Reforestation in Central and Eastern Europe after the breakdown of socialism

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Reference

- Research published:

  Gregory N. Taff, Daniel Müller, Tobias Kuemmerle, Esra Ozdeneral, Stephen J. Walsh, “Reforestation in Central and Eastern Europe after the breakdown of socialism” in Harini Nagendra and Jane Southworth (eds). Reforesting Landscapes: Linking Pattern and Process; Springer Landscape Series, vol 10, pp. 121 – 148, 2010.

- Research published in popular form on Discovery web:

  http://dsc.discovery.com/news/2009/03/10/communism-europe-forests.html (no longer available)

- Now available: http://www.ecoearth.info/shared/reader/welcome.aspx?linkid=120885

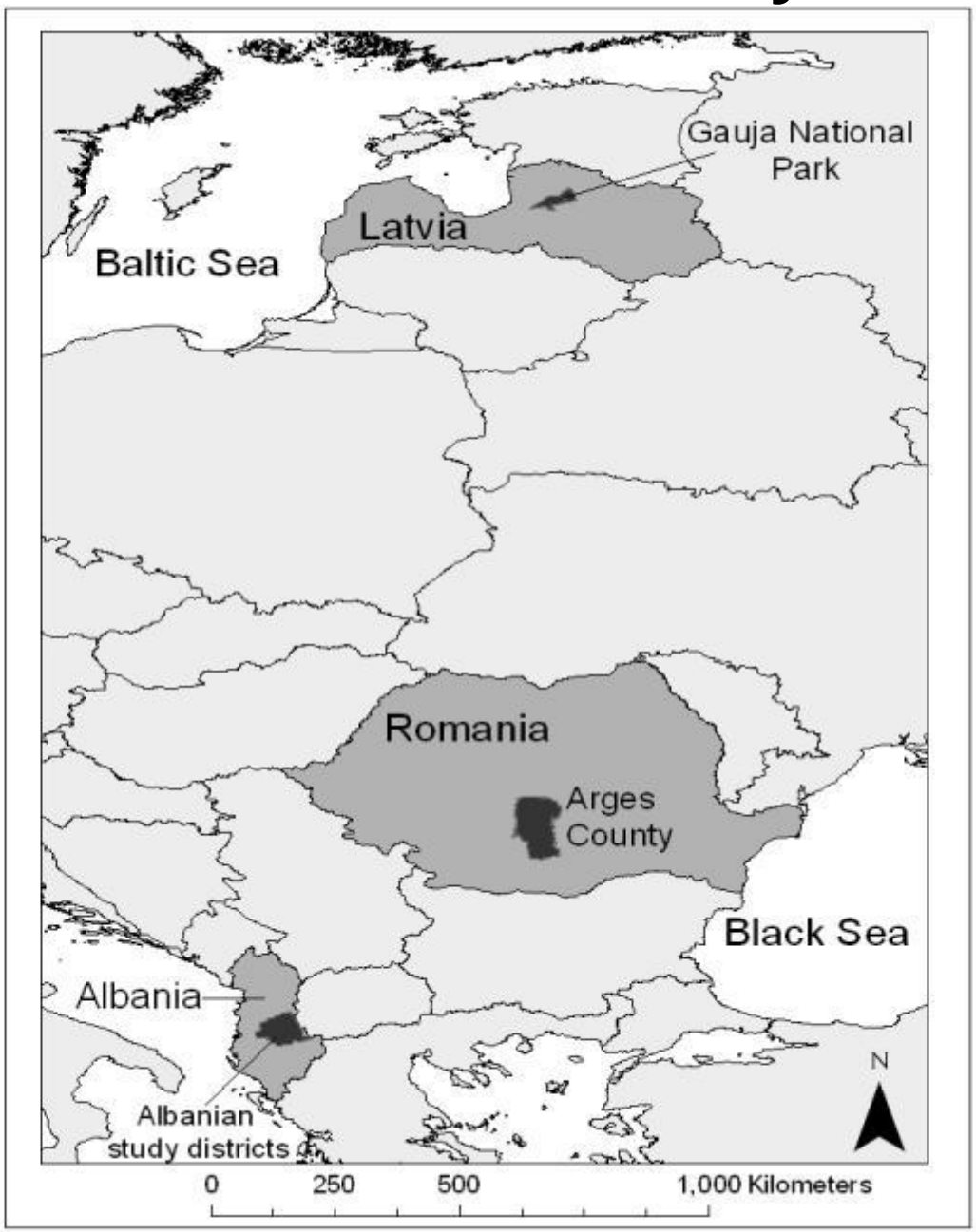
Goal

- Understand reforestation trends in Eastern Europe since collapse of communism
  - Overall trends
  - Spatial and temporal patterns of change
  - Drivers of reforestation
  - Consequences of reforestation

