EGU General Assembly 2022

University of Reading

LEVERHULME Centre for Wildfires, Environment and Society

BG1.2

Fire in the Earth system: interactions with land, atmosphere and society

EGU22-1007

Investigating woody species resprouting in response to fire

Abstract

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Background

Many ecosystems and plant species are adapted to fire and depend on fire.

Why study fire-related plant traits?

- Little systematic evaluation of the **environmental controls** that determine the geographic distribution of this trait.
- No investigation of how the deployment of this trait affects the **speed of ecosystem recovery** after fire events.

Fire free

lack fuel; dry enough fuel; lack ignition sources

Infrequent crown wildfires

resilience (e.g. serotiny)

Serotinous cones of Pinus

Relatively frequent surface fires

resistance (e.g. thick bark, resprout)

Very frequent surface fires

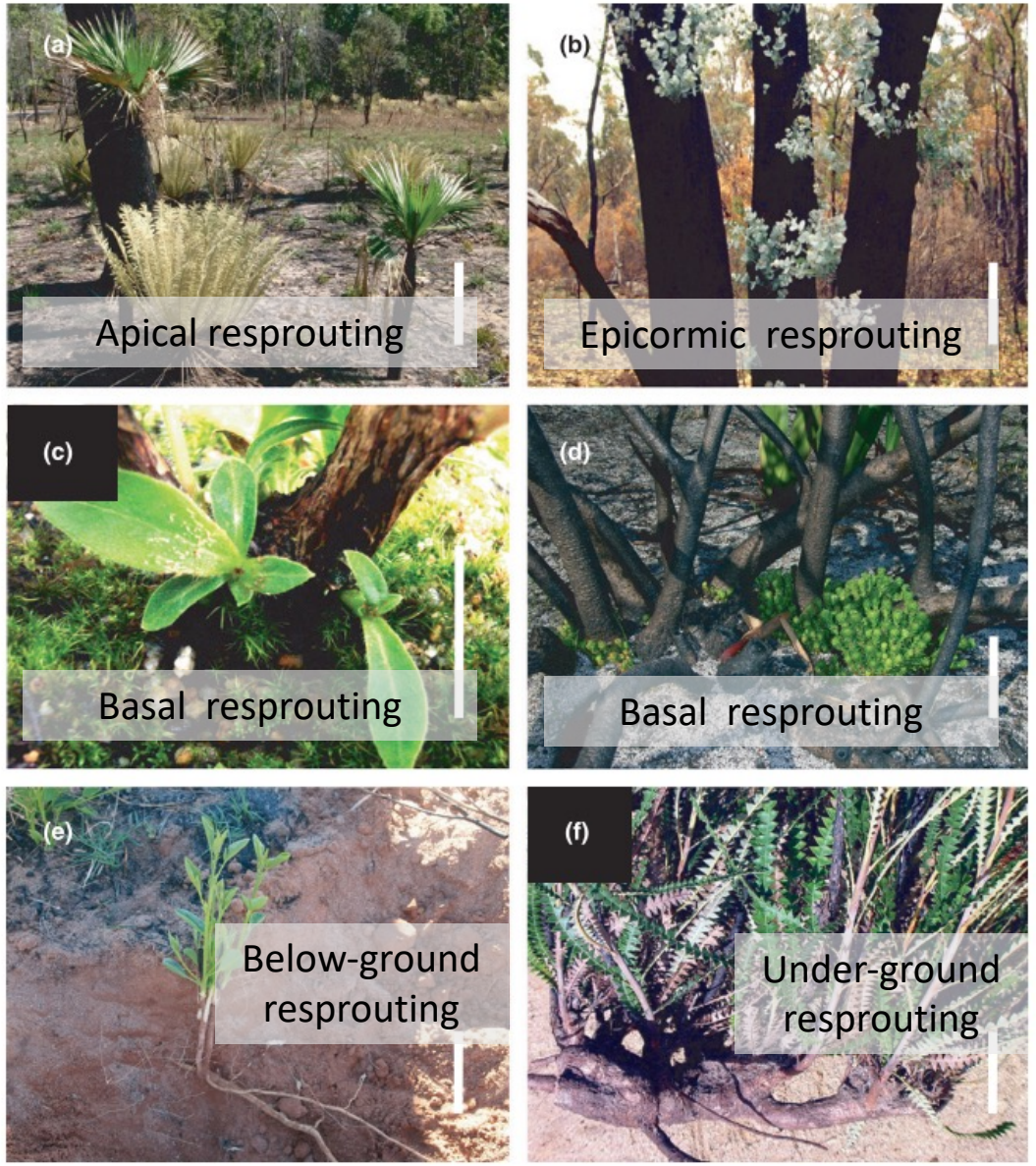
plants with underground meristems, below-ground biomass and ephemeral plants

Resprouting plants

What aspects of the fire regime influence the incidence of resprouting?

