Why burn forests (and some other areas also) - Prescribed burnings in Finland – and especially on 21st century. What do we want and why but what did we get?

Henrik Lindberg, Häme University of Applied Sciences/Light&FireLife

FIRE FOR LIFE: EU LIFE workshop on restoration burning and management of sunlit forested habitats-24-27.2017. Lammi Finland

Paahde-LIFE
Light & Fire LIFE
TAIGA
NATURA 2000

Why burn forests (in Finland)? Why these kinds of meetings?

- - we`ll return

Paahde-LIFE
Light & Fire LIFE

Life

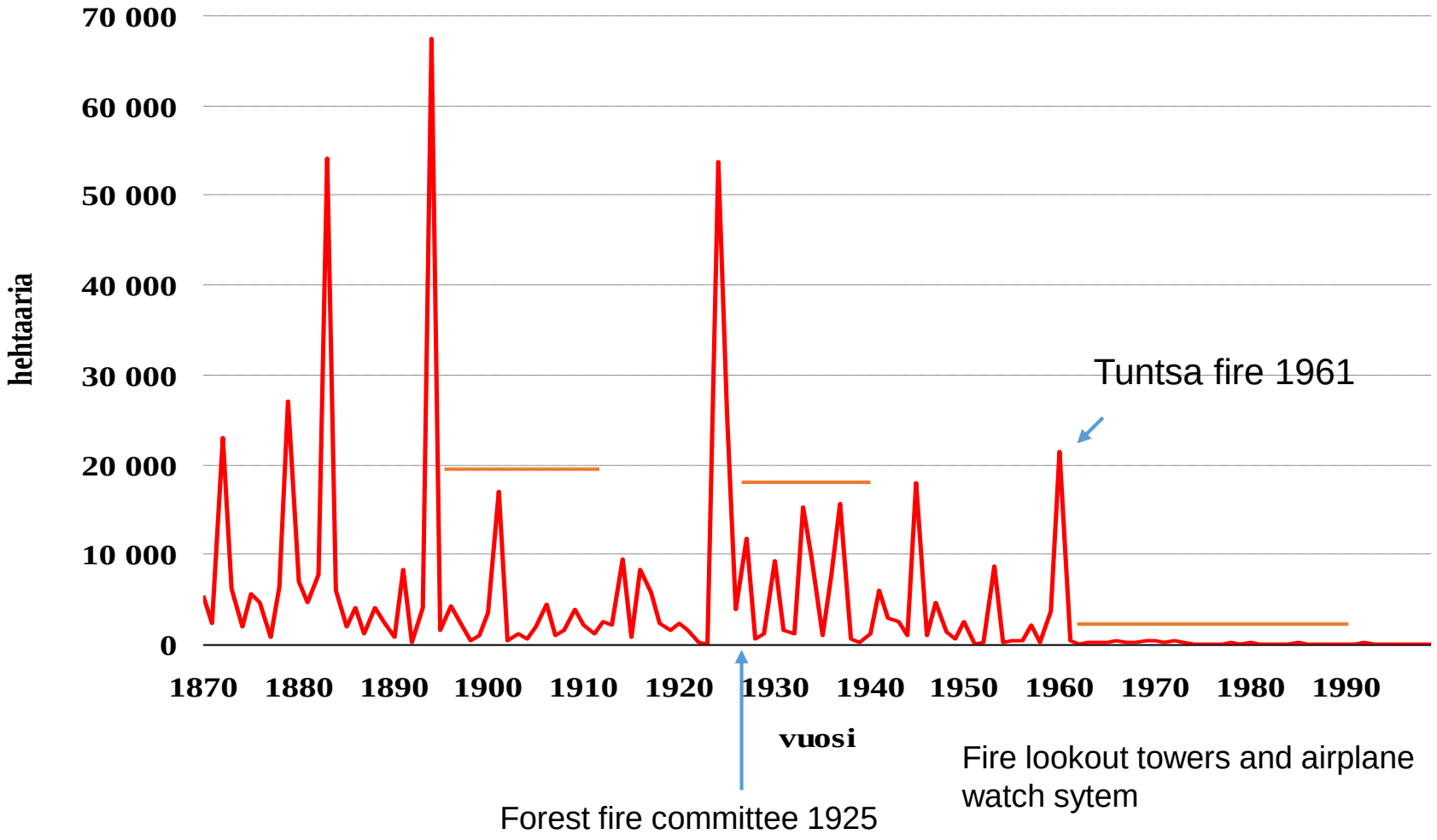
TAIGA

NATURA 2000

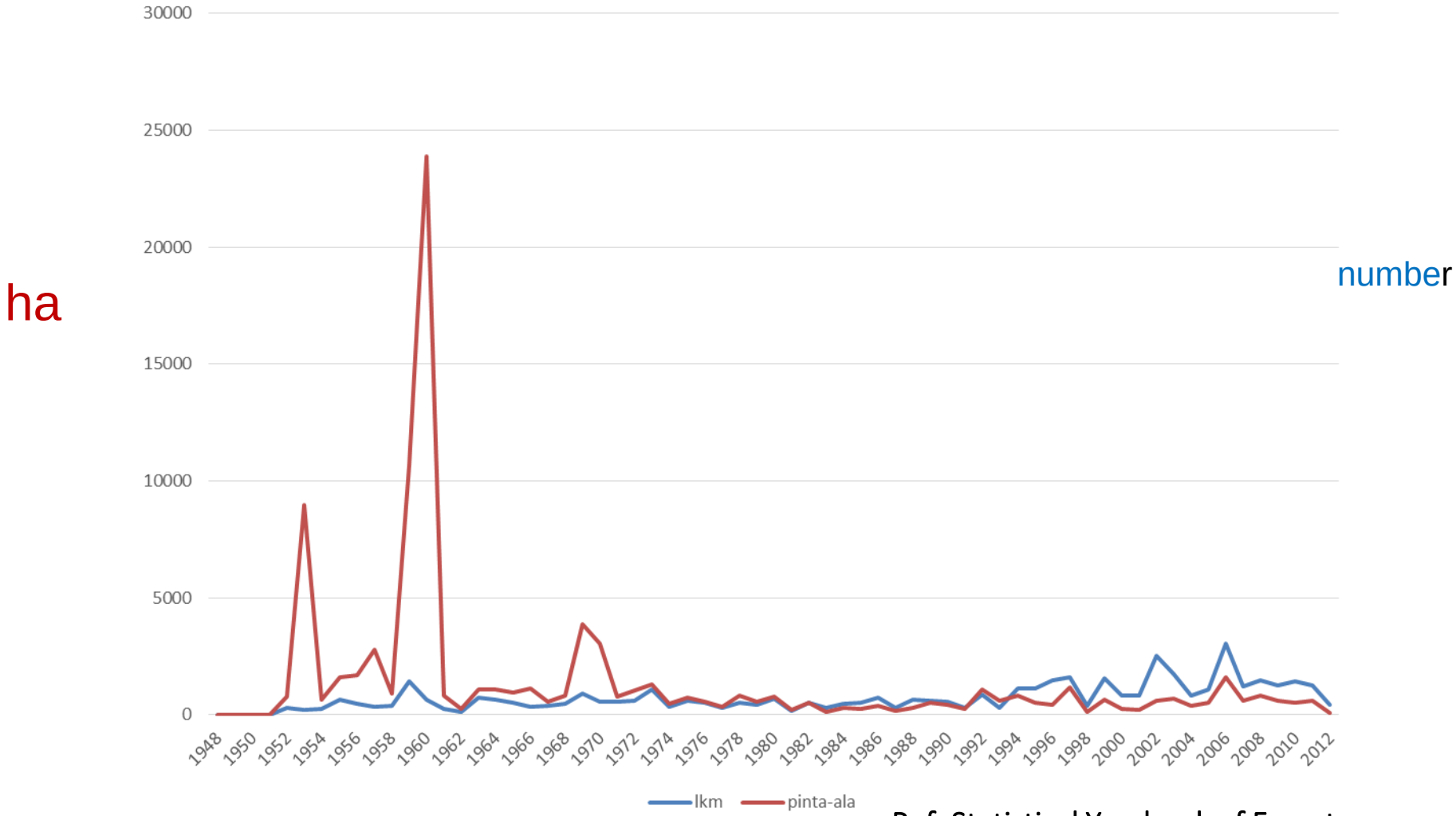
Reason 1. Natural history. Our natural (or rather semi-natural or ”historic ” disturbance regime has changed, we are in unnatural situation

- Lots of research (fire history)
- Different, even controversial results in different studies
- Fire cycles and annual amounts presented in studies burned vary a lot in boreal Fennoscandian forests (20- 1000-(1500 years), according to e.g era and area and even used methods and personal opinionst
- E.g the importance and interpretation of human influence is essential

Annual area burned in State forests 1870–1999. *(Picture: Heikki Suvanto)*



Finnish forest fires 1952-2012



Ref: Statistical Yearbook of Forestry

Average size

Forest fires v. 1952 - 2014

Time	Fires, n/a	Average annual area burned/a, ha	Average, size, has
1952-60	514	5760	12
1961-70	487	1355	2,7
1971-80	559	727	1,3
1981-90	471	312	0,7
1991-2000	947	582	0,7
2001-2010	1533	642	0,4
2011-2014	1068	382	0,4

Lots of small fires!

