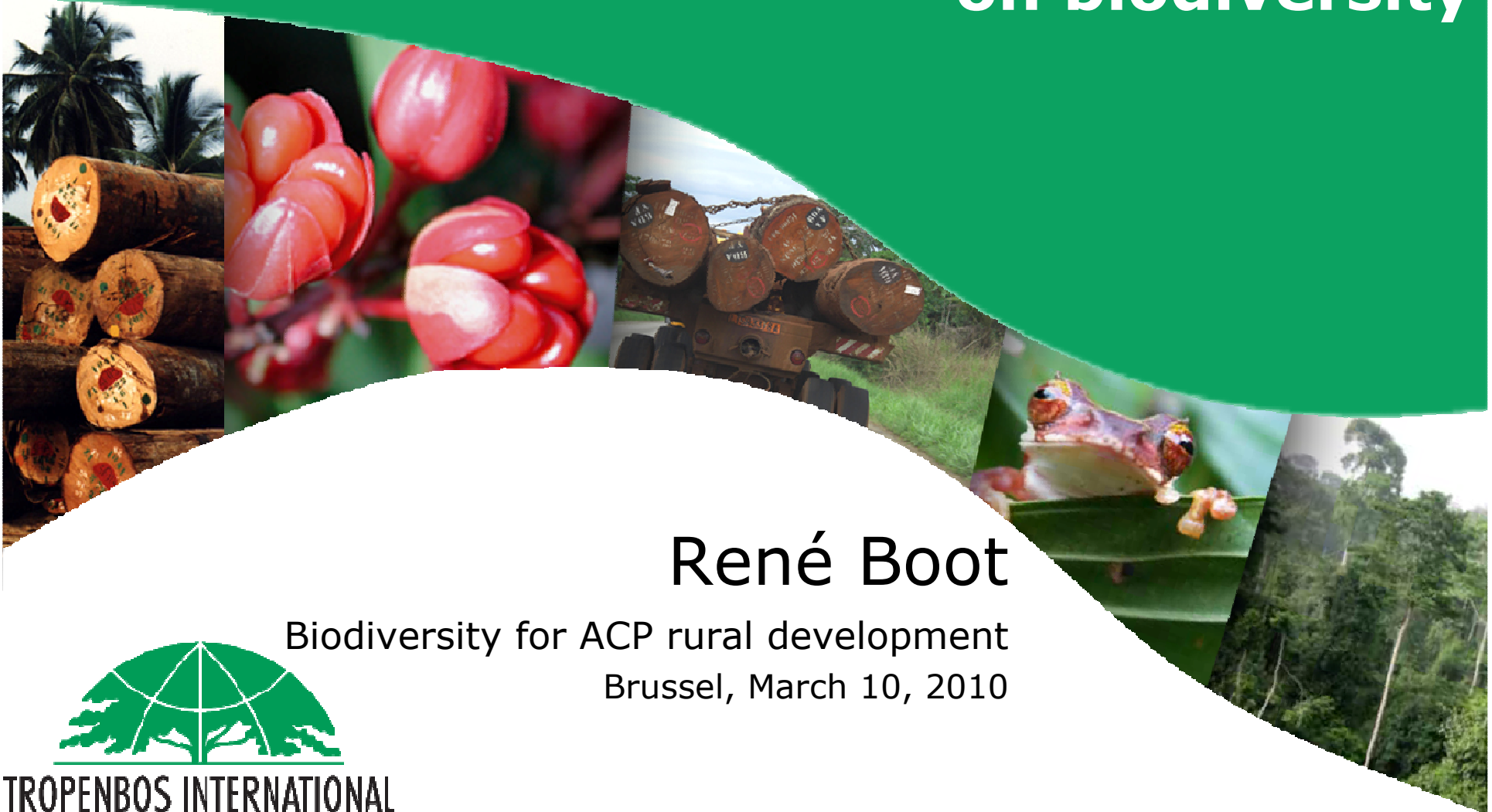


# Effects of forest certification on biodiversity



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Biodiversity for ACP rural development

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*Making Knowledge Work for Forests and People*

# Contents

- Introduction on certification
- Defining logging and biodiversity
- Impacts of logging on biodiversity
- Does certification work?
- Conclusions and implications



# Certification in the tropics

- Concern about the loss of tropical forest biodiversity has been a major driver of forest certification since the 1990s



# Extent of forests certified



- >300 million ha of forest have been certified

<b>System</b>	<b>Countries</b>	<b># Certificates</b>	<b>Area (m ha)</b>	<b>In Tropics</b>
FSC	81	940	102.5	13%
PEFC	19	620	223.0	0%
MTCS	1	8	4.4	100%

Status November 2008



# Certification in the tropics

- But does certification work for tropical forests?



