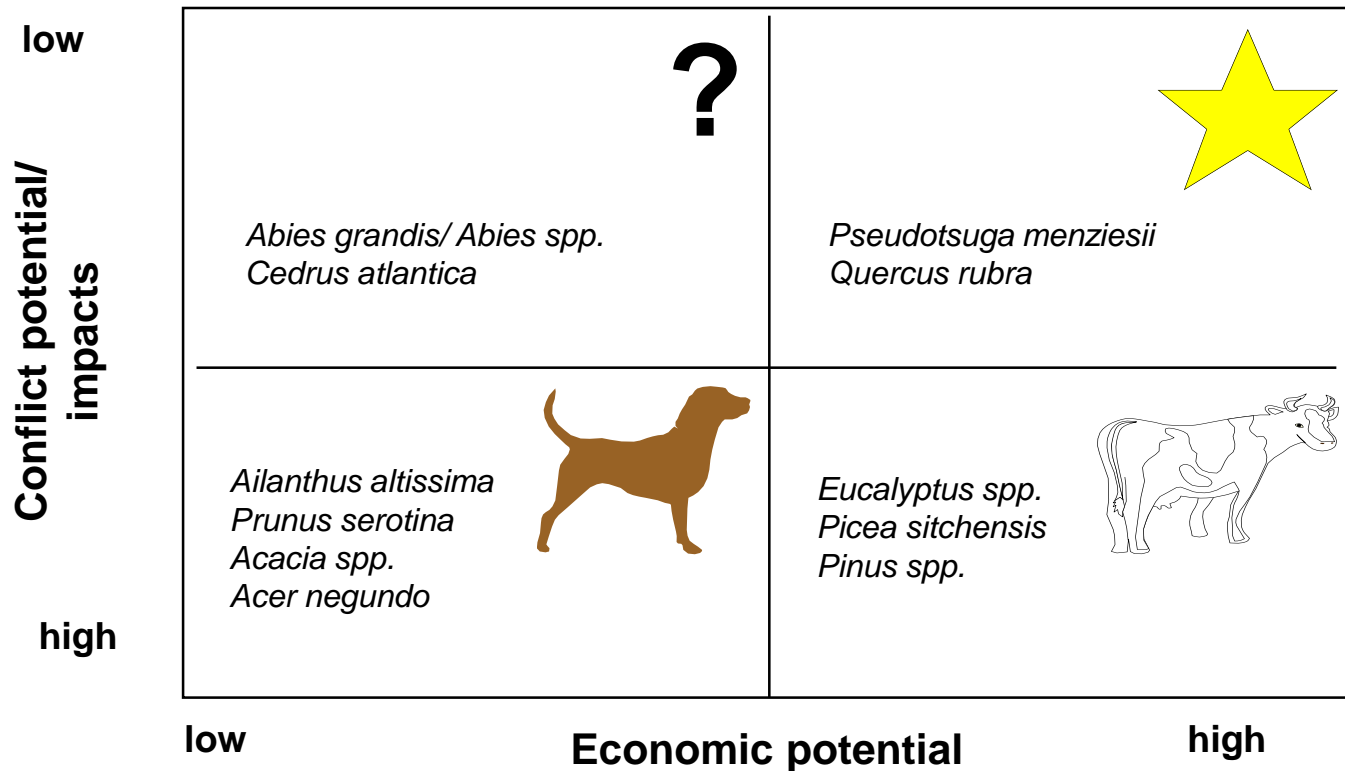
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- **Portfolio analysis – strategic management**

