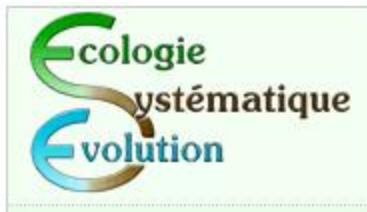




Policy issues of seed transfer for forest management under climate change: *where do tropical countries stand?*

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IUFRO-Ecofor International Symposium
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UNIVERSITÉ
PARIS-SUD 11



AgroParisTech

Talk Outline

- Introduction
 - Climate change and forest adaptation
 - General Policies regarding seed transfer
- Geographic distribution of studies
provenance/seed zones that address
climate change
- Conclusions

Introduction

- It is widely accepted that forest conversion and burning is the second cause of CO₂ increment in the atmosphere.
- Hence, *conserving* forests, *reforestation* and *afforestation* has been proposed as key mitigation measures to cope with human induced climate change.
- Evidently, we start forests with seeds.
- However, *how we trade seeds, what we plant and what we study* is highly different between tropical and temperate countries.

Introduction (cont.)

- Forests need to be seen as something more valuable than carbon sinks.
- The added value of biodiversity and ecosystem services will highly depend on ***which*** species are planted
- What are then the role of policies, research priorities and practices in these issues?

Climate change & Forest adaptation recommendations

Use of multiple provenances of

the same species to ensure local diversity all either planted raw material evolution

Introduction of new species that

forests

Introduction of alien/modified

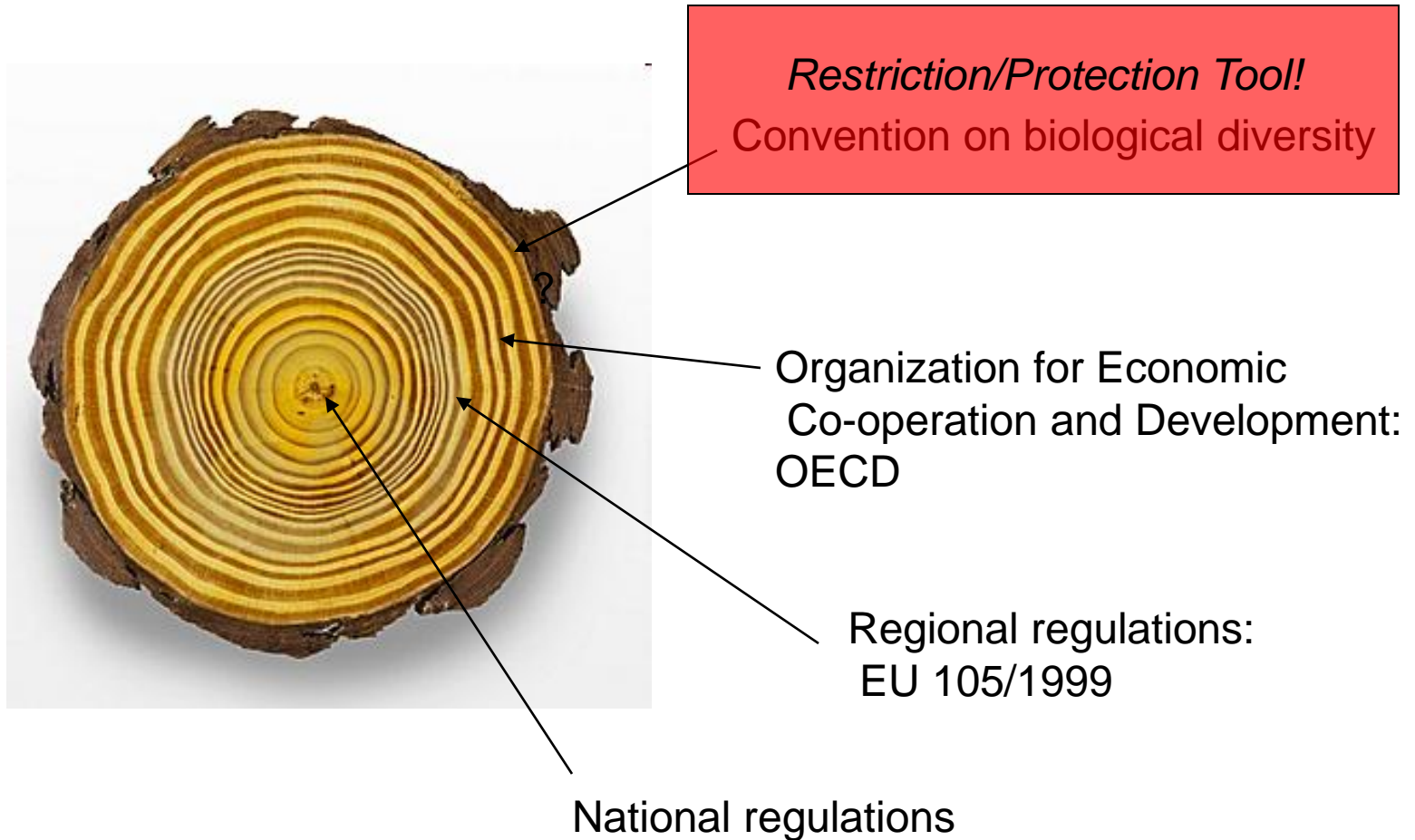
that have proved to climate s

Measures require seed transfers at different scales!



