

# The evolution of fire management in the Brazilian savannas: integrating science, traditional knowledge, and policy

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# CERRADO: Diverse physiognomies and landscapes



2 million km<sup>2</sup>



PN Serra da Canastra (MG)



PN Jalapão (TO)



PN Sempre-Vivas (MG)



Pirassununga (SP)



PN Jalapão (TO)



Serra do Roncador (MT)



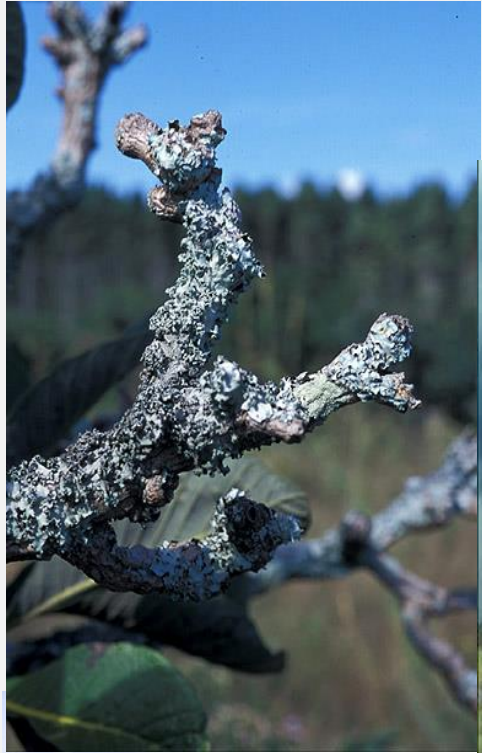
EE Itirapina (SP)

# CERRADO: the most plant-diverse savanna in the world!

>12,000 plant species, 1/3 endemics

herbs ~70%

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I  
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E



| Era      | Period     | Epoch          |
|----------|------------|----------------|
| Cenozoic | Quaternary | Holocene       |
|          |            | Pleistocene    |
|          | Neogene    | Pliocene       |
|          |            | <b>Miocene</b> |
|          |            | Oligocene      |
|          | Paleogene  | Eocene         |
|          |            | Paleocene      |
| Mesozoic | Cretaceous |                |
|          | Jurassic   |                |
|          | Triassic   |                |

Tertiary

10 My



evolution of the Cerrado biodiversity under fire

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Tertiary

10 My



32,000 BP → oldest fire records in Cerrado  
 30,000 BP → frequent fires  
 5,000 → increased fire frequency → humans  
 (Ledru et al., in prep.)

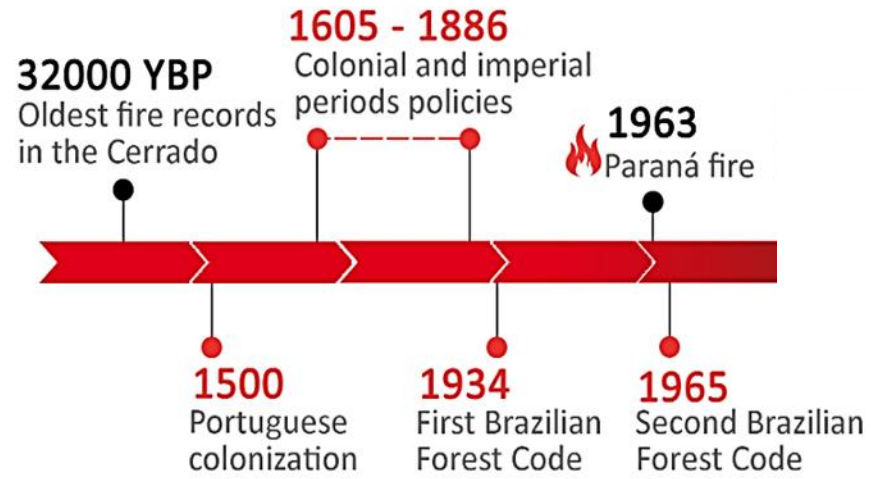
evolution of the Cerrado biodiversity under fire

