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Questions

Winter wildfires of low to medium intensity are typical in Southern Switzerland and represent an important driving force for the dynamics in forest ecosystems. We investigated the following questions:

1. How is the faunistic biodiversity influenced by fire?
2. What are the responses at the community level?
3. How long does it take for the forest ecosystem to restore?

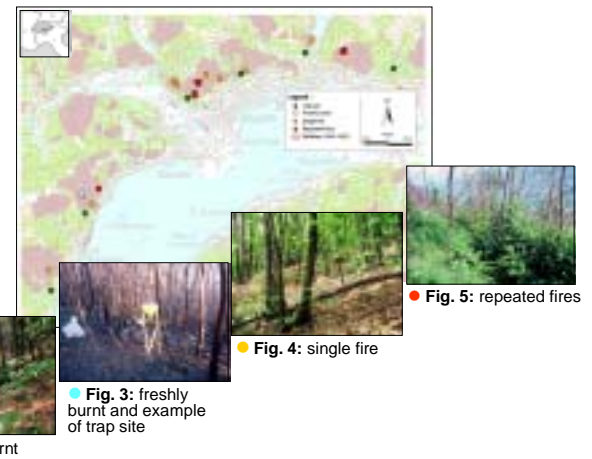
Methods

Study area (Fig. 1): located along a uniform, south-facing slope (450-850 m a.s.l.)

Sites (n = 26):
 6 sites without fires (●) for the last 30 years (Fig. 2)
 2 freshly burnt sites (●) where sampling started 1 week after the fire (Fig. 3)
 8 sites which have burnt once (●) within the last 30 years (Fig. 4)
 10 sites which have burnt 3-4 times (●) within the last 30 years (Fig. 5)

Traps in each site: 1 pitfall trap emptied weekly between March and September 1997 (Fig. 3)
 1 emergence trap (idem)
 1 yellow window-pan (idem)
 9 litter and soil samplings for Berlese extraction, every 2 weeks between January and Mai 1997

Fig. 1: Study area (© 2001/Bundesamt für Landestopographie)

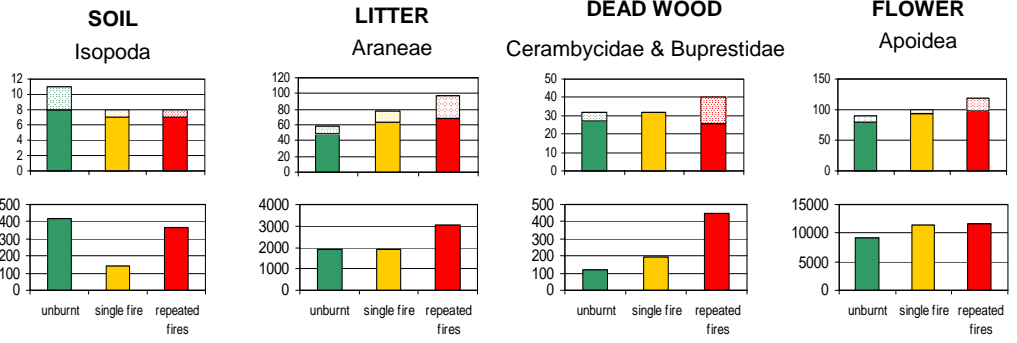


Results

1. How is the faunistic biodiversity influenced by fire?

- Number of species (pointed = exclusive species)

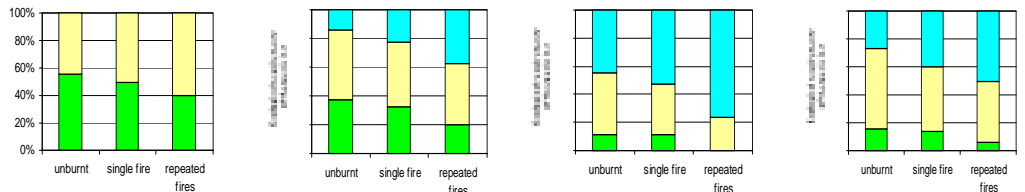
- Number of individuals



2. What are the responses at the community level?

- Ecological requirements of the species:

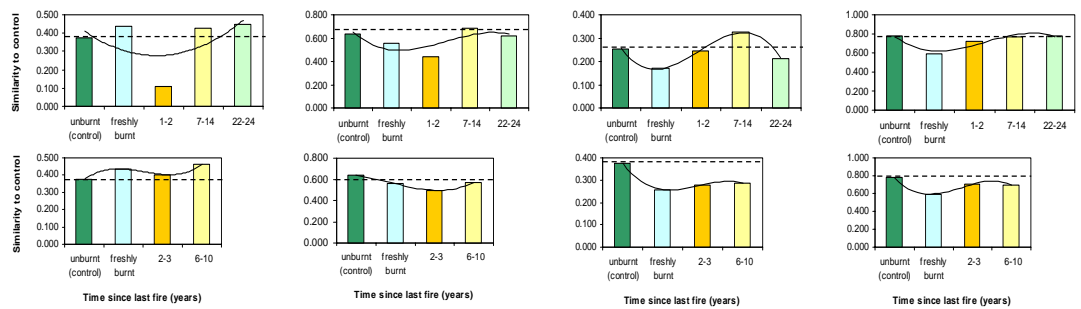
- Shrub species (red)
- Ubiquist species (yellow)
- Forest species (green)



3. How long does it take for the forest ecosystem to restore?

- After a single fire

- After repeated fires



Conclusions

1. The number of total and exclusive species, and the number of individuals and their activity increases especially in sites of repeated fires.
2. In repeatedly burnt sites the 'shrub species' tend to increase. They are forest species which require open sites for foraging or reproduction.
3. After a single fire, the highest dissimilarity appears in the first 2 years after the fire. The communities recover after 7-14 years (high resilience). In case of repeated fires, the recovery takes longer.