

Economical effects of National Park to local society and ecological effects of society to National park – Loving them to death – old slogan new perspective; Experiences from Finnish Lapland

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Do you know? I
may have got a

Humanflu



Study partners

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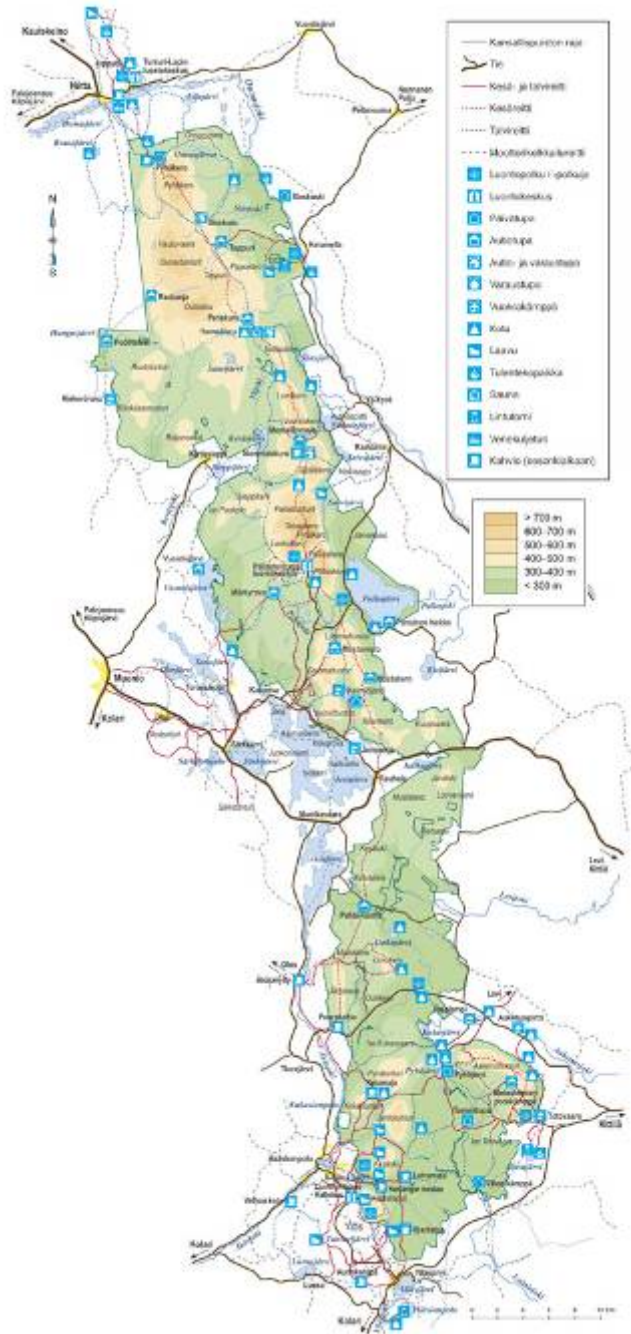




Study area

- Pallas-Yllästunturi National Park
- Area: 1020 sq. km
- $68^{\circ}05' \text{ N}$, $24^{\circ}04' \text{ W}$
- Annual mean temp. $-0,4^{\circ}\text{C}$ (2004)
- Pallas-Ounastunturi NP was one of the Finland's first National Parks established in 1938
- At the beginning of 2005 Ylläs-Aakenus Nature Reserve was joined to the old National Park and a new one called Pallas-Yllästunturi National Park was established
- Managed by Metsähallitus





Pallas-Yllästunturi NP

- The Pallas-Ounastunturi region had already developed into a popular tourist resort in the 1930's
- Finland's first marked hiking route from Pallas to Hetta was marked in 1934
- Most popular NP in Finland: 350 000 visit each year - growing
- There are approximately 350 km of marked summer-time trails and 500 km of cross-country skiing trails
- Over 40 huts and campfire sites
- 1 skiing resort with hotel inside the park (4 near the park)