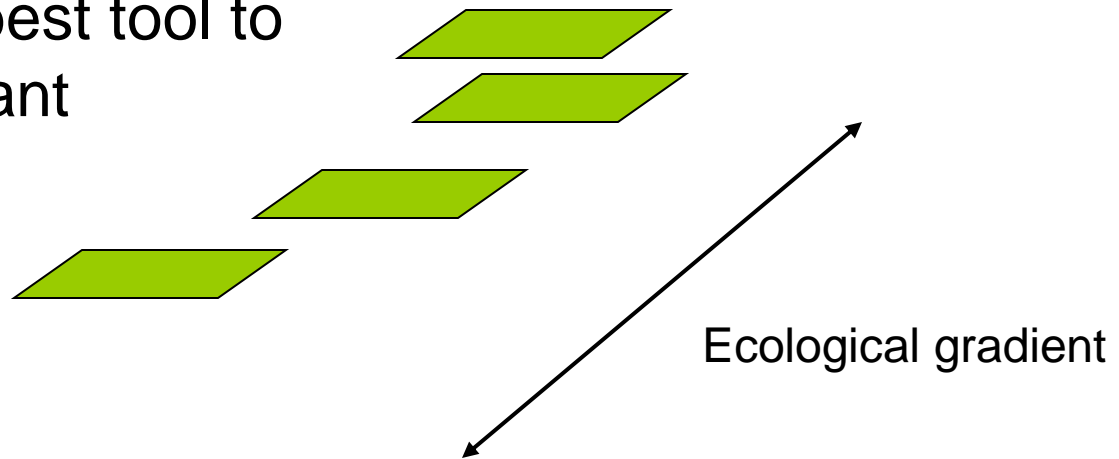
Assisted Migration Options

Policy and regulations for seed commerce



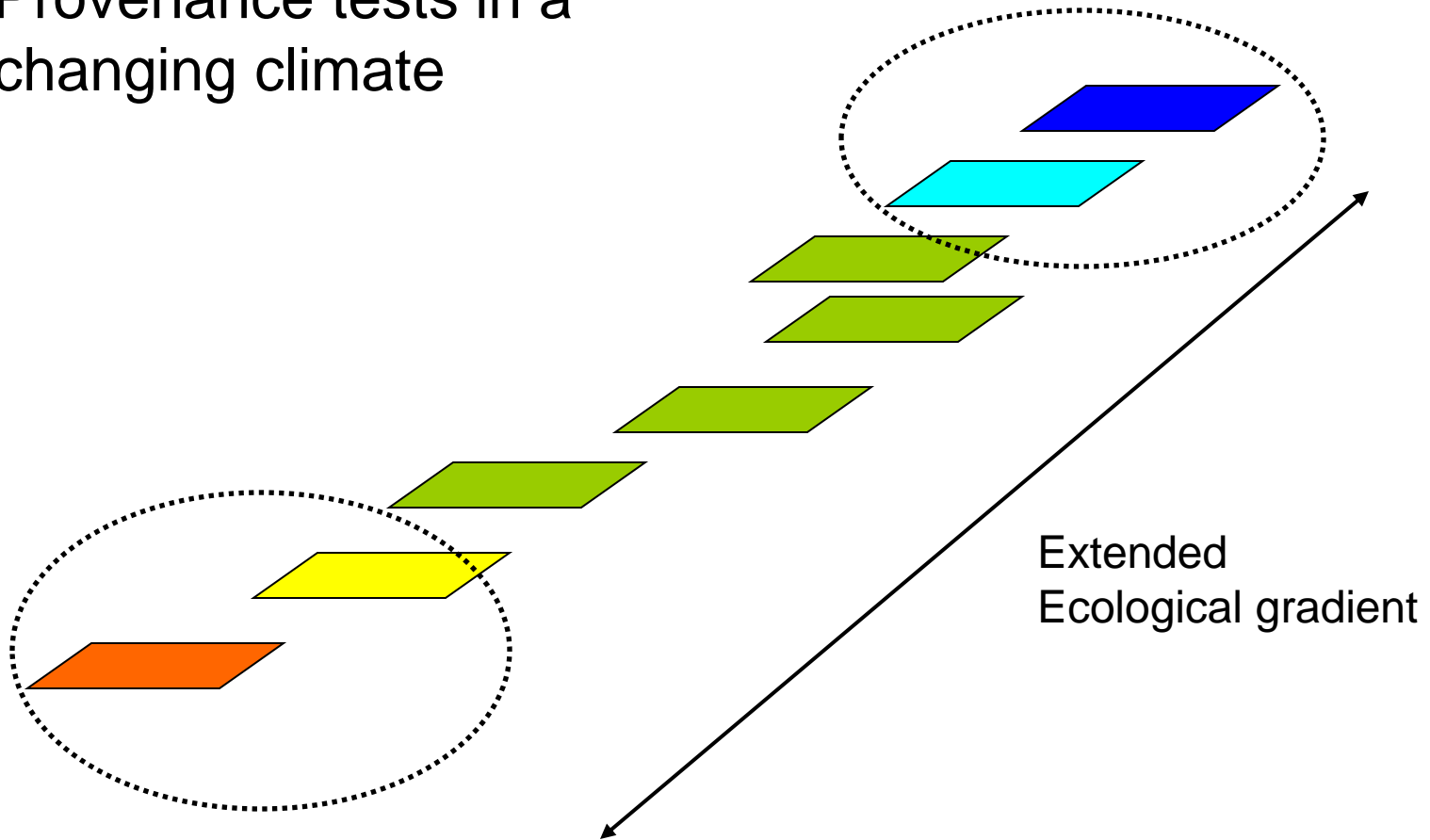
How to know what to plant?