- What is resprouting?
- Sprouting and resprouting?

Types of resprouting



Clarke et al. 2013

Data source

Species abundance:

sPlotOpen

Fire data:

Fire return interval: MODIS MCD64CMQ

Fire intensity: MODIS MCD14ML, GlobFire

Resprouting information sources:

TRY, BROT, AusTraits …

Literature

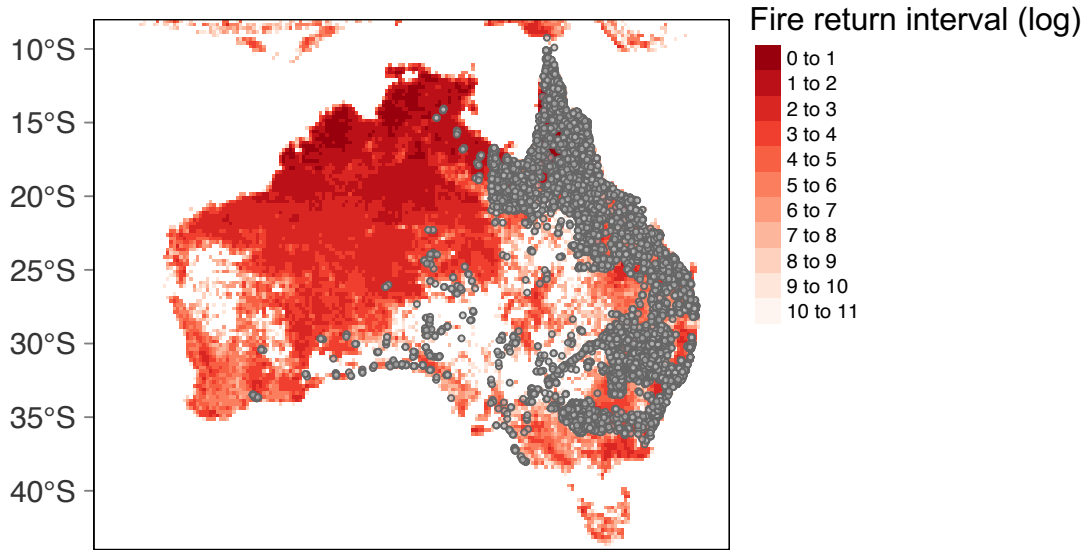
Experts' knowledge

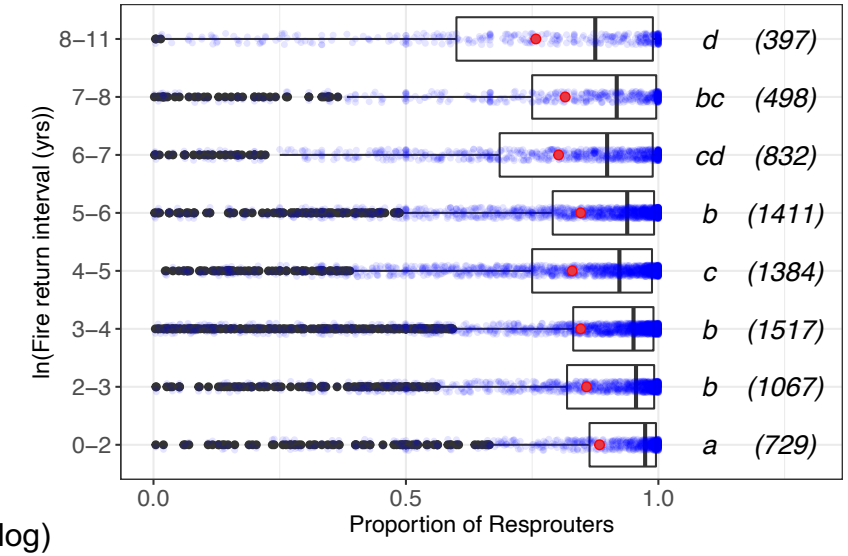
	Woody species	R^+	R^-	$R^?$	Known species
Australia	3552	1445	472	1635	53.97%
Europe	913	279	69	565	38.12%