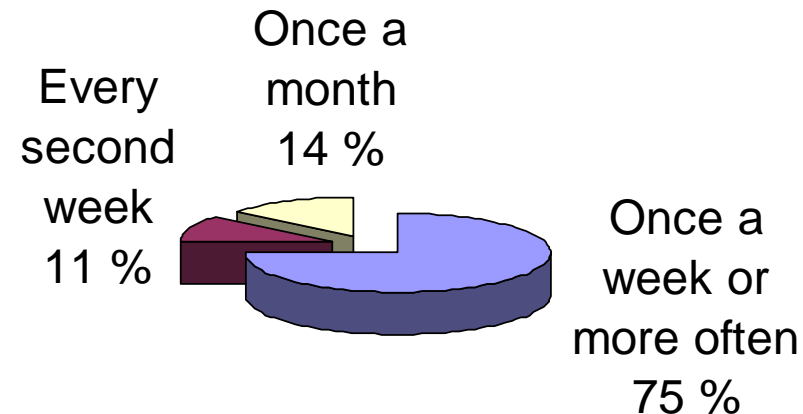


Entrepreneurs around the park

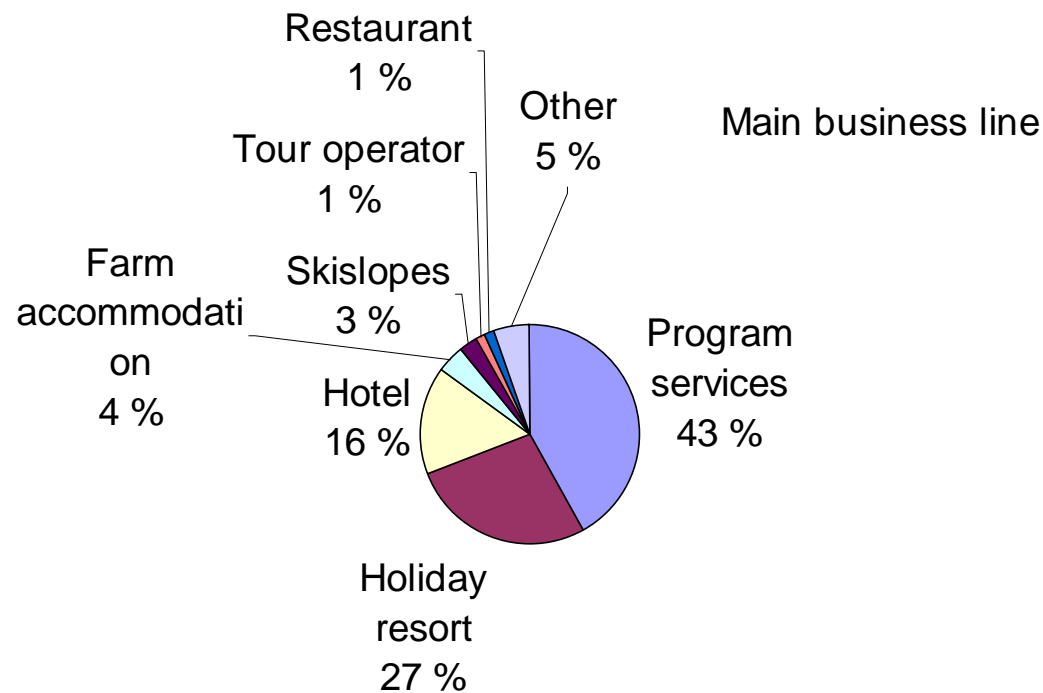
- Questionnaire / Interview study 2004 (n=74) to entrepreneurs who used NP area or draw customers from visitors
- Around the whole Pallas-Yllästunturi NP area there are more than 100 who feel NP important for their business
- 4 municipalities (total app. 15000 inh.)
- Management planning 2003-2006
 - 45 cooperation meeting
 - Visitor/Company surveys 5 kpl



67% used NP



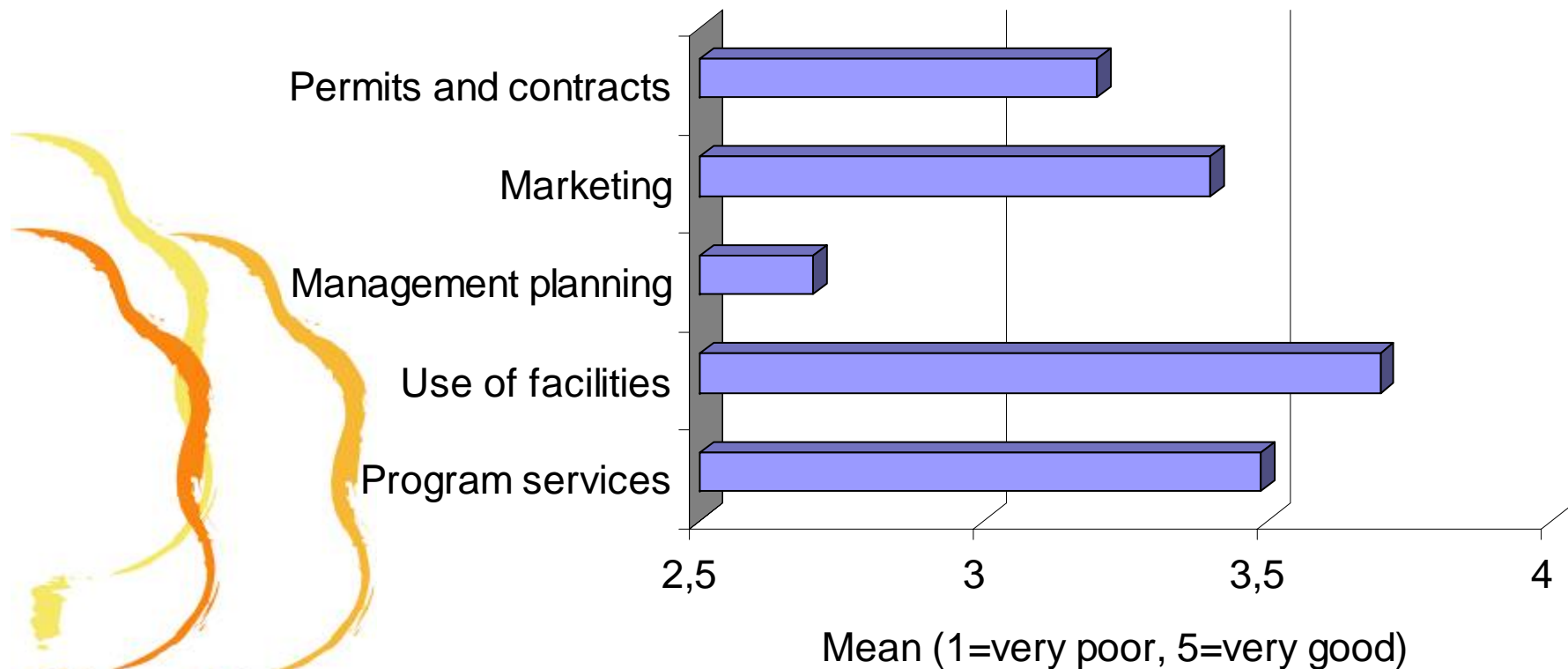
Services



- Program services (52)
- Accommodation (40)
- Food (30)
- Snow scooters (15)
- Reindeer safaris etc. (11)
- Cross-country skiing (9)
- Paddle a canoe (9)
- Guiding (8)
- Sledge-dogs (7)
- Fishing (6)
- Skiing (3)
- Handicrafts (3)
- Camp schools (3)
- Picking berries (3)
- Horses (2)