- Provenance tests
- More than 100 year of experiments
- Arguably the best tool to understand plant responses



How to know what to plant?

- Provenance tests in a changing climate

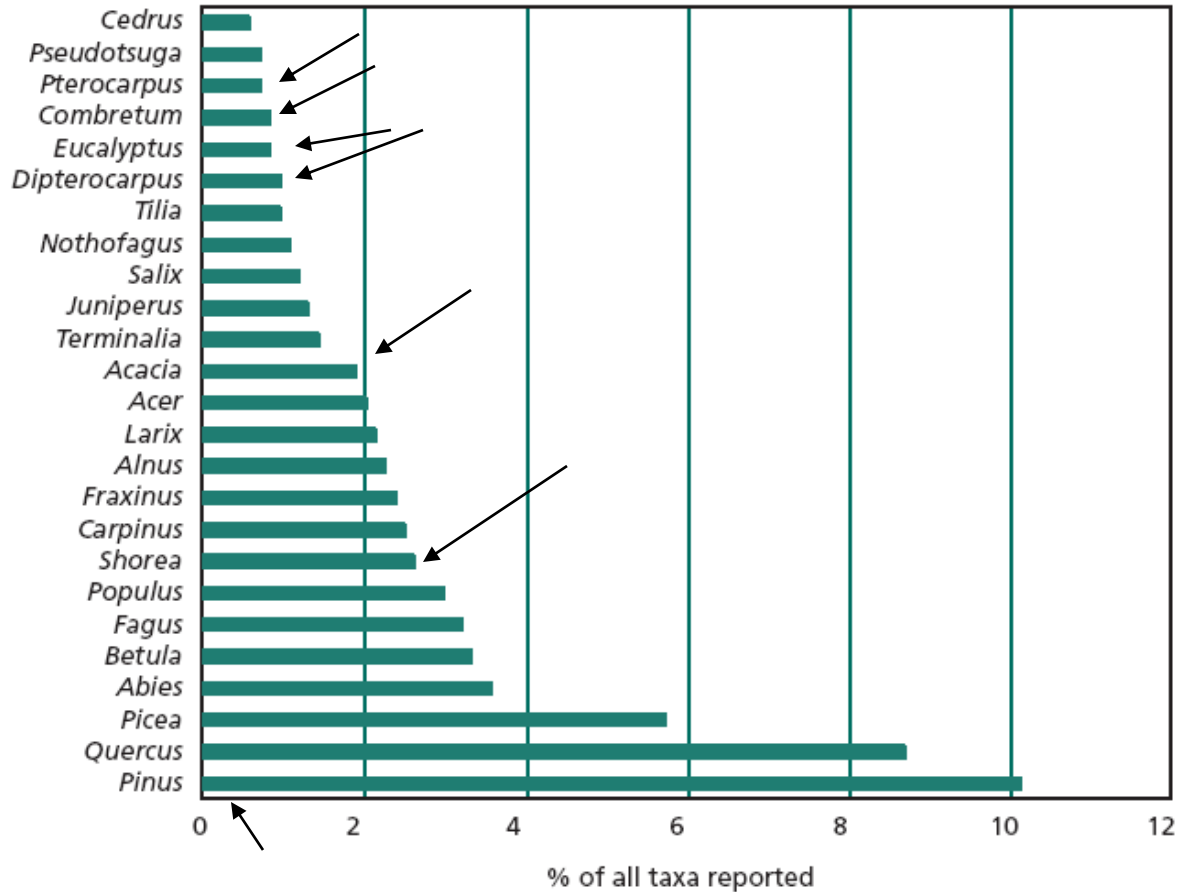


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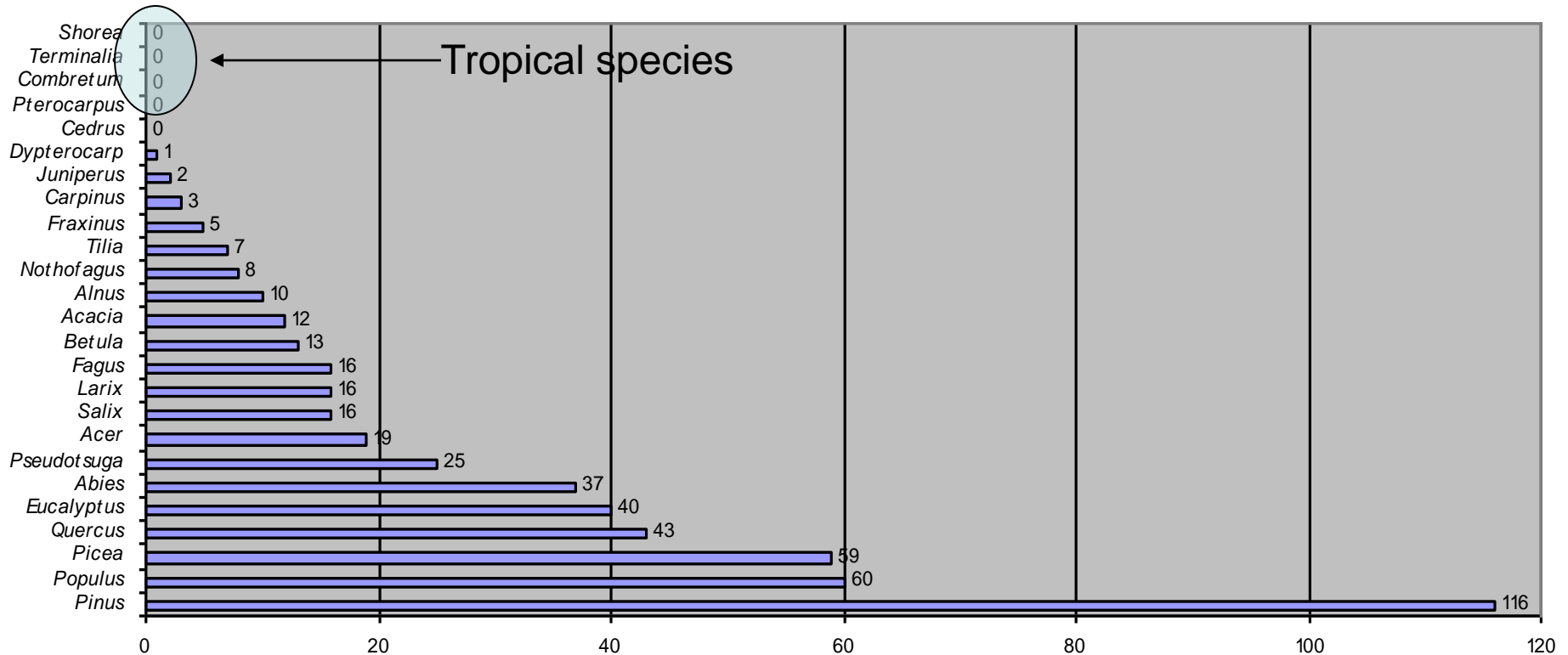
Most planted species in the world¹