Lähde: Metsätilastollinen vuosikirja

In recent years

- **Surface fires** **abt 90 %**
- **Crown fires** **< 1 %**
- **Ground fires** **abt 10 %**

Lot of small surface fires, no big fires, rather nuisance than risk

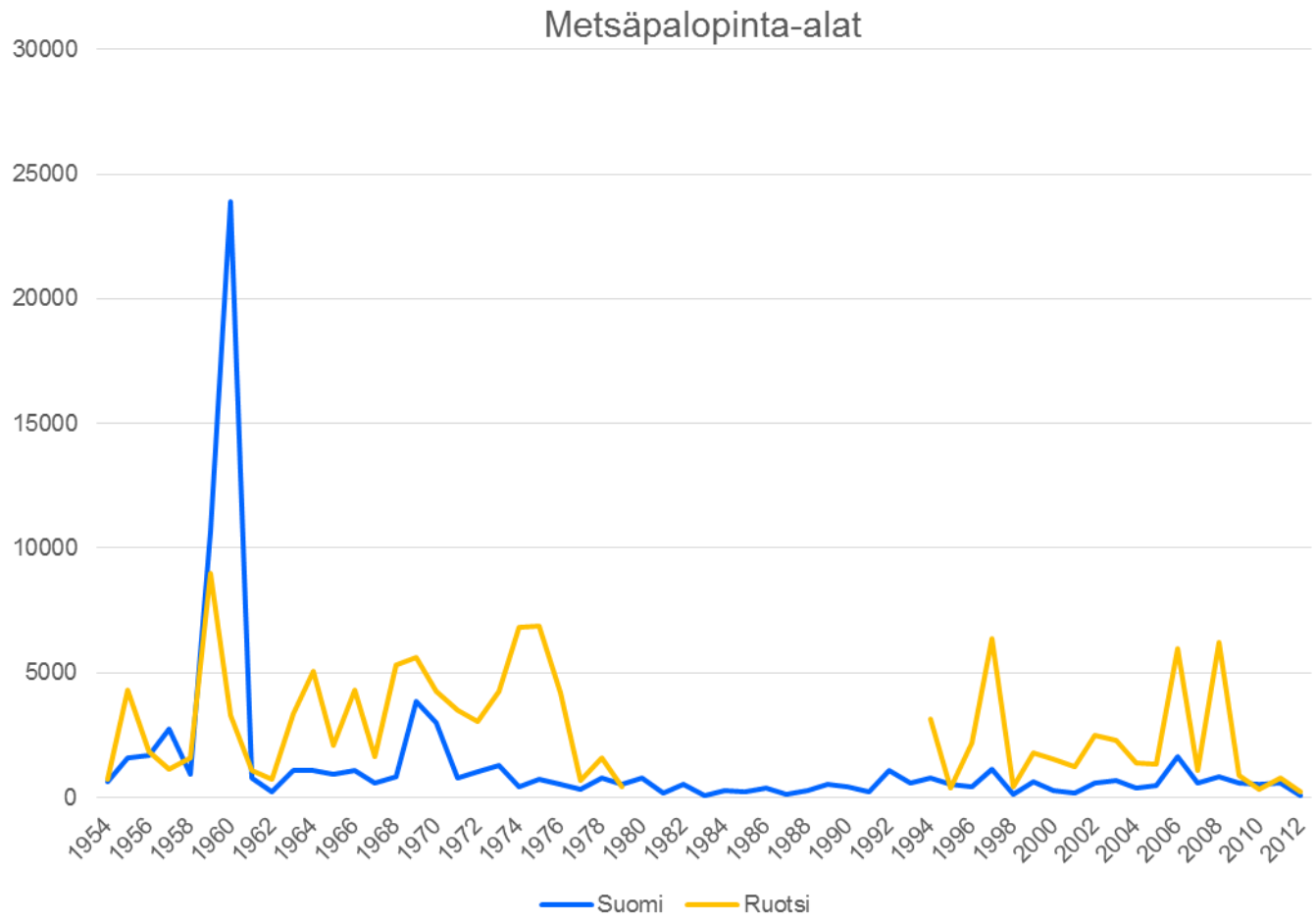
- Last over 10 000 hectares 1960 (20 000)
- Last over 1 000 hectares (1970)
- Last”big fire” (1997), 250 hectares

- In general:
- Ecolgical significance has decreased drastically and the natural variation in size, intensity and severity has disappeared

Interesting difference between Finland and Sweden

Forest fires in Sweden and Finland, average annual area

Ha:s



Major fires

- 1959 Isojoki-Honkajoki noin 1 700 ha
- 1960 Tuntsa noin 120 000 ha
- (siitä Suomen puolella noin 15-20 000 ha)
- 1969 Rantsila noin 600 ha
- 1969 Tyrnävä-Muhos noin 1300 ha
- 1972 Inari noin 200 ha
- 1970 Kalajoki noin 1 600 ha
- 1970 Liminka noin 500 ha
- 1992 Lieksa noin 150 ha
- 1997 Laihia noin 150 ha
- 1997 Tammela noin 250 ha
- 1999 Kangasala noin 110 ha
- (2006 Sodankylä, ampuma-alue n 130 ha)

1992 Gotlanti 1000 ha
1994 Trollhättan 400 ha
1997 Östersund 1000 ha
1997 Ånge 400 ha
1997 Sollefteå 450 ha
1999 Tyresta 450 ha
2003 Skellefteå 210 ha
2006 Bodträskfors 1 900 ha
2006 Muddus 300 ha
2008 Vännebo 800 ha
2015 Sala 14 000 ha

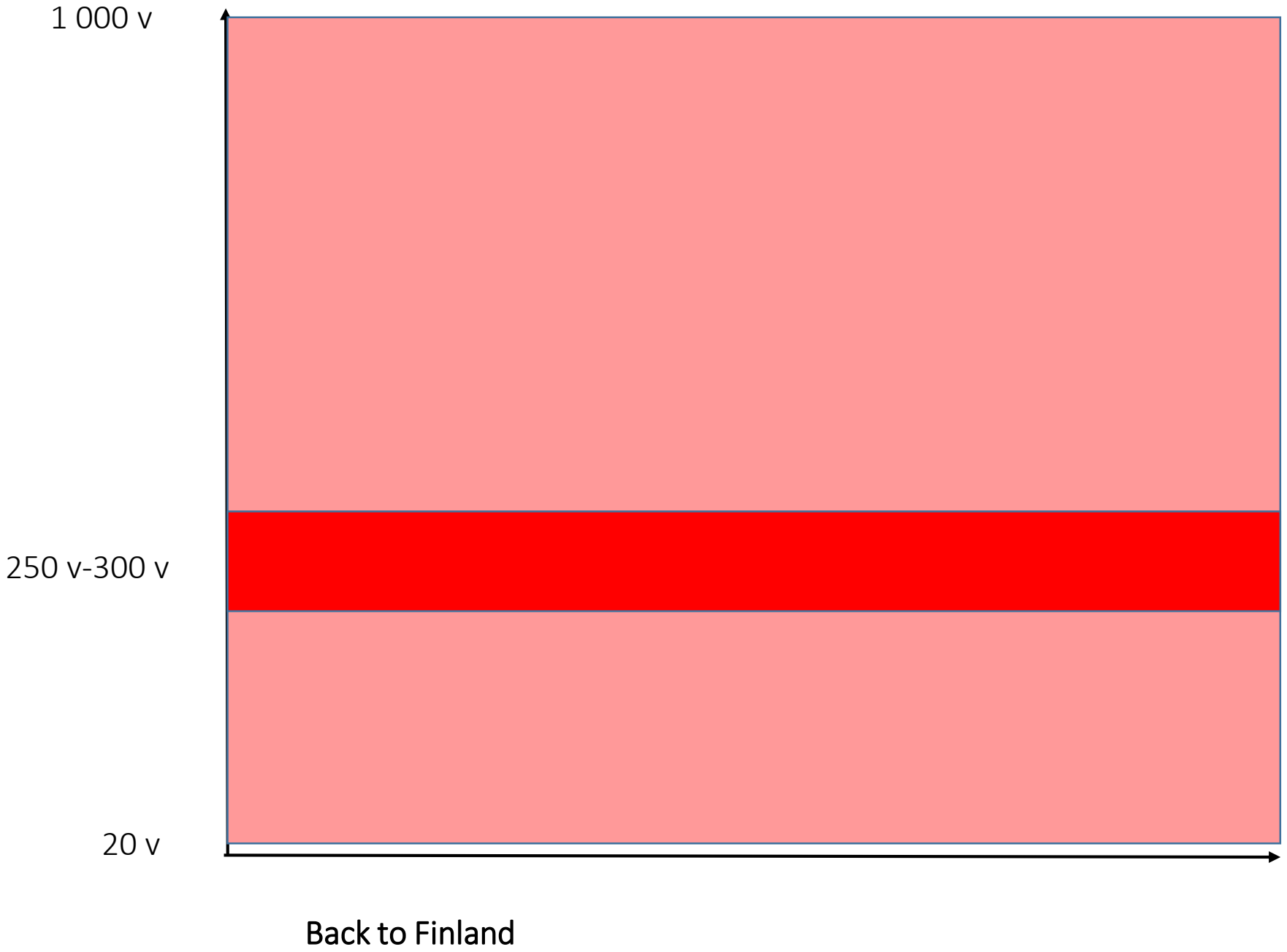
(Noin=about)

Finland-Sweden

- In Sweden the general trend is decreasing like in Finland, but the scale is different
- In ”easy” fire years Finland and Sweden are close, but…
- In Sweden part of fires seldom but frequently develop in to major fires which have practically disappeared in Finland
- In Sweden the variety between different years (weather conditions) still shows, in Finland it has been cleaned away

Why?