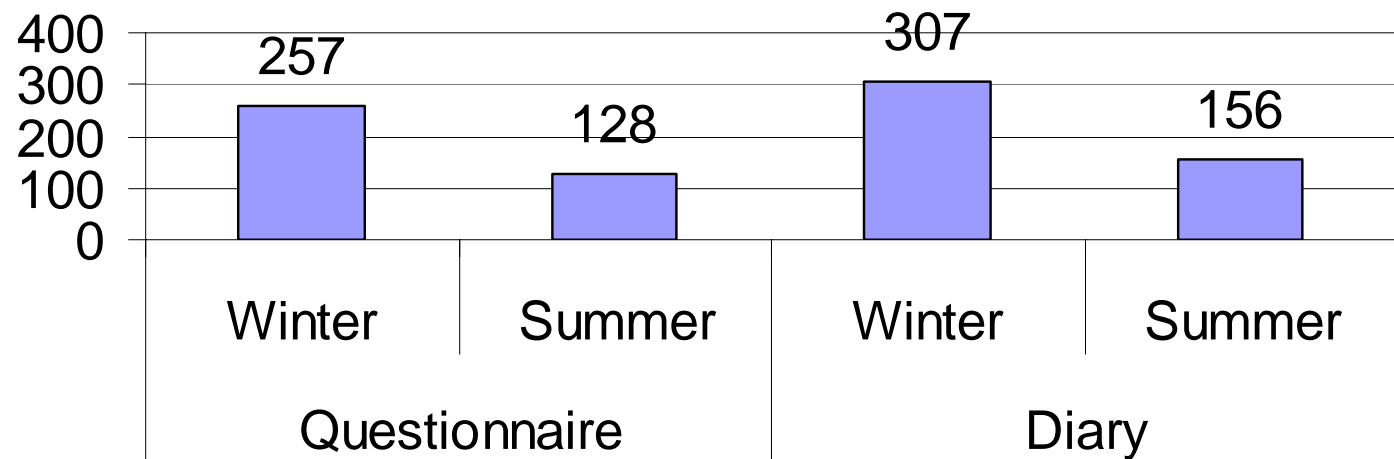
Quality of cooperation between Metsähallitus and entrepreneurs

