Successional trajectories subjected to different fire recurrences in *Pinus* sp. forest colonised over old-fields

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CEAM
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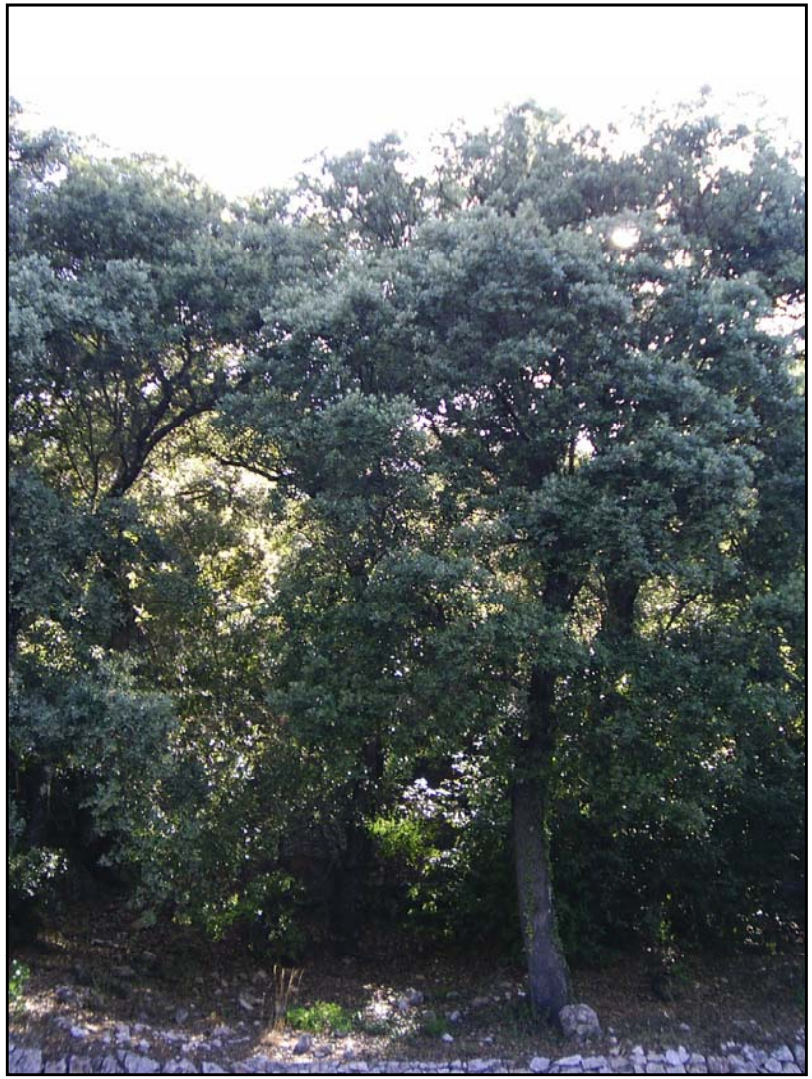
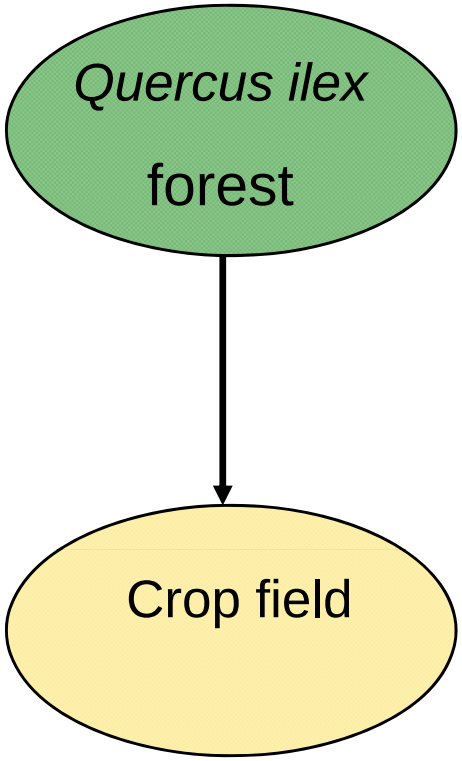
INTRODUCTION & HYPOTHESIS

Quercus ilex forest

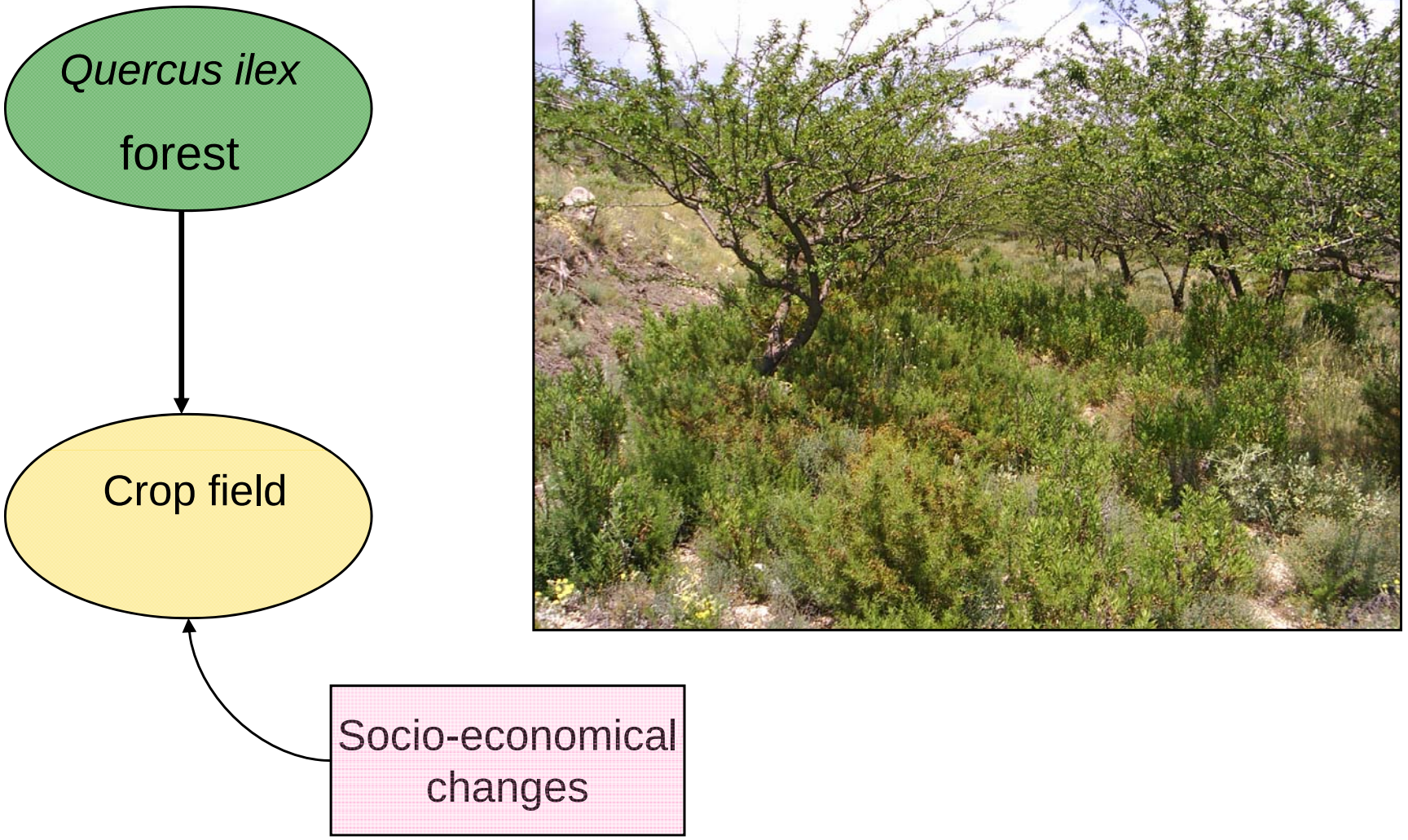
In large part of eastern Spain, mature stages of succession are oak forests



Font roja, 2007

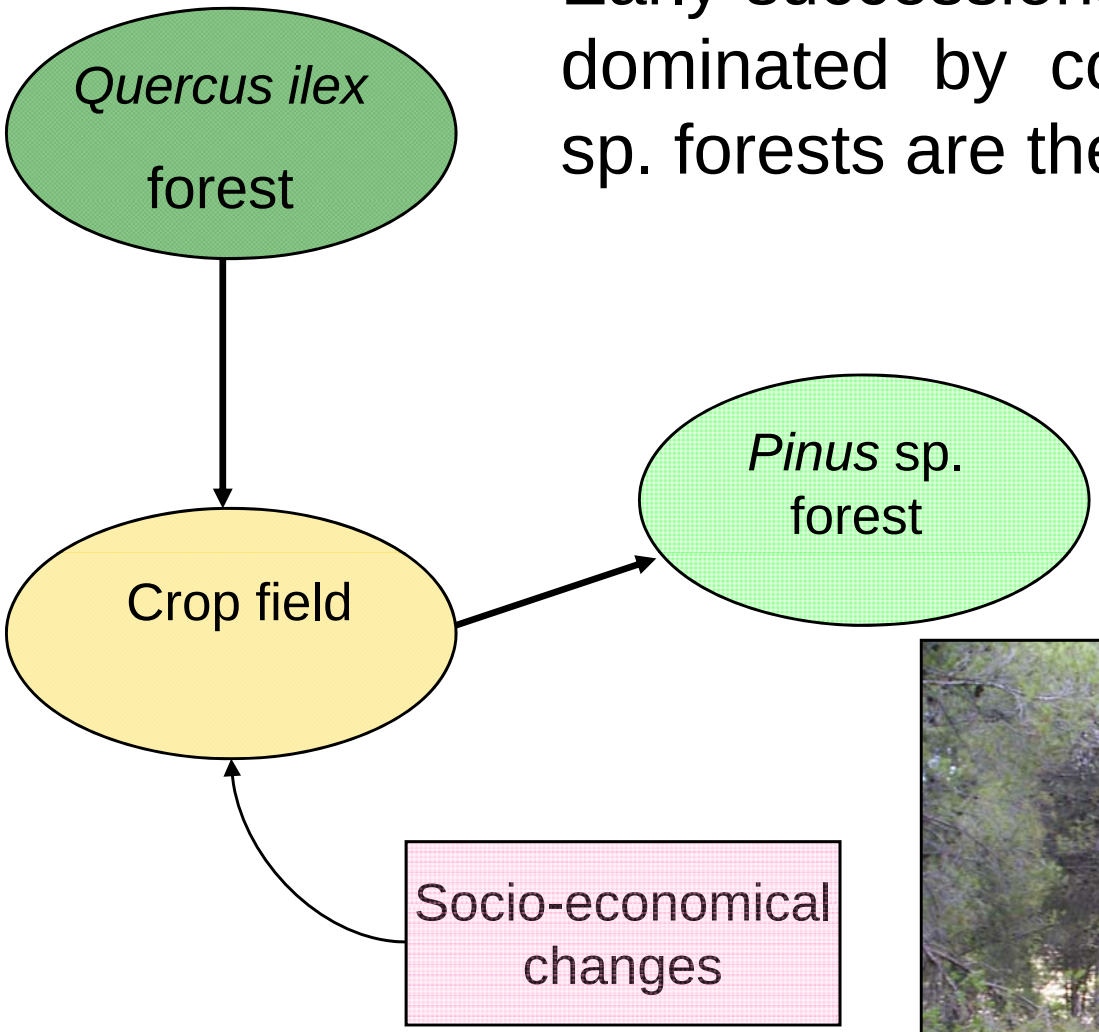


Vegetation was removed several centuries ago when the land was taken into crop production

