

Studying possible futures of Mediterranean forests



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Objectives

- Theoretical** : Understand how ecologists study possible futures :
 three levels - landscapes, ecosystems and populations
Practical : Build conjectures about the future of a Mediterranean
 landscape, a forest ecosystem and an endangered population

Some definitions

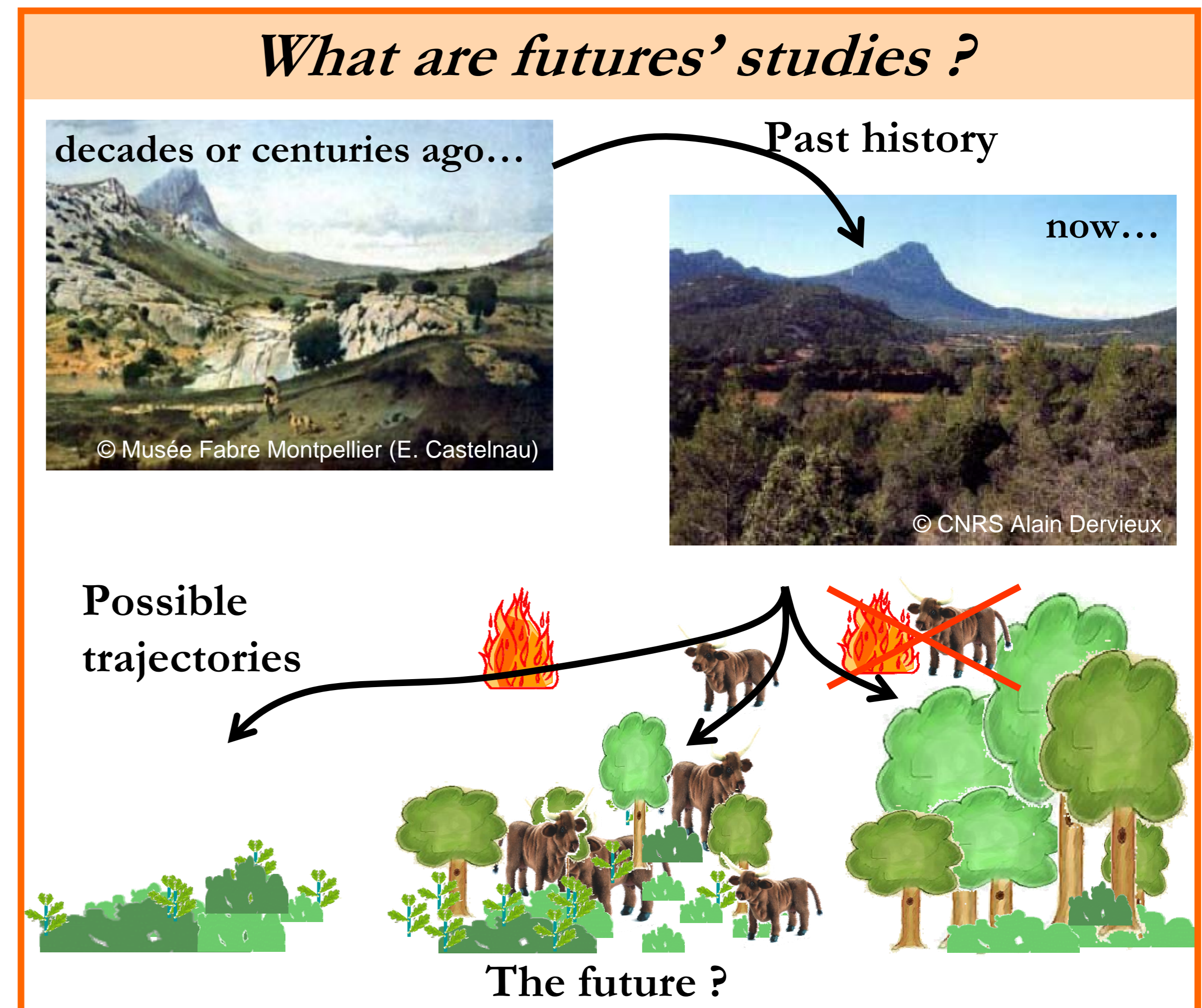
Futures' studies

- 1) based on well-thought-out methods, building conjectures on the future state and changes of systems whose future is important
- 2) debate about these conjectures

Conjecture

- 1) statement about the future
- 2) not predictions
- 3) quantitative or qualitative or both

Our conceptual framework:



Theory

Difficulties

- complexity of ecological systems
- interactions => nonlinearities
- spatial and temporal scales
- lack of data
- objects that do not exist

Limits

- are only models trustful?
- validation of the future? no experiments, uncertainties.
- little attention towards scenarios building

A diversity of methods

- Models or storylines?
- What model?
- How to build scenarios in ecology?