FIGURE 3.9
Twenty-five most common tree genera reported¹



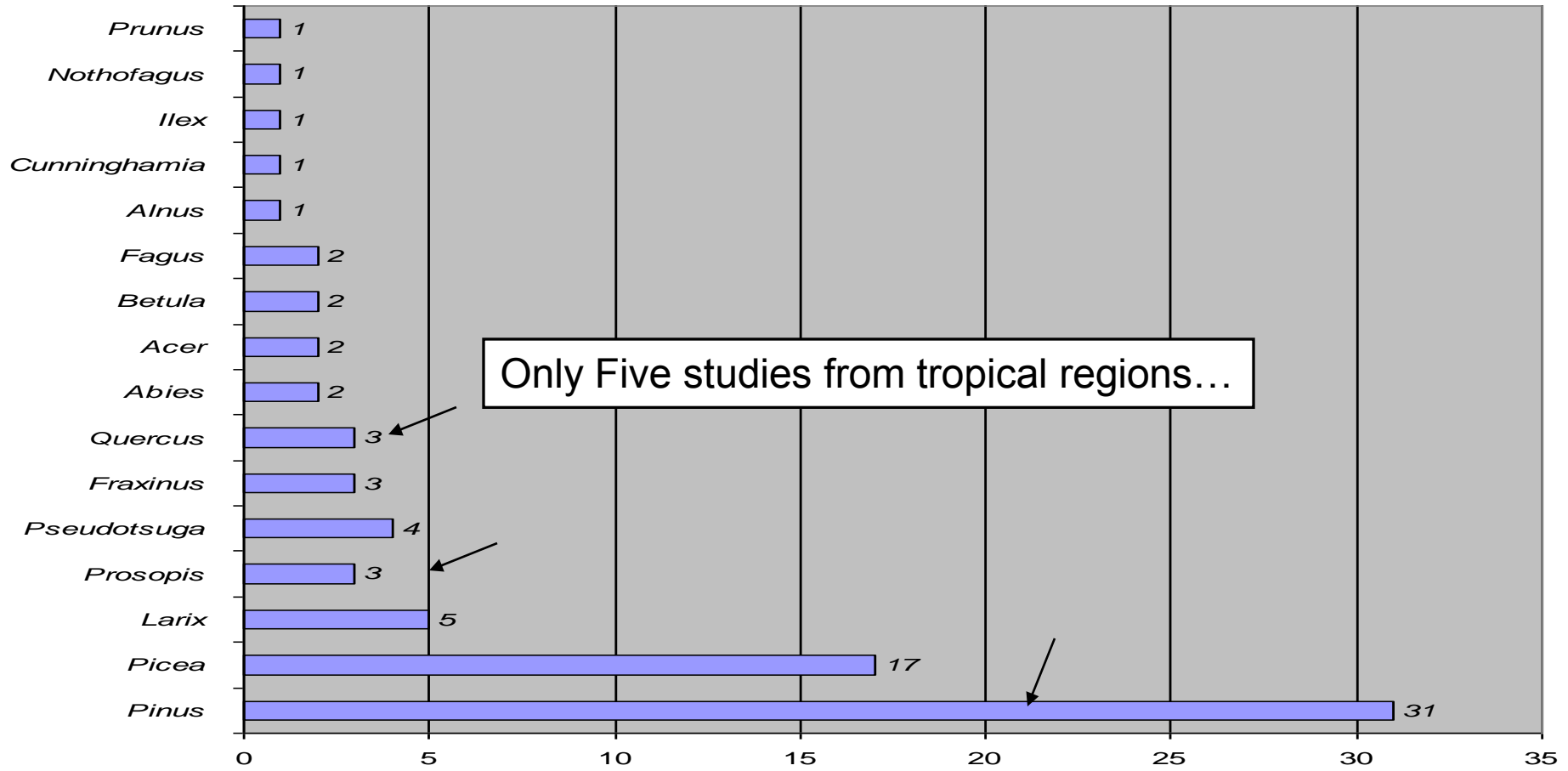
¹ Among the ten most common species reported by 88 countries.

