



Social networks and governance of ecosystem services: Power asymmetries between stakeholders at multiple levels

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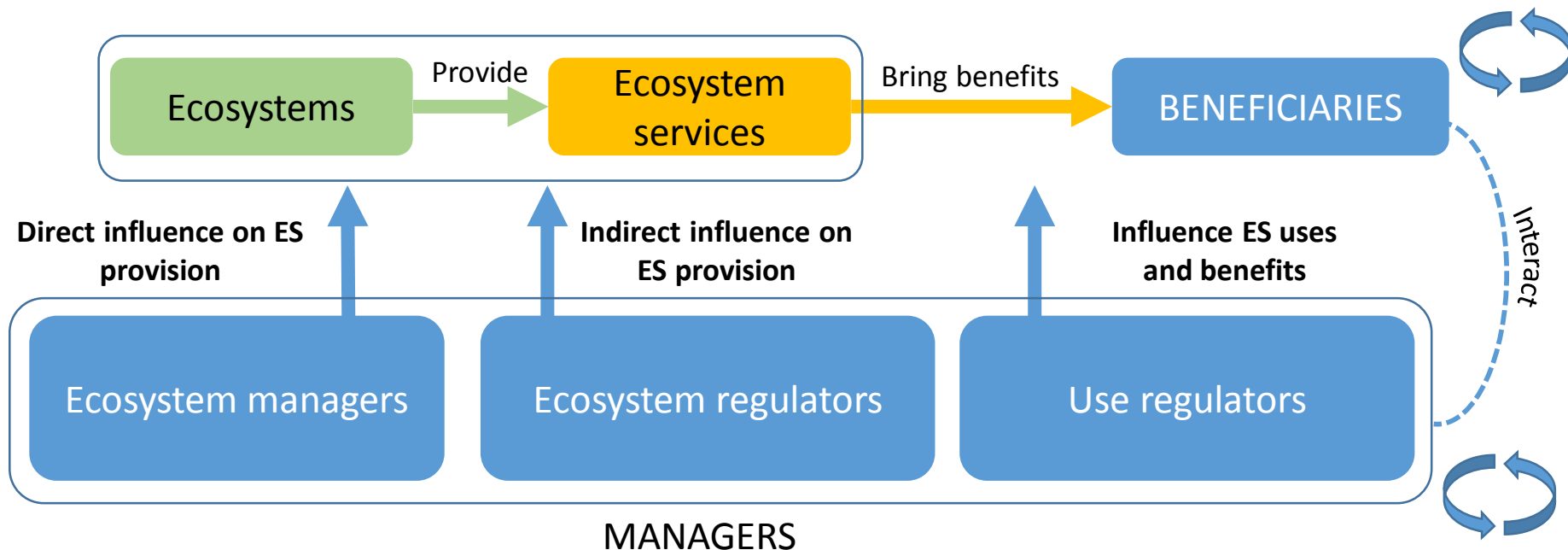
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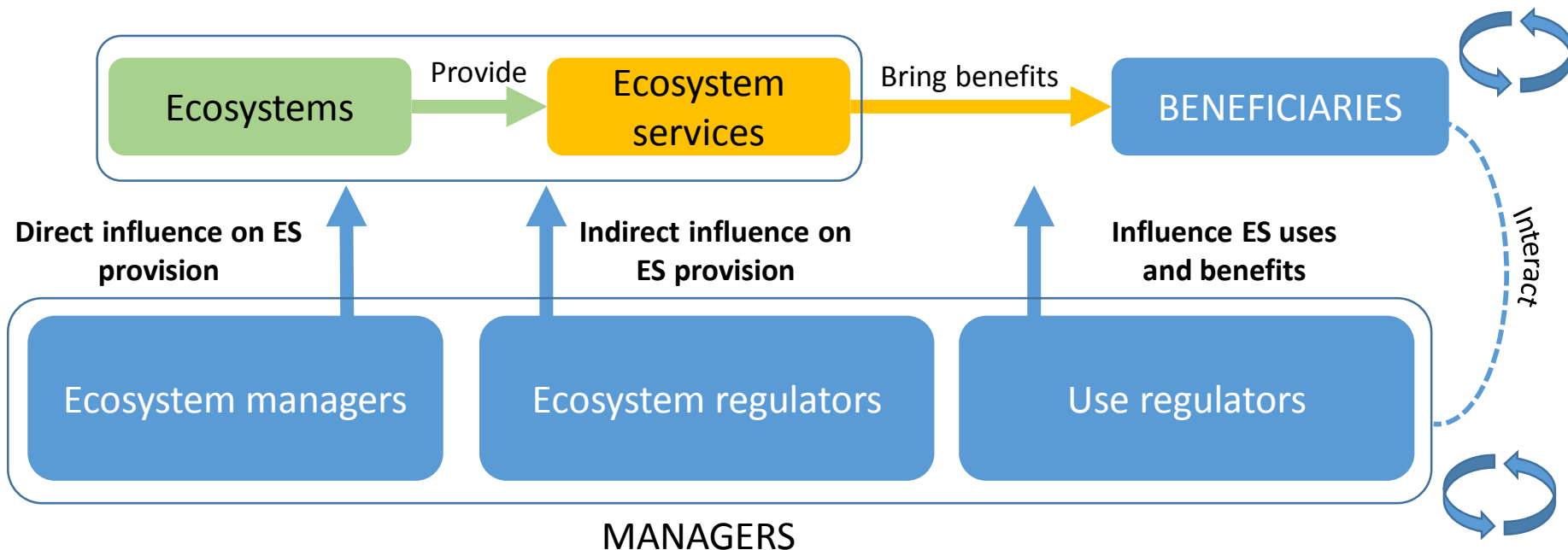
Power asymmetries and ecosystem services