Results
fire return interval

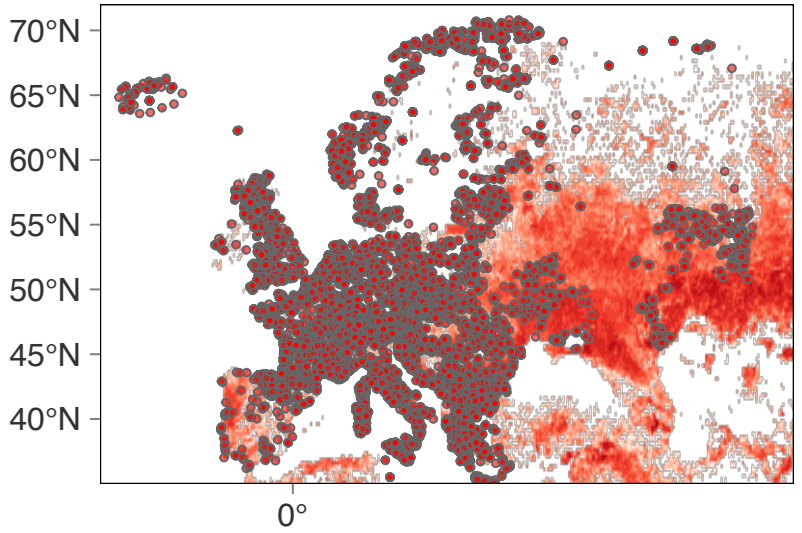
Fire return interval ↗
Proportion of resprouter ↘