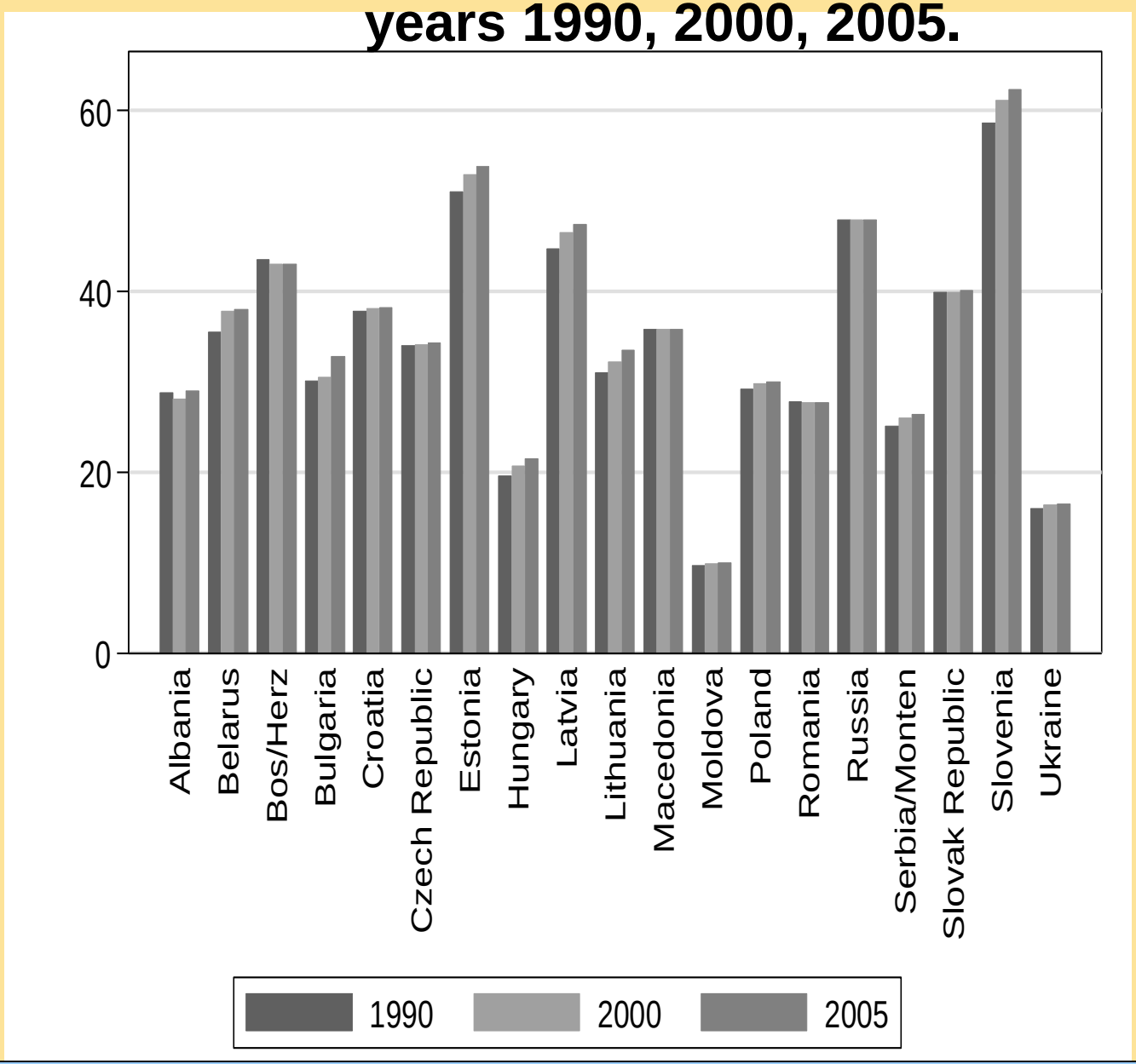
Methods

- Literature review
- Analysis of FAO country-level forest statistics
- Three case studies: Albania, Romania, Latvia
  - Satellite image time series analyses
  - Interviews and surveys
    - Landowners
    - Other key stakeholders