- Addressing power relations is crucial for more sustainable, equitable and resilient governance of ecosystems (Berbés-Blázquez et al. 2016)
- The concept of ecosystem services is poorly related to the questions of equity, power and environmental justice (Ernstson 2013; Felipe-Lucia et al. 2015)



Power asymmetries and ecosystem services

- Two dimensions of power asymmetries
 - Stakeholders play different roles in relation with ecosystem services (managers/beneficiaries) (Felipe-Lucia et al. 2015)
 - Stakeholders have varying capacity to interact with other stakeholders (Cohen et al. 2012)



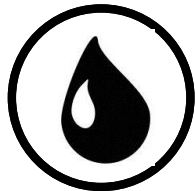
Question and application

- What are the power asymmetries in the network of stakeholders related to ecosystem services benefits and management?
- Watershed in Peruvian Andes (Apurimac)

**Medicinal
plants**



**Water flow
regulation**



Methods

Workshops

- Selection of ecosystem services
- Identification of stakeholders

Interviews
(n=66)

Type of stakeholder	N° interviews
Civil society	8
NGO's	7
Private sector	17
Public organizations	34

Analysis

Methods

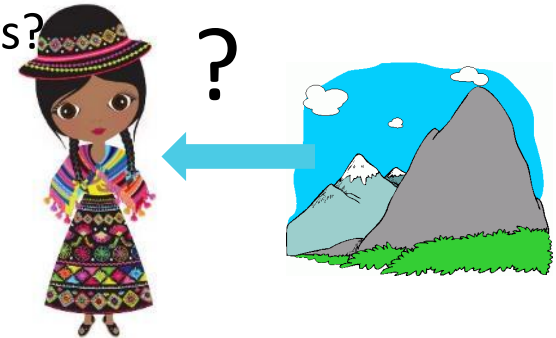
Workshops

- Selection of ecosystem services
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Interviews
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- What services benefit stakeholders?

Analysis



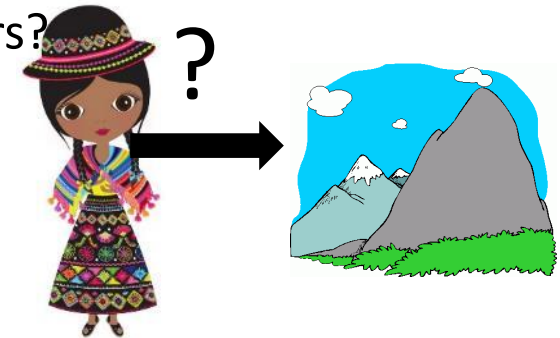
Methods

Workshops

- Selection of ecosystem services
- Identification of stakeholders

Interviews
(n=66)

- What services benefit stakeholders?
- What services do stakeholders manage?



Analysis

Methods

Workshops

- Selection of ecosystem services
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Interviews
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- What services benefit stakeholders?
- What services do stakeholders manage?
- How do stakeholders relate?



Analysis

Methods

Workshops

- Selection of ecosystem services
- Identification of stakeholders

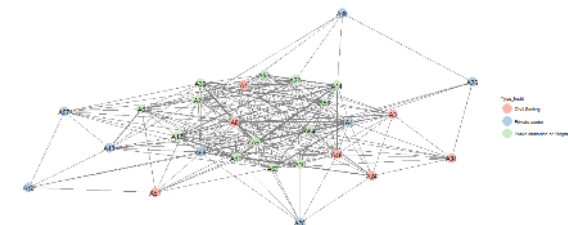
Interviews
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- What services benefit stakeholders?
- What services do stakeholders manage?
- How do stakeholders relate?