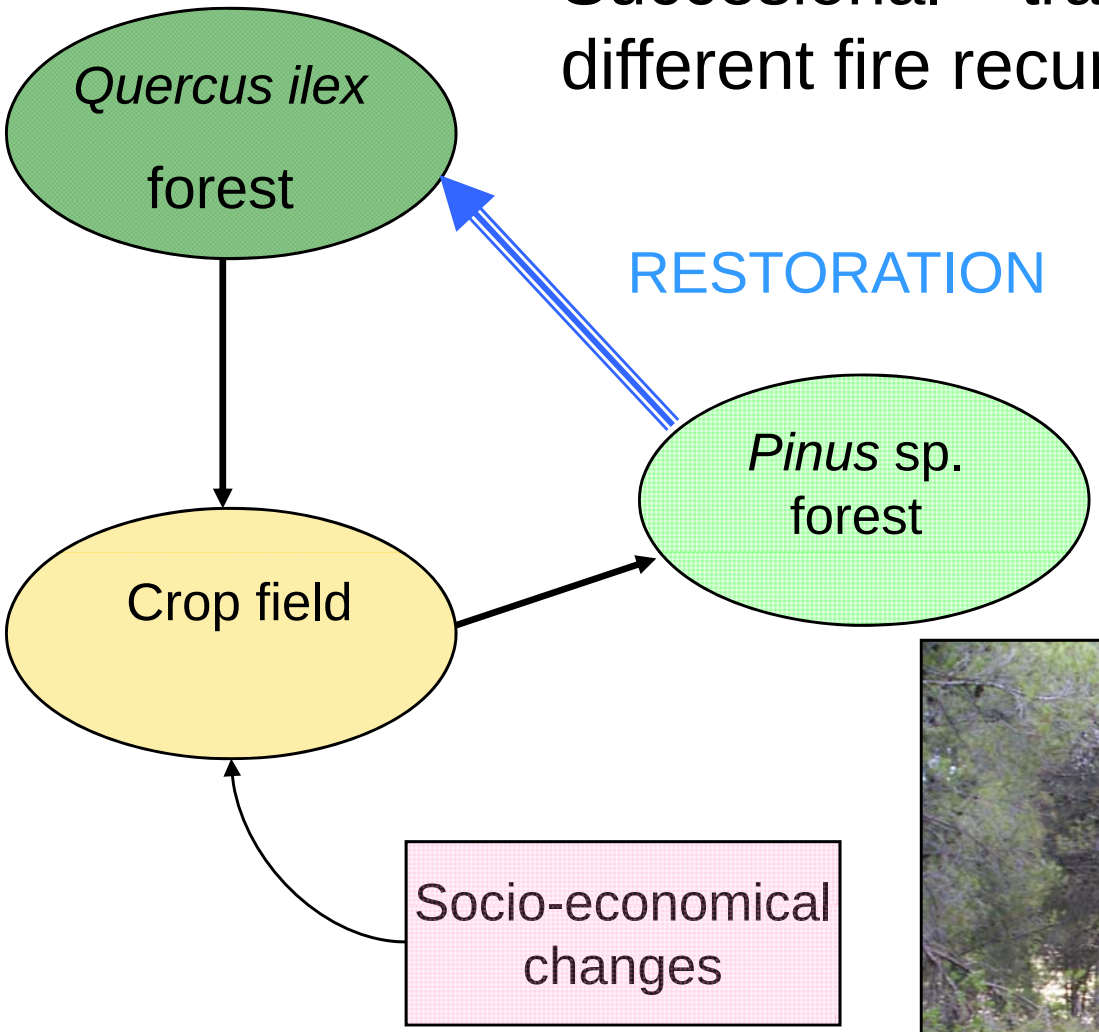


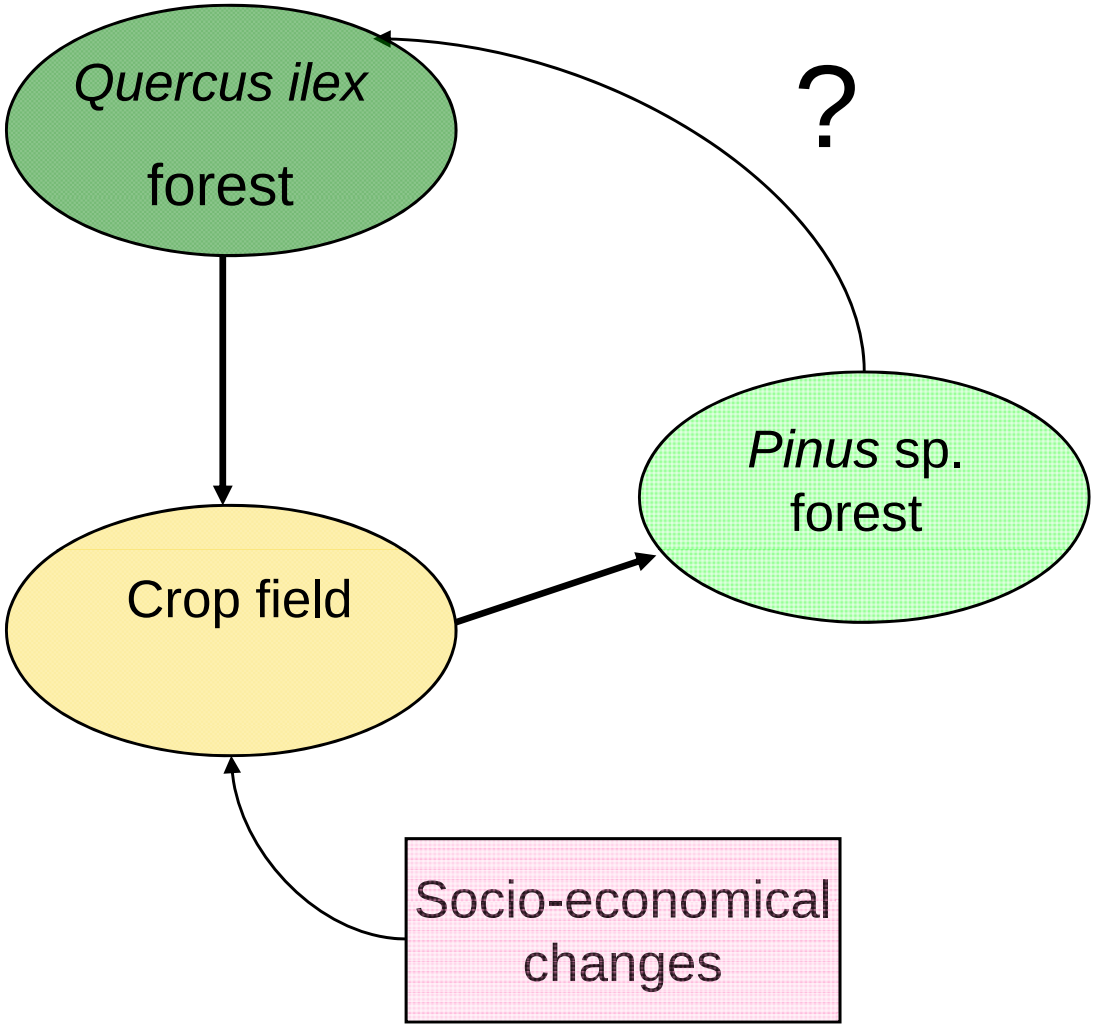
Along 20th century, socio-economical changes produced a great abandonment

Early-successional communities, dominated by colonizing species. *Pinus* sp. forests are the most abundant.



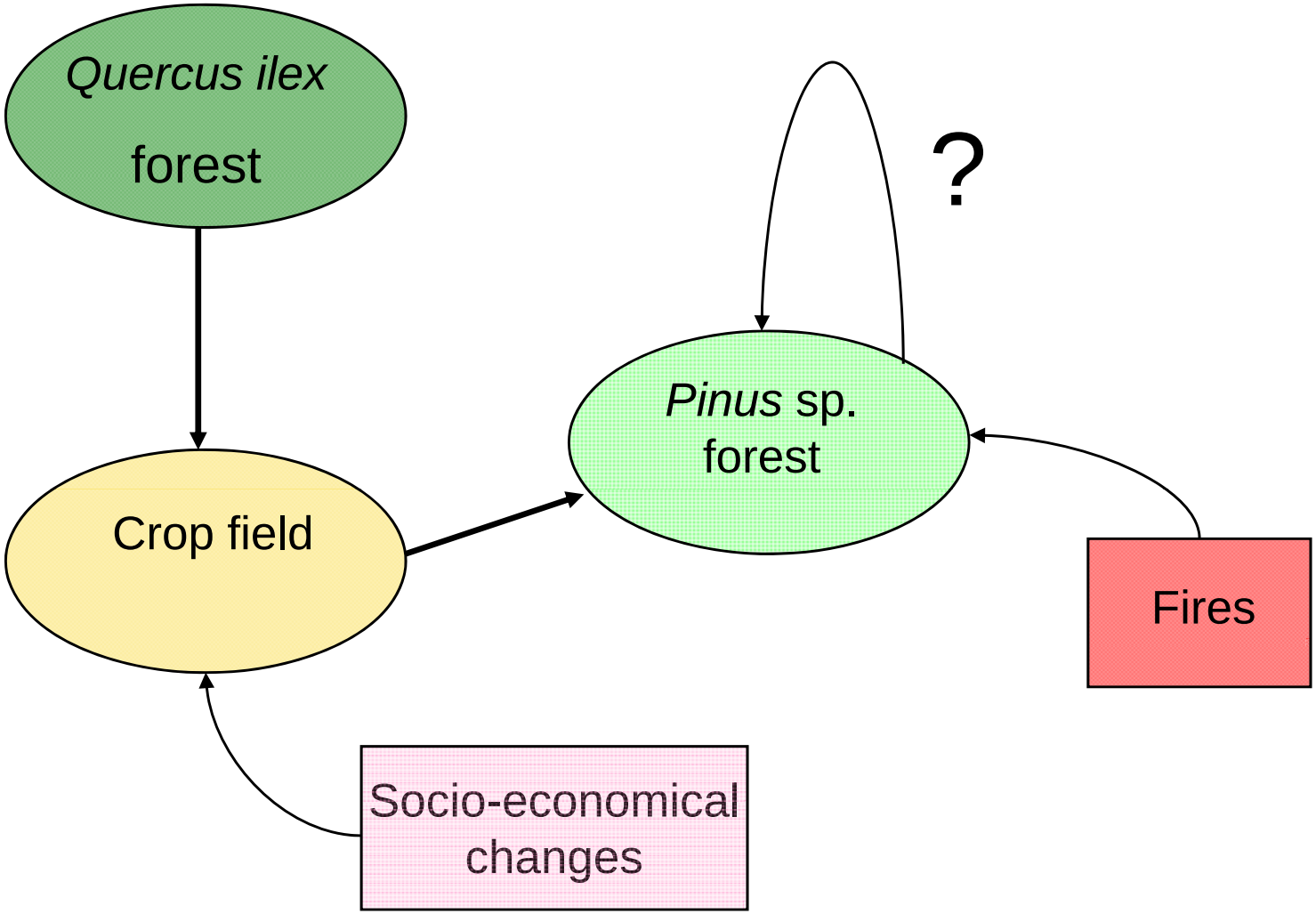
Succesional trajectories subjected to different fire recurrence?