Three intensive study sites



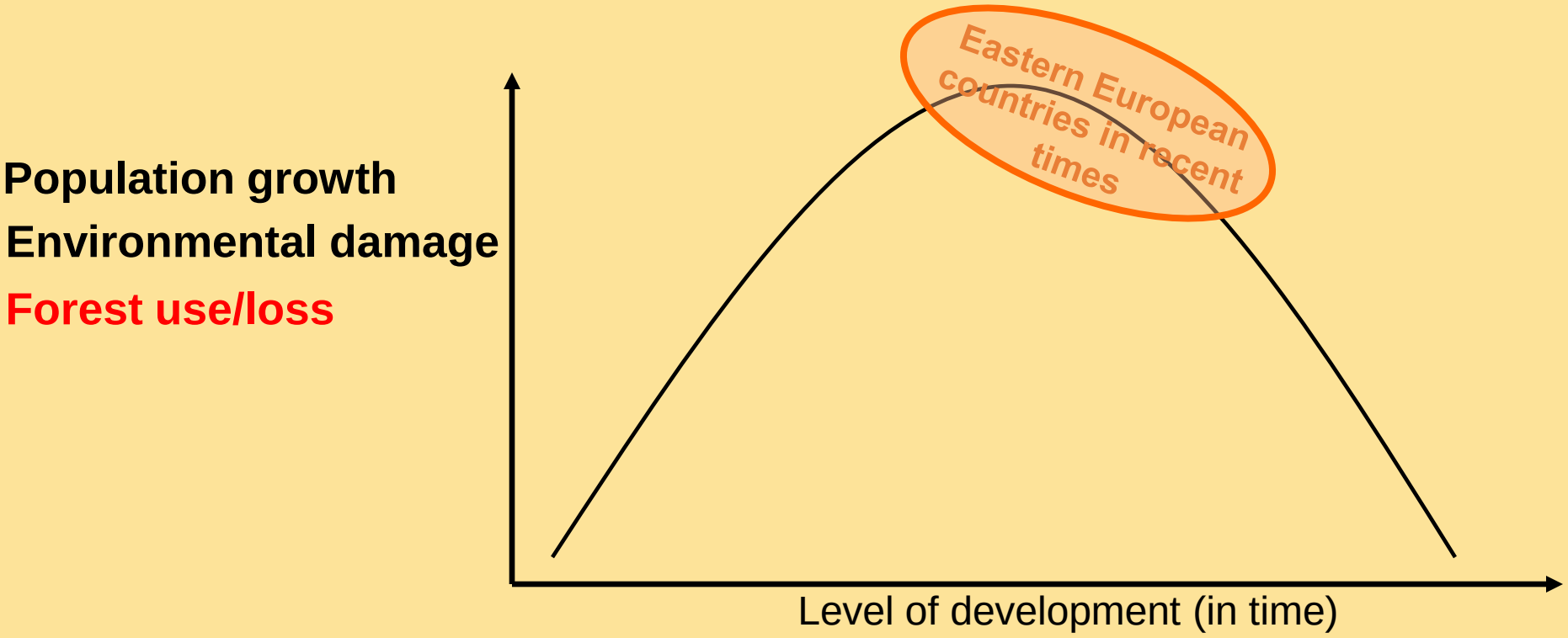
Percent forested land in East European countries in years 1990, 2000, 2005.



Data source: Food and Agriculture Organization of the United Nations (2006) Global forest Resources Assessment 2005: Progress Towards Sustainable Forest Management, FAO Forestry Paper 147. FAO, Rome