Number of Provenance studies of the most planted species in the World¹

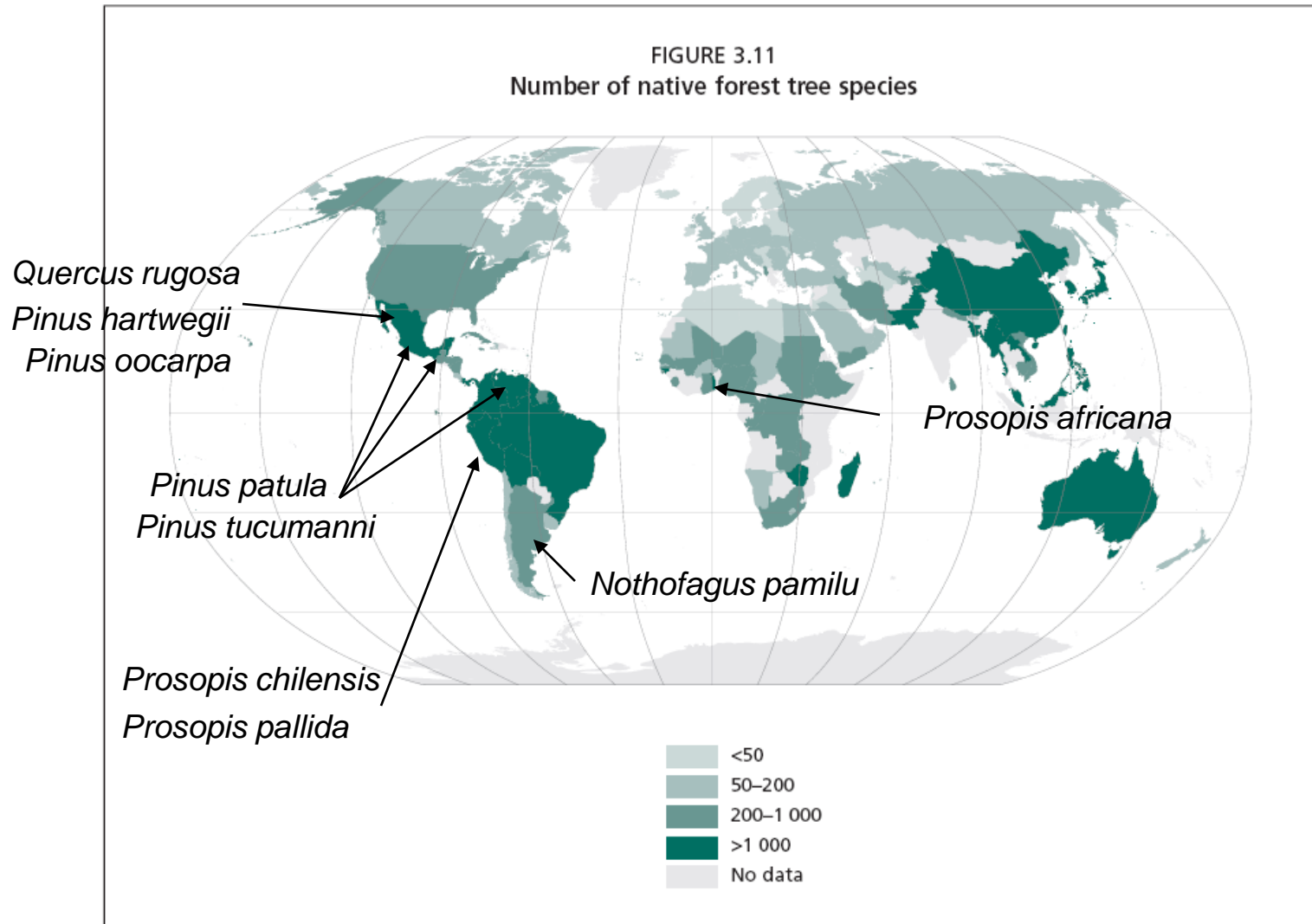


¹ ISI web of science searched in may 2010

Studies *explicitly* addressing Provenance Tests and Climate change

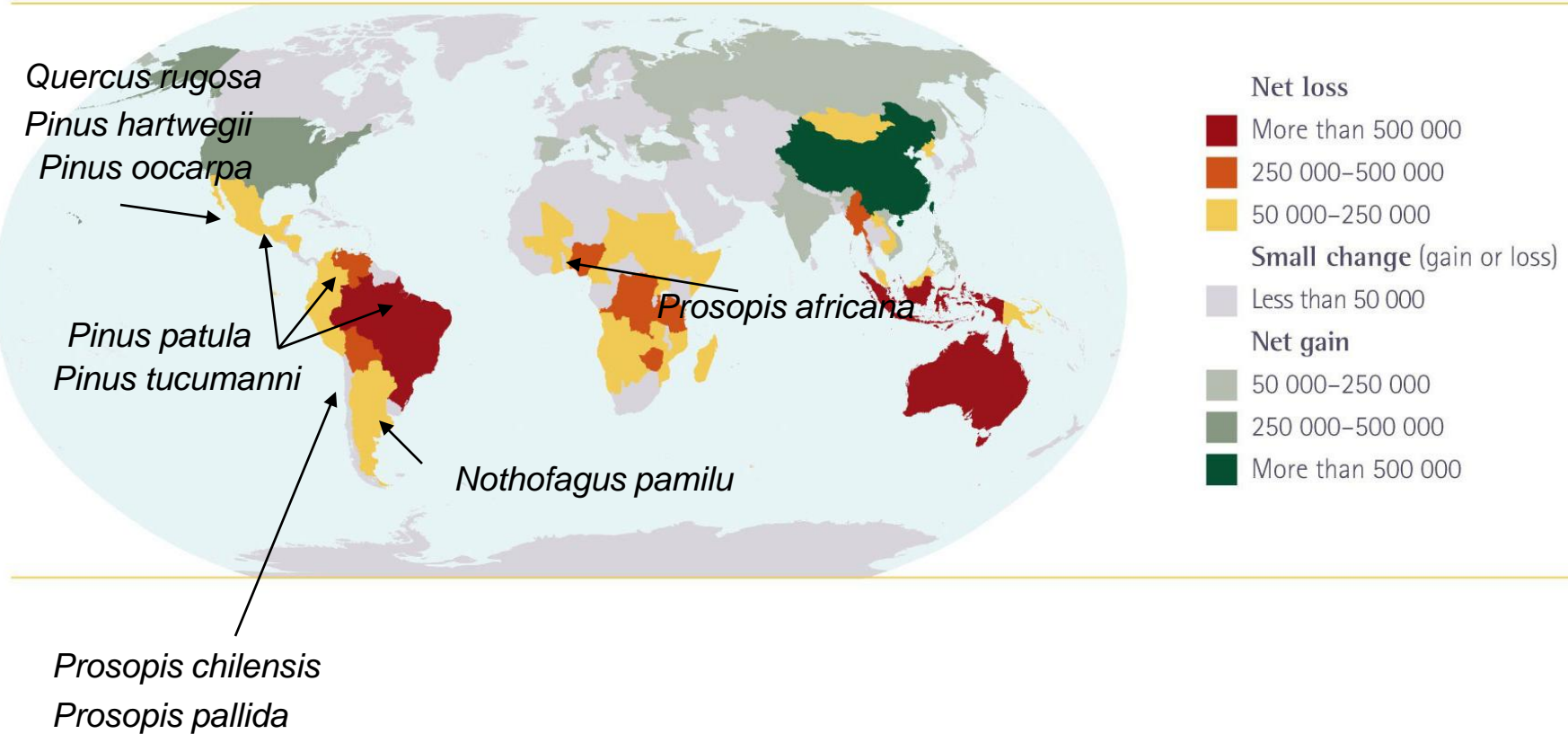


Provenance Studies addressing Climate Change in Tropical plants

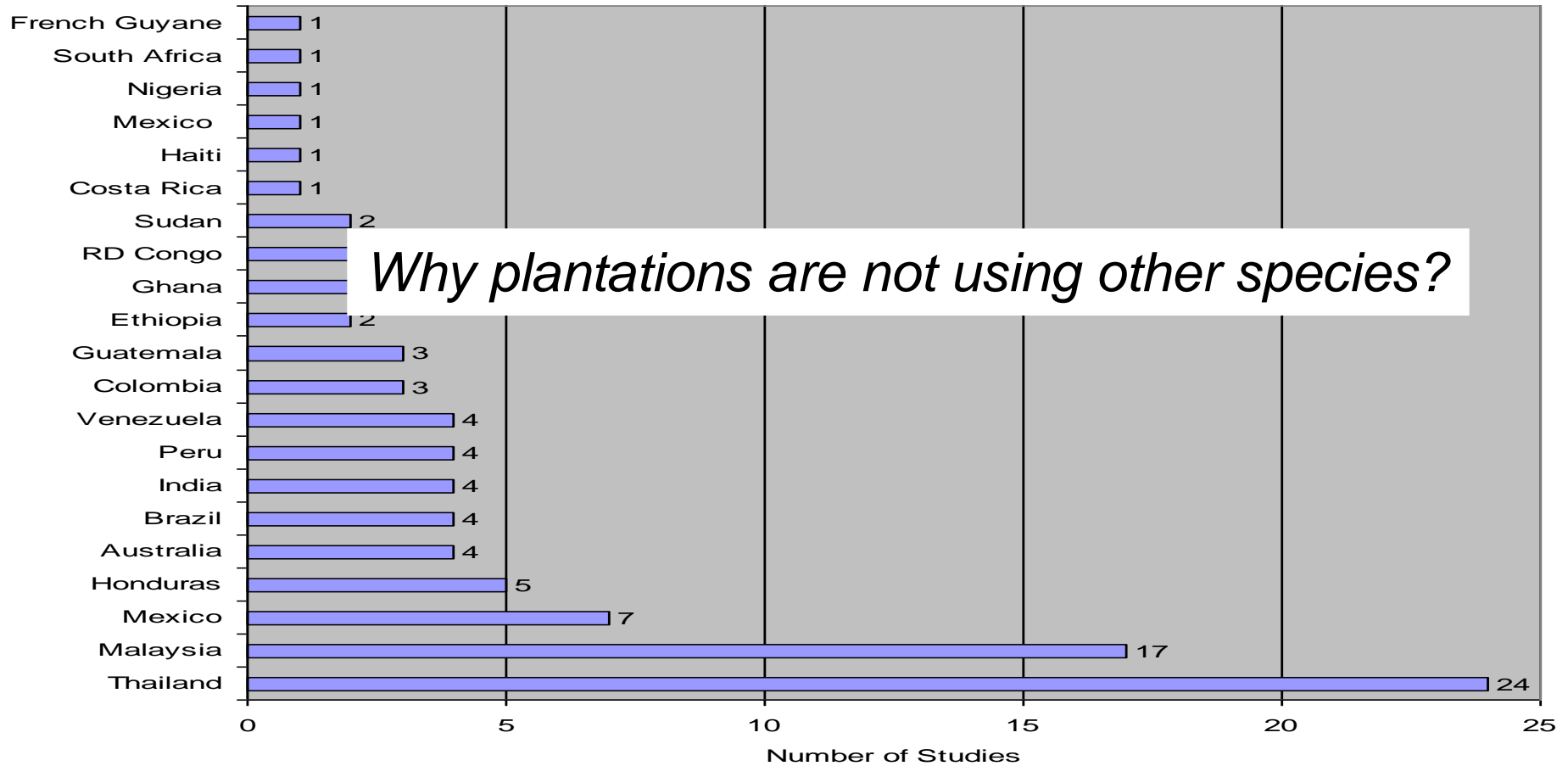


Provenance Studies addressing Climate Change in Tropical plants & Deforestation

