

# Different goals for restoration burnings in Western USA, Sweden and Finland - and why is that?

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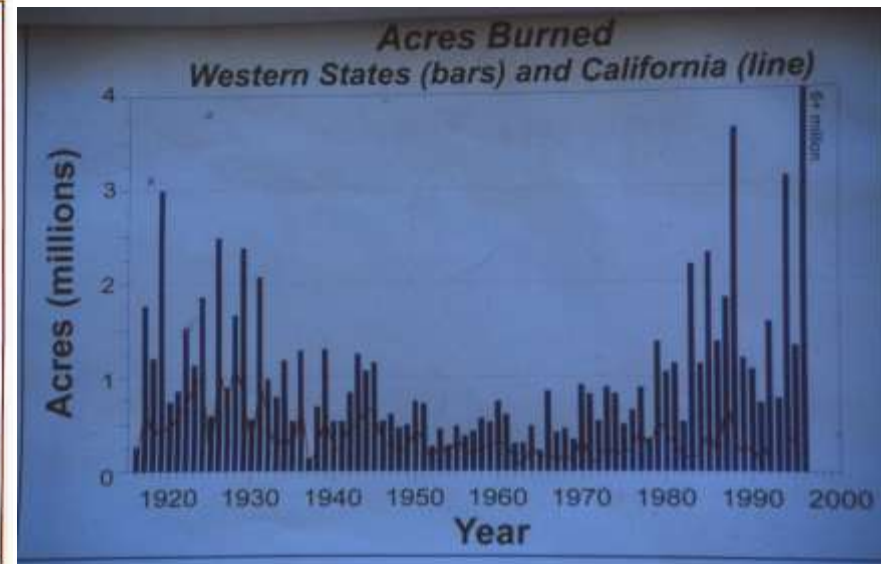
Finland

# Western USA

- National Parks Service started to use prescribed burnings already in 1968 in Western USA National Parks.
- The main goals have been:
  - to maintain more natural fire regimes = more frequent low to moderate intensity fires
  - to reduce the amount of accumulated fuel and thus the risk for catastrophic fires
  - to enhance the regeneration of light demanding tree species like Ponderosa pines, Jeffrey pines, Sugar pines, Douglas firs and Giant sequoias.
- To create habitats for fire-dependent fungi and invertebrate species has not been an acknowledged goal



**“Smokey Bear effect” has increased the risk for catastrophic fires**





## Problems caused by long-lasting fire suppression:

- Unfavourable regeneration conditions for light-demanding fire tolerant tree species
- Unnaturally high amounts of fuel, dense "dog-hair forests", susceptible for high intensity crown fires that kill also old fire tolerating trees and are very difficult to control





## Successful restoration burning in a mixed conifer forest reserve in Sierra Nevada mountains, California





**Successful  
restoration  
burning in a  
Giant sequoia  
grove in  
Sequoia  
National Park,  
California**



# Sweden

- First restoration burn 1993
- In Sweden restoration burnings in protected areas are carried out in significantly older stands than in Finland.
- The goals are:
  - to **restore open, multi-layered stand structures** that were typical for frequently burned pine forests before fire suppression era.
  - to reduce stand density,
  - to kill most of the spruce trees
  - to maintain old pines and
  - to create charred, resin-impregnated and fire-killed wood.
  - to create habitats for fire-dependent fungi and invertebrate species



## Restoration burning in Fageråsen Nature Reserve, Sundsvall, 14. June 2006.



Photos: Tomas Rydkvist

”With the latest fire in the end of 1800 we are lacking 2-3 fires in almost every pine dominated nature reserve, and that results in denser, darker, cooler and moister forests, due to an increase in number of spruce trees.”  
(Rydkvist, T. & Eriksson A-M. 2009.)



# Finland

- In Finland restoration burning has been used mainly to restore **young or middle aged planted pine stands** inside nature conservation areas.
- First restoration burn in 1989. Annual burned area 50-100 hectares/year.
- Goals: to kill significant portion of the planted pine trees. Target set for the mortality is typically 25-75%.
- to diversify the canopy structure and tree species composition
- to enhance regeneration of broadleaf tree species
- to produce dead and fire-injured trees and burnt soil.
- to create habitats for fire-dependent fungi and invertebrate species
- The aim is to burn more diverse stands in the future, by including older stands with coarser stems and more variable tree species.