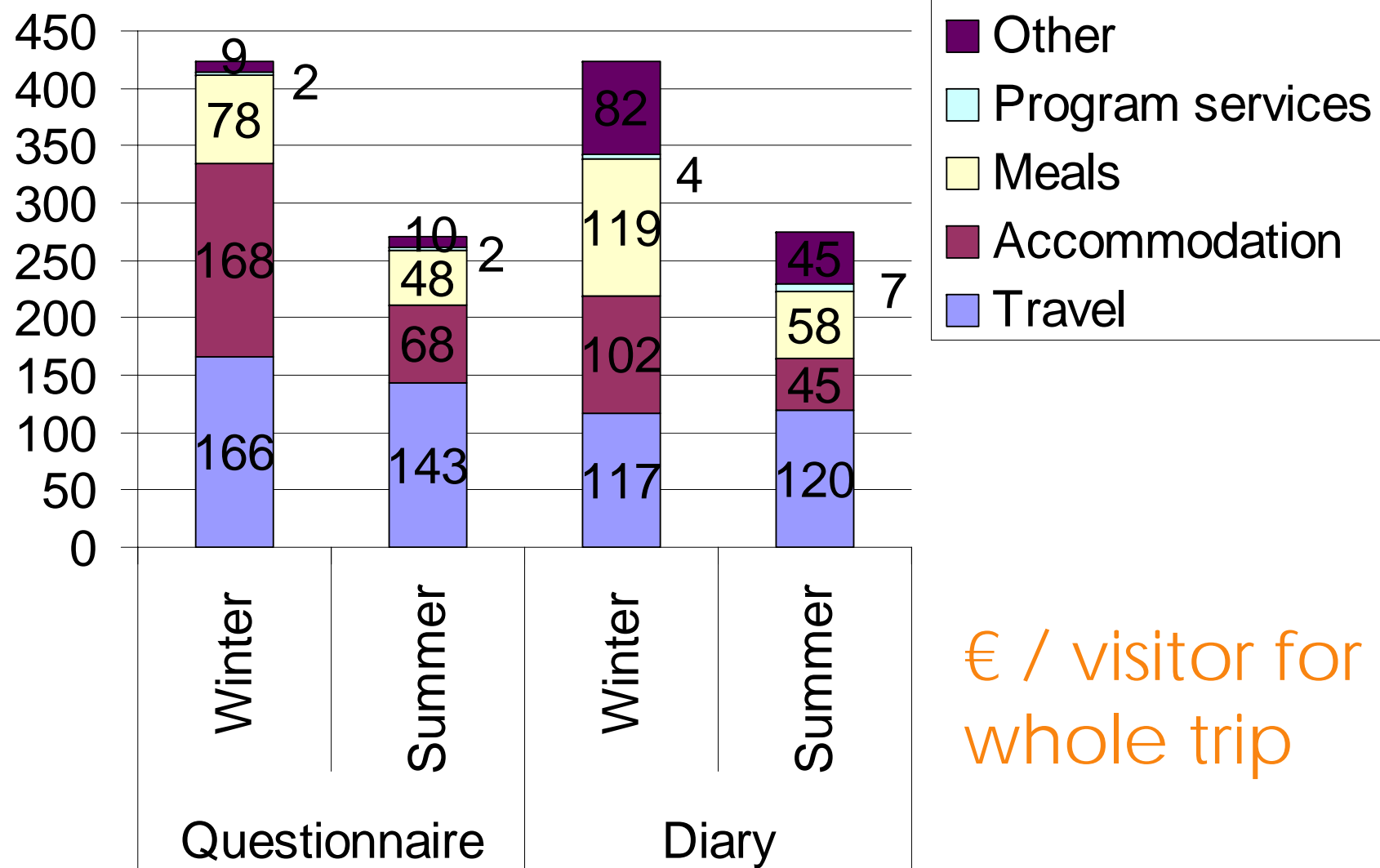


Economical effects to the local society

- Questionnaire 2003 (N=1038) and Diary study 2004 (N=728) in part of Pallas-Ounastunturi
- Total 24,2 M€ each year to the local economy in Pallas-Ounastunturi area (125000 visit = 36% of visitors)
- Whole Pallas – Yllästunturi NP visitors left at least 50 M€ each year

Expences of visitors around the Park
(€/visitor)





€ / visitor for whole trip



Park Management and Research

- 21 permanent staff and about 30 working years
- Other costs of basic maintenance for 3 Visitor Centers, Working areas and facilities for visitors
- Research is doing by specialised research institutes
 - Several long term studies and facilities like GAW station





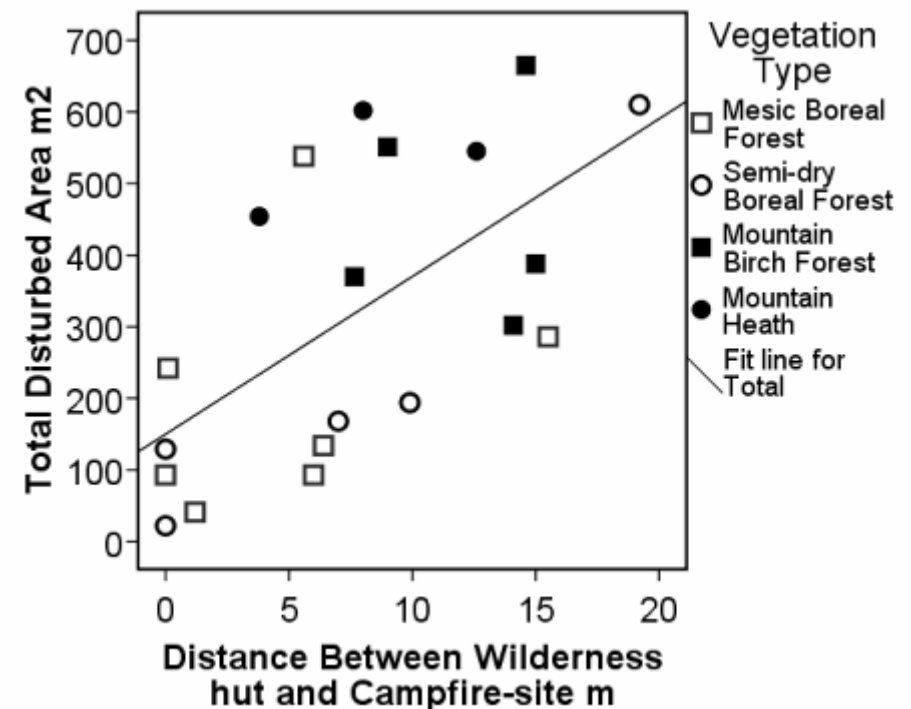
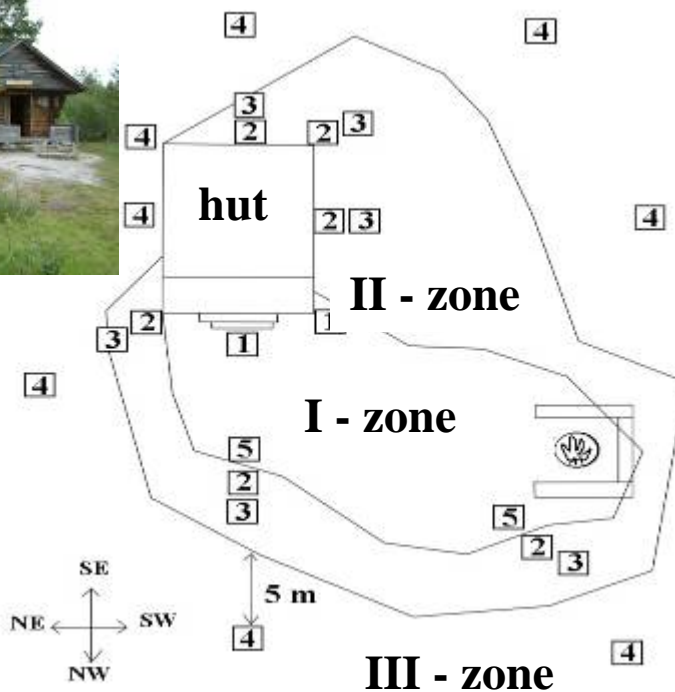
Ecological effects of society to National park