# Biodiversity

- “Biological diversity is the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.”  
(source: Convention on Biological Diversity)

# Biodiversity

- Biodiversity can be defined at different scales which can all be affected by logging
  - From landscapes to genes
- Each component has certain attributes
  - Structure
    - the physical organization or pattern of the elements
  - Composition
    - the identity and variety of the elements in each of the biodiversity components
  - Function
    - ecological and evolutionary processes acting among the elements



Putz et al 2000

# Examples

<i>Scale</i>	<i>Attribute</i>		
	<b>Structure</b>	<b>Composition</b>	<b>Function</b>
<b>Landscape</b>			
<b>Ecosystem</b>			
<b>Community</b>			
<b>Population</b>	●	●	●
<b>Genetic</b>			

Sex and age/size ratios;  
range and dispersion

Species abundance  
distributions, biomass, or  
density; frequency;  
importance or cover  
value

Demographic  
processes (e.g.,  
survivorship, fertility,  
recruitment, and  
dispersal); growth  
rates; phenology



# Practical definition

- Most practical definitions of biodiversity relate to the number of species (in a community) and the abundance of individuals (of a species)



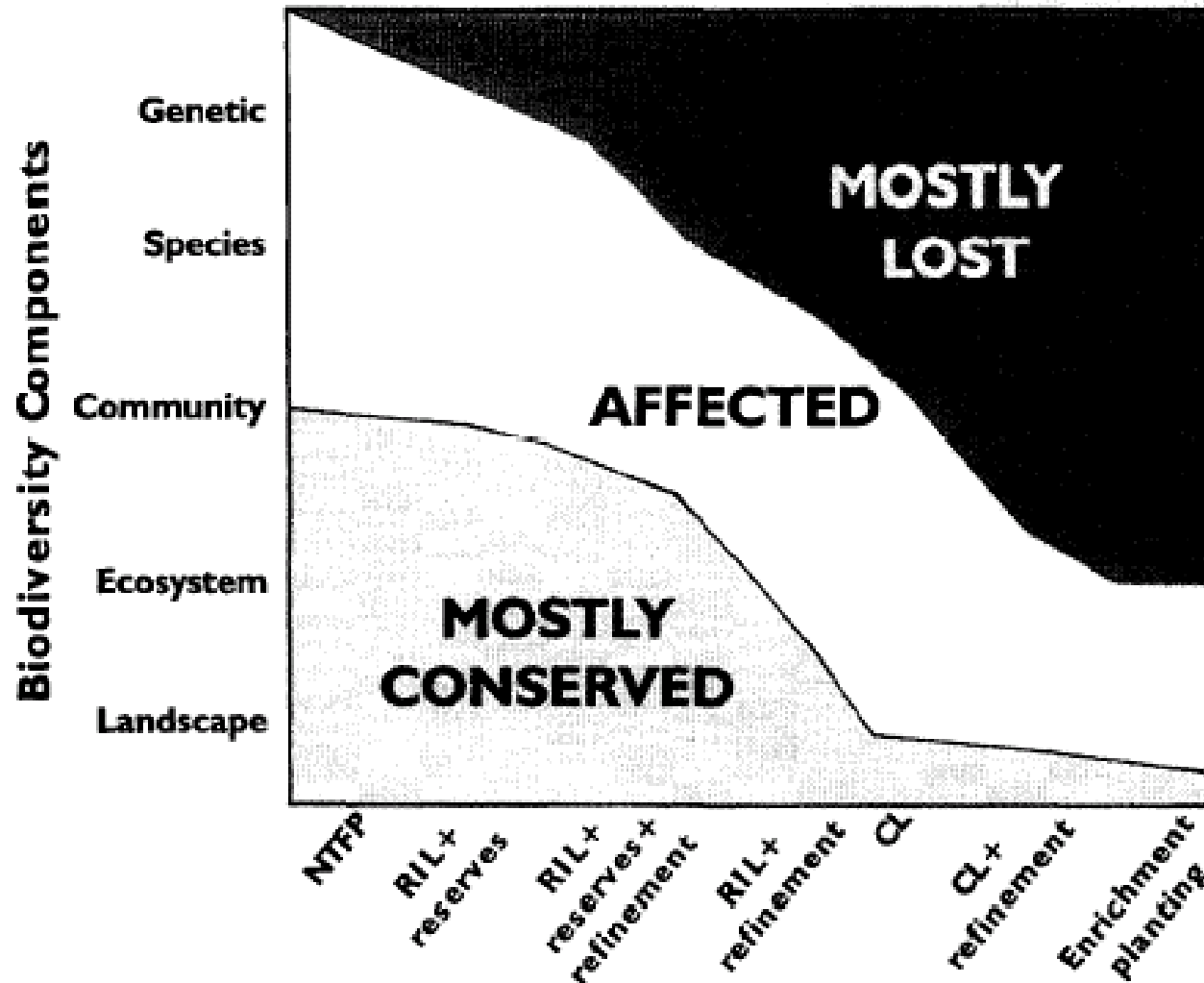
# Logging

Many components of logging affect biodiversity, in different ways

- Logging intensity
- Extraction method
- Species selection
- Silviculture
- Road building



# Impacts depend on scale and management intensity



Putz et al. 2000

# Variability: example

## Variation in response of birds to logging in tropical forests

(Number of studies reporting positive, no or negative effects)

<b>Bird Guild</b>	<b>Positive</b>	<b>No response</b>	<b>Negative</b>
Community: diversity/ abundance	9	12	17
Carnivores	3	0	1
Nectarivores	6	0	0
Frugivores	13	4	7
Insectivores	2	5	15
			38 studies

# Impacts of logging

## Some generalizations

- Decline of timber species and understory and food specialists
- Increase of generalist species
- Decrease of specialist species
- Short-term increases in species diversity are not uncommon, Long-term effects are poorly known
- Indirect effects (hunting!, human invasion!) can be more important than direct effects



# Certification study

- Well-managed forests ... forest certification
- Are certified forests in the tropics better off in terms of biodiversity?
- Comparison between certified and conventionally logged forests
- Literature study on the effects of 'certified forest management' on biodiversity



# Certification study

- Literature study on effects of certification and of associated 'good management practices':
  - Reduced Impact Logging
  - Riparian buffers
  - Protected areas
  - HCVF