**Control area and restoration burning area in Kauhaneva – Pohjakangas national park. Burned 2009.**



**Control area and restoration burning are in Helvetinjärvi national park. Burned 2013.**



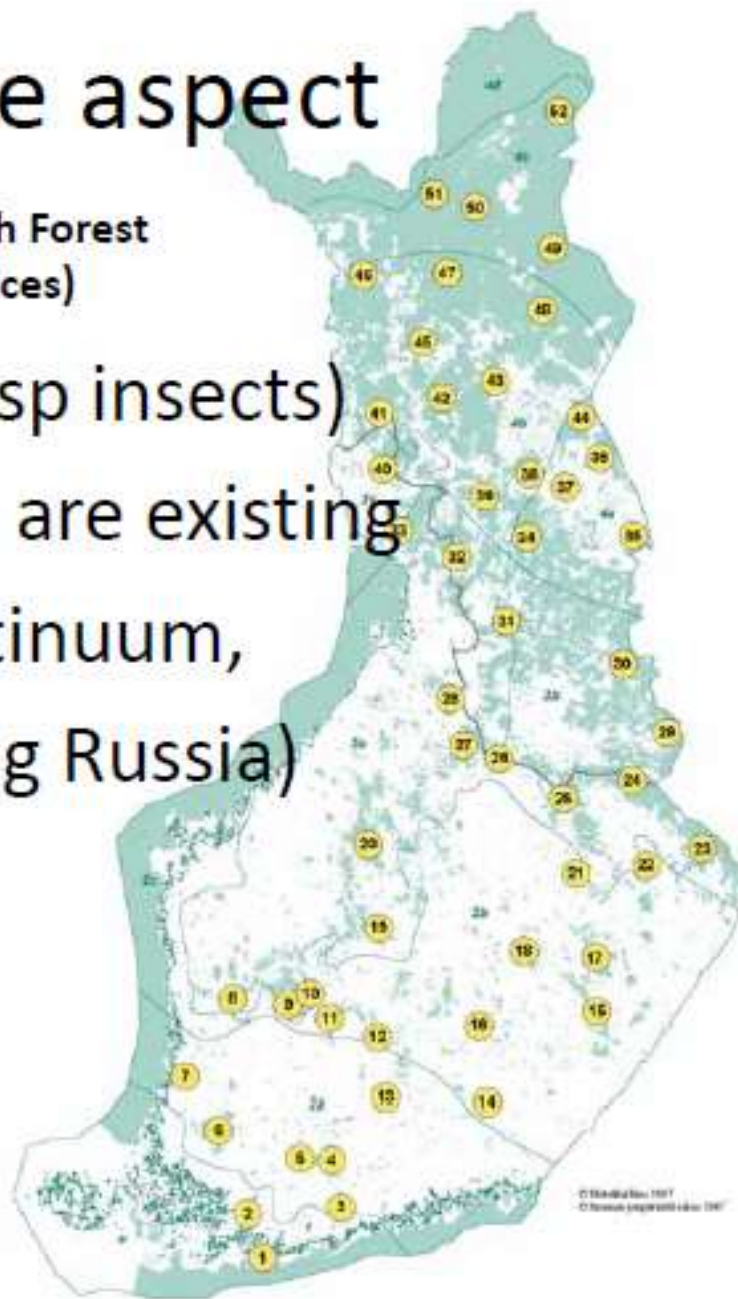
Photos:  
Janne  
Oikarinen



# Landscape aspect

Fire Continuum Areas of Finland (Finnish Forest and Park Service/Natural Heritage Services)

- Ecological benefit (esp insects) is higher when there are existing populations – fire continuum, Source populations (e.g Russia) (Kouki et al 2012)





Swedes are natural born spruce killers

Whereas finns have been torturers of young  
pines

# Reasons for differences in goal setting

- **Different climatical conditions.** Also in Fennoscandia fire suppression causes accumulation of forest fuels, but due to cooler and more humid climate without clear dry season this doesn't seem to increase the amount of high intensity fires. Fire hazard is far more burning issue in dry regions of Western USA than in Fennoscandia.
- **Different traditions of thinking about restoration.** What is the main problem aimed to be solved with restoration burnings?
  - In Western USA: Making fires and their impacts more controllable.
  - In Sweden: Making forest structures and dynamics more natural-like.
  - In Finland: Making man-made monocultures more natural-like.
- **Different levels of knowledge** concerning fire dependent fungi and invertebrate species: significantly higher in Fennoscandia than in USA. In USA focus is on vascular plants and wildlife = mammals & birds.