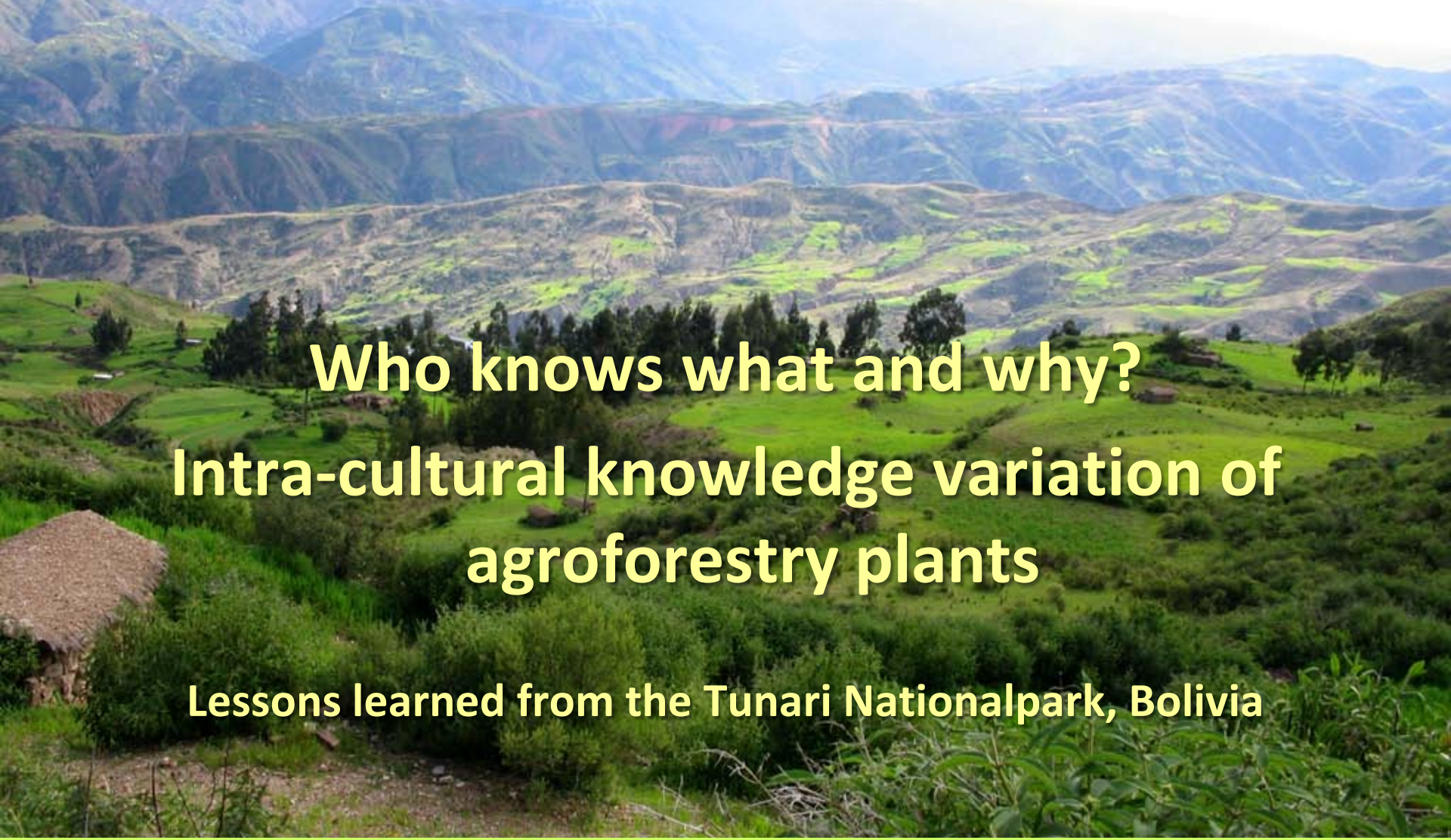

Who knows what and why?
Intra-cultural knowledge variation of agroforestry plants

Lessons learned from the Tunari Nationalpark, Bolivia

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Identification of Agroforestry Plants

Agroforestry: adaptation strategy to Climate Change

(Verchot et al. 2007, Bellow et al. 2008)

Methods from quantitative ethnobotany → use value, cultural importance of plants

(Hoffman and Gallaher 2007)

Frequent and early citation in freelisting exercise → perception

(Quinlan 2005; Quinlan 2010)

Quality, intensity and exclusivity of plant uses known and applied; symbolic values

(Turner 1988)

Level of agreement among the informants (informant consensus)

(Reyes-García et al. 2006)