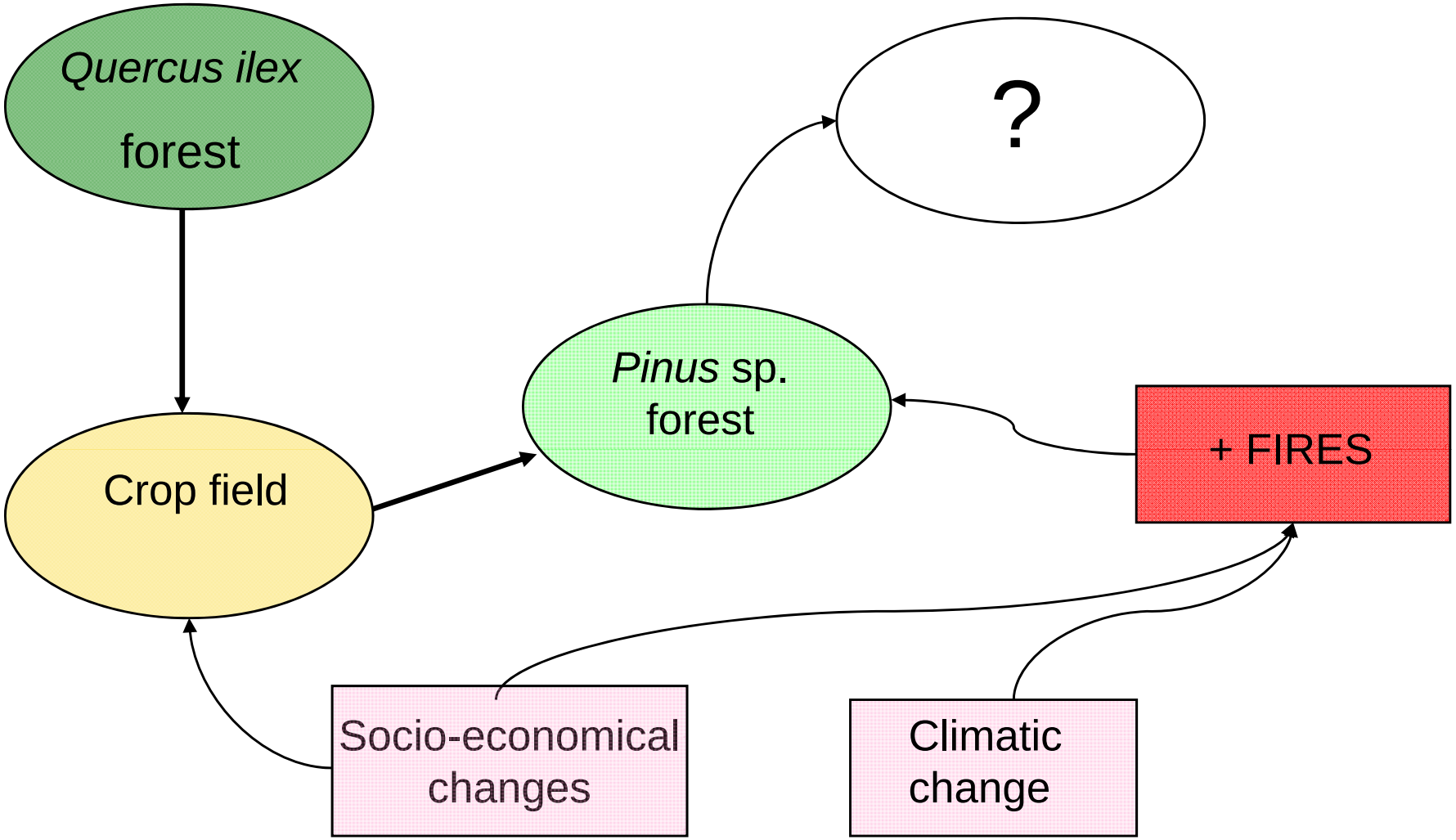
HYPOTHESIS 1

In long periods of time in absence of fire, *Pinus* forests are replaced by late-successional species belonging to initial mature stages



HYPOTHESIS 2

Pinus sp. forests have auto-successional regeneration after fire



HYPOTHESIS 3

High fire recurrence could trigger communities dominated by species favoured by this fire regime

EXPERIMENTAL DESIGN

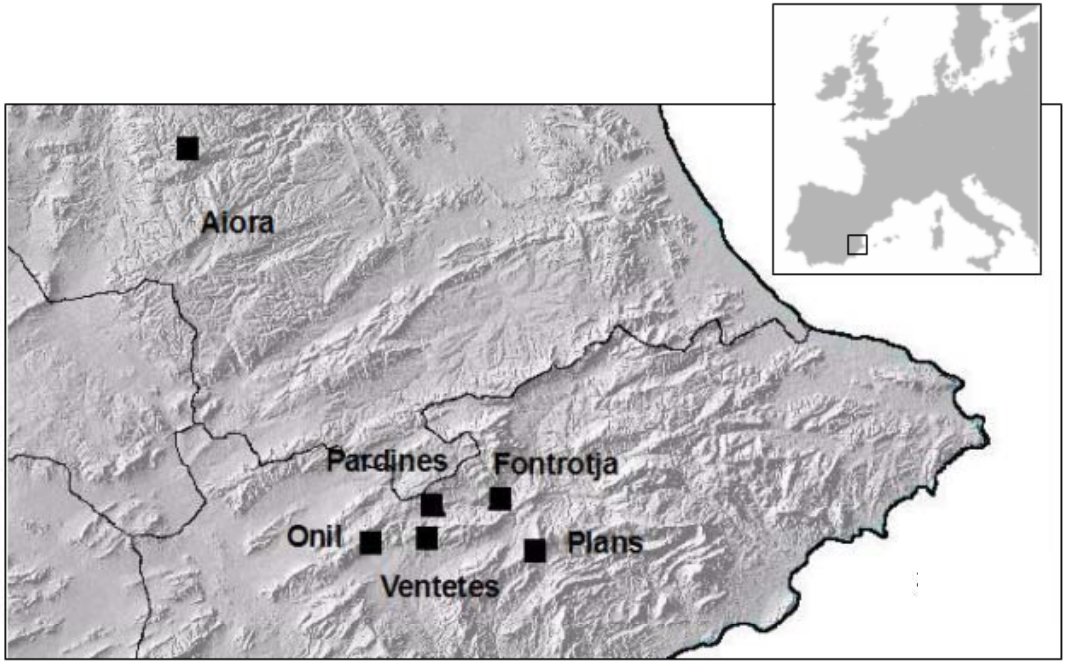
- Species cover
- Three 20m transects in each plot
- Late-species density

