

# Bothnian Bay LTSER-platform

Assessment of impacts of climate change on biodiversity in coastal ecosystems and implementation of new policies and conservation strategies

- Seashores in the northernmost Baltic Sea (the Bothnian Bay) harbour a number of plant and animal species that occupy a temporally and spatially narrow belt between the sea and dense upper shore vegetation. This belt is maintained by constant post-glacial (isostatic) land uplift that creates virgin land to be colonized by pioneer species
- It has been predicted that the amplitude and frequency of extreme climatic events causing disturbance will increase due to global warming. Furthermore, there are already signs that sea level rise is counteracting land uplift and slowing down the emergence of new land and, hence, narrowing the successional zones and causing fragmentation.
- Similarly, in forest ecosystems along the coast of the Bothnian Bay deforestation has been supposed to impair winter survival of forest associated sedentary species by reducing the carrying capacity of the habitat



# VACCIA

Three projects:

1. *Ex situ protection:*

Finnish botanic gardens hold both regionally or nationally and globally threatened plants in their collections. However, most of these collections were not originally founded for conservation purpose and it is difficult to estimate how much of the natural genetic variation is actually conserved.

- An analysis of the quantity and quality of these holdings has been done.
- On the basis of the survey, a national plant ex situ conservation strategy and action plan will be compiled

2. *Agricultural practices:*

Applicability of existing livestock seashore pasture network along Bothnian Bay as targets for transplantations and sowing of endangered seashore plant species will be tested.

- The prevalence of variable grazing practices and their effects on the vegetation structure and biodiversity of seashore meadows will be studied.
- The influence of alternative grazing strategies on economical sustainability of agriculture in the LTSER-area are estimated.



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## 3. *Habitat and climatic contributions to populations of managed forest landscapes*

The project will relate spatial structure and quality of the landscape to territory occupancy and measures of fitness of resident boreal birds under changing habitat structures.

- Habitat suitability modelling (HSM) will be used to define species' habitat requirements and give spatial prediction of the most suitable (and unsuitable) habitats as a function of environmental conditions.

- Spatial predictions of HSMs will be used to recognize high suitable areas, which is of great importance since species extinctions are less likely in those areas and thus, including such information in selection of protected areas can improve the ability to ensure long-term persistence of species



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- Successes:
  - The survey of endangered species which grow in scientific gardens has been successful, but unexpectedly few species is under ex-situ conservation (18% of endangered species; 56 taxons, 77 stems)
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  - It has been difficult:
    - to build habitat suitability models for template birds in deciduous trees even we have had 25 year monitoring data available