Intra-Cultural Knowledge Variation

Fotos: Brandt (2006)

Perception and knowledge about plants are not equally shared in a given cultural group

(Tardío and Pardo-de-Santayana 2008)

Factors that predict intra-cultural distributions:

Demographic: *age, gender*

(e.g., Begossi et al. 2002, Voeks and Leony 2004)

Socioeconomic and cultural: *market integration, migration, modernization, education*

(e.g., Godoy et al. 2005, Nesheim et al. 2006, Ceuterick et al. 2011, Quinlan and Quinlan 2007, Voeks and Leony 2004)

Intra-Cultural Knowledge Variation

Fotos: Brandt (2008)

Analysis of factors and dynamics that are behind such intra-cultural variations

Understanding attitudes and social relationships of actors

Transmission, transformation and loss of ethnobotanical knowledge

(e.g., Lozada et al. 2006, Santos et al. 2011, Mathez-St. et al. 2012)

Intra-Cultural Knowledge Variation

Studies about intra-cultural variation of perception and knowledge about multifunctional trees and shrubs grown in farming land are still rare !

(e.g., González-Insuasti et al. 2011, Chepstow-Lusty and Winfield 2000)

Fotos: Mathez-St. (2007)

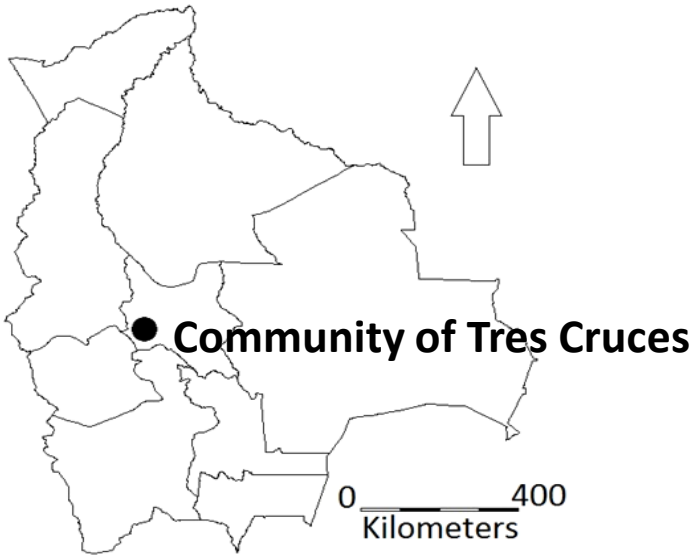
Research questions

1) Intra-cultural variation of perception and knowledge about plant uses according to different actor groups (gender, age, migration)?

2) Adaptation of Andean community-based agroforestry towards the land users' interests and skills?

Study Area

Fotos: Mathez-St. (2007)



Kewiña *(Polylepis subtusalbida)* > 3600 m

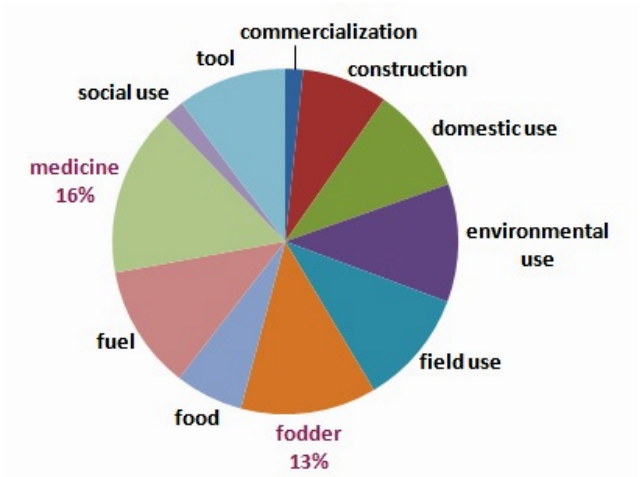
Molle *(Schinus molle)* < 3200 m

T'ola *(Baccharis dracunculifolia)* < 3900 m

Fotos: Brandt (2004, 2007)

Thaqo, algarrobo (*Prosopis laevigata*) < 3200 m

Fotos: Brandt (2004, 2007)



Fotos: Mathez-St., Brandt (2007)

Methods

Data Collection

Freelisting exercises, semi-structured interviews
14 selected local woody species (e.g., *Schinus molle*, *Prosopis laevigata*)
40 community members




Data Analysis

9 use categories (e.g., construction, tools) → Cultural Importance (CI)
Composite Salience (CompS)

(Smith 1993; Quinlan 2005, 2010, Tardío and Pardo-de-Santayana 2008)