Abandonment aprox. 100 years

- Font roja
- Les Ventetes
- Els Plans

Abandonment aprox. 50 years

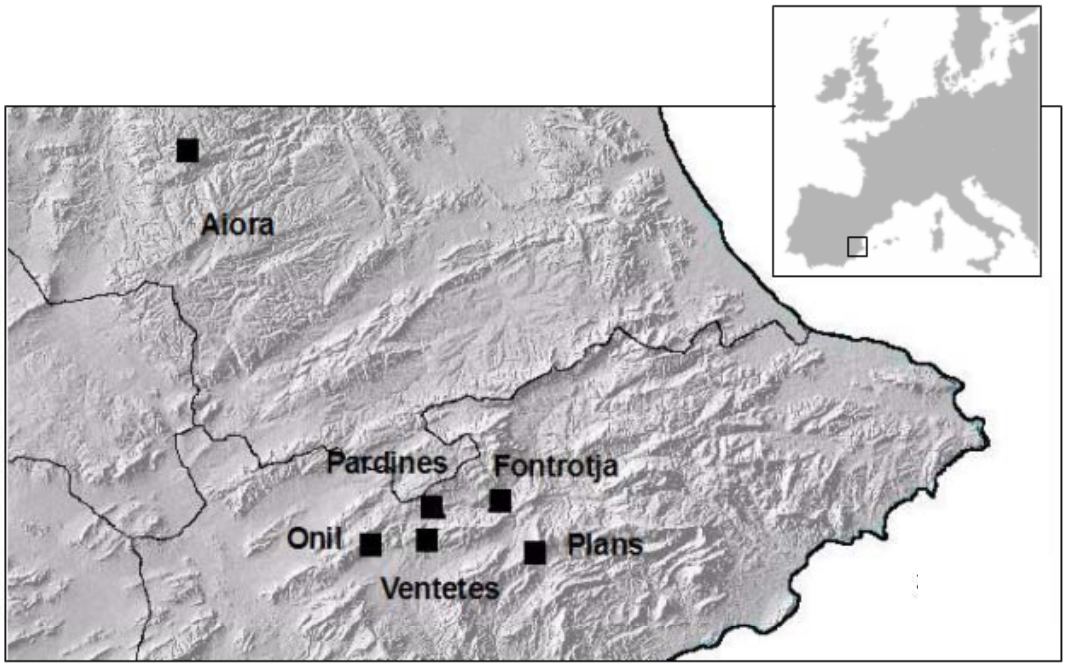
- Onil
- Pardines
- Aiora



HYPOTHESIS 1

EXPERIMENTAL DESIGN

- Species cover
- Three 20m transects in each plot
- Late-species density

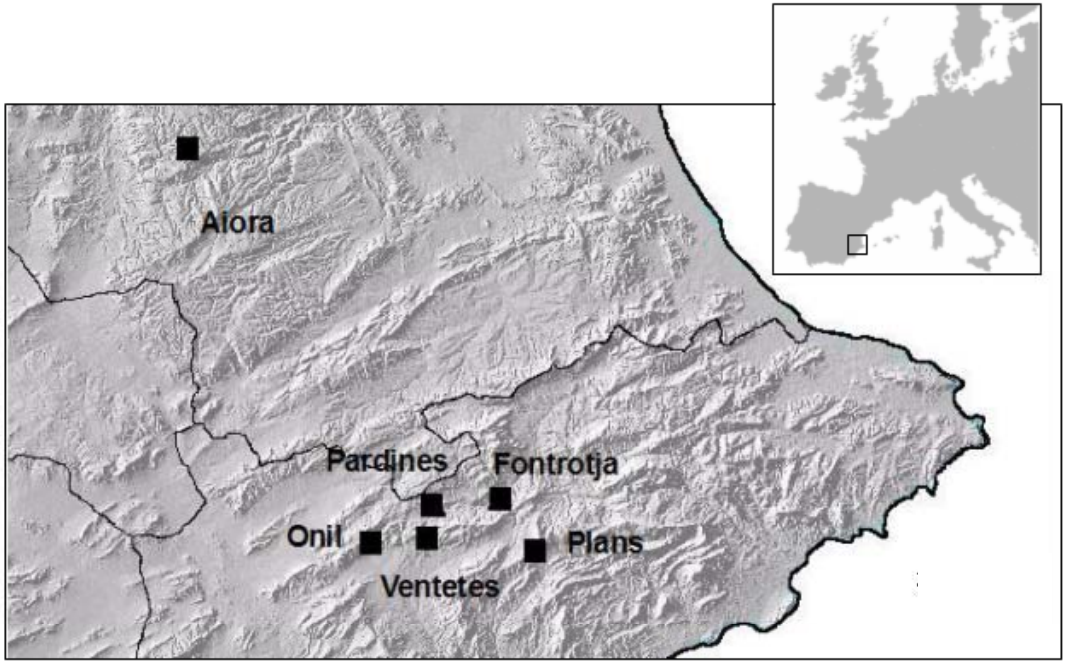


Abandonment aprox. 50 years		1 fire
•Onil	⟶	1986
•Pardines	⟶	1986
•Aiora	⟶	1979

HYPOTHESIS 2

EXPERIMENTAL DESIGN

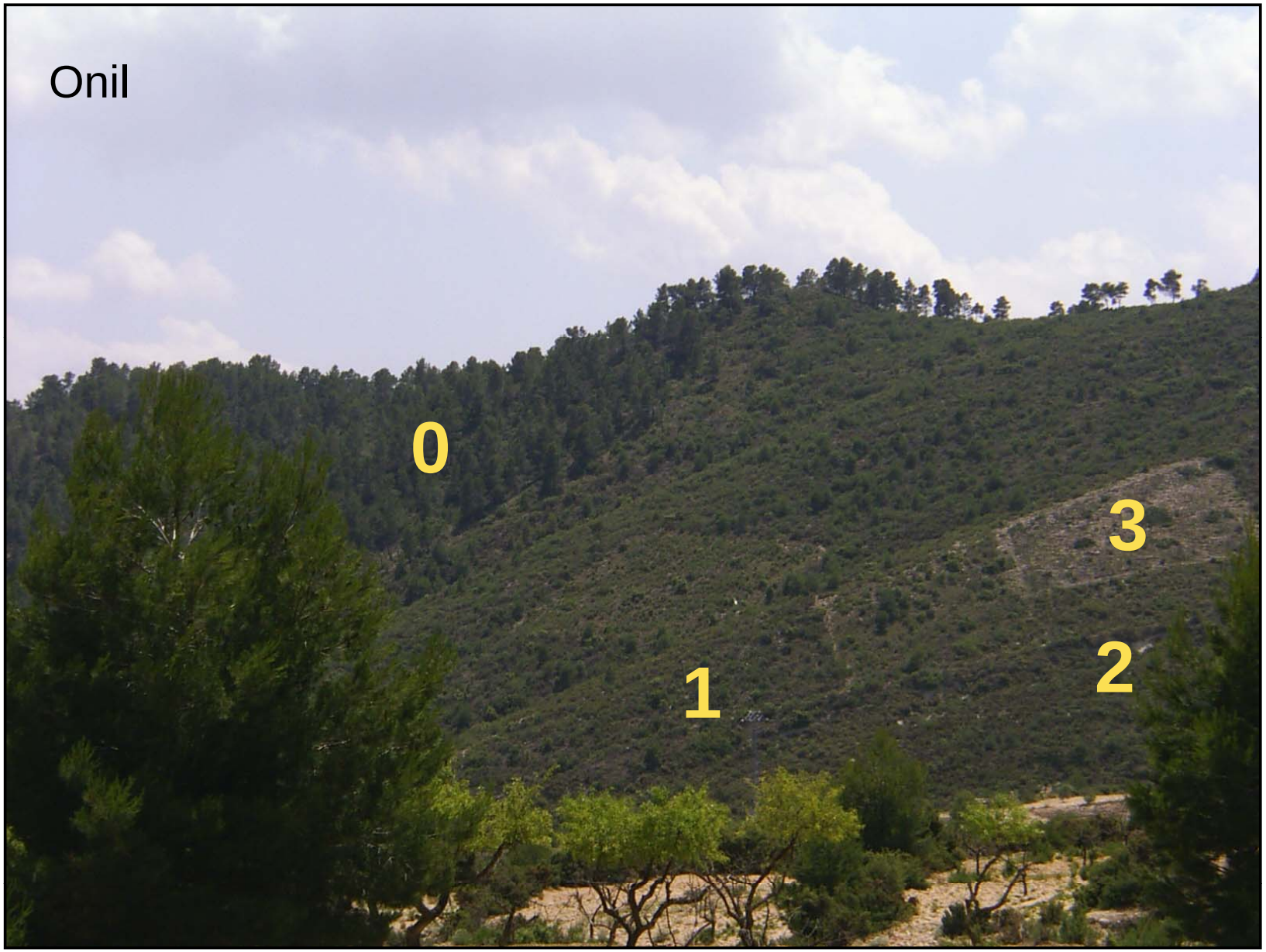
- Species cover
- Three 20m transects in each plot
- Late-species density



HYPOTHESIS 3

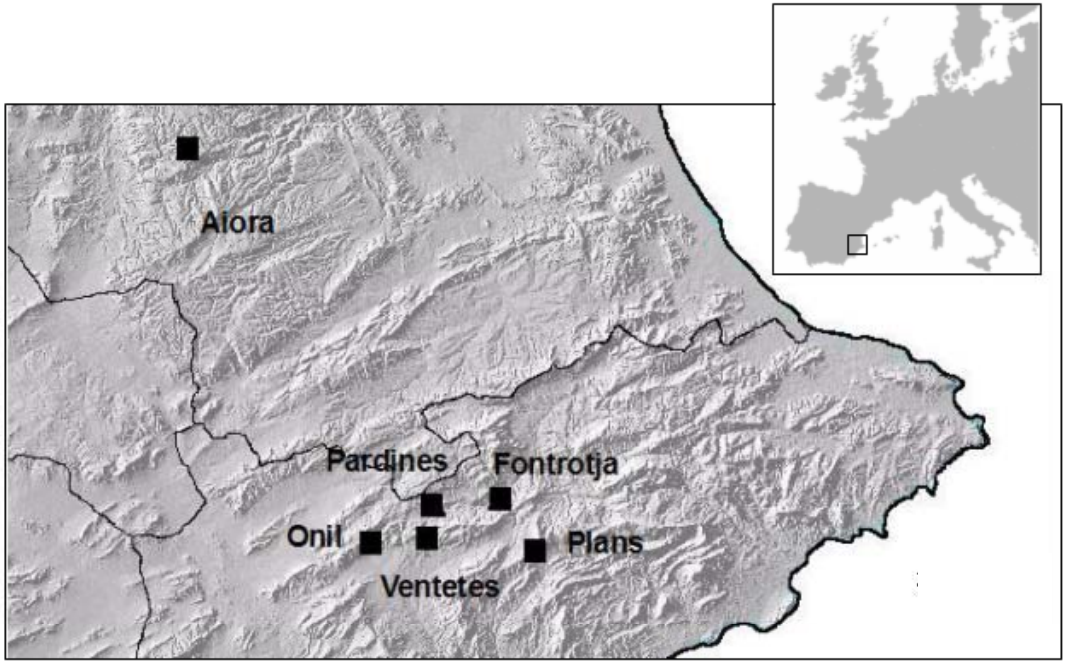
Abandonment aprox. 50 years	1 fire		2 fires		3 fires
•Onil	→	1986	→	1994	→ 2006
•Pardines	→	1986	→	1994	→ 2006
•Aiora	→	1979	→	1996	→ 2006

EXPERIMENTAL DESIGN



EXPERIMENTAL DESIGN

- Multivariate analysis (CCA)
- Euclidian distances between communities



Abandonment aprox. 100 years

- Font roja
- Les Ventetes
- Els Plans

Abandonment aprox. 50 years	1 fire		2 fires		3 fires
•Onil	1986	→	1994	→	2006
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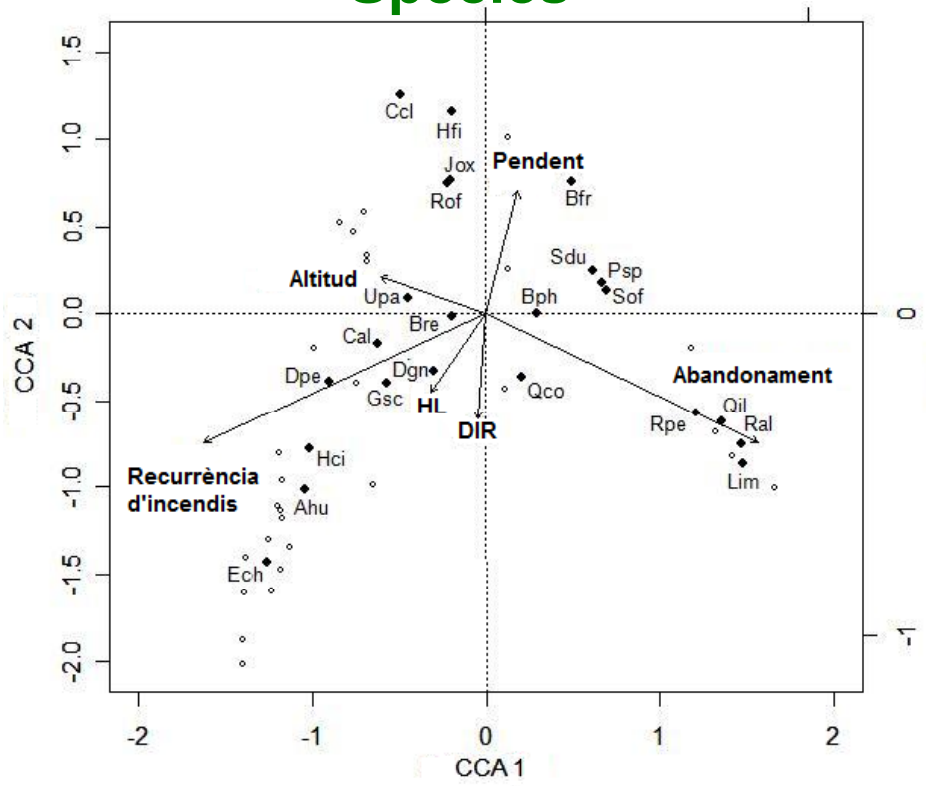
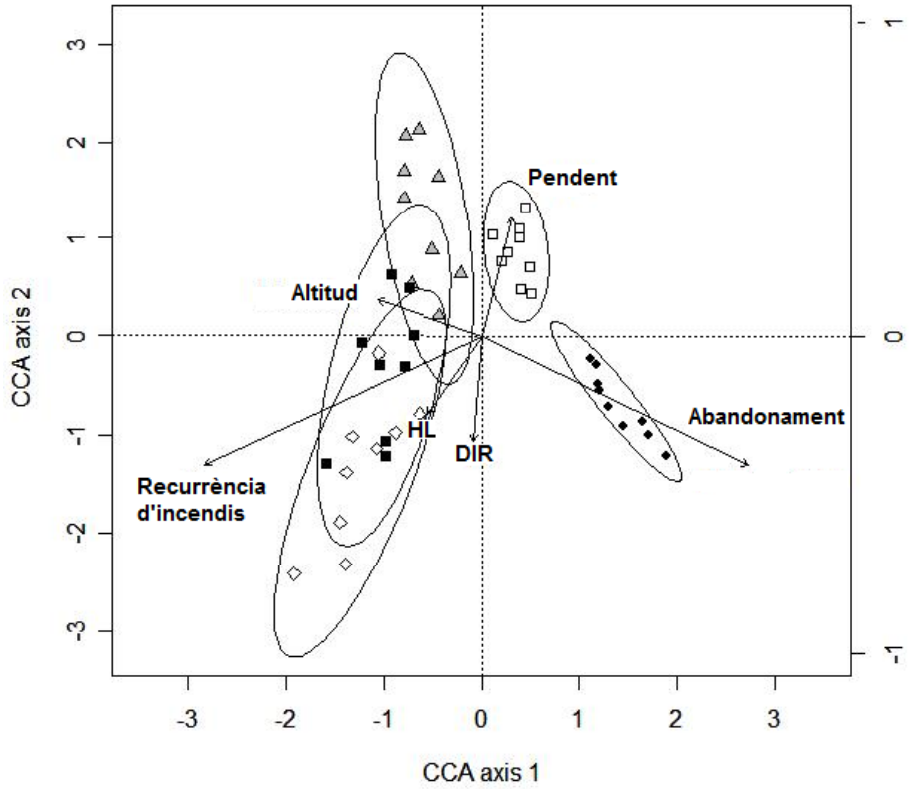
•Aiora	1979	→	1996	→	2006