Methods

- Field workshops with ecologists
- Ecological building of scenarios
- Cross validation by various linked or coupled models
- Assessment by experts of the plausibility, coherence and accuracy

Why study the future?

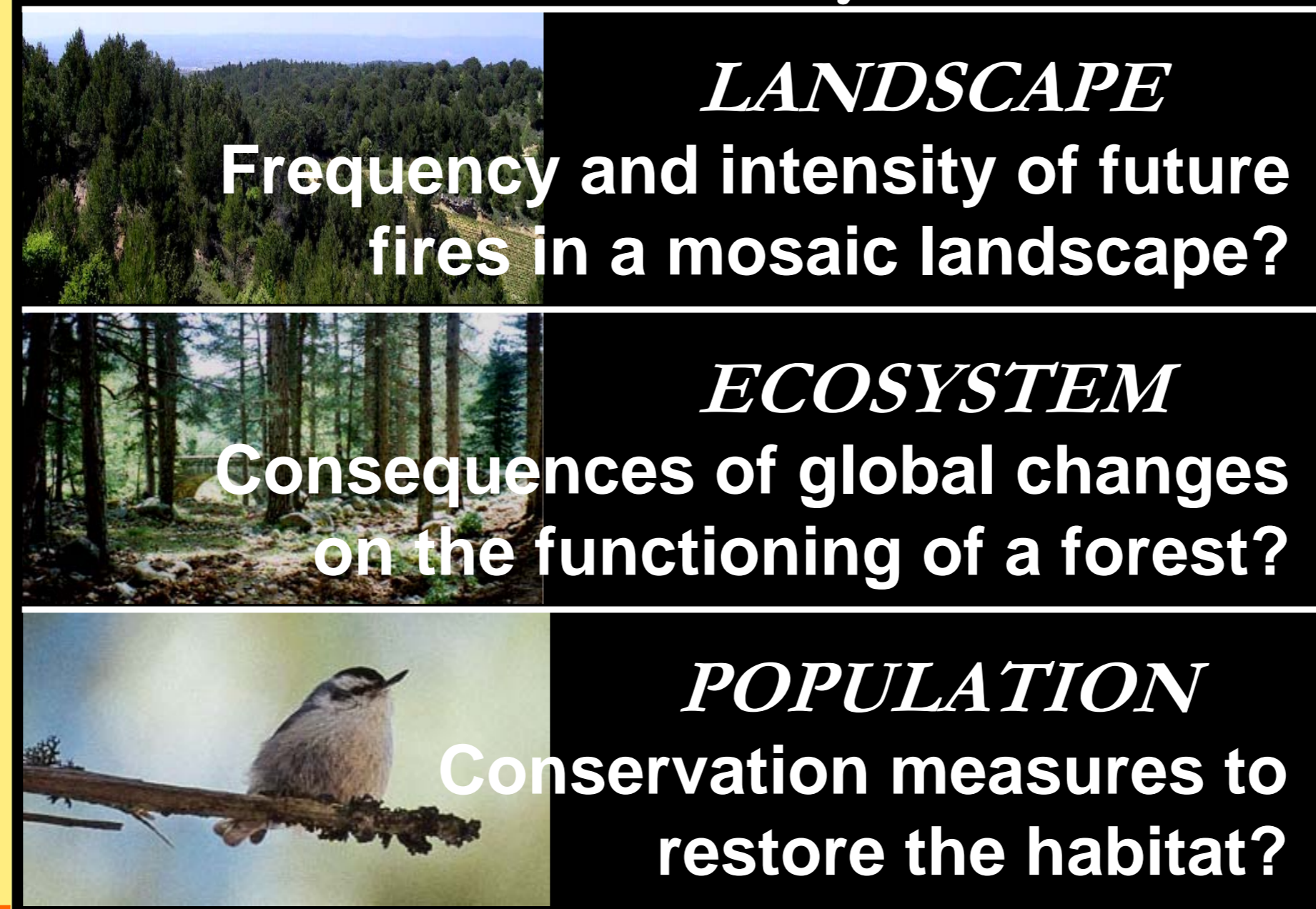
For decision making

- integrate latest ecological knowledge
- anticipate future change
- design conservation measures

For ecology itself

- first research step
- include changes that cannot be modelled
- connections (processes and scales)

3 levels of analysis:



Adaptation of method to the object

Practice

What ecological concepts do we need to build conjectures?

- fragmentation, connectivity
- dispersion, regeneration
- succession, disturbance
- carbon, water, nitrogen cycles
- species interactions, invasion
- pollination, phenology
- life cycle, survival, fecundity
- habitat dynamics
- species interactions (prey, predators,...)

Conclusion: Ecologists have produced a growing body of work on the future of ecosystems along a continuum from predictive models to exploratory storylines. However, a deeper investment in building of scenarios is now needed to produce more accurate conjectures based on ecological knowledge. Futures' studies will also provide insights concerning contemporary ecological issues.

Main references

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