Portfolio analysis

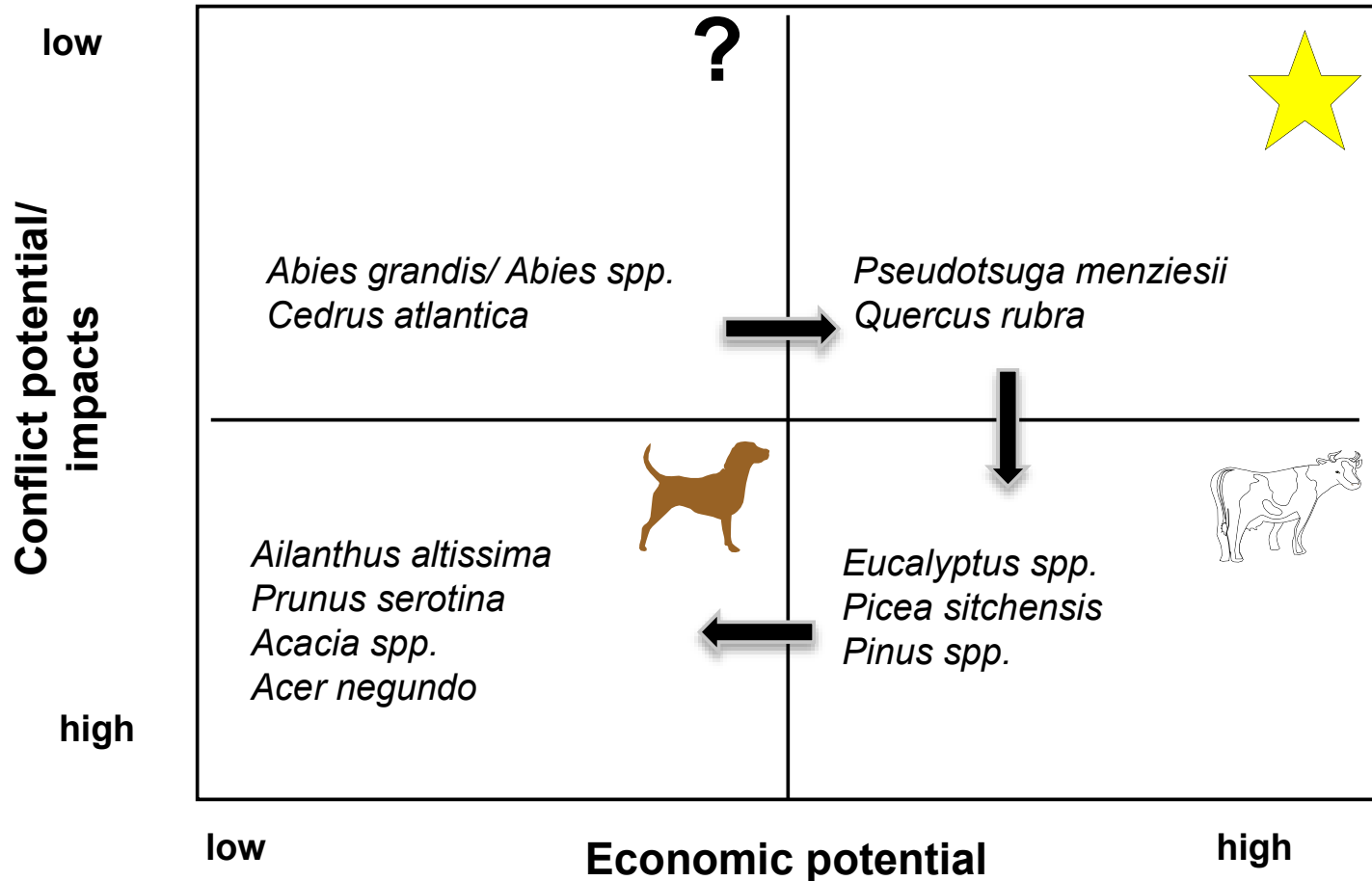
norm strategies



Portfolio analysis – introduced species



Portfolio analysis – introduced species – changing framework conditions



- **Introduced species: Important opportunities but also risks**
- **Risk management can be expensive**
- **Stakeholders and beneficiaries have to be involved**
- **Climate Change: introduced species as a chance ?**
- **Requires: Strategic management – Portfolio analysis**

**Thank you for your
attention !!**