- Ignition source and possibility +- same (society)?
- Climate+-same
- Fuels
- Stand level– landscape level differneces (silvicultural policies, compartment size, tree species)
- Fire suppresion:differences: the organisation of rescue service and fire fighting
- Forest road network



The current fire cycle is up there somewhere behind appr 40 slides

… or

- With the longest fire cycles presented (1000 a) about 20 000 ha/a should be burned, 1500 a, n 15 000 ha/a
- And with 300 years cycle abt 70 000 ha
- So we should have hundreds of thousands - even millions of hectares - fire-driven habitats
- .. And as you remember we have around 500-1000 ha/a with a low variation

- We truly have fallen totally outside the former fire regime
- ”**Fire is the most absent factor of Fennoscandian forests**”
- There are percents or even permilles fire habitats compared to preceding centuries
- the change has been rapid
- There is no risk of ”burning too much”

Reason 2. The absence of fire has affected the endangerement of species and nature types (direct biodiversity effects)

- Active research during past decades
- Tens of articles (+ swedish), that all in general show the benficial biodiversituy effects and recommend the increase of prescribed burnings – scientific evidence
- Concentrate on certain species groups (beetles, polypores)

Paahde-LIFE
Light & Fire LIFE

Life

HAMK
HÄMEEN AMMATTIKORKEAKOULU
UNIVERSITY OF APPLIED SCIENCES

More from Finnish fire and biodiversity reseach

- Prof Jari Koukis website
  - http://forest.uef.fi/~jkouki/project_fire.htm

Together…

- Abt 20-30 scientific articles
- Around 10 dissertations
- around 20 M-Sc thesis
- B.Sc thesis-tens

Paahde-LIFE
Light & Fire LIFE

TAIGA

NATURA 2000

Results

- Practically all results show that controlled burning has a strong positive effect on studied species groups (beetles, bugs,-short term effect, polypores, long-term effect), especially endangered and rare species
- Not only pyrophilous spesies
- It also creates a long-term mortality effect providing dying wood and coarse woody debris

Paahde-LIFE
Light & Fire LIFE
Life
TAIGA
NATURA 2000

- Supported by e.g Red list assessments, semi-scientific monitories and quiet knowledge
- Followed by different development projects

Suomen lajien uhanalaisuus 2010

SUOMEN YMPÄRISTÖ 8 | 2011

Elinympäristöjen tilan edistäminen Suomessa

ELITE-työryhmän mietintö elinympäristöjen tilan edistämiseen priorisointisuunnitelmaksi ja arvio suunnitelman kokonaiskustannuksista

Toim. Janne S. Kotiaho, Salla Kuusela, Eini Nieminen ja Jussi Päivinen

SUOMEN YMPÄRISTÖ 4 | 2008

Suomen luontotyyppien uhanalaisuus – Osa 1

Tulokset ja arviointia perustelut

Anne Raunio, Anne Schulman ja Tytti Kontula (toim.)

Suomen ympäristökeskus

SUOMEN YMPÄRISTÖKESKUKSEN RAPORTTEJA 2 | 2015

Harjumetsien paahde-elinympäristöverkostot

Metsien luonnonhoidon vaikutukset harjuluontoon, maisemaan ja paahdelajiston monimuotoisuuteen

Harri Tukia, Julia Hämäläinen ja Terhi Ryttäri (toim.)

- Focus has been quite of lot in insects with good colonization ability (”burn-hoppers”)
- But in recent years the importance of **barren, semi-open, fire driven habitats** like **esker forests** and especially **sunlit slopes** has been lifted up

He was right!

	Early successional	Late successional
Mobile	Coleoptera	Senescent deciduous stands and their fauna
Sessile	Seed banking plants Fire-shaped soils	Multi-storied pine stands

From: Granström, A: Scan, J For. Res. 2001, Suppl 3

	Esker forests	Forest fire areas
Red-listed species	196, 10.4 %	23, 1.2 %
Endangered species	113, 13.8 %	10, 1.2 %

From: *The 2010 Red List of Finnish Species, % refer to all endangered forest species*

EU Habitats directive species, abt 10 can be considered fire-benefitters

Habitat	Esker forests, primary			Esker forests, secondary			Dry forests, primary			Dry forests, secondary			Forest fire areas, primary			Forest fire areas, secondary		
Conservation status Species group	CR, EN VU	RE NT DD	TOT	CR EN VU	RE NT DD	TOT	CR EN VU	RE NT DD	TOT	CR EN VU	RE NT DD	TOT	CR EN VU	RE NT DD	TOT	CR EN VU	RE NT DD	TOT
Vascular plants/*Tracheobionta*	6	3	9		1	1								1	1			
Gilled mushrooms/*Agaricales*		1	1				1	2	3									
Aphylloporales							2		2		7	7	2		2	2		2
Parasitic microfungi/*Pucciniomycetes*	1		1	1		1												
Sac fungi/*Ascomycota*							1	1	2				2		2			
Lichens/*Lichenes*																	2	2
Birds/*Aves*										2		2						
Spiders/*Arachnida*								1	1		4	4						
Crickets etc/Orthoptera	2		2															
Bugs/*Heteroptera*	1	1	2					1	1				1		1		2	2
Aphids etc/ Homoptera	19	11	30	4	2	6	3	2	5									
Net-wingers/*Neuroptera*								1	1		1	1						
Thrips/*Thysanoptera*		2	2															
Butterflies and moths/*Lepidoptera*	49	22	71	25	14	39	2	1	3		1	1				2	2	4
Mosquitos etc/*Nematocera*													1		1	2	7	9
Flies/*Brachycera*		3	3	1	3	4				1		1						
Twisted-wing parasites/*Strepsiptera*		2	2															
Sawflies/*Symphyta*	1		1				1		1									
Parasitic wasps/*Parasitica*	1	2	3													2		2
Stinging wasps/*Aculeata*	21	23	44	11	8	19		1	1							2		2
Beetles/*Coleoptera*	6	6	12	2	1	3					1	1	4	8	12	6	1	7
Total	107	76	183	44	29	73	10	10	20	3	14	17	10	9	19	16	14	30

Habitat	Esker forests	Xeric heath forests	Barren heath forests
Conservation status, Southern Finland	EN	NT	CR
Conservation status, Northern Finland	NT	NT	CR
Conservation status, Finland,	VU	VU	CR

From: *Assessment of threatened habitat types in Finland* (2008)

Assessment of threatened habitat types in Finland. 2008

- From forested NATURA-types *”The fertilisation of barren forest types should be prevented and decreased by active management. Such actions that increase fertility or strengthen nutrient cycling should be avoided. The absence of forest fires changes the characteristics of barren nature types. Thus impowerishing management actions, especially burnings should be hurried”*

From: The 2010 Red List of Finnish Species

“Forest fires are a natural factor in boreal forests and of great importance for the diversity of species. They shape the structure of tree stands, and the amount of dead and decaying wood is high after intensive forest fires, in particular. Because of the dense forest road network and effective fire prevention, the number of forest fires is low in Finland.

The development of many threatened forest species can be affected effectively by increasing the number of prescribed burnings carried outannually as part of habitat management or restoration. In commercially managed forests, prescribed burning is an effective method for increasing biodiversity”

ELITE-report 2015

ELITE-working group: Improving the status of habitats in Finland - report of the ELITE working group on a priorisation plan for improving the status of habitats and estimated costs of the

7.6. The recommendation of forest group

Especially following actions should be promoted:

- Leaving living retention trees permanently
- Preserving dead trees in cuttings
- Restoration burnings and prescribed burnings.
- Founding conservation areas

Reason 3.

- With restoration burning you can start natural succession and restore e.g young commercial stands and create (semi)-natural young forests (which are actually even more rare than old growth) the Finnish style, also, e.g the Finnish voluntarely METSO-program could provide this kind of conservation tool
- Burning increases directly the conservation value of certain area
- **”Burning is the most effective way to restore a managed forest in Finland”**

Paahde-LIFE
Light & Fire LIFE

Life

HAMK
HÄMEEN AMMATTIKORKEAKOULU
UNIVERSITY OF APPLIED SCIENCES

Reason 4

- Reduces fuel load and decreases the risk of catastrophic fires (important in many parts of the world)

Controlled burnings/presribed burning

Paahde-LIFE
Light & Fire LIFE

Life

TAIGA

NATURA 2000

History: Slash and burn

- Practised in Finland for thousands of years (abt 4 000 years ago)
- Started to increase during 18th and 19th century when population was increasing rapidly, moving to eastern Finland, reached it height around 1850 (appr 4 milj hectares, 100 000 has/a)
- Different techniques (coniferous, mature forests in uninhabited areas, decidious trees near villages, a rotation of 20-40 years)
- Increasing population and shortening slash-and-burn rotations led to impoverisment of soils and lack of timber near populated areas
- In general the 1700-1900 can be considered as ”fire centuries” in Finnish forests, lot of activities practised in forests were related to fire (shows in paintings, poems, folk lore etc)

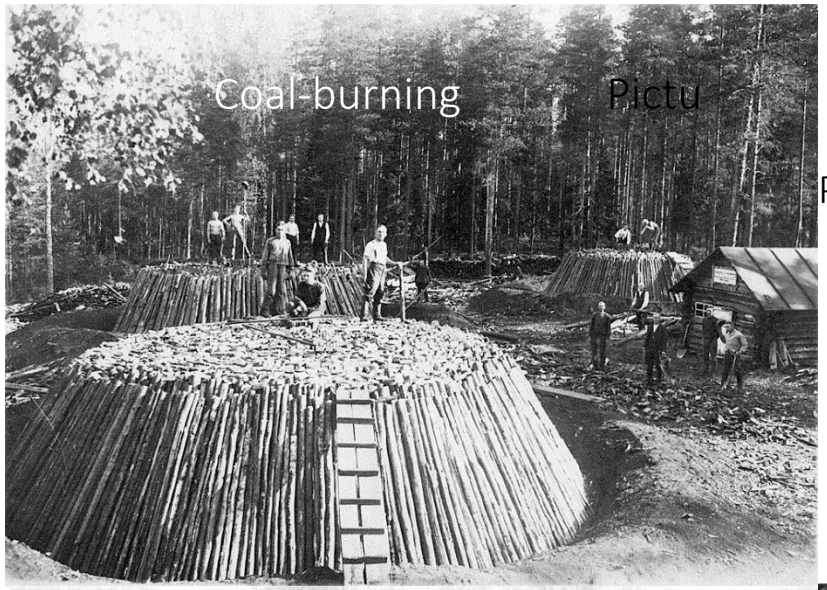
- Made possible to immediately utilize land for agriculture (simultaneously cleaning and fertlization), made possible a semi-nomadic lifestyle, also made possible to quickly colonise remote forested areas (Sweden/Värmland, Northern America)
- It is considered that in Finland the role of slash and burn in agriculture has been among highest in world
- Had a big impact on Finnish culture, nature, shows in language, proverbs, names etc