Year 1500: European colonization

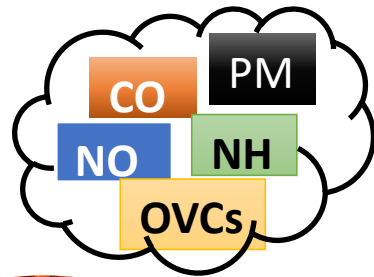


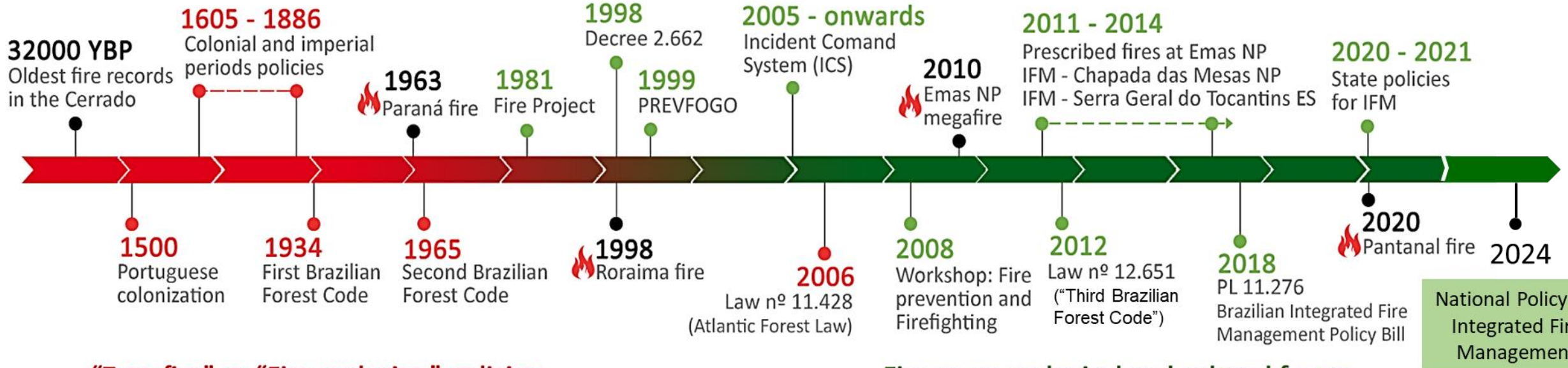
No-fire legislation





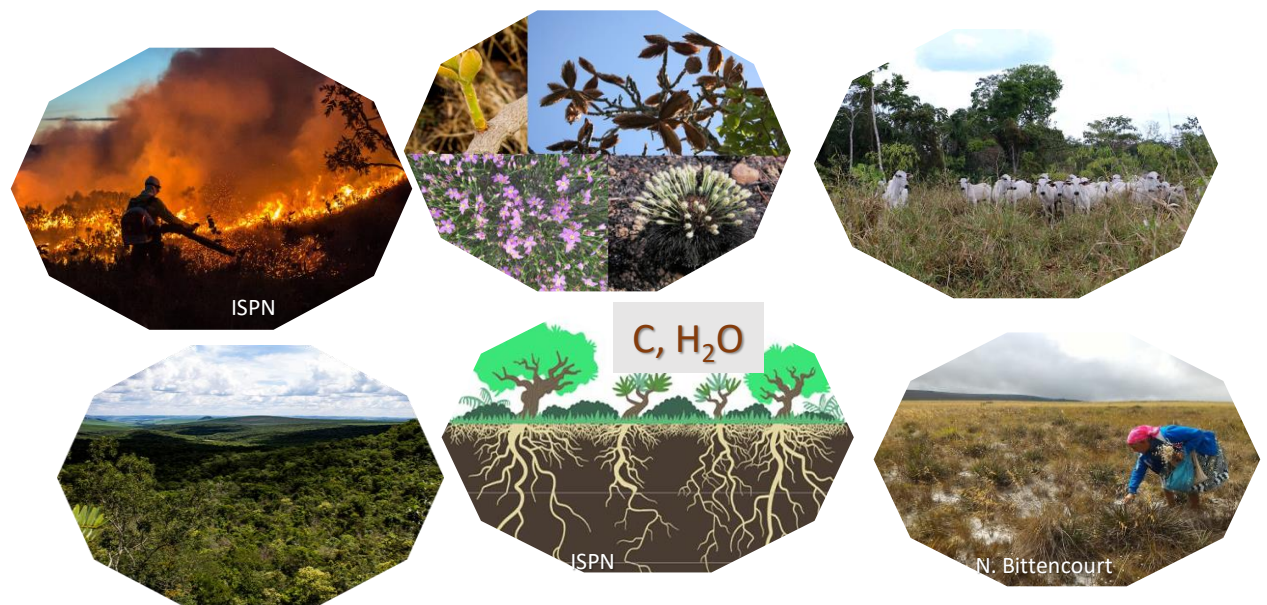
**“Zero fire” or “Fire exclusion” policies**





**"Zero fire" or "Fire exclusion" policies**

**Fire as an ecological and cultural factor**



# NATIONAL INTEGRATED FIRE MANAGEMENT POLICY (JULY 2024)

## National Operational Coordination Center

planning, monitoring, detection, coordination, dissemination (federal)

## Information System

records, data, mapping, alerts (federal, state, municipal)

## Instruments and sources of funding

## Environmental awareness and education

### Agriculture

controlled burning  
traditional burning  
fire substitution

### Preventive burning

(e.g., firebreaks)

### Research / Conservation

prescribed burning

### Protected Areas

prescribed burning  
Integrated Fire Management (IFM)

### Traditional cultural practices

practices

permission

Fire Management Plan

community protocol

requirements + notification

Irregular use of fire



liability and legal action

# NEXT STEPS

## Balancing ecological and human needs



Vegetation types

Biodiversity

Woody encroachment

Fauna life cycles/ activity

Soil microbiota

Traditional uses

Ecos. functions & services

Wildfire prevention  
– climate changes

- Appropriate fire regimes
- Fire Management Plans: adaptive management (PAs)
- Land tenure problems (PAs)
- Fire use in private properties
- Regional planning
- GHG emissions
- C sequestration (above **and below** ground)
- C/N cycling
- Law enforcement
- Communication systems
- Information, training

Thank you for your attention!