RESULTS

Species

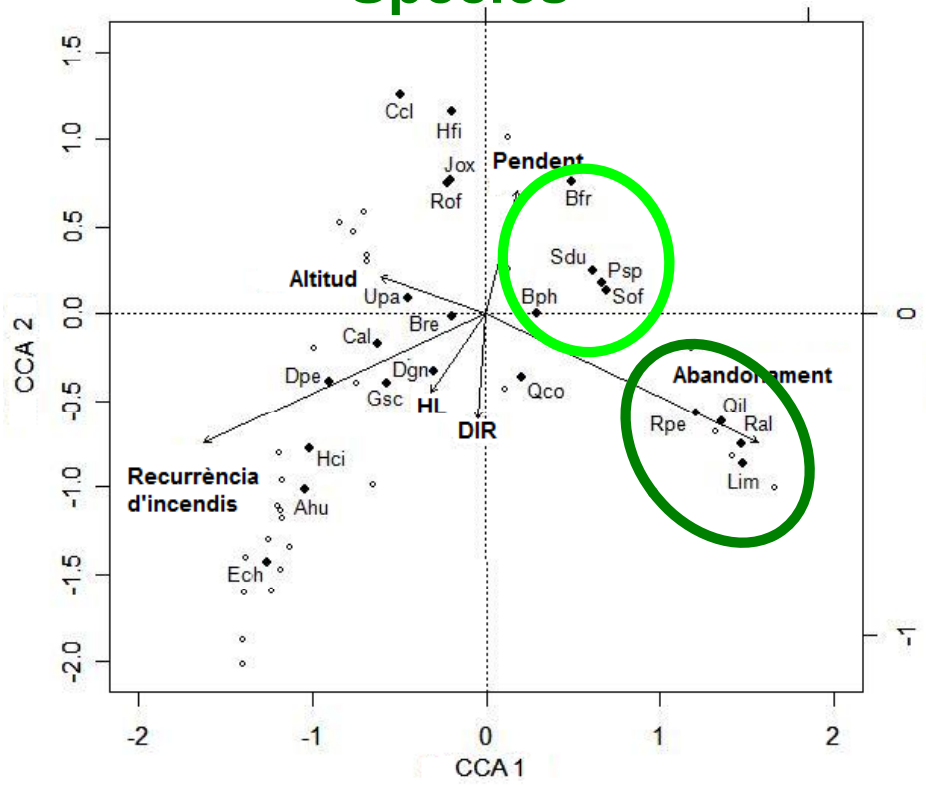


Plots



RESULTS HYPOTHESIS 1

Species



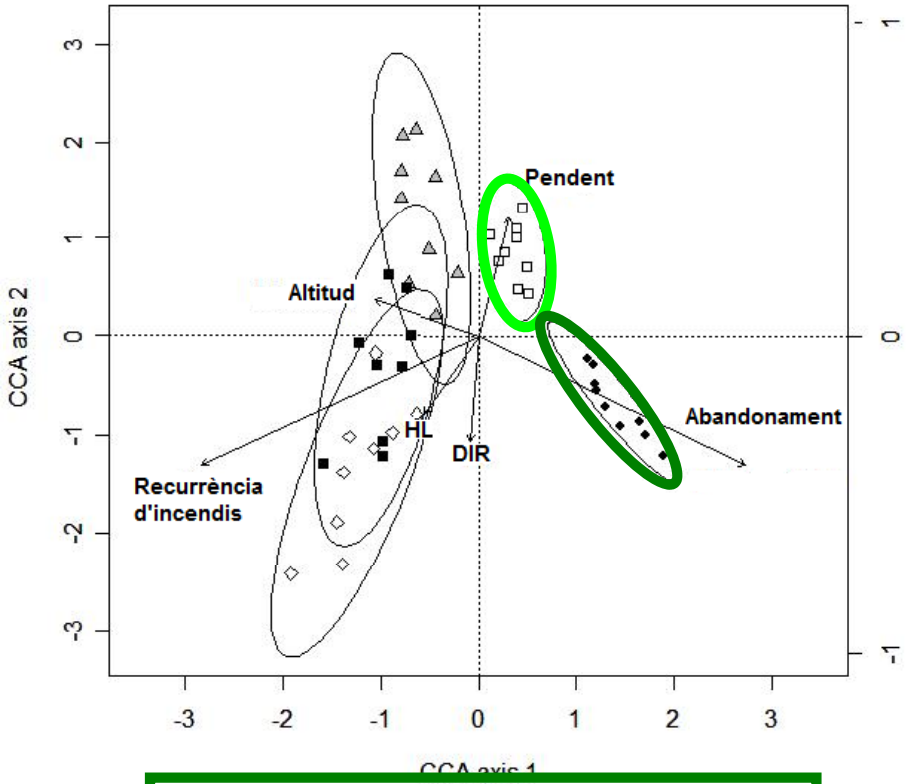
50 years

Dominated by seeders

Pinus sp.