Järnefelt 1893: Wage slaves

From: Wilkuna:Isien työ

From: Wilkuna:Isien työ

Picture:Olli Heikinheimo, 1912



Pictures: Finnish Forest Museum Lusto

How to maintain biodiversity with fire? The ways to burn forests Finland what and why”burning palette””

- Silvicultural burnings, with strong nature management targets, ”**biodiversity-orientated silvicultural burnings, modified silvicultural burnings**
- **Restoration burnings (in conservation areas)**
- **Burning retention tree groups**
- **Impowerishment burnings (esker slopes, sun-lit areas)**

Kuva: UPM/J-M Valonen

Kuva: SMK/Timo Vesanto

Kuva: Juha Metso

- 1. Modified silvicultural burnings – combining with nature management aims
  - Leaving and burning retention trees in clear cut areas
    - Quantity – threshold value of 10-20 has been presented (Toivanen & Kotiaho 2007)
    - Coarse (pine) trees
    - Fire should damage retention trees (phloem and xylem should be effected)
    - Currently a normal procedure: burnings could be called ***silvicultural-nature management burnings***

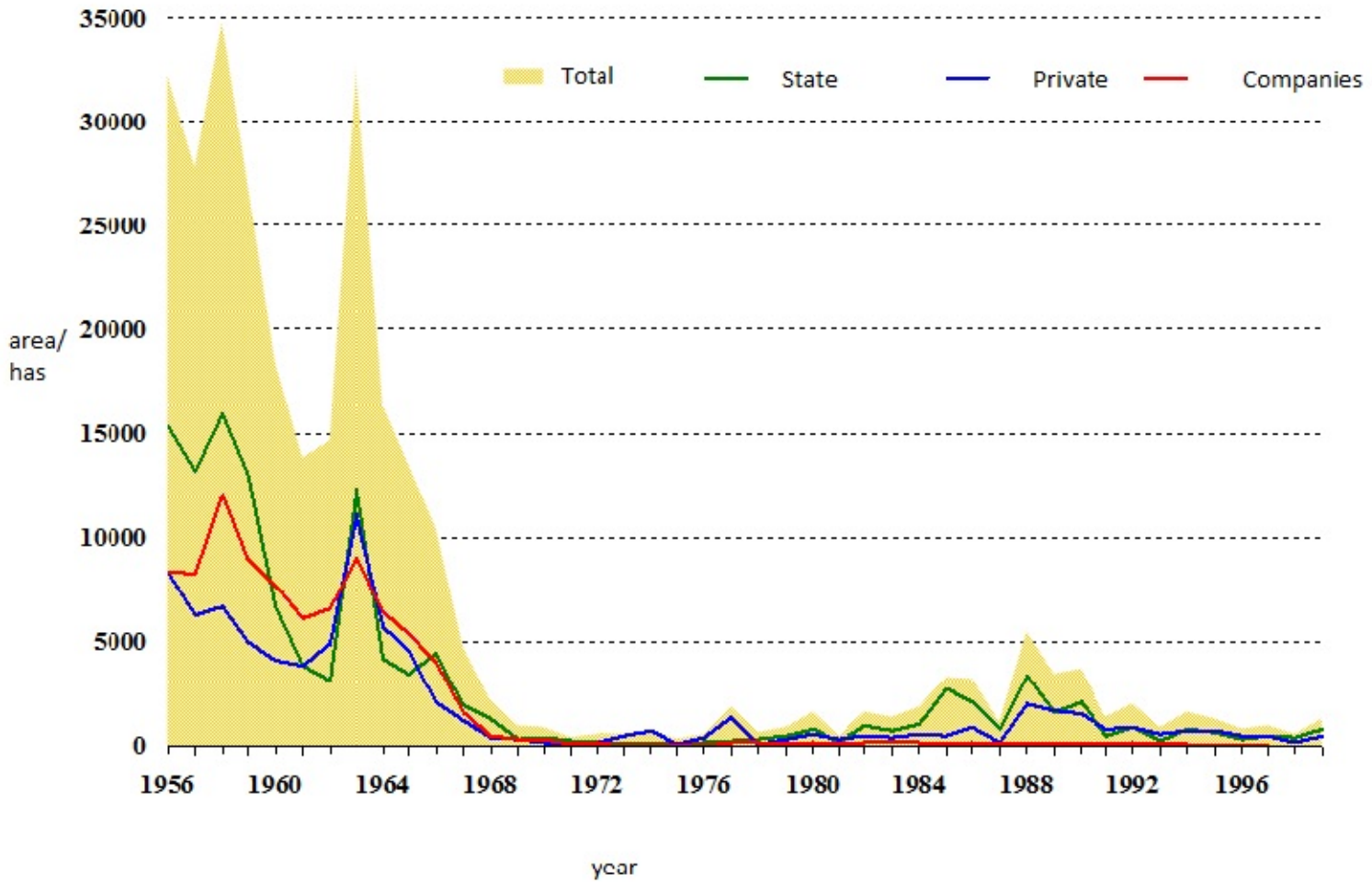
Paahde-LIFE
Light & Fire LIFE
Life
TAIGA
NATURA 2000

- Can we rely, should we support these kinds of burnings- pros and cons, is it cost-efficient? What is their role?
- Has been a tradition, e.g private landowners can be motivated
- State subsidized
- Decreasing during last years
- Concentrated to Northern Finland

- Prescribed burning was an important tool when old selective-cutting areas and natural forests were transformed into even-aged, often pine-dominated stands (”Golden era”- 1950`s and 60`s)
- Recipe: clear-cut, prescribed burning, sowing
- Prescribed burning still is an useful – but not necessary- silvicultural tool
- It has been replaced by mechanical scarification

Paahde-LIFE
Light & Fire LIFE
Life
TAIGA
NATURA 2000

Prescribed burnings on forest land 1956-2000 (in 50`s abt 10-20 % of regenarated area, now less than 1%)



Picture: Heikki Suvanto

Back to 50`s: no machine water, just hand tools, typical size of burning crew 3-8 men, typical size 5 -40 hectares , using skilfully fuel-control and burning out-method


15 hectares, 29.5,2013, +1 h


+ 2 h


+2,5 h


+3,5 h

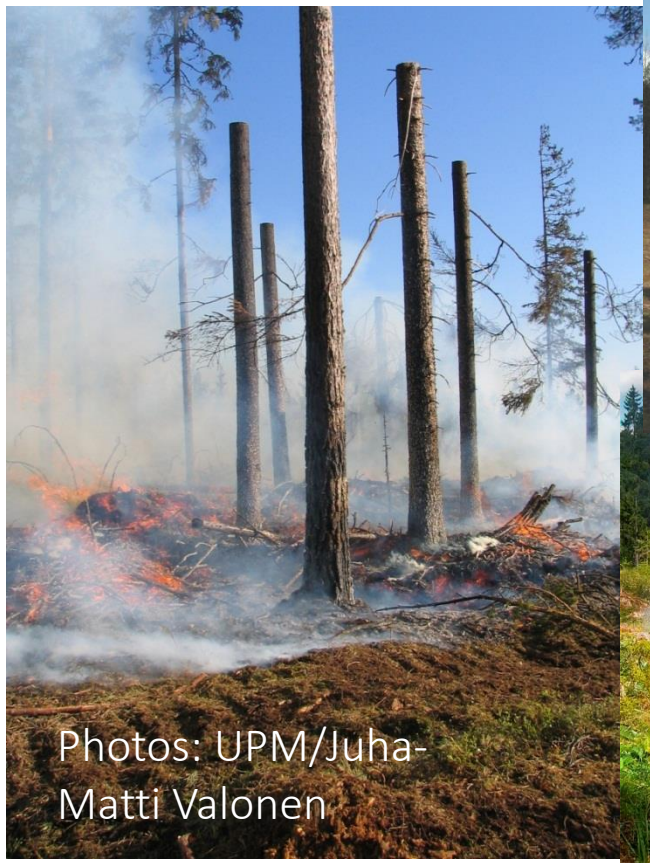

+4 h

2. Burning only retention trees – no silvicltural goals

- idea: fuel load is concentretad in retention tree group, smoke and heat signal is created for fire-dependant insects which find the area and can utilize it
- + easier, cheaper (even with persons,no special equipment needed), more careless
  - + not as weather sensitive (”like a bonfire”)

But…questions

- - Does it work? (no research)
- - method is designed for flying insects with good colonizing ability
- Produces only signal and fire-effected trees in small areas (0-1-0.3 ha) – what is the importance of fire habitat (the resource-habitat question)
- Produces small areas-similar to our current wildfires,
- Question of burning time
- Has been practised for abt 10 years
- Still in kind of experimental stage (maybe tens/a) but with high hopes
- Lots of Finnish forestry organisations are promoting this heavily- with the idea that in future burning retention tree groups will take care of fire habitats and certification requirements