- Impacts of recreational use on
 - vegetation changes and erosion
 - Changes in animal community



Campfire sites and huts

- The range of destroyed and changed vegetation in the camping sites (n=20) was dependent on the distance between wilderness hut and campfire-site, vegetation type and number of visits
- Mountain biotopes were more affected than forest biotopes
- At all campsites there were secondary species, e.g. *Poa annua*, *Poa pratensis*, *Festuca ovina*, *Rumex acetosella* and *Plantago major*, which are alien to the original biotope



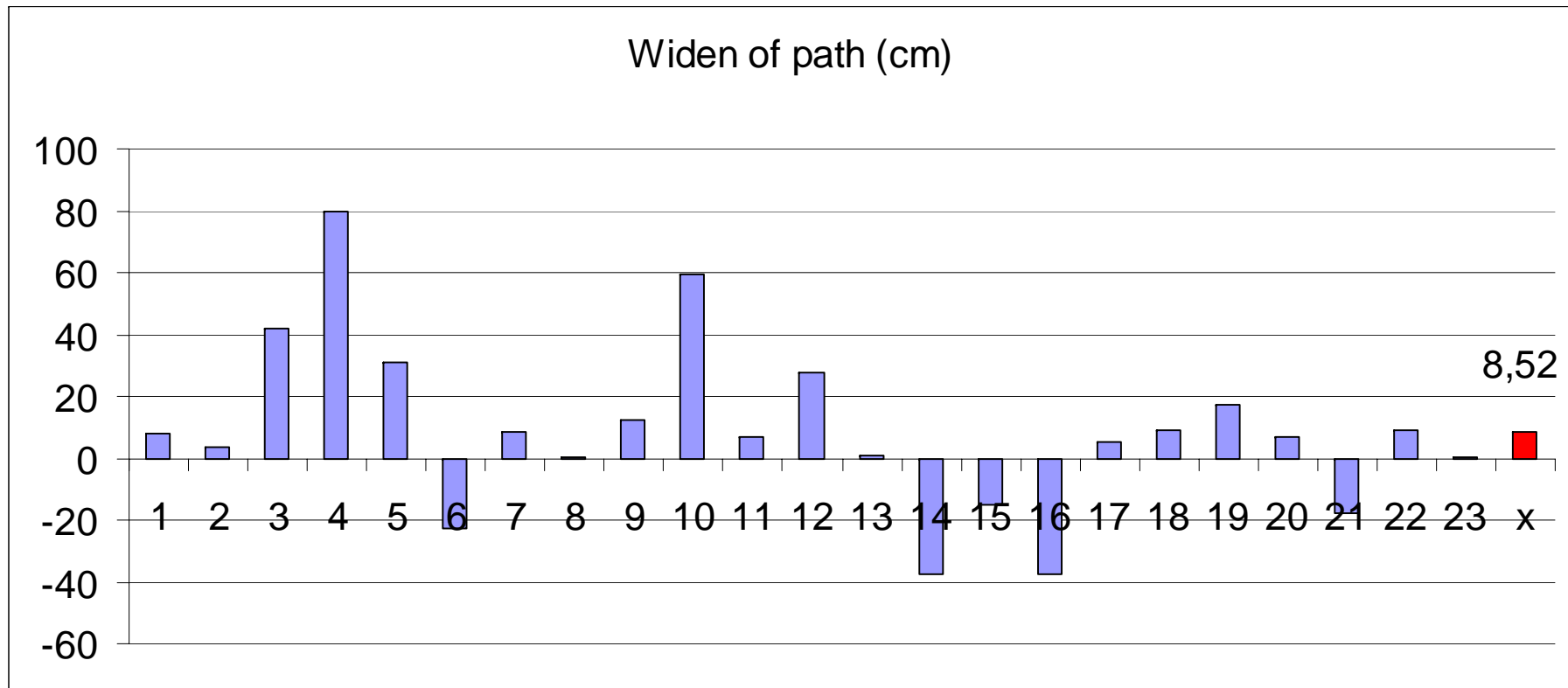
Walking trails

- The increased number of visitors increased trail deterioration class and measured width
- Deterioration was classified with a 3 (erosion, tree and root damages) and 5 (vegetation changes) class degree in all biotopes of trails and tracks (1100 section and 16 (x15) measuring plot)
- Measuring width and depth: the most deteriorated biotopes were
 - Open Alpine and Boreal h
 - Nordic subalpine forests with *Betula pubescens ssp Czerepanovii*
- Width of all trails increased app. 40% between years 199 and 2002