Spearman rank correlations
ANOVA and Tukey post hoc-tests
Two-sided binomial tests for comparison of proportions
Generalized linear mixed models

R
software

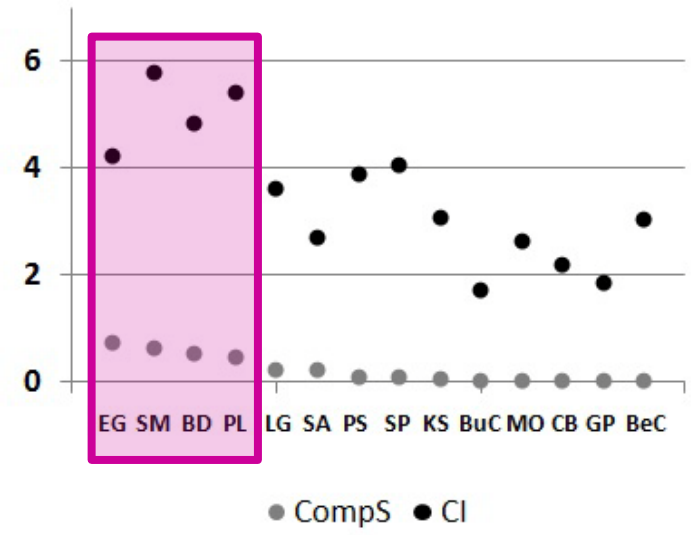
(Bates et al. 2011, Bolker et al. 2008, Crawley 2007)

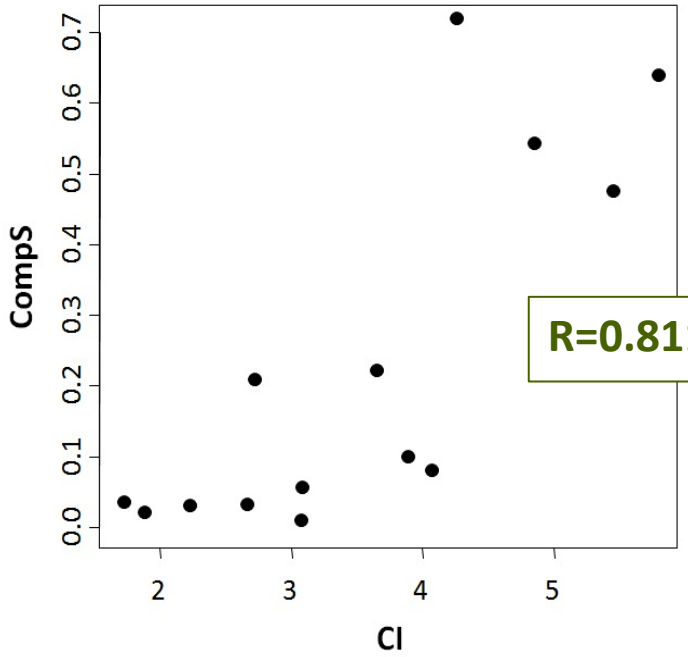





Fotos: Brandt (2006)