Photos: UPM/Juha-Matti Valonen

Juho Rantala uudelleentwiittasi

Metsä palvelee @Metsapalvelee · 16 t

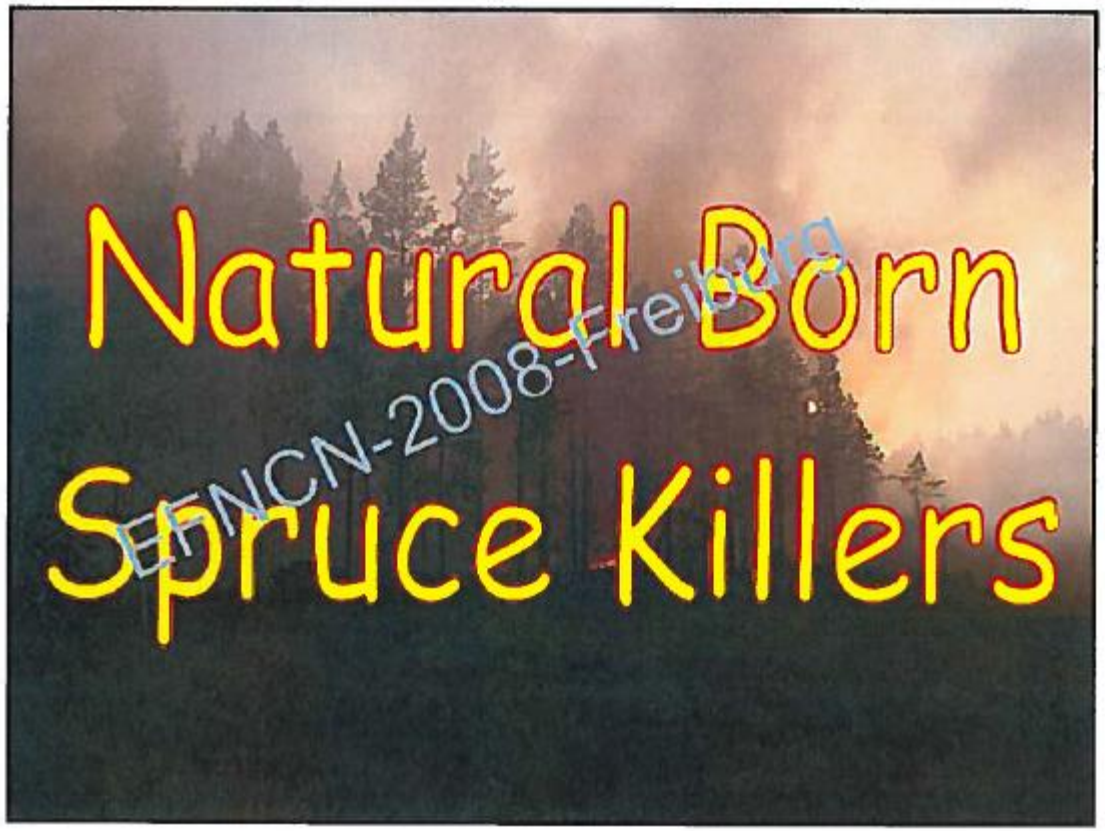
Kas, poltimmekin #pääsiäisvalkeat jo #malkamaanantai'na @MetsaGroup #vastuullisuus #säästöpuut #monimuotoisuus #lisäälahopuuta #hiiltynytpuu

6 8

3. Restoration burnings (mainly in conservation areas)

- Burning forests in conservation areas with following aims:
  - Start natural succession by fire, create young natural successional stages
  - create fire habitats, improve the possibilities of fire benefitting species
  - Delayed mortality – decaying wood in long span
  - In general improve the ecological quality of conservation areas (our conservation areas contain lot of old commercial forests (esp Southern-Finland)
  - First 1989 (first in Europe), normal practice during 1990`s, annual area 50-100 hectares
  - Recipe: young or middle-aged pine stands are thinned (reducing crown fire risk, increasing ground fuel load, hastening the drying process)
  - Heterogenic result is accepted, even wanted, no specific goals
  - Question: Should we burn old-growth/late successional stands in conservation areas? Passive or active mangement? Pros and cons? (e.g in Sweden the focus is more in transforming late successional forests with increasing spruce growth by fire to multi-cohort pine stands)

We may be not (as in Sweden)



Rydkvist 2008

The Finnish style

- But we have learned to be pine torturers

Where, when and how

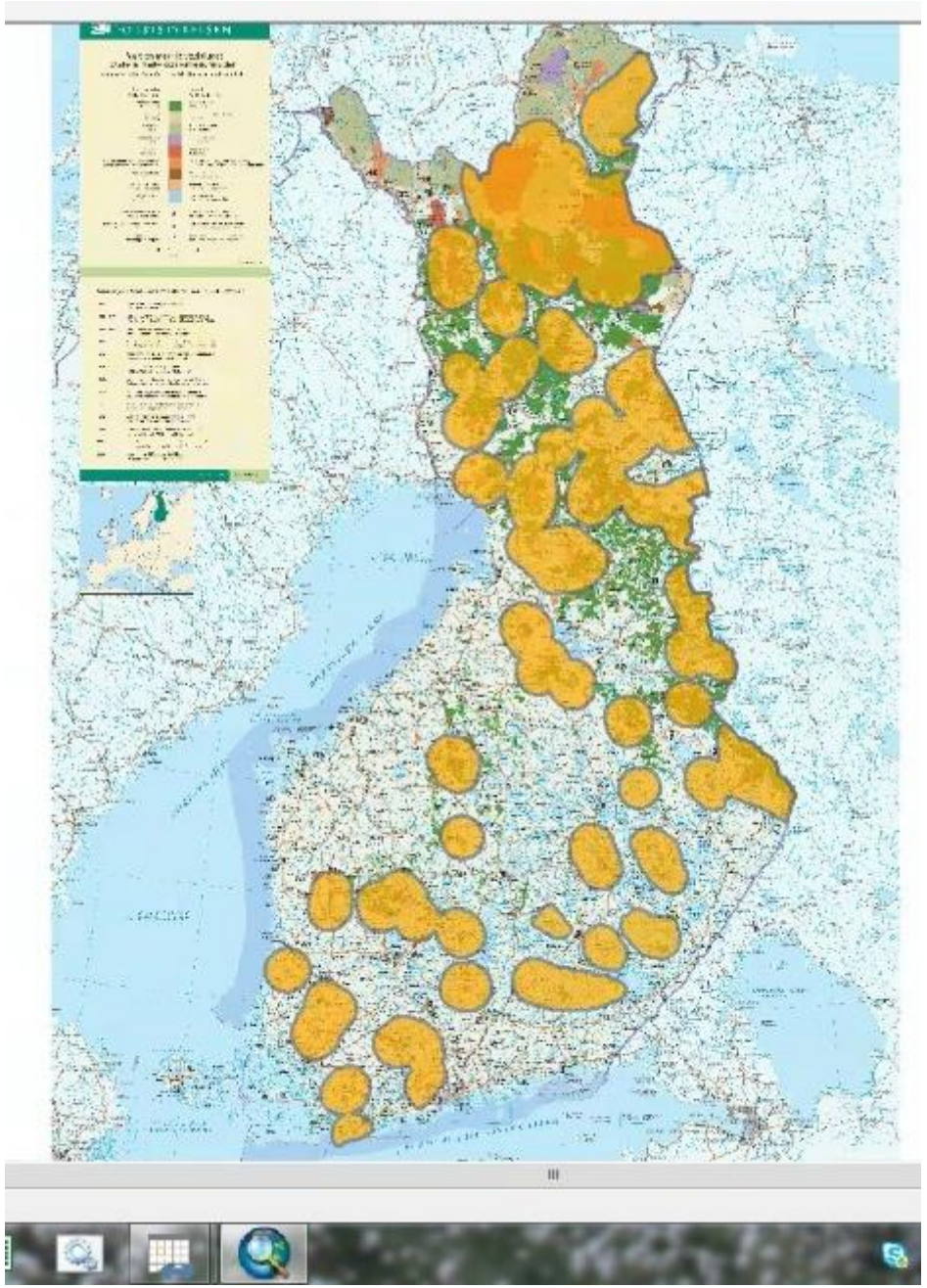
- In National Parks and Conservation areas, Finnish Forest Park Service/Parks and Wildlife responsible
- Finnish Forest and Park Service Planning Officer suggest certain areas (they can be in restoration/management plans, or can be added independently)
- The detailed burning plan is (should be done) by person who will be responsible for burning (often the Planning Officers will also burn but not always)

Where

- Reasonable shape (circular, elliptic)
- Topografy (if possible higher places in middle)
- Water source
- Rather larger than small (typically 3-15 has)
- Typically even-aged young-middle aged pine stands (70%, average diameter < 25 cm)
- Use existing natural or artificial borders (lakes, brooks, ditches, roads…)
- Concentrated in ”Fire continum areas”

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)

The role in conservation network

The preparatory work will include

- Cuttings (if needed) reducing fuel load
- Opening fire break), digging of fire line
- Burning plan
- Equipment plan
- Rescue plan
- Informing rescue department in advance (2 weeks)