Analysis

- Network construction and structure analysis

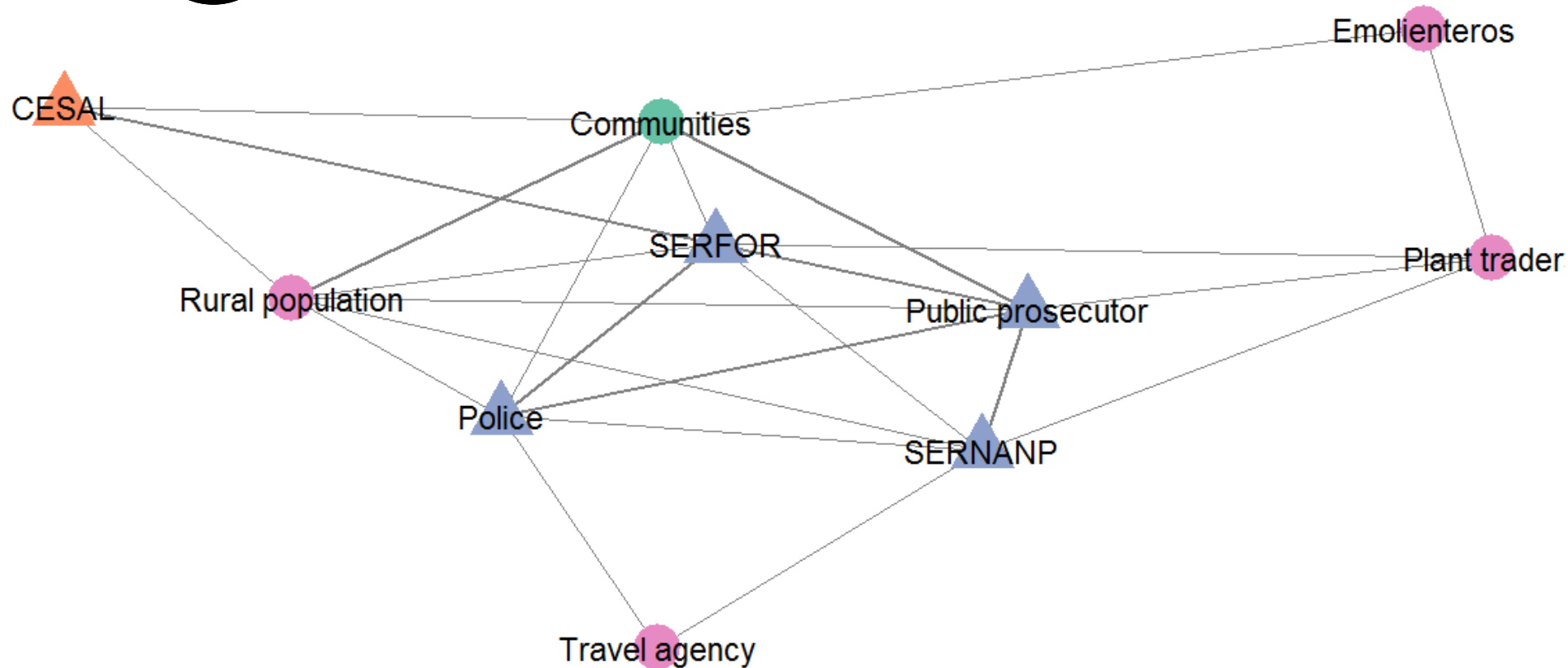
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A				A	B	C	
B	✓	A	-	A	-	✗	✗
C	✓	B	✓	B	✓	-	✓
		C	✓	C	✓	✗	-