Results

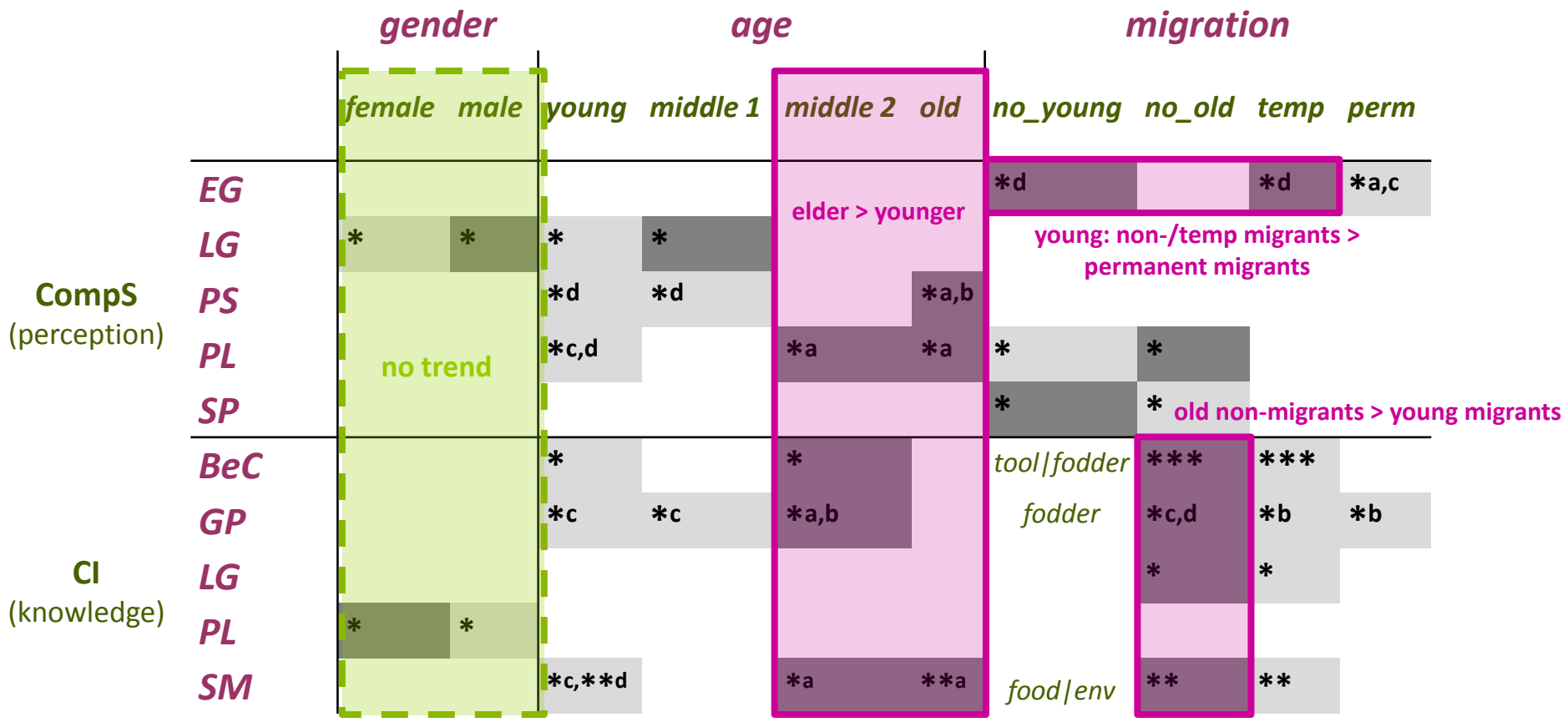




R=0.811, *p*<0.001

BD = *Baccharis dracunculifolia,* BeC = *Berberis commutata,* BuC = *Buddleja coriacea,*
CB = *Clinopodium bolivianum,* EG = *Eucalyptus globulus,* GP = *Gynoxys psilophylla ,*
LG = *Lepechinia graveolens,* KS = *Kaunia saltensis,* MO = *Minthostachys ovata,*
PL = *Prosopis laevigata,* PS = *Polylepis subtusalbida,* SA = *Senna aymara,* SM = *Schinus molle,*
SP = *Sambucus peruviana*

Results



BeC = *Berberis commutata*, EG = *Eucalyptus globulus*, GP = *Gynoxys psilophylla* ,
LG = *Lepechinia graveolens*, PL = *Prosopis laevigata*, PS = *Polylepis subtusalbida*,
SM = *Schinus molle*, SP = *Sambucus peruviana*

Results

Fixed effects	*con*	*env*	*fie*	*fod*	*food*	*fuel*	*med*	*oth*	*tool*
Intercept	-0.994	-0.714	-2.356	-0.355	-2.881	-0.765	-1.853	-2.651	-2.537
age [a]							**0.013****	**0.014***	**0.011****
gender(men)									
migr(yes)	**-0.391****			**-0.377****				**-0.975****	
age : gender(men)									
gender(men) : migr(yes)									
age : migr(yes)									
age: gender(men) : migr(yes)									

Use- categories: con = construction, env = environmental use, fie = field use, fod = fodder, food, fuel, med = medicine, oth = other use, tool

Conclusions

Women and Men

→ specific gender roles reflected by knowledge differences. No trend

Elder Know More Than Younger

→ accumulated knowledge with longer experience, or knowledge loss?

Migration

→ difference in young people‘s perception of cultural importance of exotic species! Loss of knowledge about traditional plant uses

Conclusions

Loss of Traditional Knowledge

Species degradation
(e.g., *Polylepis, Berberis*)

Species substitution
(e.g. timber of native vs. exotic trees)

Loss of traditional plant uses
(e.g. „chicha de molle“)

Substitution by other materials
(e.g. timber vs. plastic)


Foto: Brandt (2006)

Conclusions

Adaptation of Community-based Agroforestry

Consideration of specific knowledge and underlying social roles, gender perspective → women‘s participation!

Migration: interests, skills and limitations of young people

Recognition, use and innovation of endogenous knowledge, regional cooperations and native agrobiodiversity in accordance to socioeconomic, ecological, cultural context

Potentials, niches, new perspectives?


Foto: Brandt (2006)

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