Shrubby understorey

Plots

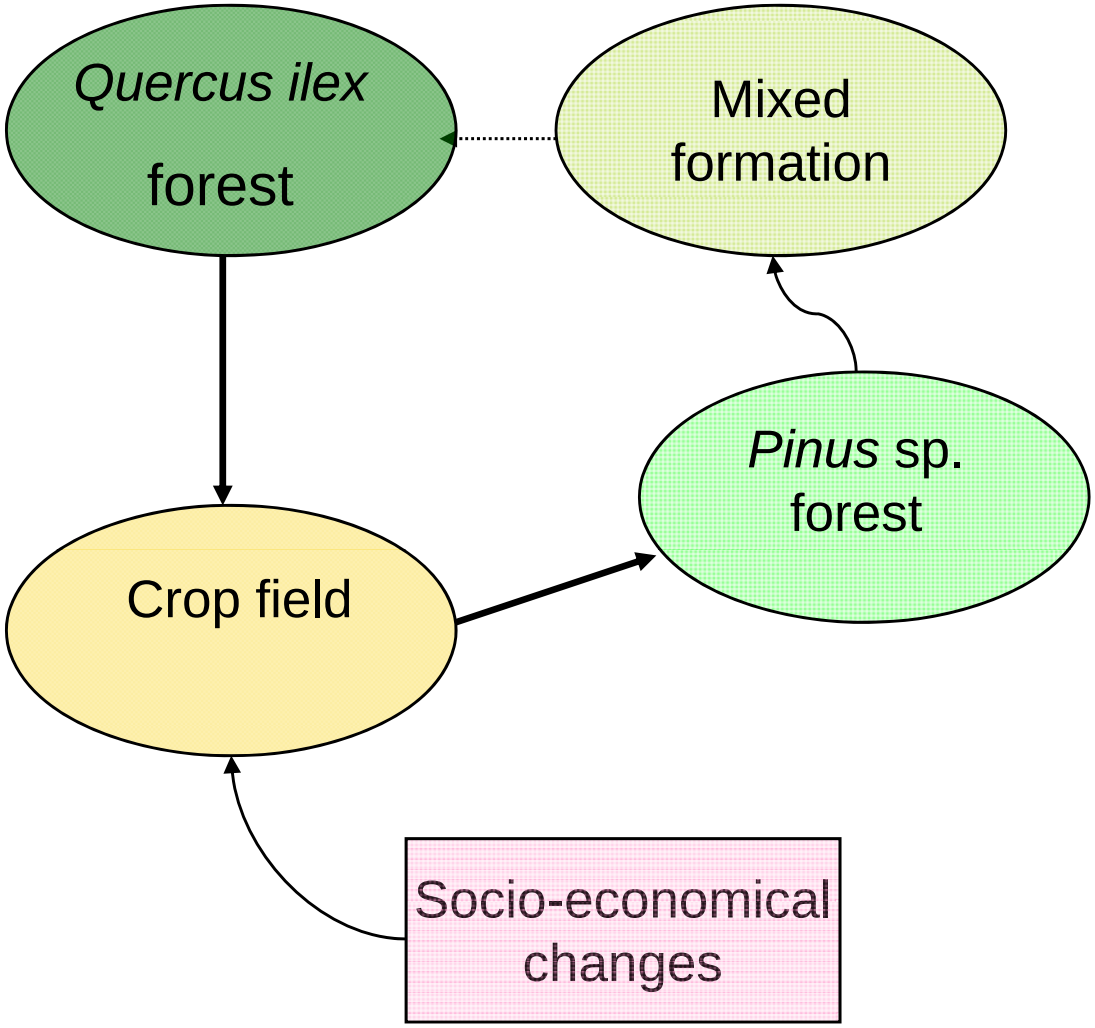


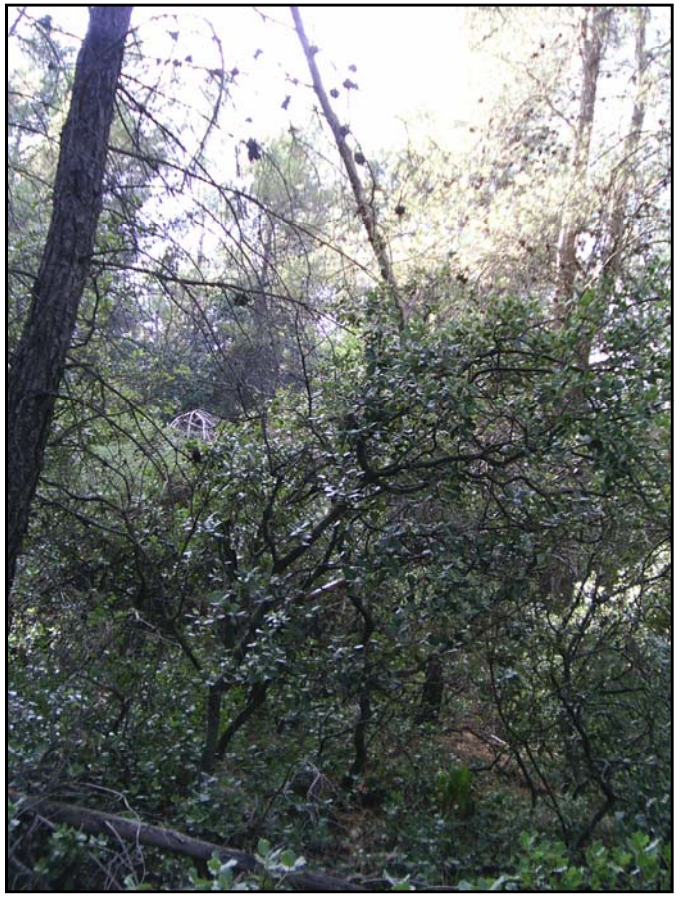
100 years

Resprouters colonize

Pinus and Quercus mixed forests

Other resprouters



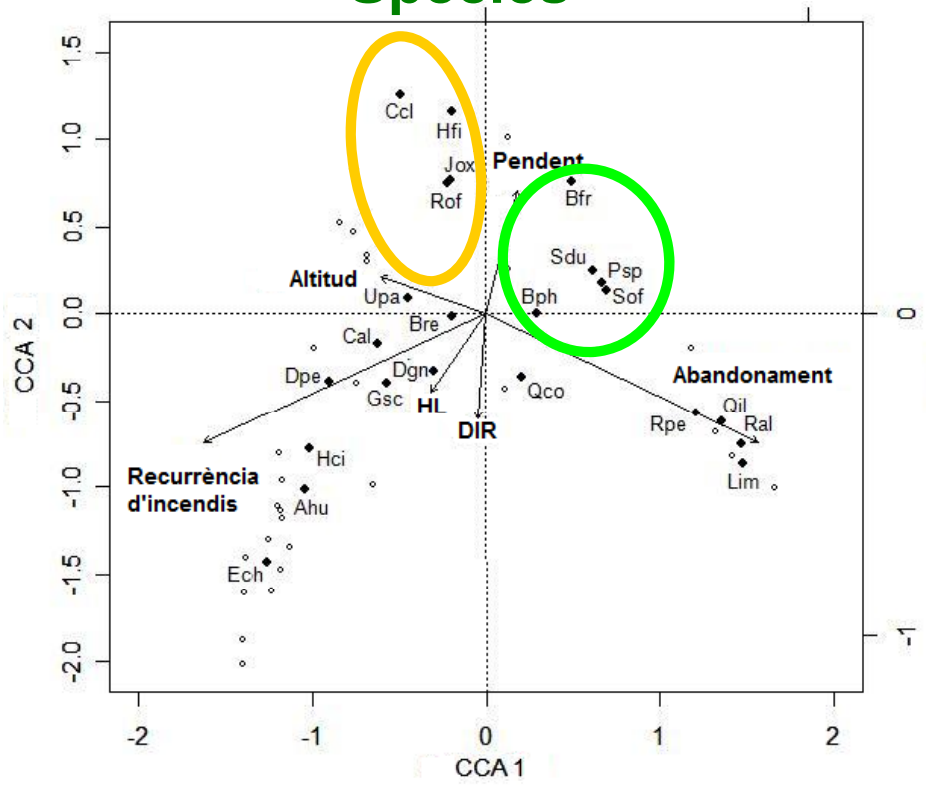


CONCLUSSION 1

In long periods of time, *Pinus* forests are replaced by late-successional species belonging to initial mature stages

RESULTS HYPOTHESIS 2

Species



50 years

Dominated by seeders

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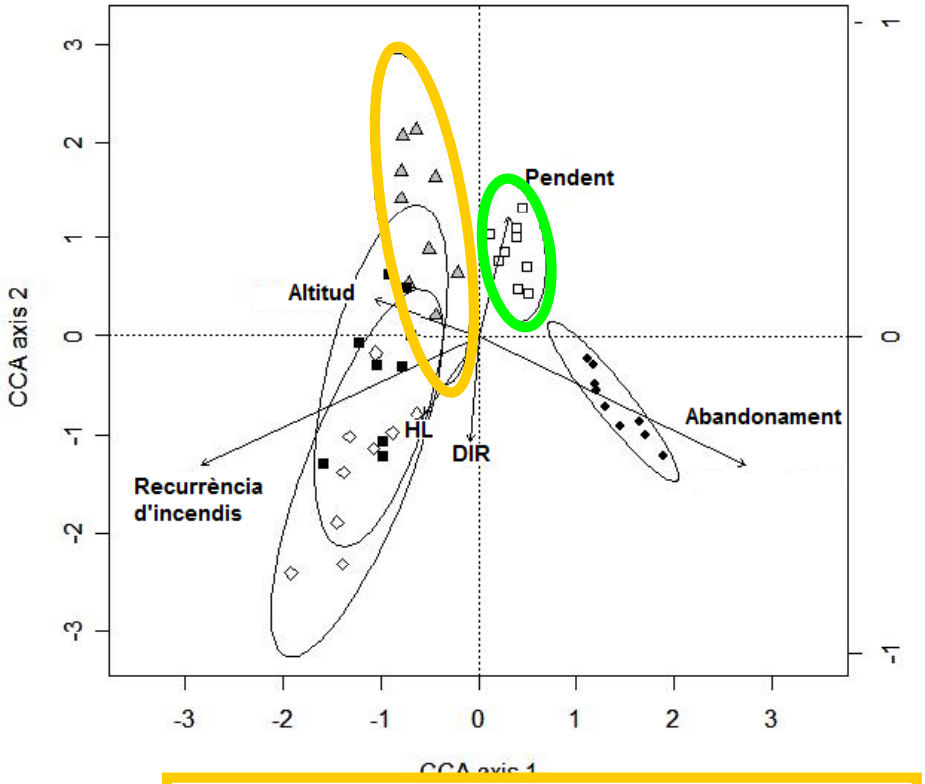
Shrubby understorey

Plots

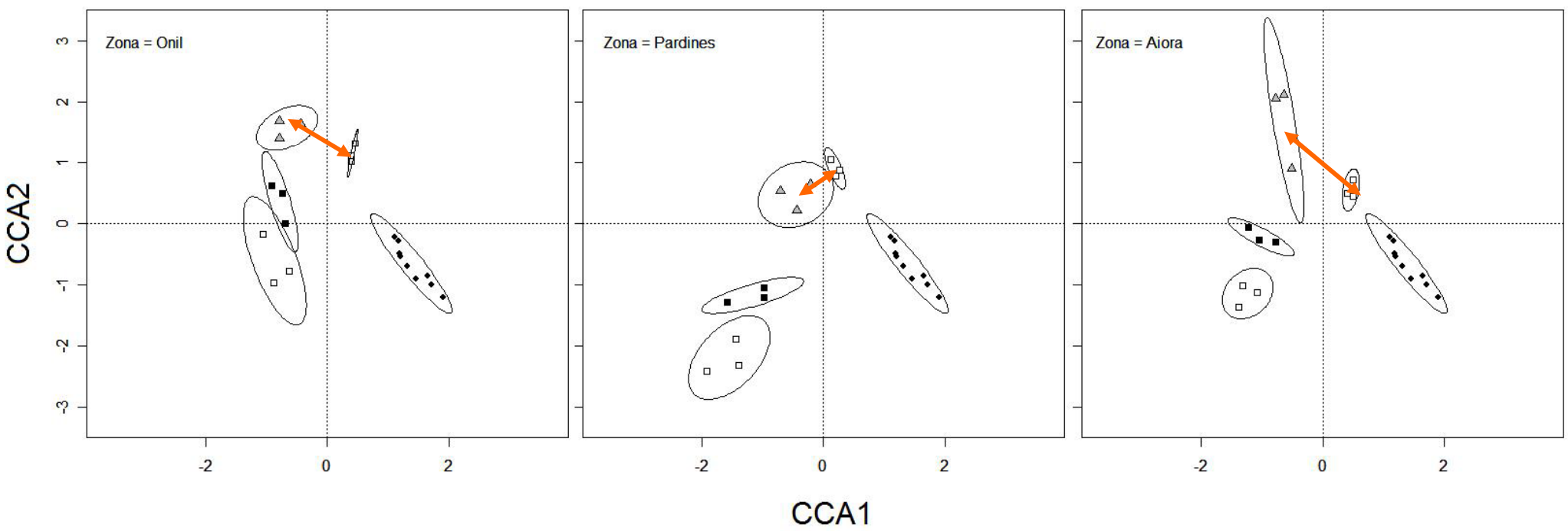


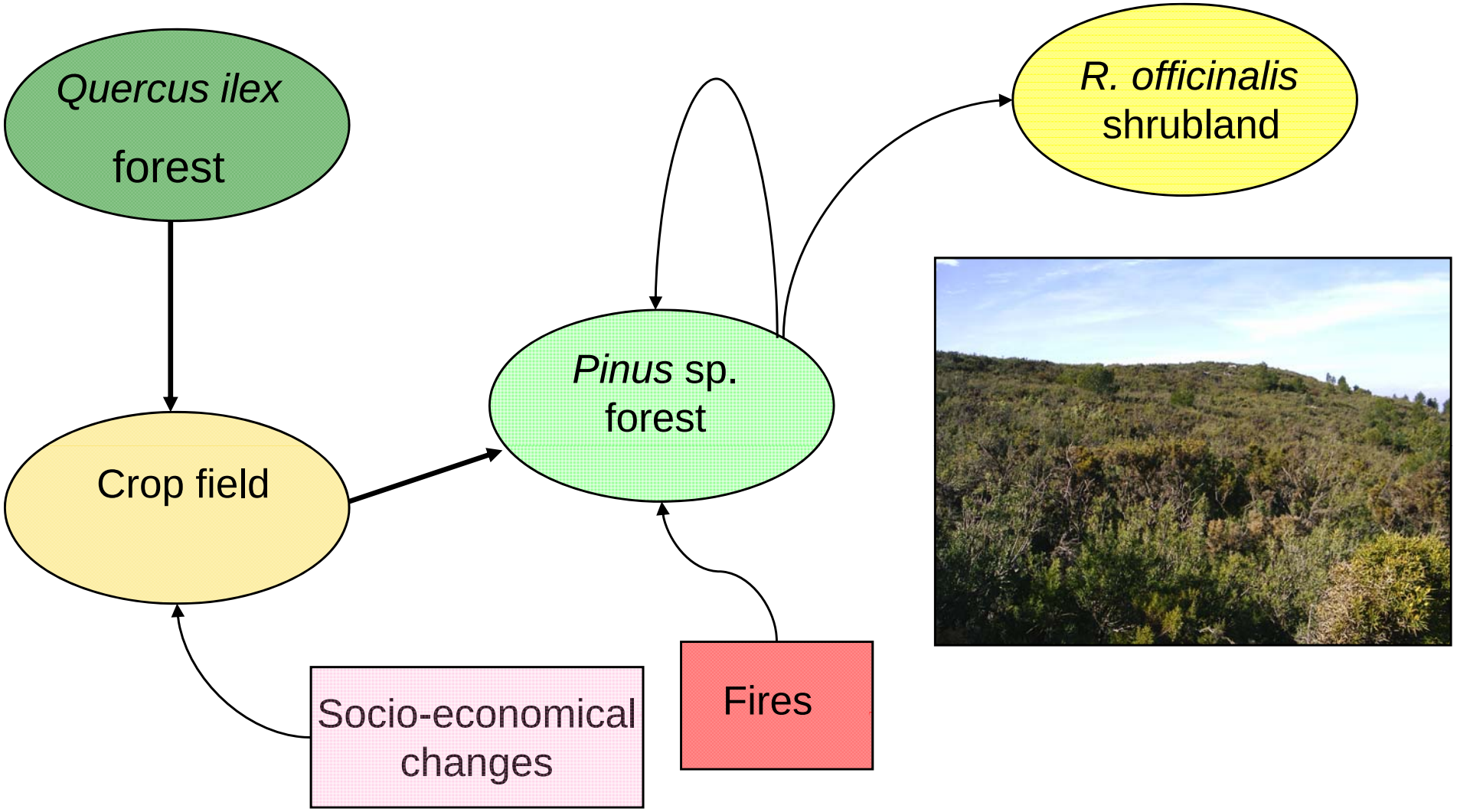
1 fire

Drastic reduction of *Pinus* sp.