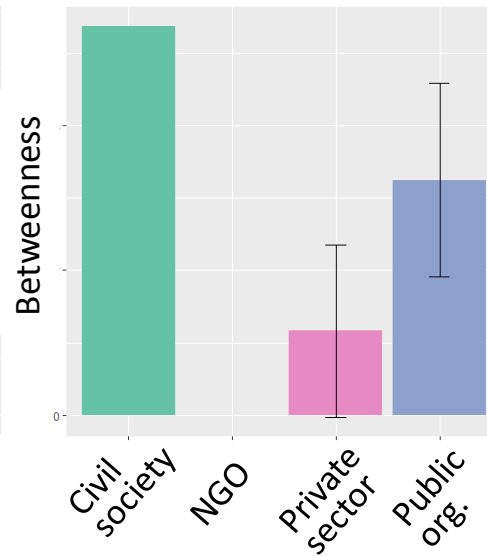
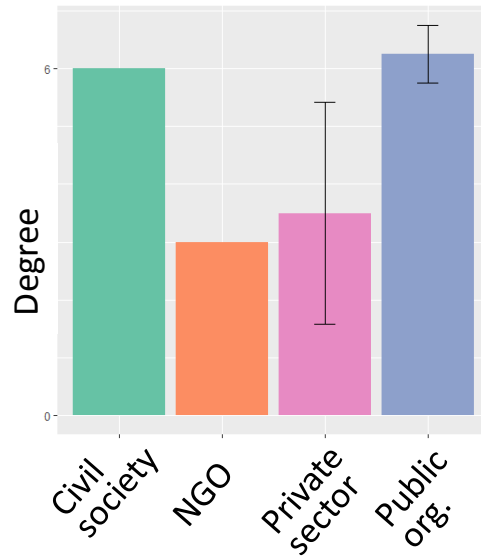
Results: Do stakeholders have similar position in the networks?



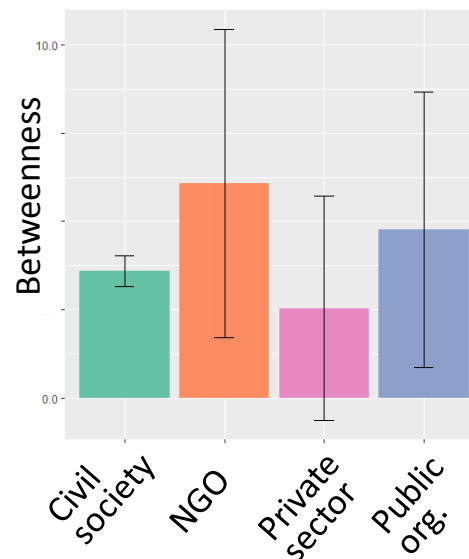
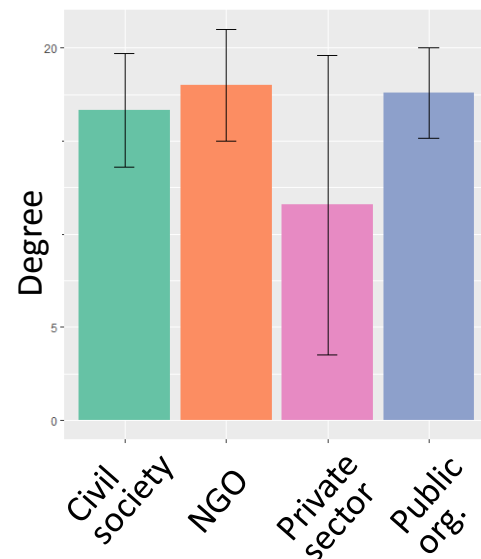
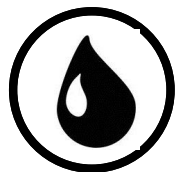
- Public organizations and national stakeholders are central to the network



Results: Do networks integrate stakeholders similarly across types?

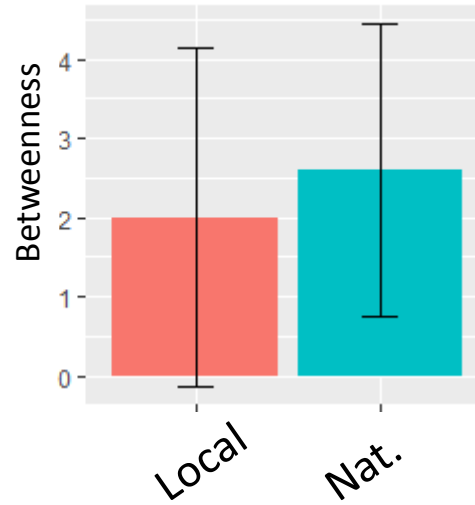
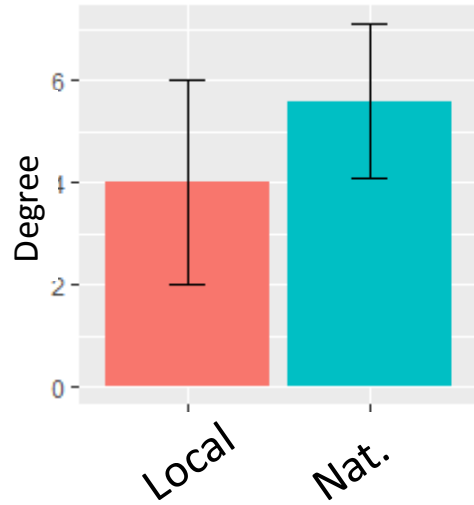