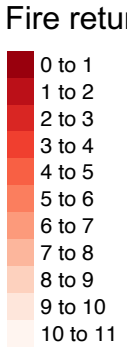
Plots in Australia

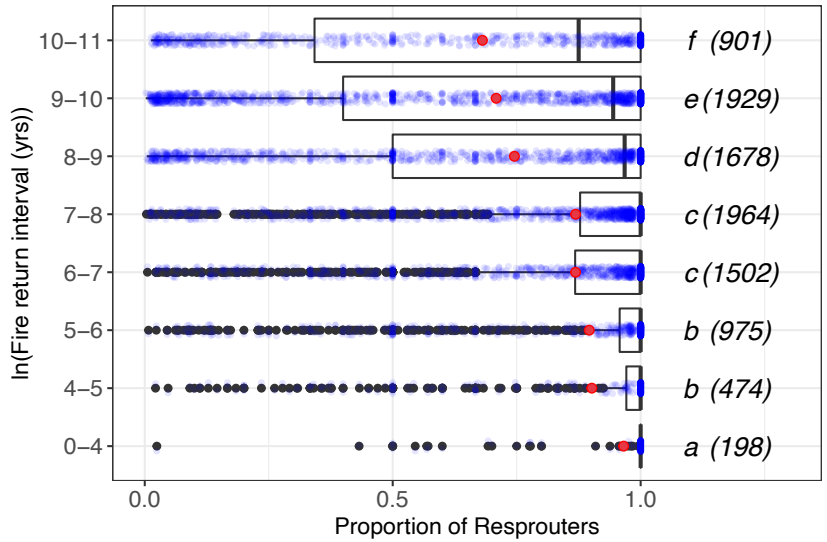




Plots in Europe





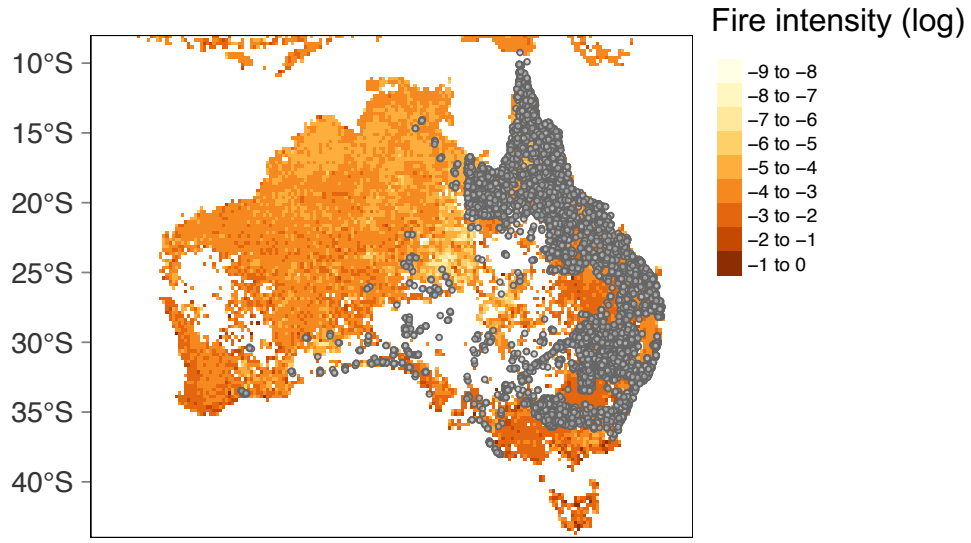


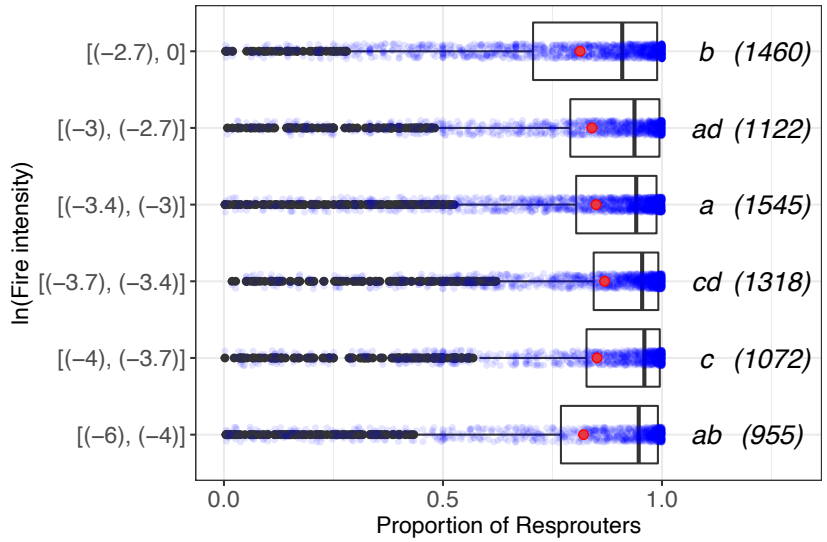
Results
fire intensity

Fire intensity ↗

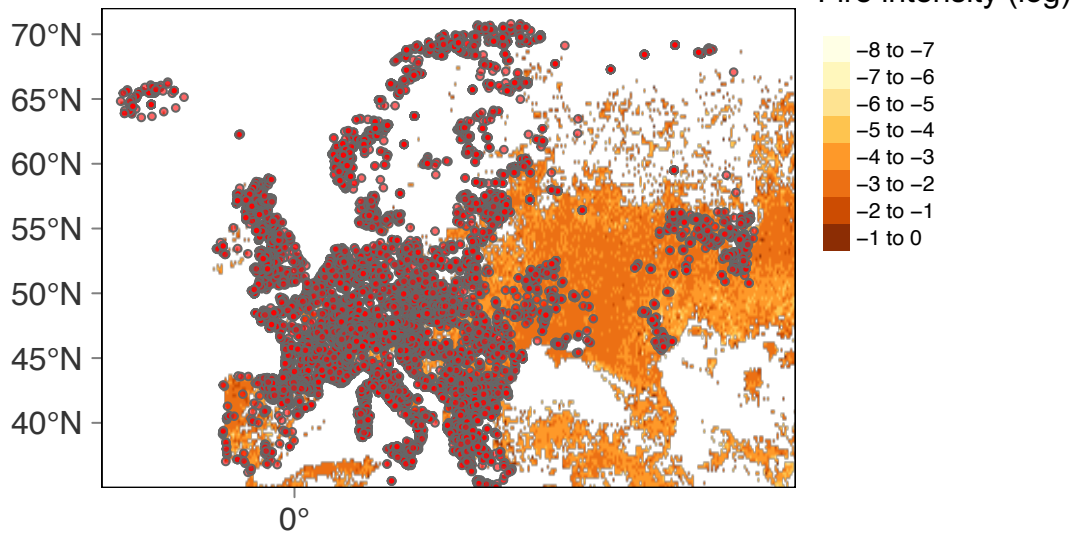
Proportion of resprouter ↗ ↘

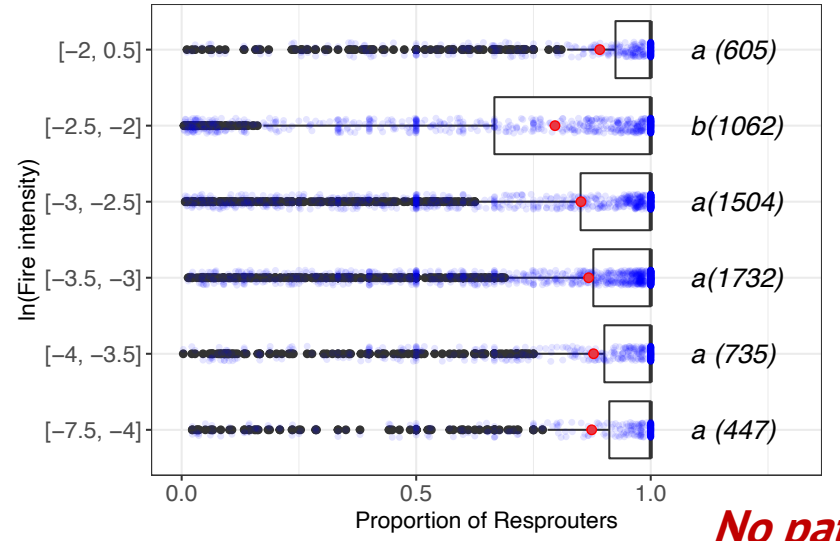
Plots in Australia





Plots in Europe





No pattern in Europe

Models for vegetation-fire interactions must be informed by insights from fire ecology, in order to make more credible future projections in a changing climate.

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Thank you!

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