Walking paths

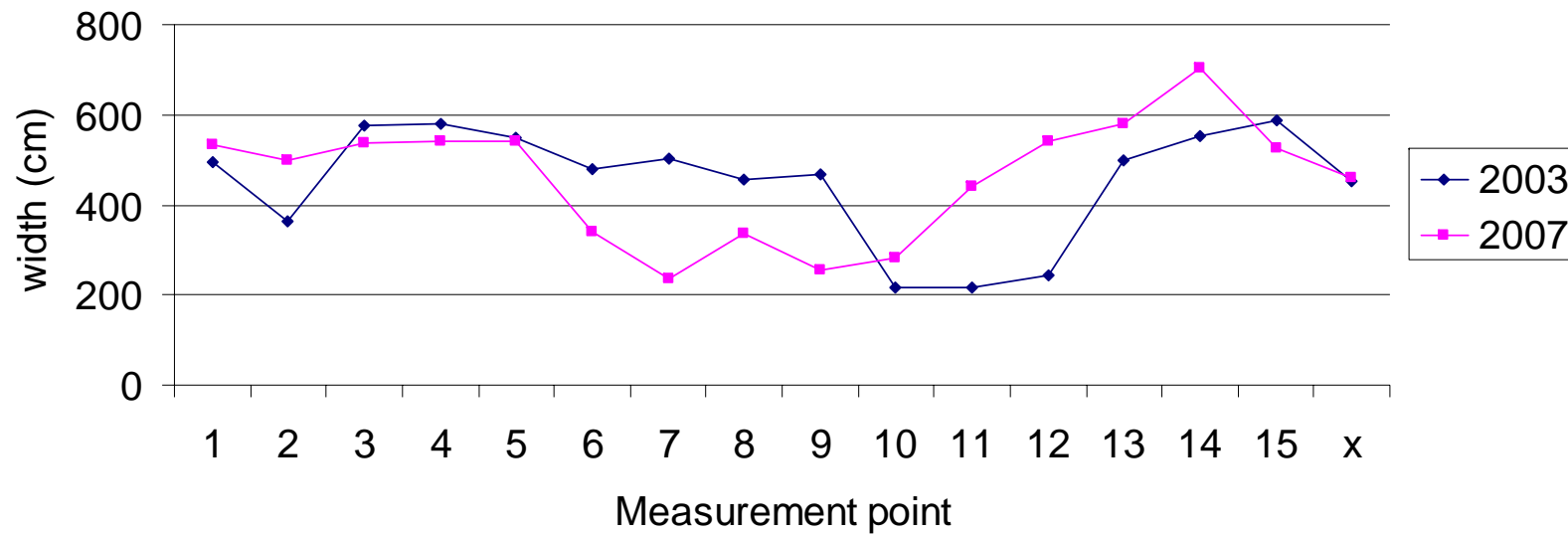
- 2003 and 2004 establishment of standard measurement points
- Widening of paths between 2004 and 2007 was approximately 8,5 cm



Walking trails



Path width of Vuontiskero



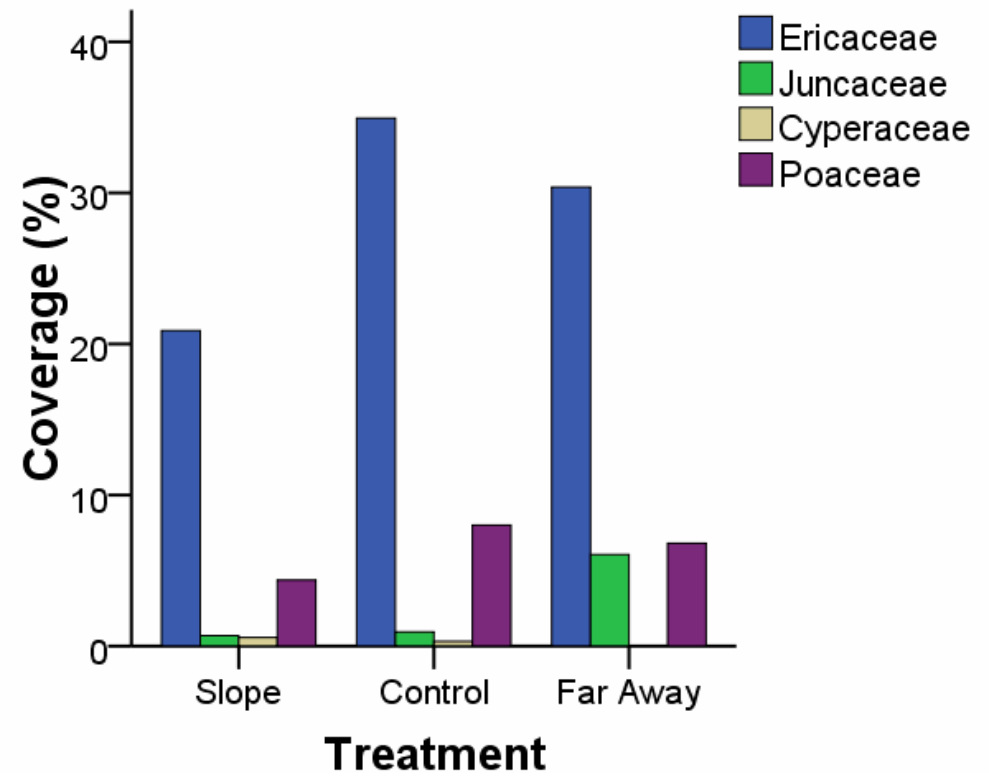
Cross-country ski trails

- Deterioration of the vegetation (n=159) 2001 and 2005
- No erosion and decrease in species frequency on the ski trails
- Coverage of mosses was greater on trails than on control plots
- Thick snow cover protected vegetation from snow compressing