- Public organizations are better connected than private sector in both networks

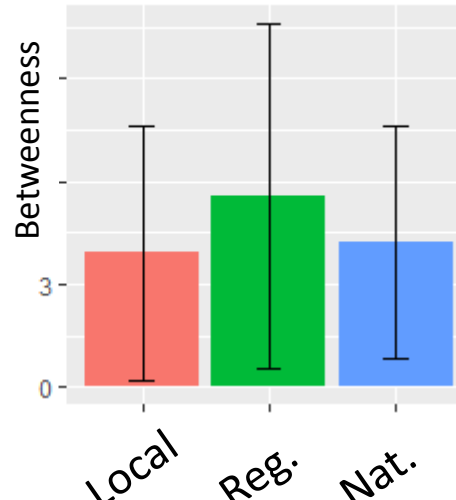
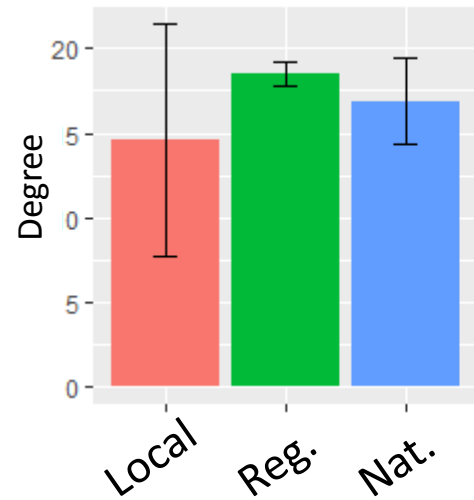


- Good connection of NGOs in the water network

Results: Do networks integrate stakeholders similarly across scales?