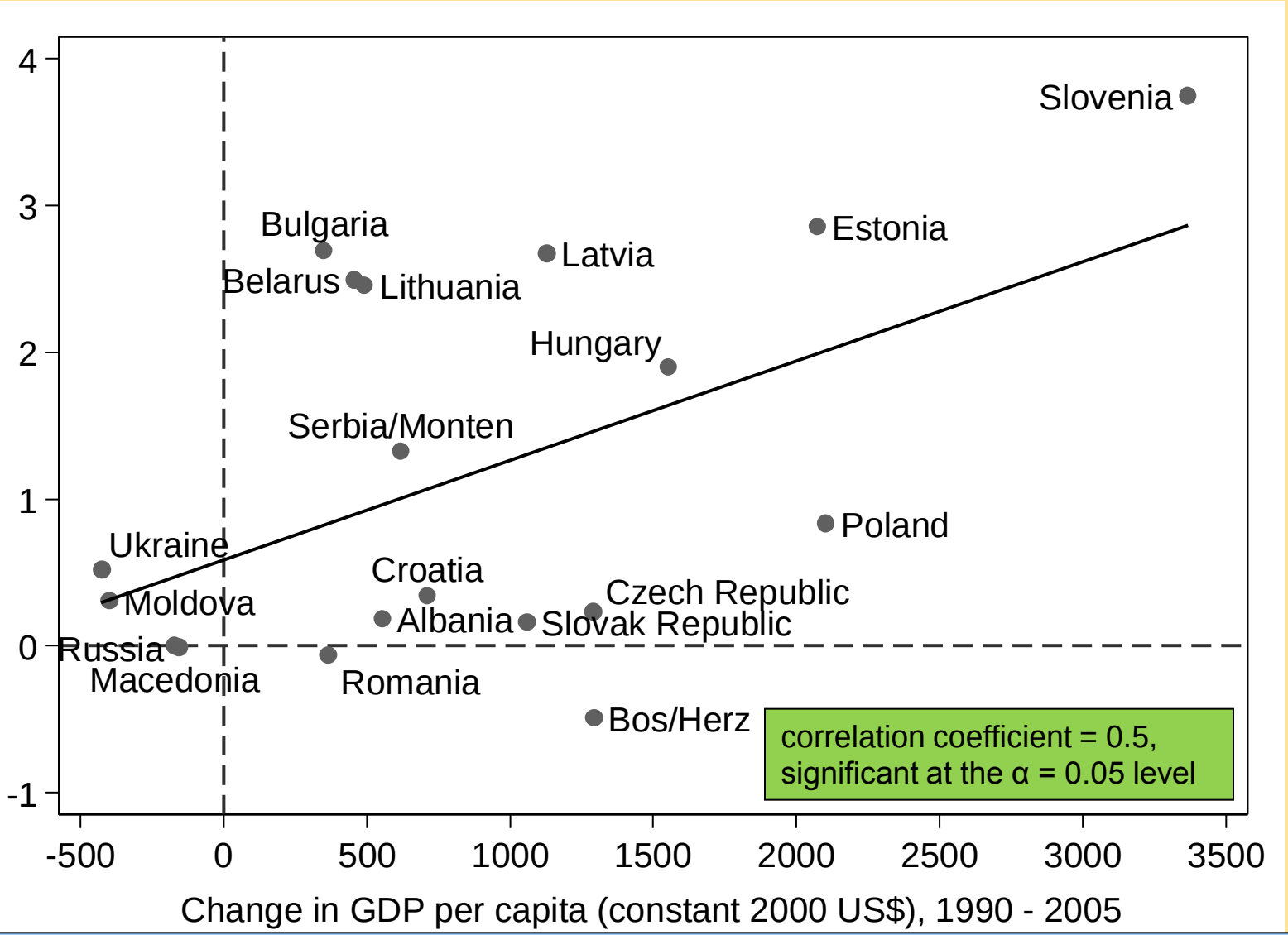
Forest Transition

- Mather's "forest transition" theory
- Analogous to development theories of:
  - Population transition
  - Environmental transition