R. officinalis shrubland

	Onil	Pardines	Aiora
Euc. Dist.	1,16	0,77	1,59
Pinus sp. cover	1,3 %	12,3 %	0



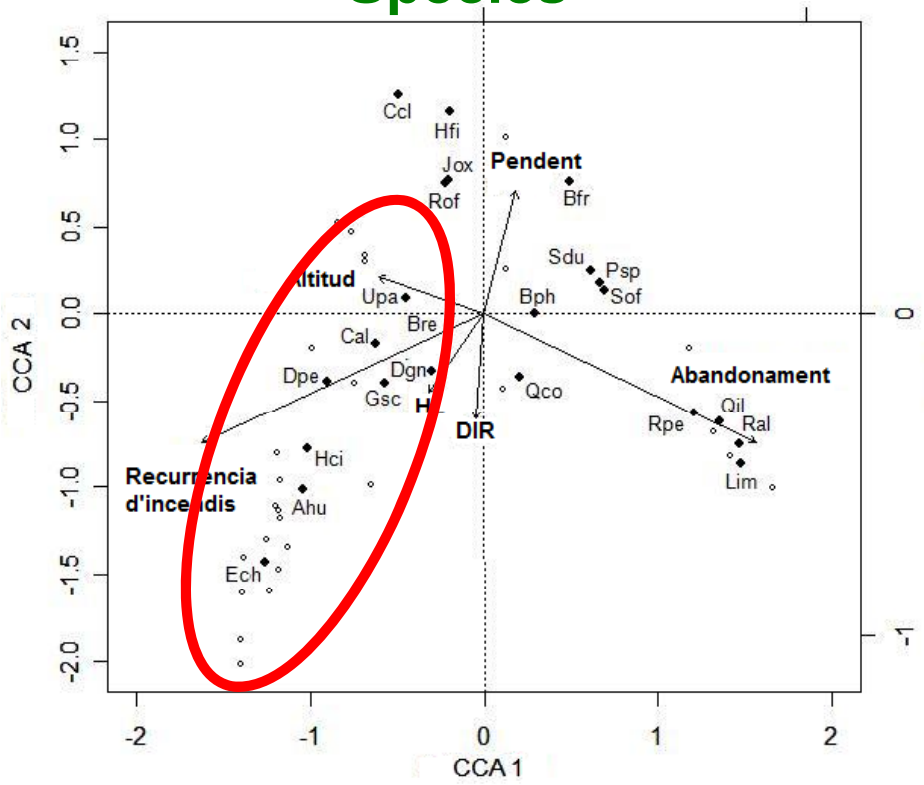


CONCLUSSION 2

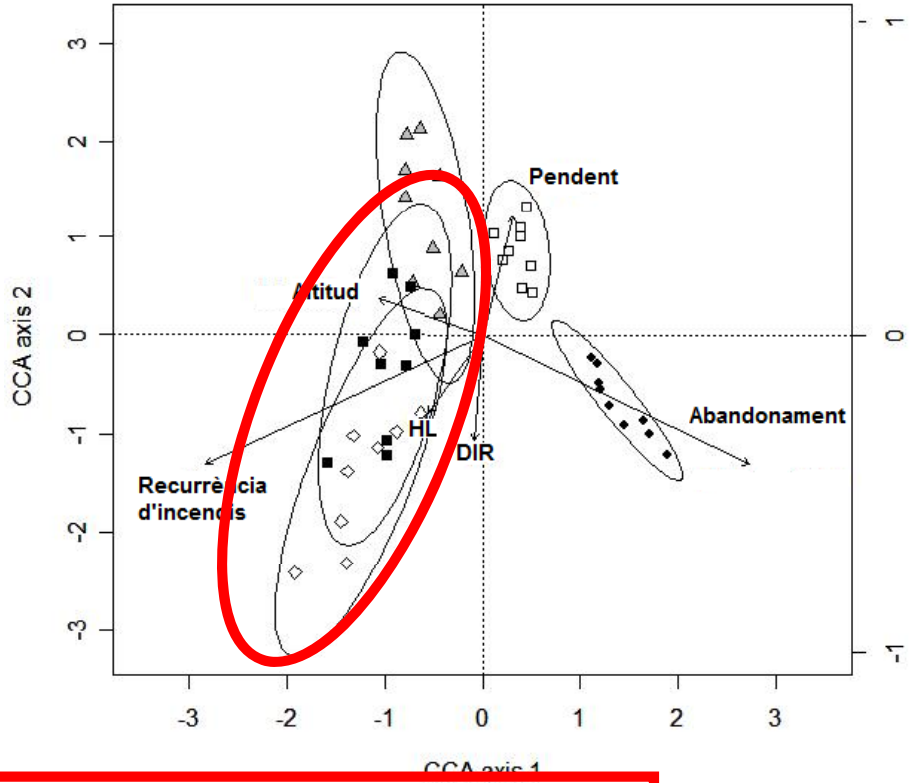
Pinus sp. forests do not always have auto-successional regeneration. A single fire was enough to change to *R. officinalis* shrubland

RESULTS HYPOTHESIS 3

Species



Plots



2 fires and 3 fires

Pinus sp. disappear

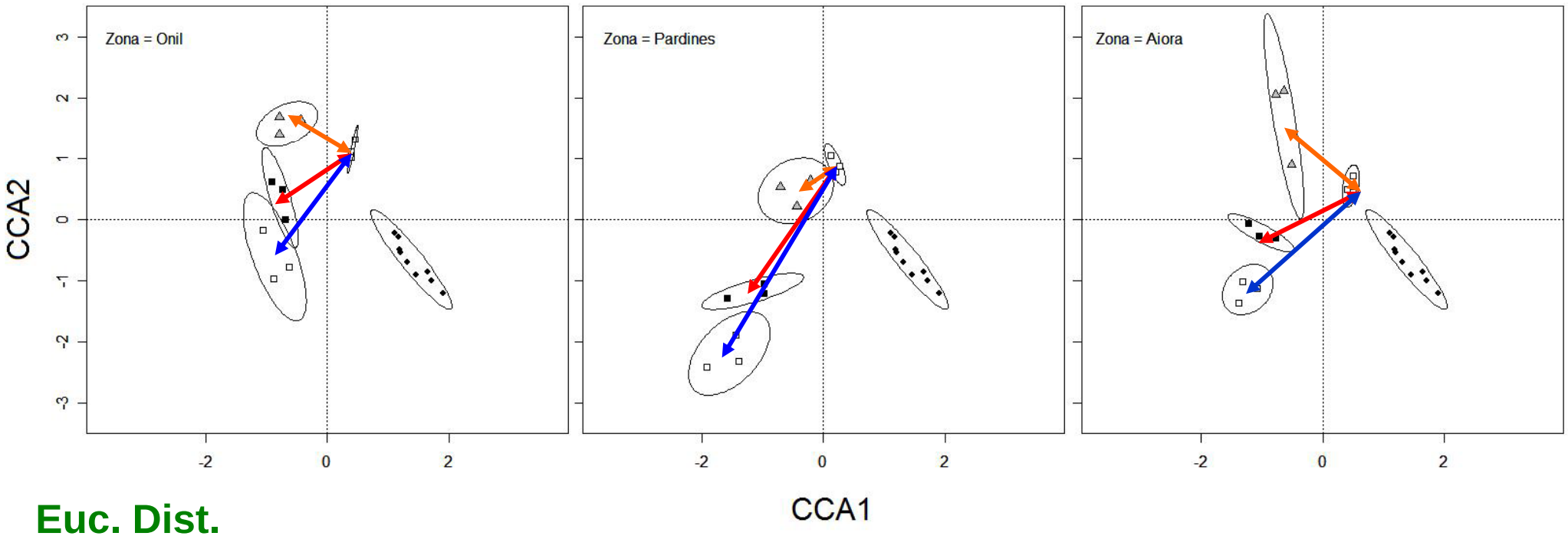
Dominated by seeders and facultative species