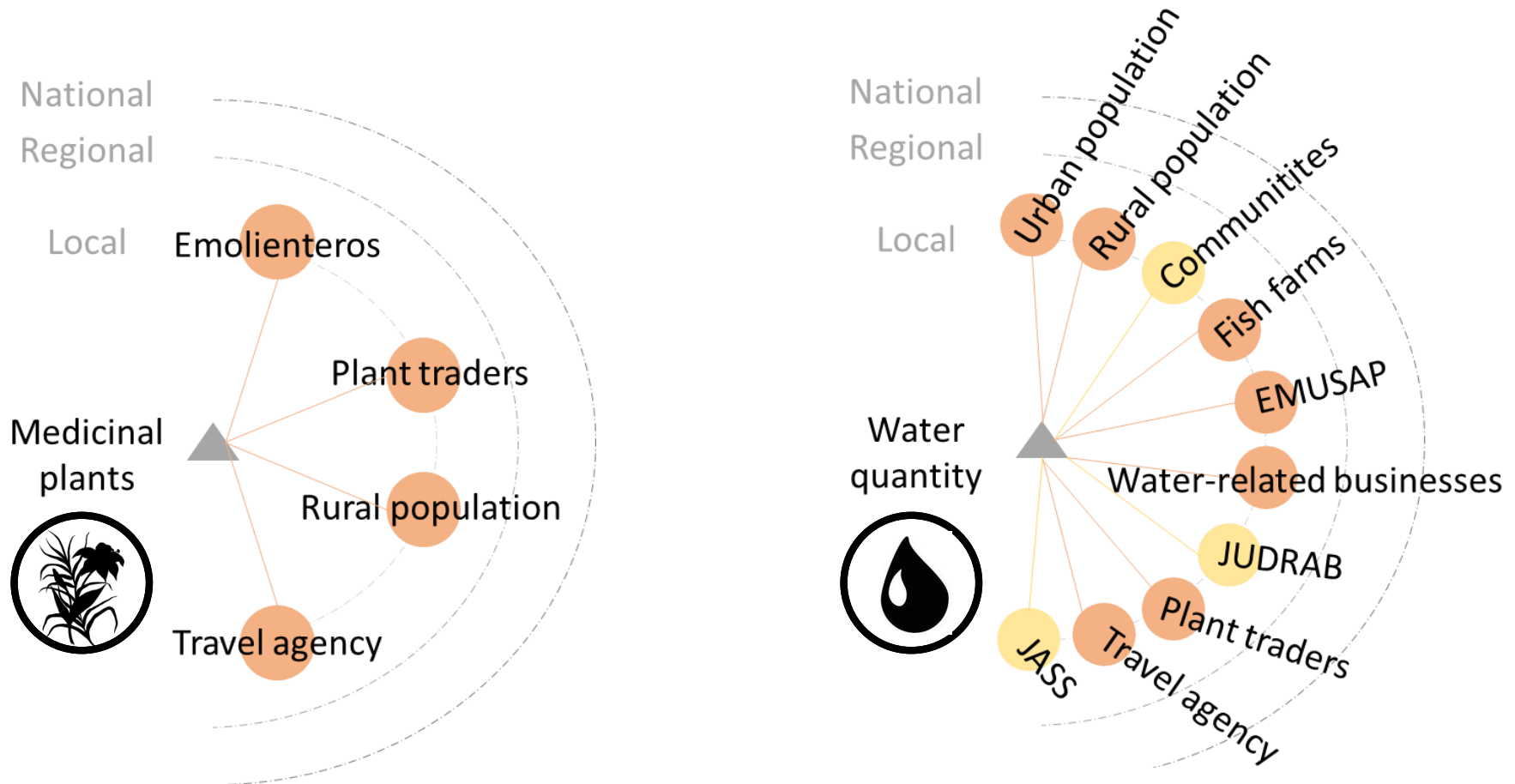


- Local stakeholders are less connected than regional and national stakeholders



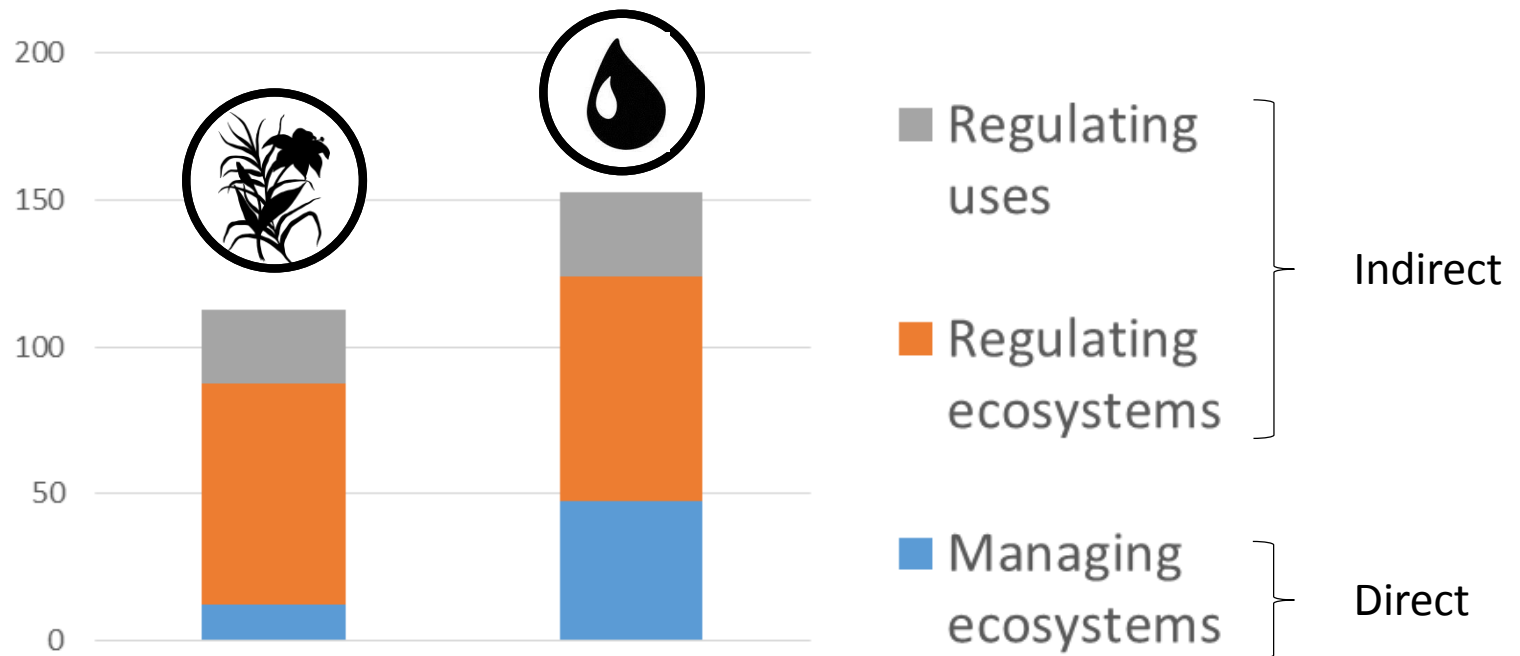
Results: What are the characteristics of ecosystem service beneficiaries?