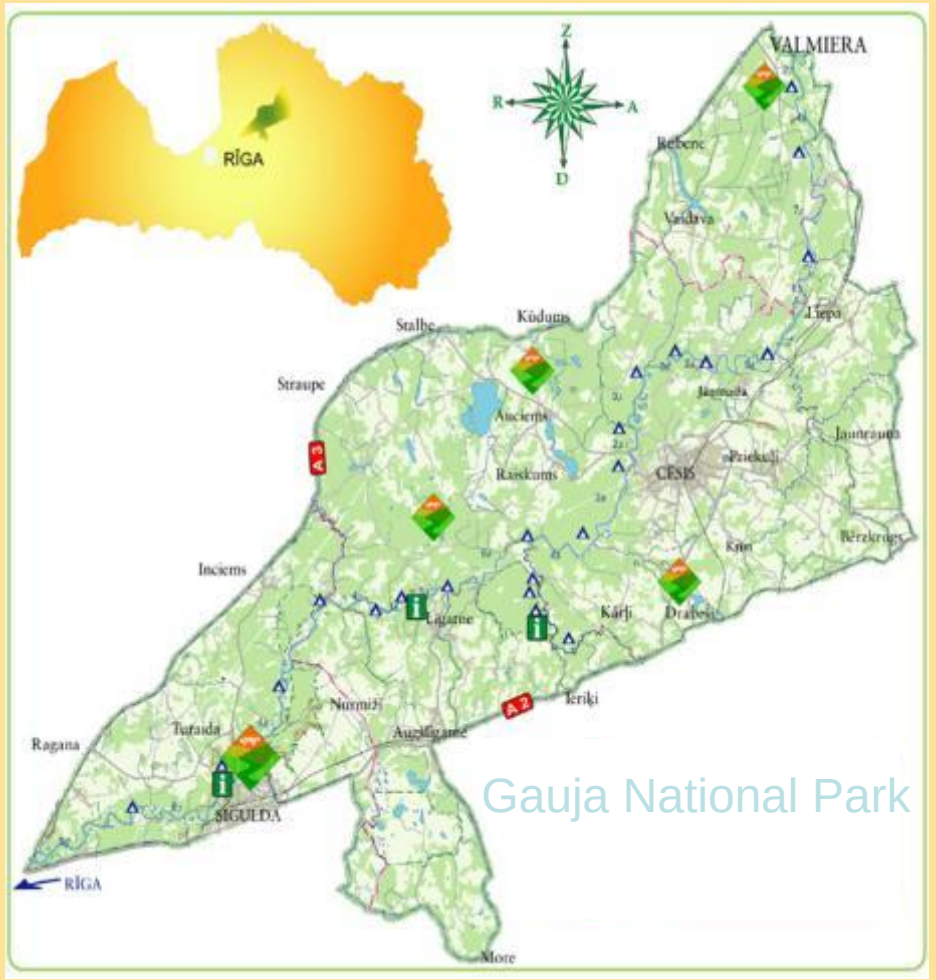
Mather AS (1992) The forest transition. Area 24:367-379

Change in GDP per capita vs. change in percent forest cover between 1990 and 2005 for Eastern European countries