  - Corridors
- Not considered: hunting, chemical and waste management, human invasion, and indirect effects

## First conclusion

Fairly little is known about the effects of certification on biodiversity

Published studies about the relation of certification practices and biodiversity in the tropics

Certification	1
RIL	17
Riparian buffers	1
Protected areas	1
HCVF	0
Corridors	4



# RIL

- RIL effects are relatively well-studied
- Effects on biodiversity are generally positive

Group	Effect	Source
Bats	+	Castro-Arellano et al 2007
Mammals	+	Mannan 2008
Trees	+	Mannan 2008
Tree regeneration	-	Kukkonen et al. (2008)
Dung beetles	+	Davis 2000
Soil macrofauna	+	Mannan 2008
Flying insects	+	Mannan 2008

# Other

- Protection of buffer zones is positive by protecting habitat specialists
- Protected areas within concessions have a positive effect on biodiversity
- Protection of corridors between patches of undisturbed forests is positive
- Conclusions are based on very few studies
- No studies on HCVF!



# Conclusions

## There is uncertainty

- Conclusive, quantitative evidence about the effect of forest certification on biodiversity is lacking
- Little quantitative evidence about the long-term effects of certified forest management
- There is a very high variation, both in forest management practices associated with certification and in responses between and even within species



## Main conclusion

In general, good forest management practices associated with forest certification appear to benefit biodiversity in managed forests



# Recommendations



- Since species respond differently, and .... different species may be valued differently by different stakeholders....  
formulating appropriate conservation goals in production forests are needed.
- This requires debate and negotiation at the local and national level (but without dismissing global interests)



# Goals of SFM

- Must be translated into practical management objectives
- Directed at specific, measurable biodiversity targets
  - Which species, at what levels of abundance?
- Subject to periodic revision to accommodate
  - Changes in value perception by stakeholders
  - Changes in the state of biodiversity in the forest.



# Policy implications

- Promoting and regulating good forest management will help conserve biodiversity (in addition to protected areas)
- Promoting forest certification may help to independently assess forest management (and transfer the costs of this assessment to the forest users)
- The EU Forest Law Enforcement Governance and Trade (FLEGT) action plan: a first but vital step towards good forest management



**Thank you very much for your  
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