- Beneficiaries are from private sector or civil society and have local area of influence (Chi-Square Test)

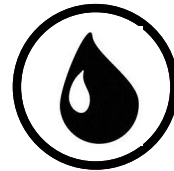
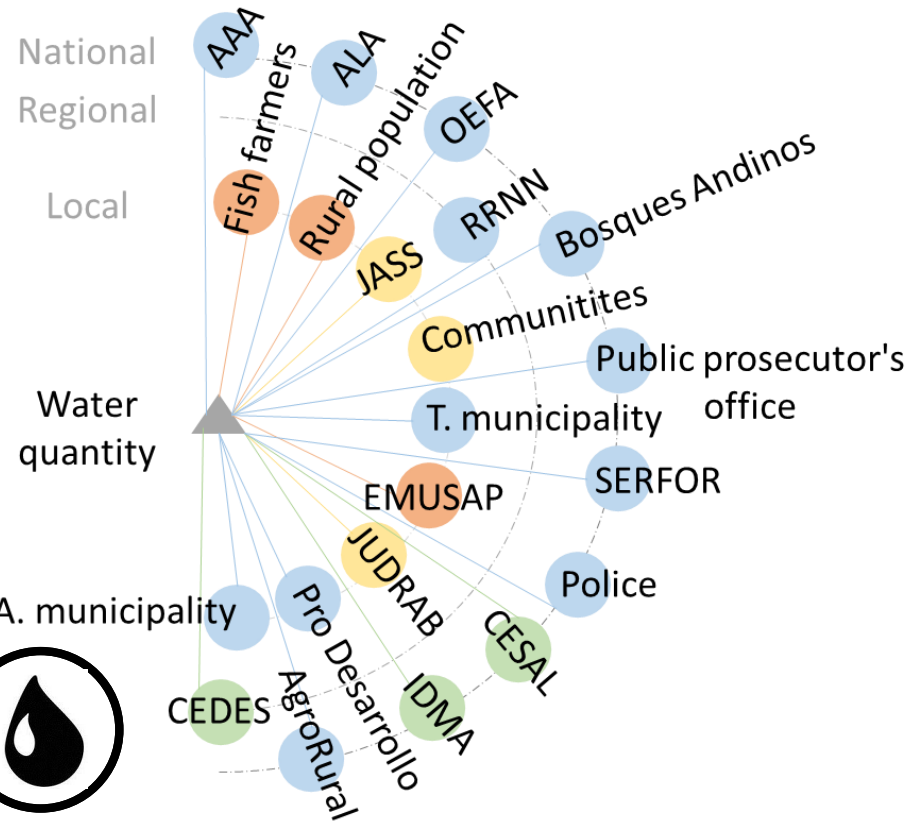
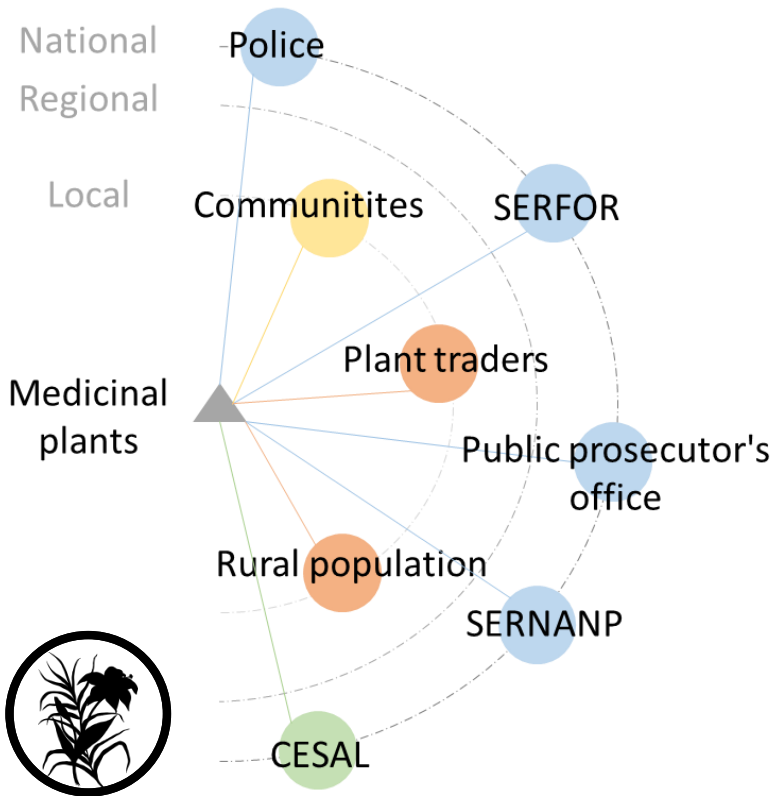


Results: How are ecosystem services managed?