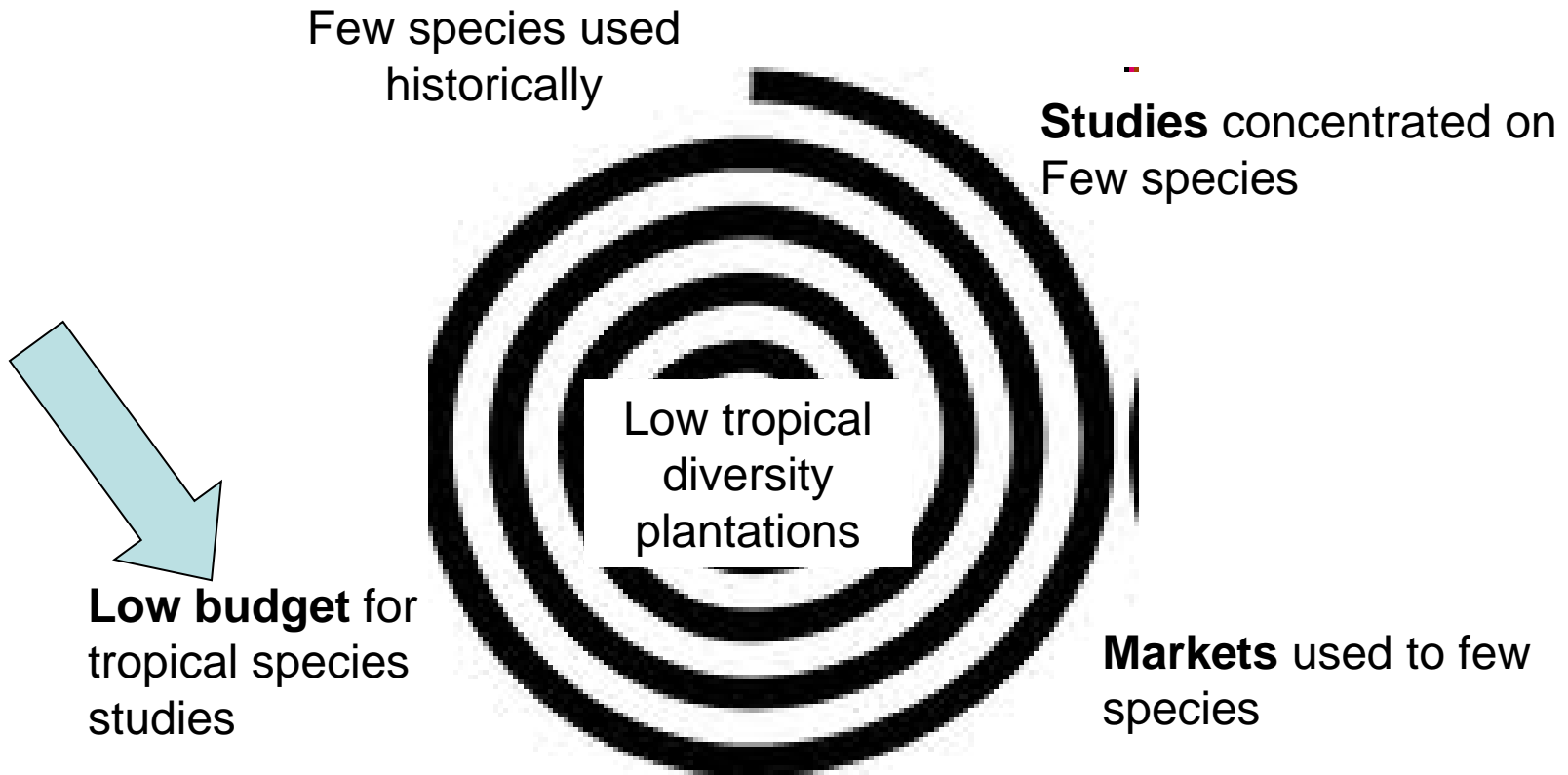
Net change in forest area by country, 2005–2010 (ha/year)



What else has been studied in the tropics?



Low Diversity Spiral



Study Case: Chinchina, Central Colombia, South America

- Began in 2001, inscribed this in April 2010 in REDD
- Protection of 15000 Ha of natural forest
- Plantation of 15000 Ha of production forest
- To enhance ecological services
- Create 1500 jobs (direct and indirect)
- Species chosen:
 - *Pinus patula* 50% (Mexico)
 - *Alnus journalensis* (Native, but water thirsty...)
 - *Cordia alliodora* (Native, but on edge of distribution)
- FAO estimates that Colombia has at least 5000 native tree species



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Conclusions

- Looking at forests only as carbon sinks can have a pernicious effect on biodiversity as a whole because many newly planted forests are done with well known commercial species that are often exotics.
- The relatively few barriers for trading of commercial seeds perpetuates the use of a reduced number of species.
- Moreover, large differences in the state of research between developed and developing countries can hinder the implementation of biodiversity rich forest

Thank you for your attention.