Fast growing species

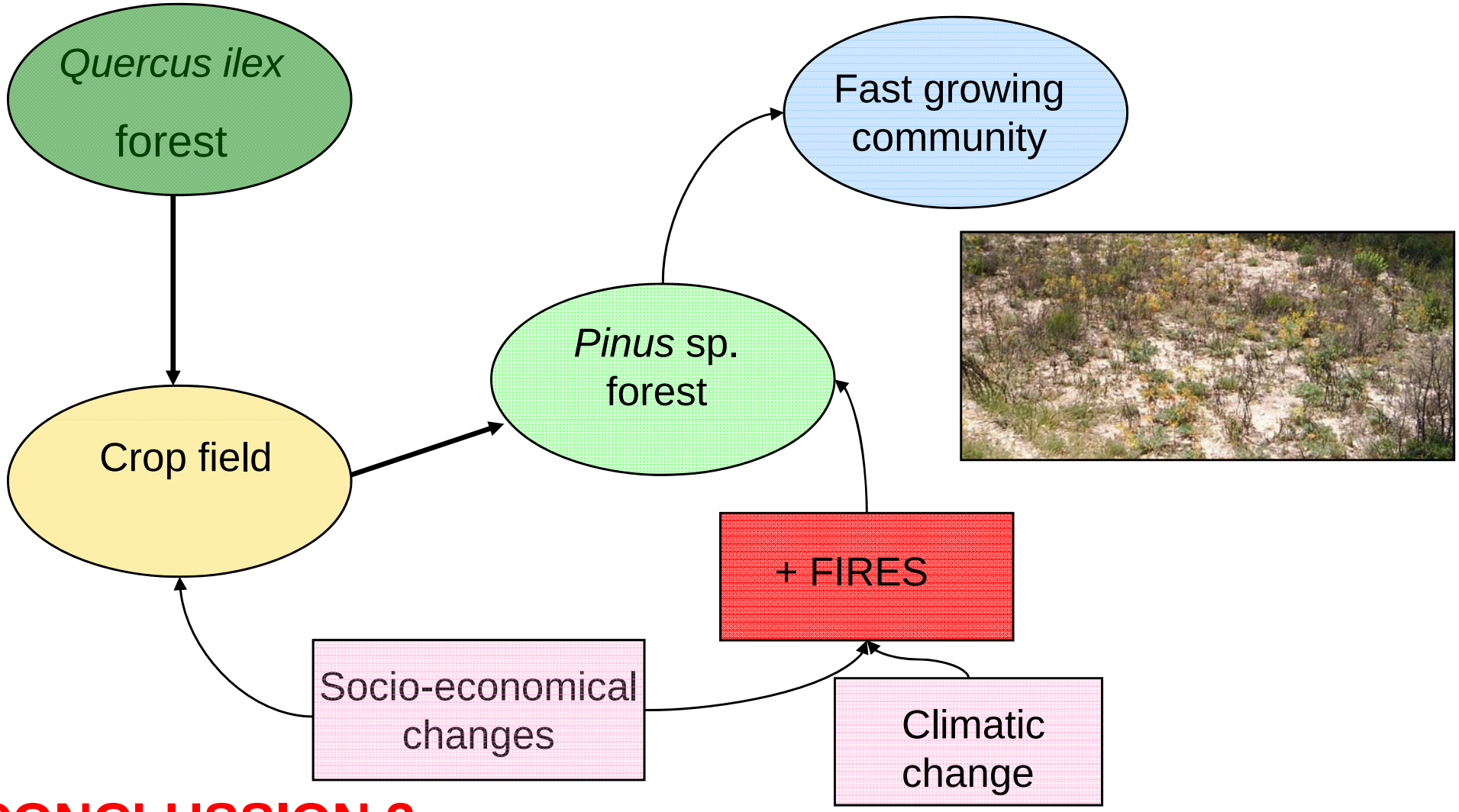
Onil

Pardines

Aiora



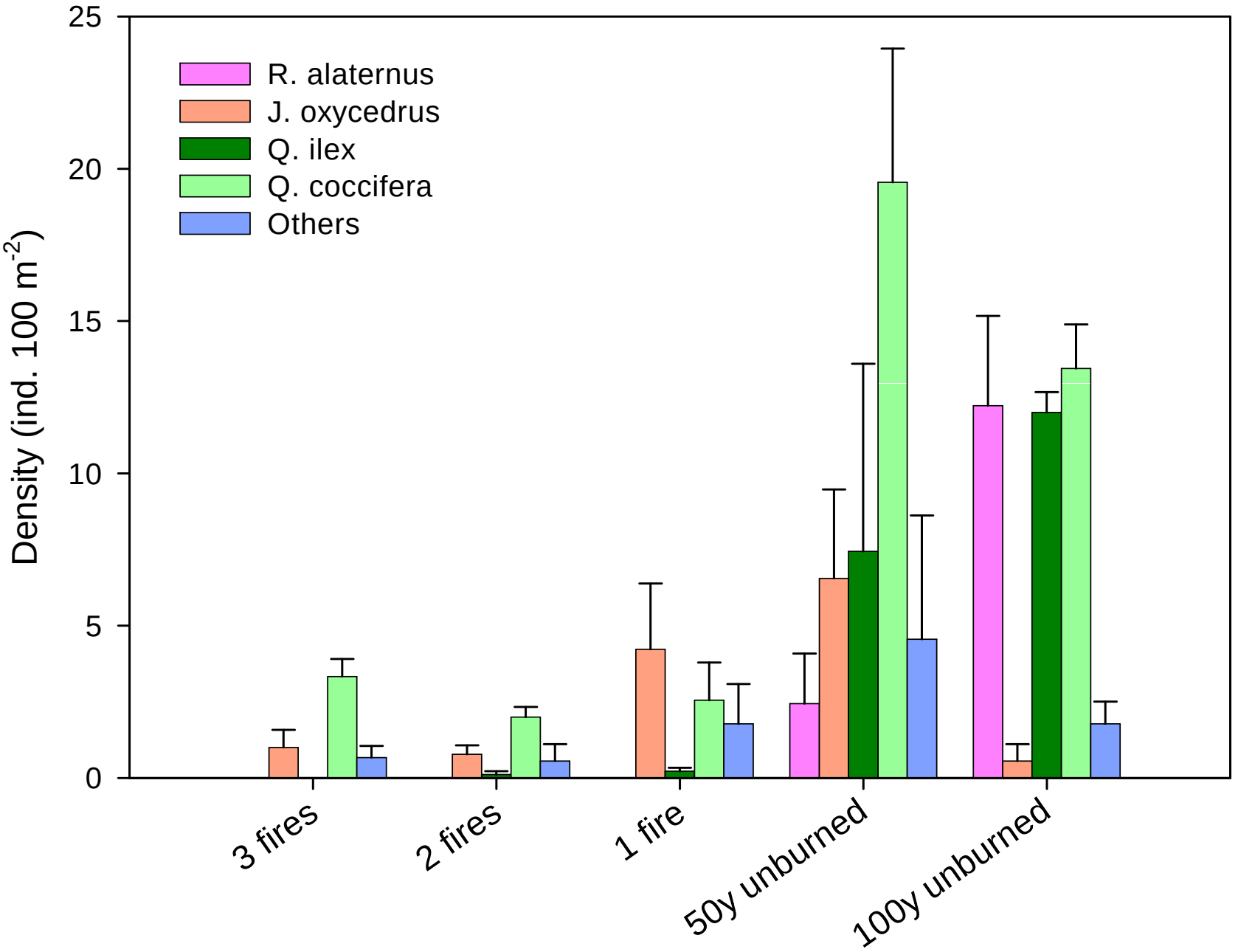
Euc. Dist.			
1 fire	1,16	0,77	1,59
2 fires	1,42	2,49	1,67
3 fires	2,19	3,58	2,44



CONCLUSSION 3

High fire recurrence trigger a change in the vegetation. Species with short life-span, fast growing and fast seed production are enhanced

LATE-SUCCESSIONAL SPECIES



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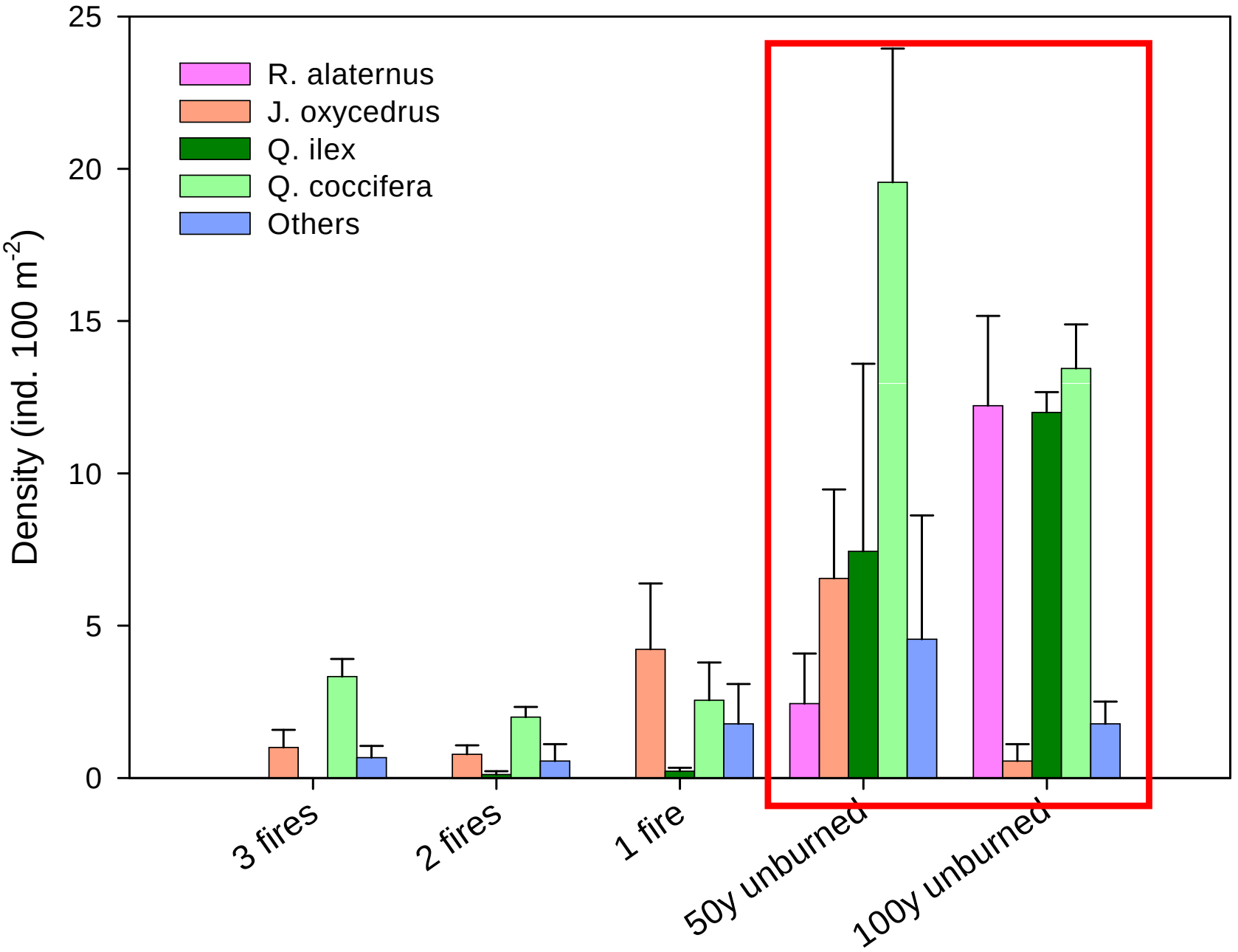

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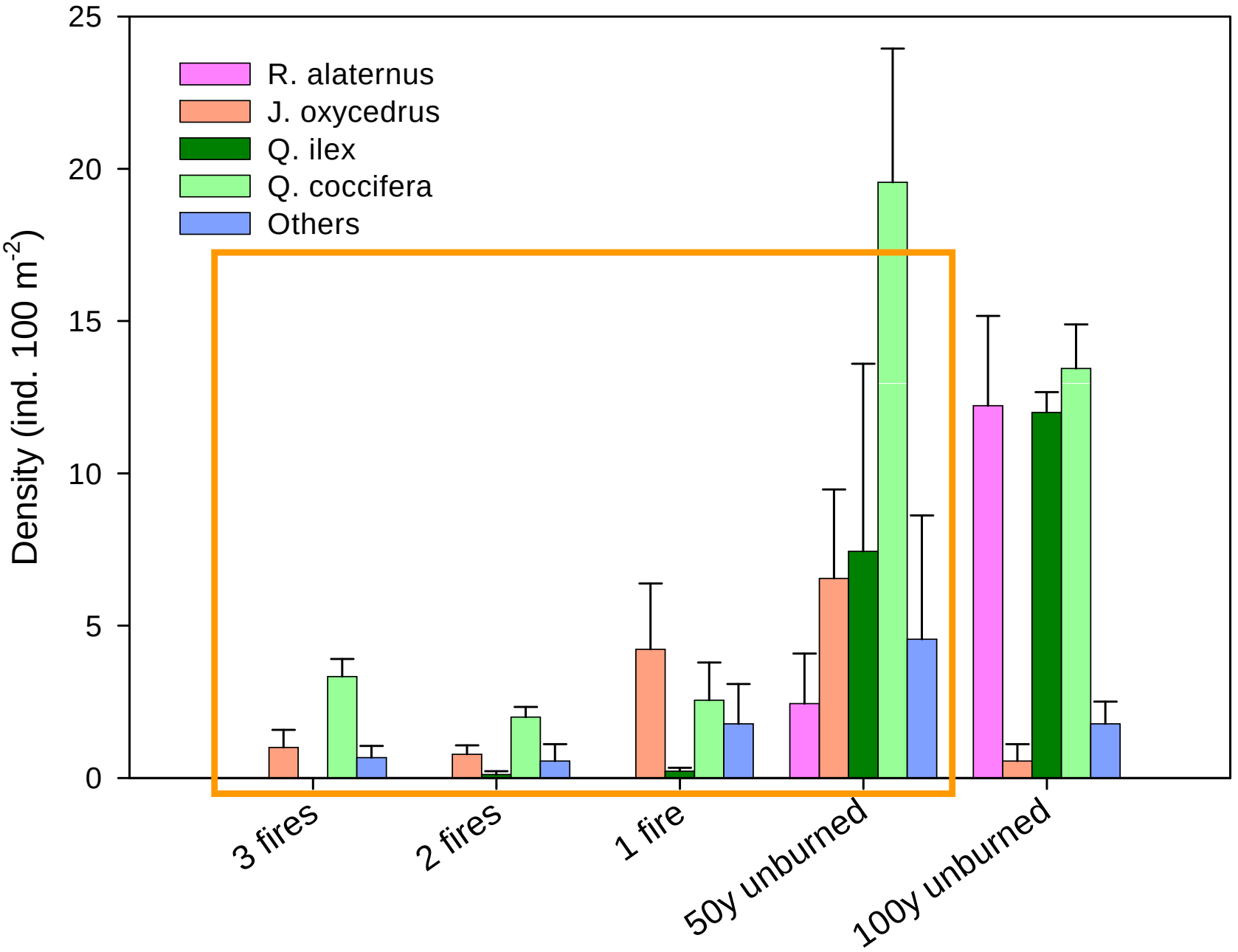

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