

# Grazing in costal meadows of the Bothnian Bay in the Northern Ostrobothnia – history and present

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# Outline of the presentation

- **Where?**
  - Placing the areas on the map
- **What?**
  - The history of utilization
  - Present usage
- **How?**
  - Results from surveys & research
- **Why?**
  - Benefits
  - Challenges
- **Conclusion**
  - What should be taken into consideration







✓ Coastal meadows of the Bothnian Bay, the northernmost part of the Baltic Sea represent a globally unique habitat

✓ The relatively young age and isolation of the area together with special features of the Baltic Sea have provided favourable conditions for genetic differentiation of plant populations



✓ The area also hosts valuable breeding and migrating avifauna

✓ Approximately 280 breeding or staging bird species have been encountered in the area



# Semi-natural grasslands

- ✓ Until the beginning of 20<sup>th</sup> century the most traditional use was to cut hay for winter forage, after which livestock were allowed to graze the meadows

- ✓ At the end of 19<sup>th</sup> century cultivation on arable fields gradually started to displace forage collection from semi-natural grasslands
- ✓ Coastal meadows were increasingly used only as pastures for livestock
- Many of them were abandoned during the second half of the 20<sup>th</sup> century





## At the present

- Decreased traditional use & eutrophication have resulted in overgrowth by taller vegetation on the shores of the Baltic Sea
- ✓ Approximately 4200 ha of coastal meadows are left in Finland, which is less than 10% of the amount in the 1950's
- ✓ The habitat type was classified as critically endangered





- **There is in total 2874 ha of sea shore managed by 51 farmers in Northern Ostrobothnia**
  - 86% of this area is classified as coastal meadows
  - 14% is composed of forest areas, which also were included into some of the coastal pastures



- ✓ 89% of the total area was grazed and 11% managed solely by mowing
- ✓ 86.6% of the pasture area was grazed by cattle, 12% by sheep, and 1.4% by horses or mixed herds
- ✓ Beef cattle prevailed over dairy cattle:
  - 84% of the cattle pastures were grazed by beef cattle (mainly by beef cows with their calves)
  - 16% by dairy cattle (heifers in all cases)

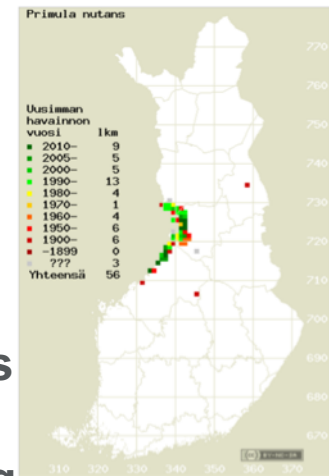


# Southern Dunlin *Calidris alpina schinzii*

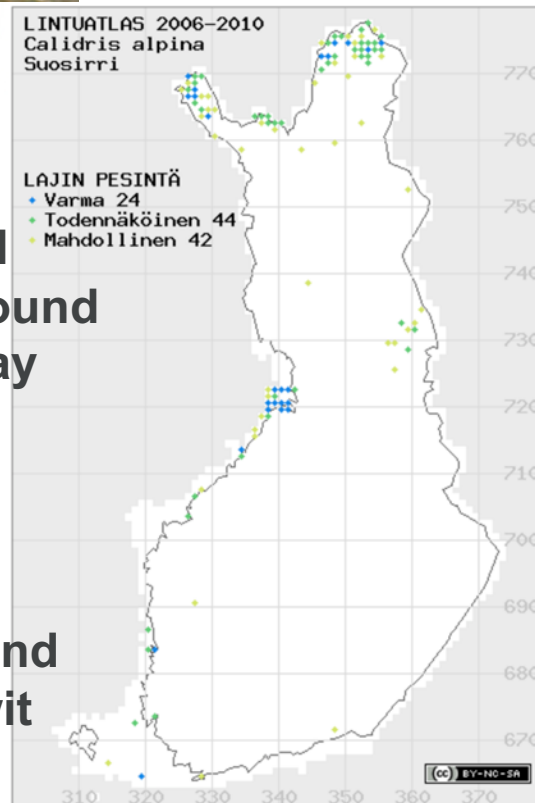


## Benefits from grazing

- Maintaining coastal meadows has a great importance for the favourable habitat of endangered birds
- Most of the endangered coastal meadows plant species benefit, and are even dependent on livestock grazing



- There are at least seven endangered species of birds found in the Bothnian Bay grazing areas
- Among the most important are the Southern Dunlin and Black-tailed Godwit (*Limosa limosa*)



Siberian primrose  
*Primula nutans*



# Dry matter yield & nutritional quality



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)



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## Coastal meadows as pastures for beef cattle

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- Three year study (2003–2005)
- Four farms
- Herd size (cows, calves, bulls): 30–237
- Adults/ha: 0.27–0.66
- Grazing area ha: 53–270
- Grazing days: 58–119

- ✓ The maximum dry matter yield:
  - June 1704 ( $\pm$  608) kg DM/ha
  - July 2586 ( $\pm$  1019) kg DM/ha
- ✓ The mean height of the vegetation 9.2–19.6 cm in the end of July
- ✓ Nutritional quality of the forage weakened during the summer
  - ✓ Digestible organic matter:
    - June 680–760 g/kg DM
    - July 640–680 g/kg DM
  - ✓ Crude protein:
    - June 120–180 g/kg DM
    - July 90–100 g/kg DM



# Growth of the calves

- The daily gain of the calves differ significantly between farms and between year
  - ✓ The average growth rate of the **male calves was  $1.022 \pm 0.246$  kg/d** (Niemelä et al. 2008)
  - ✓ The average growth rate of the **female calves  $0.981 \pm 0.195$  kg/d** (Niemelä et al. 2008)
- In beef cow feeding experiments on cultivated pastures in Finland the mean daily gain of crossbred beef calves has been considerably higher; **1.3-1.5 kg/d** (Manninen & Huhta 2001, Manninen et al. 2005)



- ✓ **Options:**
- **Providing creep feed for the calves**
  - Extra work
  - Costs
  - Leaching
- **Earlier weaning**
  - Extra work
- **Autumn calving cows**
  - = only maintenance energy requirement, no milk production, no calves



# Condition score (CS) of the dams



Breed		Number of calvings	Number of cows	CS before grazing period	CS after grazing period	The change of CS
Farm 1	Si, Ch	3	32	3.09	2.53	-0.56
Farm 2	Si	3	24	2.07	1.57	-0.50
Farm 3	Hf	3	21	3.55	3.37	-0.18



# Conclusion & Summing-up

- **A moderate density grazing is most effective for the management of biodiversity**
  - Results in a mosaic of heavily and lightly grazed batches providing habitats for diversity of species
  - In coastal meadows grazing density of  $>0.4$  adults/ha
  - Higher densities are required in restoration phase
- **Delaying grazing starting date to mid June might enhance production and environmental impact**
  - More forage available for cow-calf pairs
  - Improve breeding success of many bird species
- **Grazing cattle breed selection should be carefully evaluated**
  - British origin beef breeds and their crossbreds might be more suitable to lower productive grasslands than continental breeds
  - Native breeds
- There is a future research need whether the breeds/herds have adapted to challenging grazing environment

# Questions?



# Thank You!