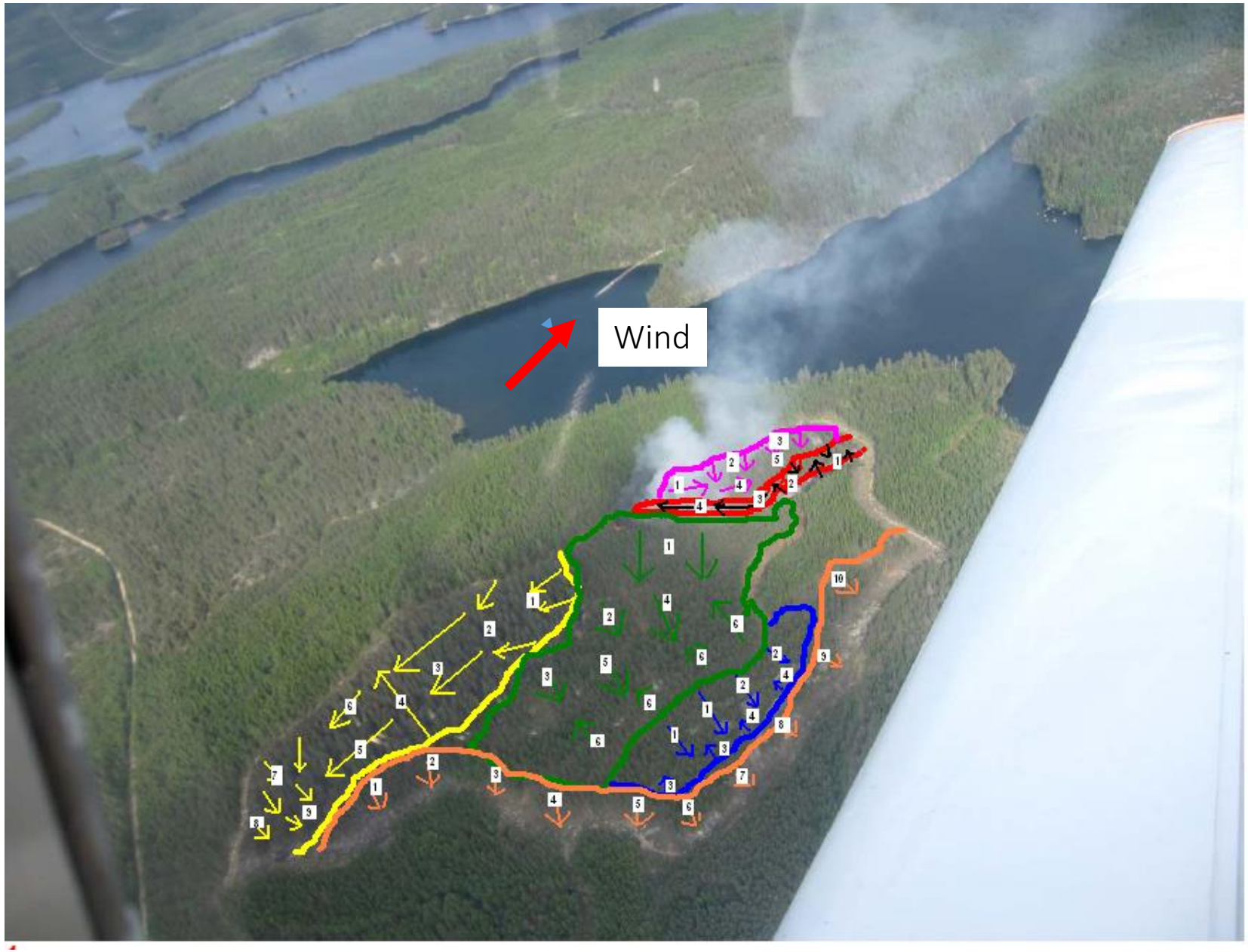
When

- Dry but not too dry
- Fuel Moisture Content 10-20 (25)
- Relative humidity 30-50%
- Low to moderate winds (< 4-5 m/s)
- Depends on burning object
- Maybe 10-20 days/a, big variation betwe

The burning

- Usually starts in afternoon, when conditions suitable dry enough but too drt, low-moderate wind, stable conditions
- Area surrounded by hoses
- Own equipment
- Min 6-8 persons (usually > 10)
- Adjacent forest is wettened in advance, before the area is lit
- Lighted from downwind
- In smaller areas the horseshoe-technique is used, bu mostly strip-technique is used (easier to control fire intensity)

- Usually a mixed crew (officers, forest workers entrepreneurs, but the leader is always from FFPS)
- Fire brigades are sometimes used (e.g if no natural water source, adds costs
- no full contracting (as in Sweden)
- Costs vary a lot! (size, circumstances, what is counted)
  - maybe an average of 1000-2000 €/ha
  - LIFE-funding has been used a lot in recent years



The burning process: the numbers refer to igniting (1=first) and the arrows the igniting direction

14 h, 12 ha has

1=yellow, 3 h
2=red, 2,5 h
3=violet, 1 h
4=green, 2 h
5=blue, 0,5 h
6=light brown, 5 h

-high intensity crown fire is usually **not** wanted (only in places, torching is OK)
-too risky – increases spot fire risk
- Result is usually a lot of quickly dying trees

Photos: Juha Metso

- Is over in evening/at night (in large areas can take several days)
- Mopping-up (extinguishing after fire) starts immediately
- After guarding continues until the risk is over (can take days, even weeks)

Result

- Heterogenic result is alouded
- Usually part of trees will die –OK
- Maybe not as specific burning goals as in Sweden
- ”if we can burn let`s burn” – because suitable days are anyhow limiting factor”

Paahde-LIFE
Light & Fire LIFE
Life
TAIGA
NATURA 2000

4. Impoverishment burnings (esker forests)

- Goal: reduce biomass, thin raw humus layer and reveal mineral soil by burning
- Problems
  - Weather sensitive: must be dry enough (otherwise has a fertilizing effect – totally opposite what wanted!)
  - For same reason slash should be removed, not burned
  - Lack of experience
  - (often) lack of natural water
  - Ground water risks (PAHs)
  - So far only experimental (10-20)

Esker forest

- Unique ecological characteristics differing from normal upland forest: open, sunny, warm, thin or missing moss and duff layer, revealed mineral soil
- Exposition(south/west)+soil type (sand)+ disturbance (fire)= sunlit habitat
- Specialized species: key plant species with rich companion species pool, with complicated symbiontic and parasitic relations
- Decreased: fire suppression, forestry (full stocked stands), nitrogen deposit
- Increasing shade, organic layer(raw humus) developing to ”normal” upland forests

Picture/Anne Raunio

Key+target species
Wild thyme
Thymys serpyllum
(Picture: Terhi Ryttäri

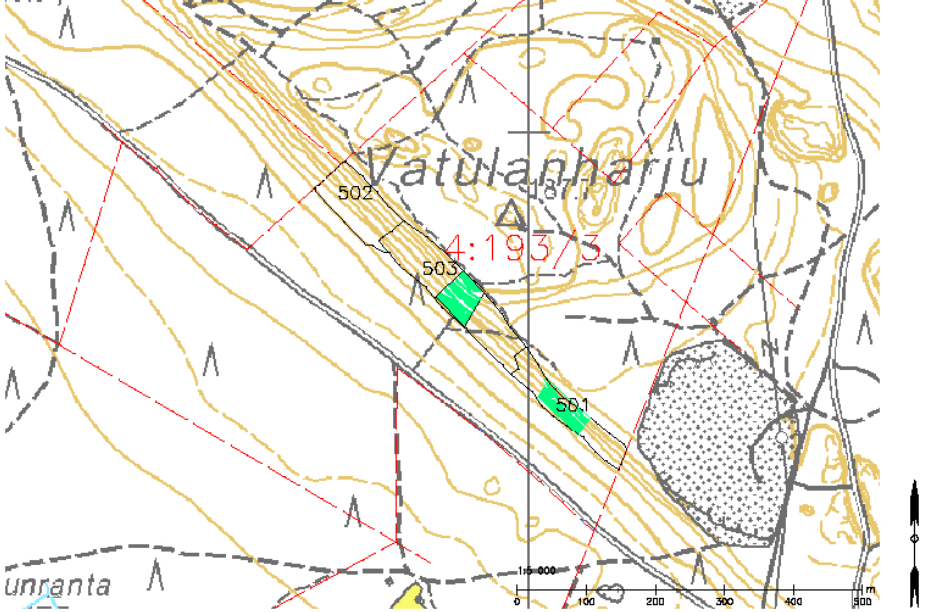
Picture/Sanna Kittamaa


Photo/Harri Tukia


Photo/Harri Tukia


Photo/Harri Tukia


Photo/Seppo Repo


Vatulanharju
502
503
501
4:193/3
unranta


Mittakaavataso 1 : 4 000 000
Pohjanlahti
Bottniska viken
Suomenlahti
Finska viken
ITÄMERI
ÖSTERSJÖN
VAASA
VASA
SEINÄJOKI
KUOPIO
JYVÄSKYLÄ
TAMPERE
PORI
TURKU
ÅBO
MARIEHAMN
ÅRIANHAMINA
HELSINKI
HELSINGFORS
LAHTI
KOUVOLA
LAPPEENRANTA
HÄMEENLINNA
MIKKELI
KAJAANI
Åland
Ahvenanmaa


Photo/Keijo Mattila


Picture/Timo Vesanto


Wild thyme
Seppo Repo


Photo/Timo Vesanto


Me
Sari, girl
Photo/Timo Vesanto


Photos: Timo Vesanto

5. Prescribed burning on cultural biotopes

Paahde-LIFE
Light & Fire LIFE

- Cultural history, tradition, nature management -

Maintaining traditional use

- 1. Slash and burn areas (currently 3-5 areas in Eastern Finland)
- 2. Burning moor-like open sandy heathlands (especially in archipelago, commonly practised before WW II, maybe still in 50`s and 60´s), renewing heather and grasses, preventing juniper to overtake (quite similar to *Muirburn*-practice!), the sprouting heather i s less lignified and more palatable to e,g sheep
  - Two different targets:
  - burning mostly shrubs, in spring (or in autumn), like it was done
  - Or trying to burn also the raw humus/litter – dry ime, in summer
- 3. Removing reed from coastal medows

Also nowadays

- 4. Restoring meadows etc with, pause in traditional use (e.g mowing, grazing), removing biomass, ”cleaning” before other use, keeping area open
  - Usually in spring ”cool burning”, when roots and sprouts are uneffected
  - Also possibility of ”heat burning” later

- Not used systematically
- ”now and then here and there”
- Maybe couple areas/a


Photos/Arto Pummila

Slash and burn currently maintained in couple places annually (Conservation areas in Eastern Finland), with areas of few hectares (usually less than one), (Photos/Metsähallitus)