- Indirect management is more common than direct one
- Direct management is more important for water because of climate change and water scarcity it induces

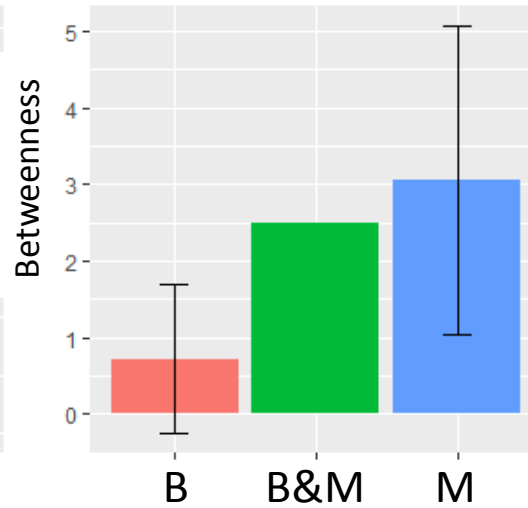
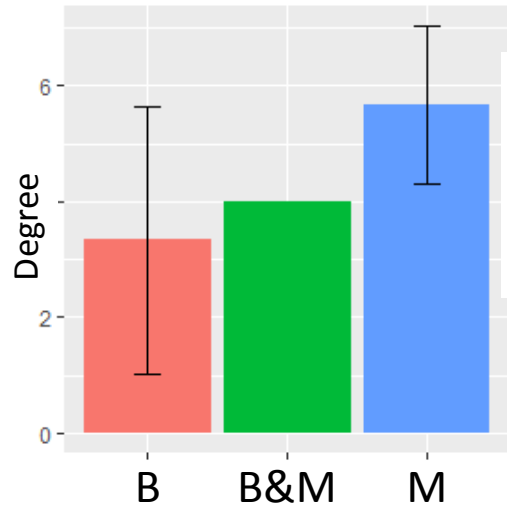


Results: Who manages ecosystem services?

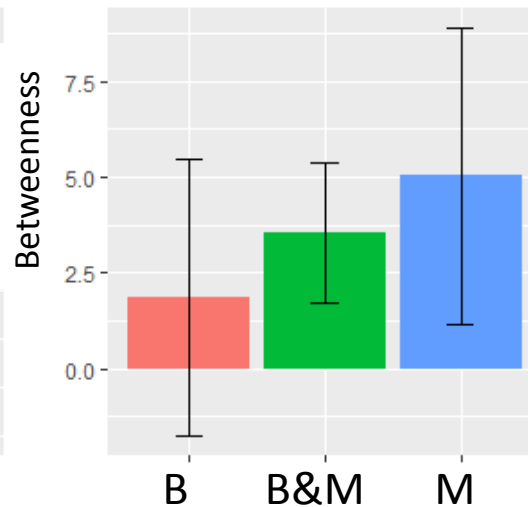
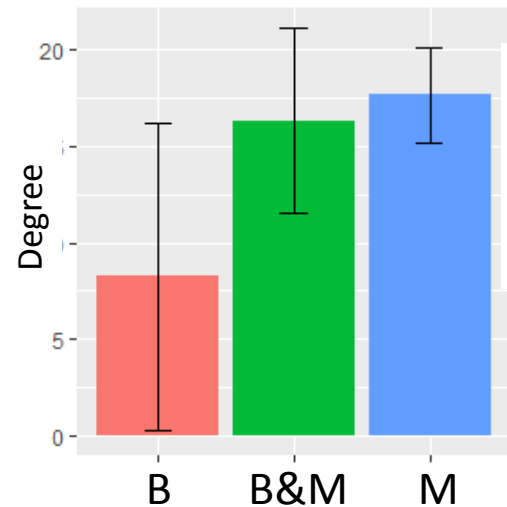


- Diverse types and scales of managers
- Non-managers are private and local

Results: Have managers and beneficiaries different connections to other stakeholders?



- Beneficiaries have lower connectivity than managers





Conclusions

- Network analysis can describe power asymmetries
- Beneficiaries, mostly local stakeholders, from private sector, are marginalized from the networks of ES governance
- Why does it matter?
 - Limited representation of other stakeholders (equity issue)
 - Reduced adaptive capacity of the system (adaptation issue)
 - Mistrust in institutions that manage natural resources (legitimacy issue)
 - Created/enhanced conflicts (social unrest issue)

Thanks for your attention!

If you have questions or comments on this presentation:
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