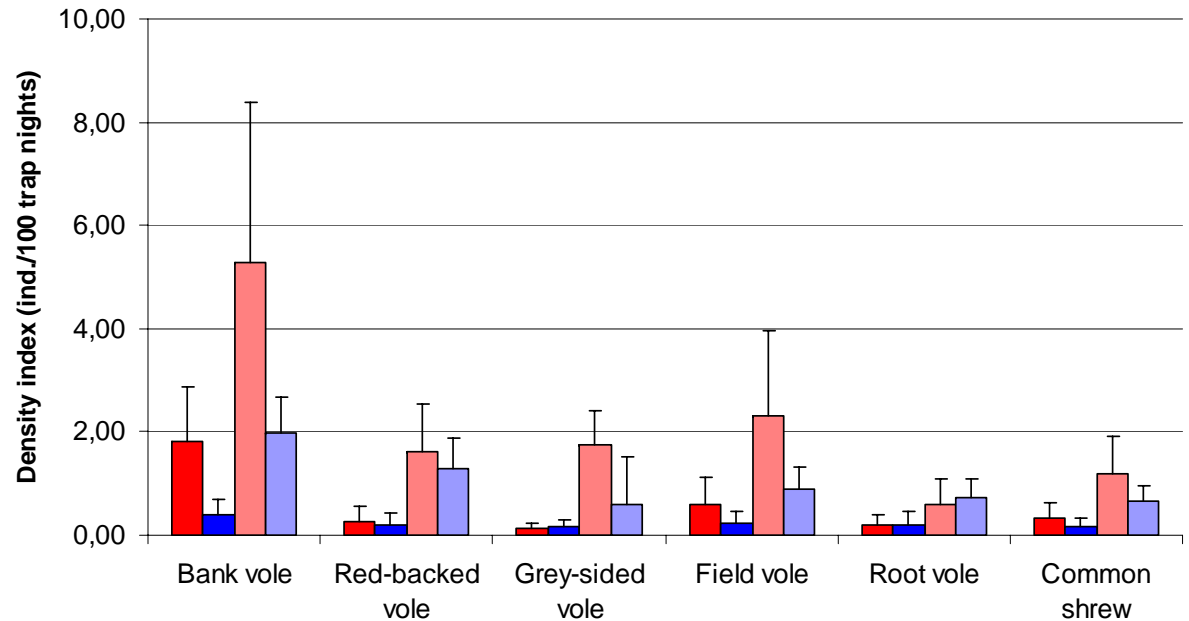
Ski slopes

- Slopes enhanced exposed mineral ground and exposed rock and litter (9 x 3 cluster with n=16)
- Herbs were most affected: slopes increased the frequency of *Gramen* spp. on nutrient rich sites and *Carex* spp. on Ekg sites and decreased evergreen shrubs (*Empetrum*)
- Thickness of snow cover was more important than vegetation type, altitude, or age of slope

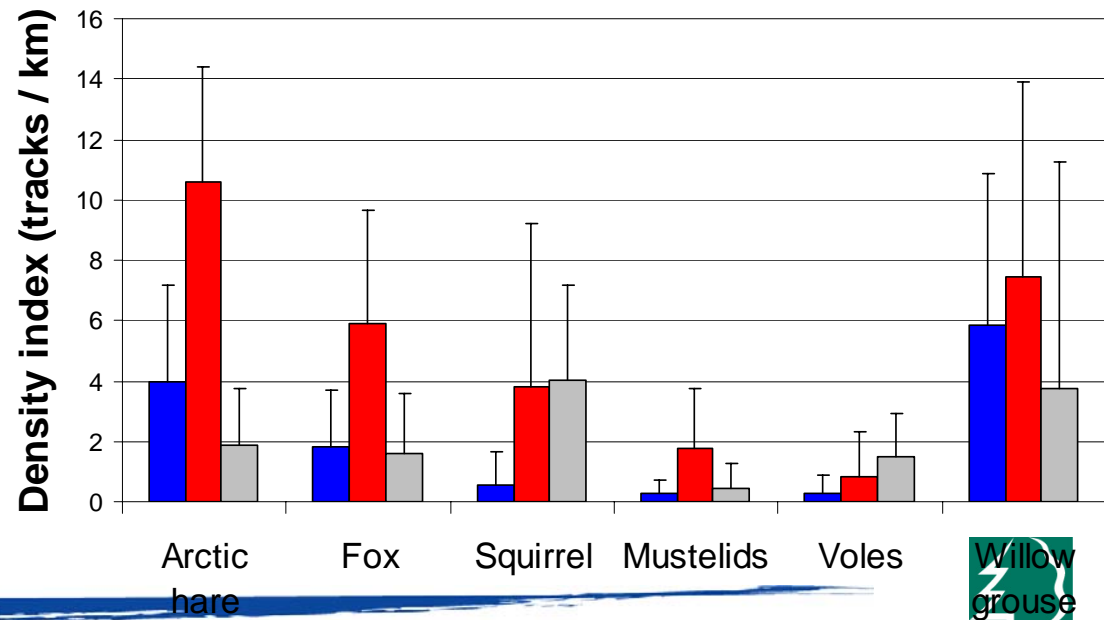


Mammals

- Snow-track census (N = 20) and Small-mammal snap-trappings (total 17280 trap night) 2005 and 2006
- Many species seems to take benefit from tourism
- Winners: Arctic hare, fox, squirrel. Vole and shrew species - Generalists, adapters
- Looser(s): More sensitive species? Prey species (birds, insects)



■ Summer, campfire sites ■ Summer, control areas ■ Fall, campfire sites ■ Fall, control areas