Photo/Metsähallitus

Photo/WWF

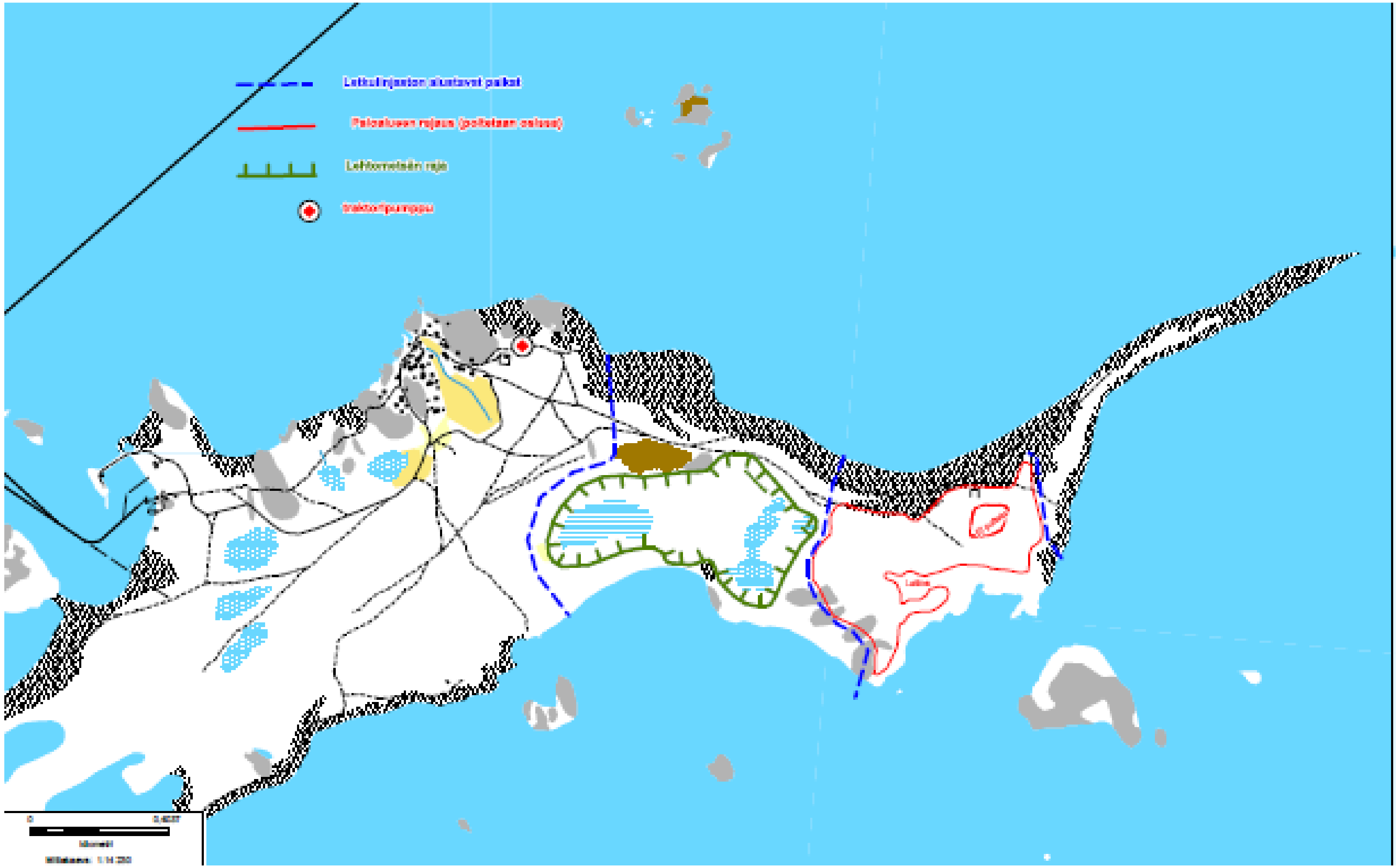
Case:Island of Jurmo, burning of heather-heatland, Archipelago National Park

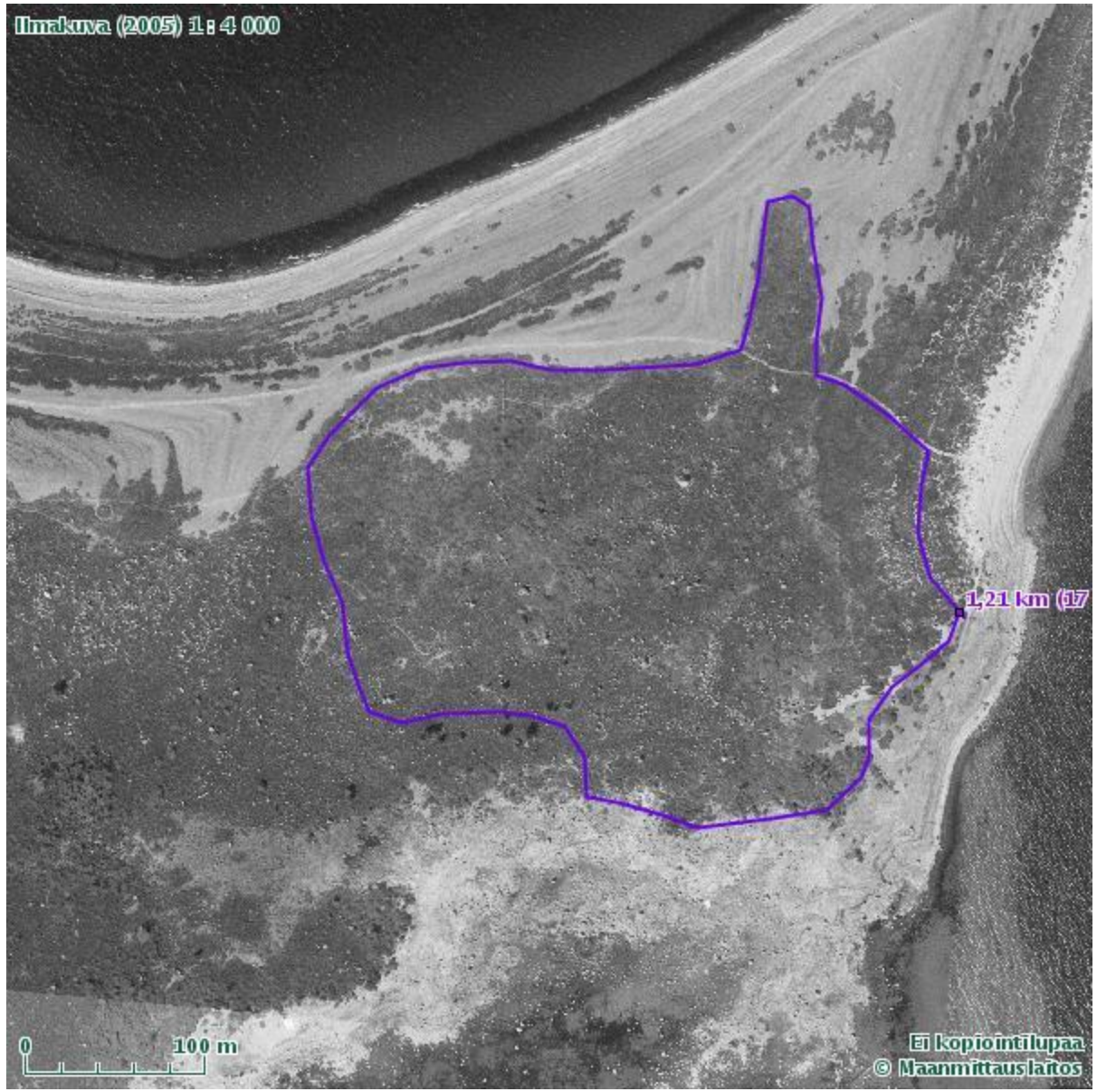
- Abt 4 hectares, first experimental burning
- Need and plan to do in > 100 has
- (some) locals opposing strongly

Paahde-LIFE
Light & Fire LIFE

August 2014

Photos and material: Helena Lunden, THANKS!


Letkulinjaston alustavat paikat
Paloalueen rajaus (poltetaan osissa)
Lehtometsän raja
traktoripumppu


Ilmakuva (2005) 1 : 4 000
1,21 km (17
0
100 m
Ei kopiointilupaa
© Maanmittauslaitos


Photos:Helena Lunden


Helena, the boss

Photo:Jaakko Ruola

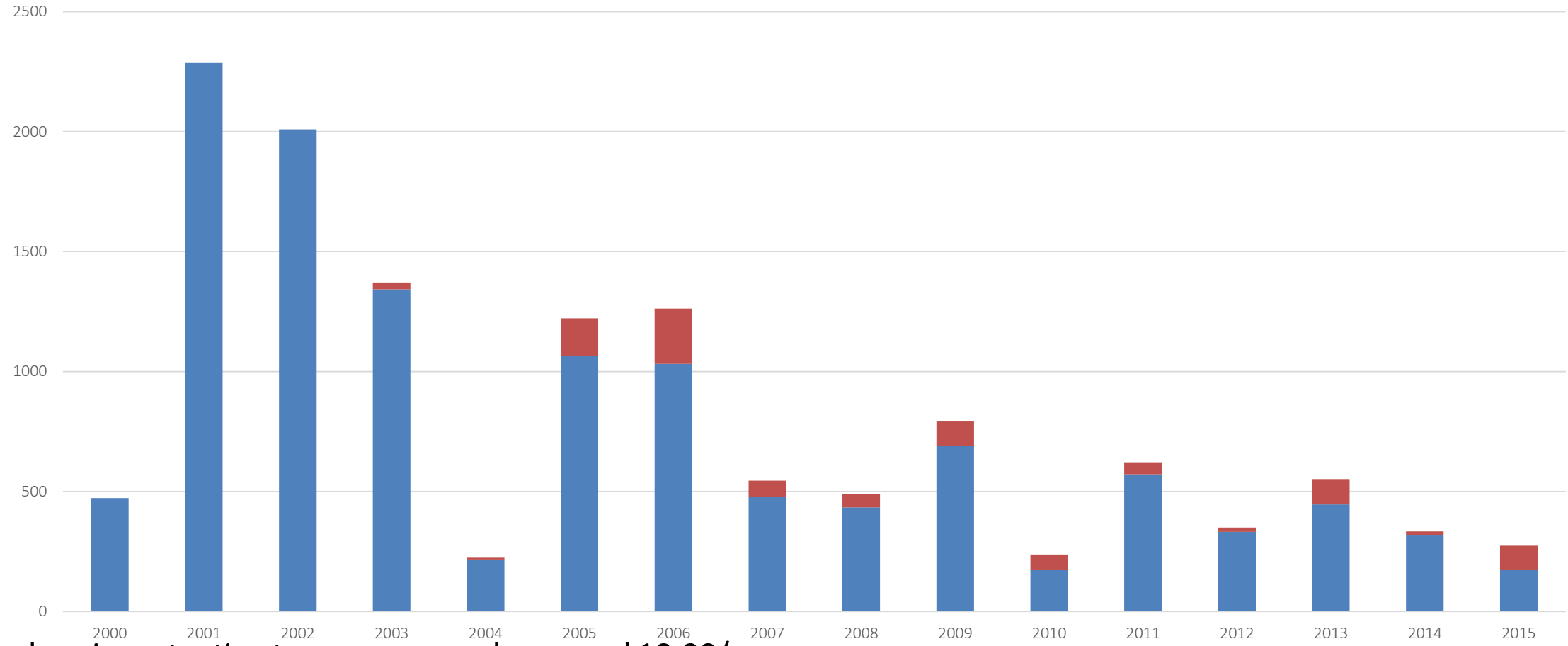
Photo:Jaakko Ruola


Photo:Jaakko Ruola


Photo:Jaakko Ruola

Modern sheep? Alien species?

