Restoring resilience in Mediterranean landscapes

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Restoring resilience in Mediterranean landscapes

- What’s resilience in the context of Mediterranean landscapes?
- Biotic thresholds requiring no intervention (or passive restoration)
- Biotic thresholds requiring intervention
- Abiotic thresholds
- Increasing resilience under CC, assisted migration
- Resilience and society needs and aspirations
Resilience in the context of Mediterranean landscapes
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Biotic thresholds requiring no intervention
Biotic thresholds requiring no intervention

Old fields colonised by Juniperus phoenicea
Limits to resilience

Spectral mixture analysis based on Röder et al. 2008

Areas burned once in 1978

Areas burned in 1978 and 1991

Post fire variation

- No burn
- > 70%
- 70-50%
- 50-20%

Limits to resilience

Spectral mixture analysis based on Röder et al. 2008
Limits to resilience

Díaz-Delgado et al. (2002). Ecol. 83: 22293-2303
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Biotic thresholds requiring re-introduction

Valle de Ricote, Murcia

www.mma.es/portal/secciones/biodiversidad/montes_politica_forestal/fototeca_forestal/
Biotic thresholds requiring disturbance

SERRA ESPADÀ (CASTELLÓ, SPAIN)
Biotic thresholds requiring disturbance

- Control (CONTR)
- Spot cleared (SPOT)
- Strip cleared-planted downslope (LSTRI)
- Strip cleared-planted midslope (MSTRI)
- Strip cleared-planted upslope (USTRI)
Biotic thresholds requiring disturbance are most exposed

Biotic thresholds requiring changes in structure/disturbance

Tapias et al. (2001)
Biotic thresholds requiring changes in structure/disturbance

*Pinus nigra* natural stands
Turmill site (Castelló, E Spain)
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Abiotic thresholds that can be hardly reversed

Overgrazed alfa grass steppes in Central Tunisia

... and S Spain
Abiotic thresholds that can be hardly reversed

Effects of Roman disturbance persisting after ca. 1,500 years

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Increasing resilience under climate change

“...in southern Europe, where up to 25% of the species currently present will disappear under the climatic conditions predicted for 2100” Alkemade et al. (2011)
Increasing resilience under climate change

Sierra de Orihuela, SE España (12/01/2015)
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Resilience and society needs and aspirations

Demarcación Forestal de Enguera (Valencia, E Spain)

Disante, K. et al (unpublished) Fundación CEAM
Natural spaces that can enhance key functions or limit risks
Areas with special social value
Spaces with landscape impact
Landscape units
Areas with special economic value

WEIGHT CRITERIA TO PRIORITIZE ECOLOGICAL RESTORATION

Resilience and society needs and aspirations

Disante, K. et al (unpublished) Fundación CEAM
Conclusions

1. Mediterranean landscapes are resilient ...to some extent

2. Identify when passive restoration is feasible and acceptable

3. Identify when loss of resilience cannot be reversed

4. Manage for increased resilience under climate change: resprouting and other traits, assisted migration, landscape configuration

5. Prioritize actions and areas

6. Engage society, restore socio-ecological resilience
THANK YOU!!

ALICANTE, Spain

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