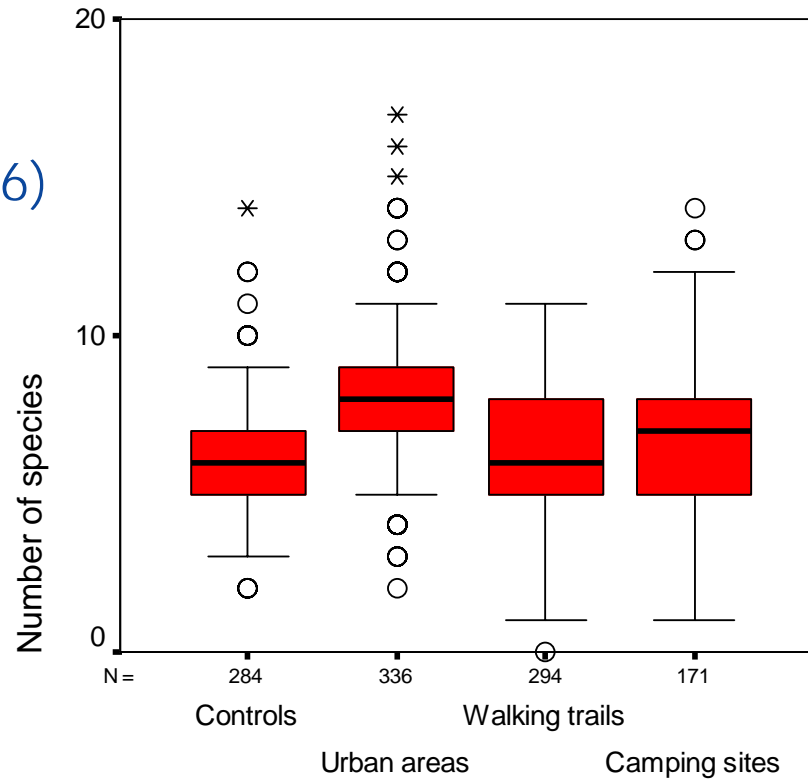
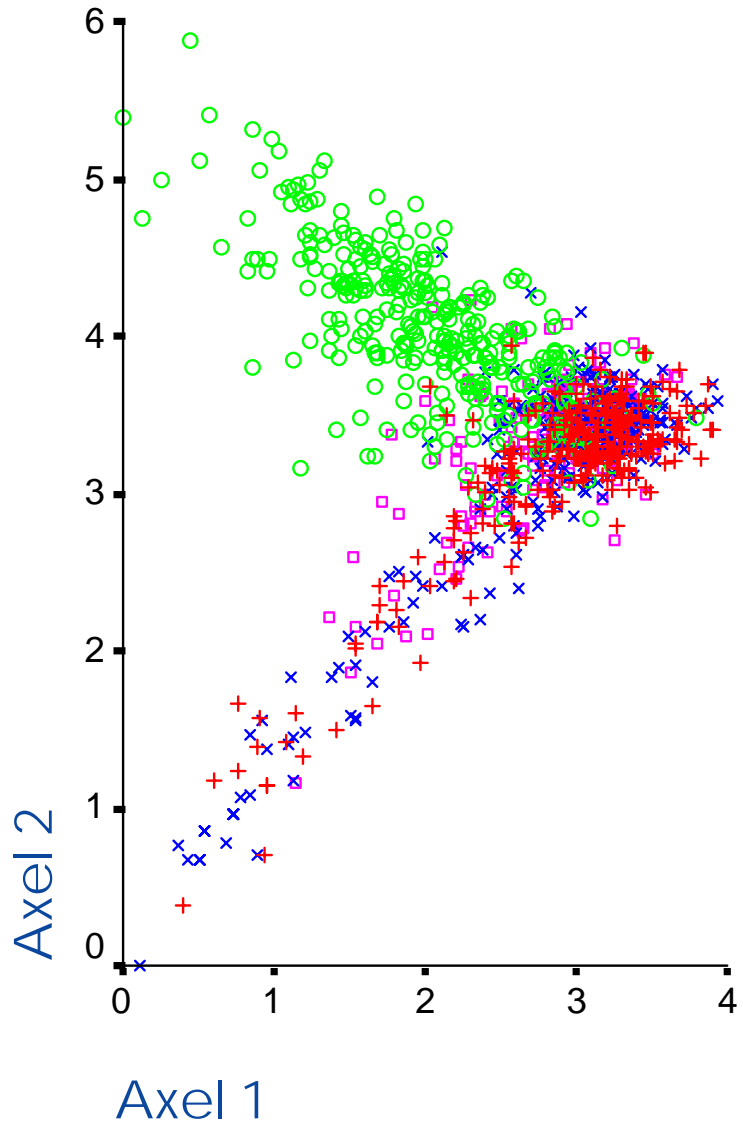


■ Low ■ Intermediate ■ High



Birds

• Point counts
(2004, 2005, 2006)



- Area
- Camping sites
 - × Walking trails
 - Urban areas
 - + Controls
- Urban areas and camping sites functioned as hot spot areas for birds
 - hole- / box nesting species
 - human caused food eating species
 - Like Pied flycatcher (*Ficedula hypoleuca*)

Birds



- Effects of tourist destinations to Golden Eagle breeding success
- 12 Tourist destinations, 2151 territory records (1990-2004)
- Golden Eagles do not breed near the tourist destinations
 - nearest successful breeding at distance of 10,3 km



So What?



- Just one single campfire site with facilities change the whole food web around it
- A scenario to be worried about?
 - Sensitive species: Larger carnivores
 - Endangered species
 - Common species take over?
 - Decreasing diversity
 - Corridor populations?
- Landscape changes – How long the people are coming?
 - Searching of quiet areas
- In the most popular campsites there are 40 000 (far in fjells) to 100 000 (near hotels) visits per year – aerial planning is very important

– How much is too much?



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