What happened



Also burning retention tree groups maybe around 10-20/a, with area of couple hectares + esker bunings altogether maybe 10-20/a

Fatal year 2016

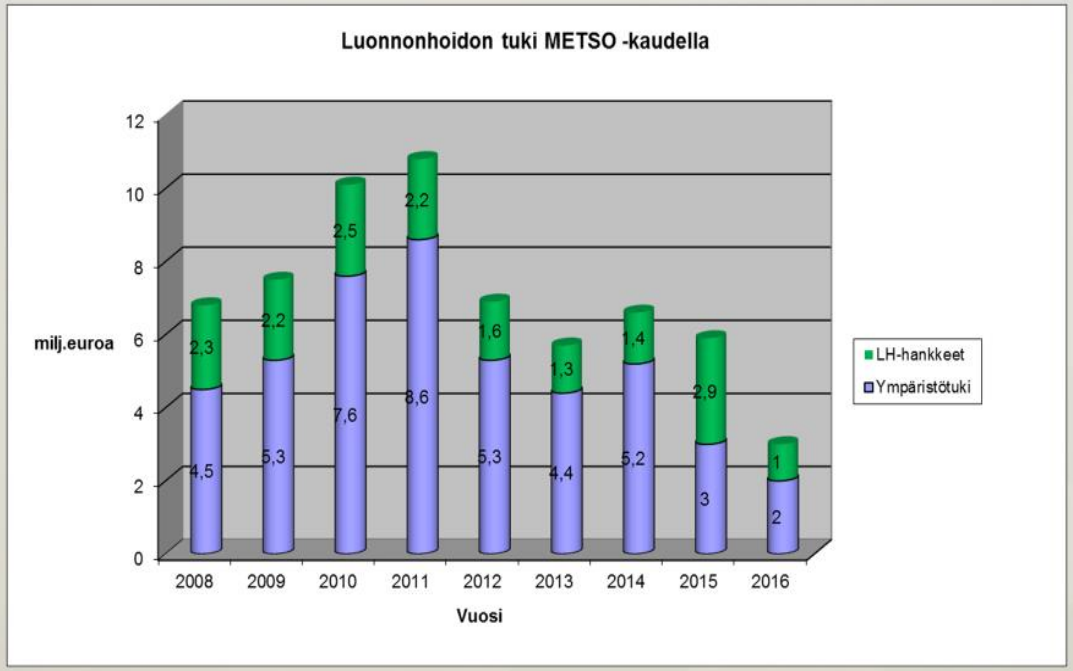
- New criteria of PEFC sertification, with practically no obligation
- Cuttings on state economic support, burnings are not priorized
- The decision of Finnish Forest and Park Servive to categorically terminate silvicultural burnings
- Despite the goals there has not a been increase in restoration burnings in conservation areas

PEFC-criteria, 85% of forests

Title	**Criterion 13: Biodiversity of forest species dependent of forest fires shall be promoted with prescribed burning**
Criterion	The habitats of species dependent on forest fires and fire induced wood damaged shall be maintained and increased through prescribed burnings. This criterion shall not be applied in the Åland Province or if the area of the certified forest holding is less than 200 000 ha.
Indicators	The annual number[38)] of prescribed rehabilitation burnings in the area is at least 1 burning/year/200 000 hectares[39)]. In case the weather conditions for prescribed rehabilitation burning have been unexceptionally unfavorable, this will be taken into consideration when estimating the conformity to the required level of prescribed rehabilitation burnings.
Definitions	38) Prescribed rehabilitation burning of sunny eskers, regeneration and retention tree groups as well as slash and burn, forest fires of over five hectares and rehabilitation burnings on protected areas are included in the area managed with prescribed rehabilitation burning. 39) The amount of hectares is determined according to the area of the certified forest holding.

FSC-standard, about 1,3 million has, forest companies

- *Verifiers: Work instructions, official guidelines, field inspections.*
- **6.2.8** The forest owner (> 10,000 ha) shall use prescribed burning to maintain habitats of species dependent on forest fires. The minimum total area of prescribed burnings performed annually shall be 3% of the regeneration felling area of suitable sites (MT and poorer sites) during a 5-year period. The purpose is to produce a minimum average of 20 fire-damaged stems (DBH > 20 cm in Southern Finland, DBH > 10 cm in Northern Finland) per hectare in the burnt area.
- **Note:** The burnt area includes prescribed burnings of regeneration areas, groups of retention trees and sun-exposed slopes located in the certified area.
- **Note:** If stands (> 0.2 ha) with all their trees are burnt, their area can be calculated in the area target five-fold, with the exception of sites listed in Indicator 6.4.1. This also applies to naturally burnt, well-stocked areas, if trees are not harvested.
- *Verifiers: Management plan, work plan, documentation of prescribed burnings done, field inspection.*



Hanketyypit, priorisointia

3)metsien monimuotoisuutta edistävään kulotukseen;
- **priorisoidaan 2. sijalle**
- vain luonnonhoidollinen kulotus

4)metsäluonnolle haitallisten vieraskasvilajien hävittämiseen ja niiden leviämisen estämiseen metsätalousmaalla;
- **priorisoidaan 2. sijalle**
- kohteille erityiset valintaperusteet, esim. liittyy suojelualueeseen

5)muihin 1—4 kohdassa tarkoitettuja hankkeita vastaaviin metsäluonnon hoitoa ja metsien monikäyttöä sekä maisema-, kulttuuri- ja virkistysarvoja korostaviin, alueellisesti merkittäviin hankkeisiin.
- **priorisoidaan 2. sijalle**
- metsien monikäytön edistäminen => liittymä EU -hankkeisiin

metsäkeskus

METSO Metsien monimuotoisuus

metsäkeskus

8.12.2015

1

Practically it means that silvicultural burnings are not subsidized (maybe some burnings of retention tree groups)

.

”Metsähallitus Forestry Ltd (part of State Forest Concern) will stop silvicultural burnings and will fulfill PEFC certification criteria with retention tree burnings. We have decided to end silvicultural burnings mainly due high expenses”

(Maaseudun tulevaisuus, 02.06.2016)

A burning year in near future

- Restoration burnings in conservation areas,50-100 ha
- Silvicultural burnings 50-150 ha
- Retention tree group burnings (with various implementations) 10-30
- + some sun-lit habitat burnings

- We are in as big a change in fire regime as in 60`s, from tens of thousands of hectares to thousands and now to hundreds

FAQ:s + points

- **Safety** – Are burnings dangerous? – yes and no: there are some escapes from prescribed burnings, yet not even every year, but compared to other human ignition sources they are minor. It also has to be remembered that in every year you can read in newspapers how ”*prescribed burning caused a wildfire*”. Yet these are mostly private, ”wild” burnings e.g farmers burning straws etc. From professional silvicultural and restoration burnings escapes are rare, but they happen. E,g from about 100 restoration burnings (abt 1000 has, there has been one true escape with 6 has)

Costs

- How expensive are burnings?
  - Variation is huge (site, stand, size, weather conditions, fuel load… and what are counted to expenses). But maybe 1000-2 000 €/ha in average, larger areas are cheaper. An average restoration burning of a size 5 hectares could cost something like 2 000-7 000€:s. The burning costs can be compensated by incomes from pre-thinnings of burned stands.

Who pays?

- private silvicultural burnings have been so far been subsidized by state and part has been payed by landowner

- restoration burnings are part of management of conservation areas and they are funded from Parks and Wildlife:s national budget (Ministry of Environment)

EU-funding has grown increasingly important

Climate change

Like wildfires prescribed burnings cause CO2 emissions which accelerates climate change?

in theory yes, but looking at amount and scale it is hair-splitting

Environmental effects: ??,

Society effects: smoke etc

How much and how big areas?

- No direct answers – in general more and bigger is better
- For pyrophilous insects: maybe a burning every-second/every third year in an area of e.g couple hundred thousand hectares could be enough
- In dry biotopes a burning cycle of maybe 20-50 year could be the target

Questions, thinking, observations, summary – the message

- Research and expert knowledge strongly recommends burnings in nature management
- Even unavoidable method in species and habitat management
- Not just ”restoration”but also ”nature/habitat management”
- Yet we are going to other direction

… but burning

- is expensive, laborous and weather-sensitive
- It cannot be automatised
- It is hard to outsource
- Carries safety hazards, especially if 0-tolerance is expected
- Can be strongly opposed (e.g citizens, rescue organisations, politicians – even legislation)
- ”playing with fire”
- Its acceptability decreases all time when we are alienating from the role and use of fire
- It just does not fit wery well into modern society
- …but it can not be replaced

What kind of ”biodiversity doctrine” we want to apply, what we are committed to?

- If we are committed to **Habitats directive** and *”favourable conservation status”* of species and nature types
- … then we have to burn

Only hard alternatives

- Give up, just ignore (we cannot do it)
- Pretend that we do something (reports, programs etc, but no true commitment or progress, the Finnish style)
- Try to do something

- But, according to our experience, most (boreal) EU-countries have to deal with this issue and face it, the role of fire in nature management is lifted up
- Political, practical and economical problem – That is why these kind of meetings and co-operation are important
- Countries probably have to develop their own fire strategy or guidelines
- Who pays?
- The role of EU, ”boreal fire network?”, training courses


Thank you!
Around every 3-6 weeks, I find myself deeply convinced that there is absolutely no sense to promote prescribe burnings, but unfortunately the sanity attacks go over, so you have to keep on trying.
Merci!
Kiitos!!
Tack!
Dziekuje!
Aitäh!
Hvala!
Takk!
Paldies!