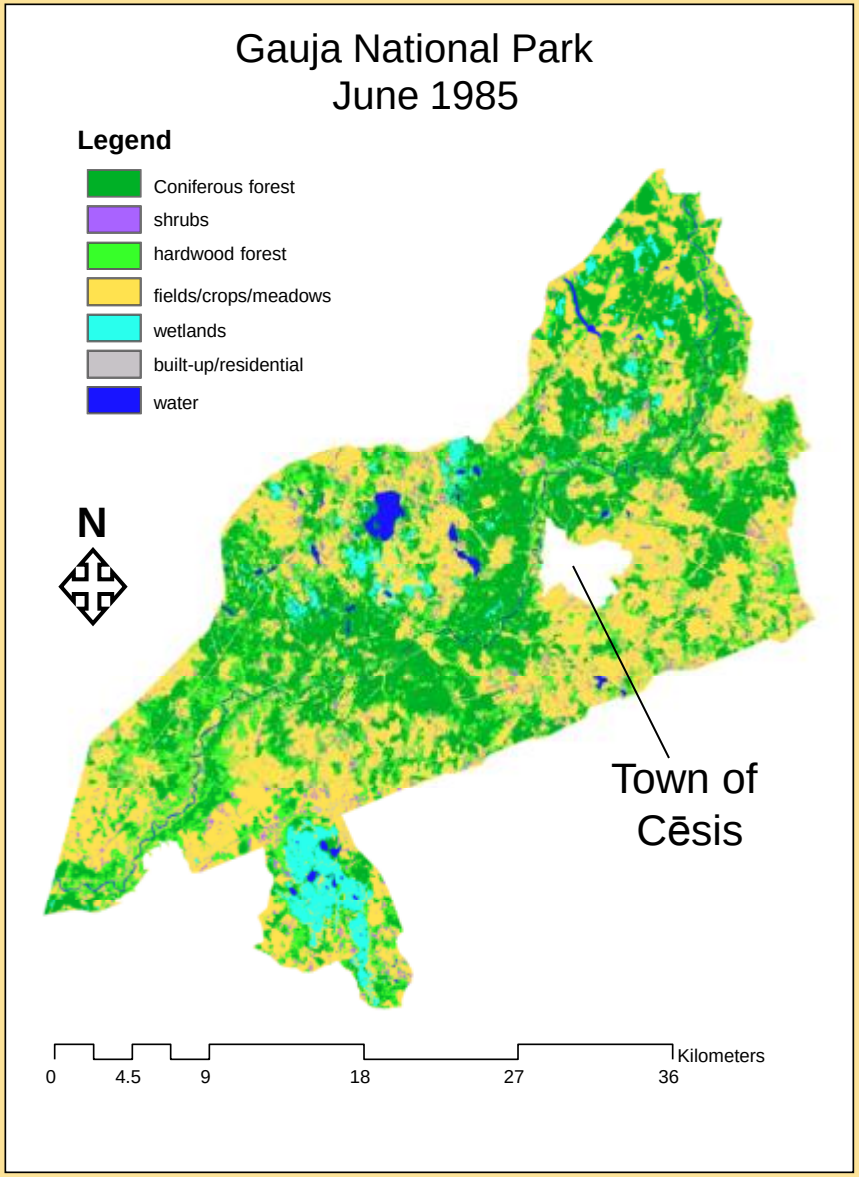


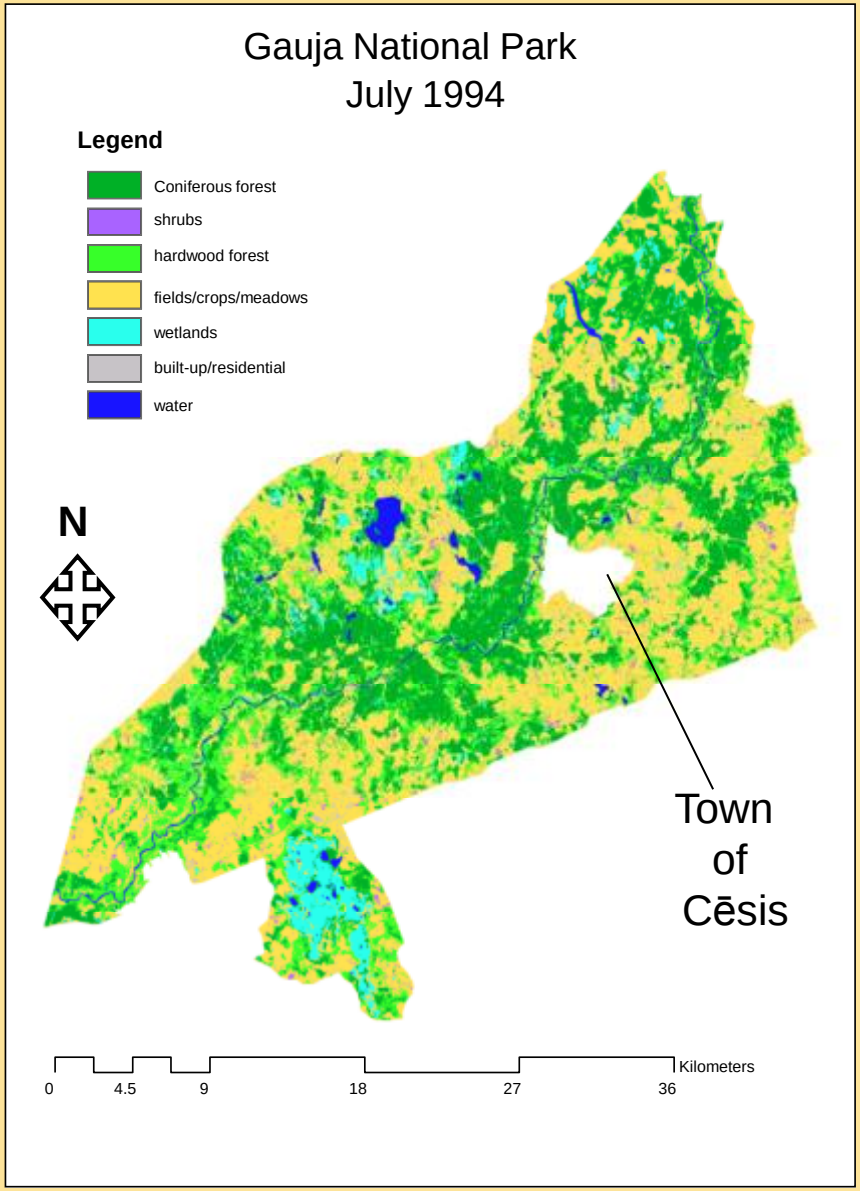
Data sources: 1) World Bank (2007) World Development Indicators 2007. The World Bank, Washington, D.C.;
2) Food and Agriculture Organization of the United Nations (2006) Global forest Resources Assessment 2005: Progress Towards Sustainable Forest Management, FAO Forestry Paper 147. FAO, Rome

Gauja National Park, Latvia



Map produced by Gauja National Park Administration


Gauja National Park
June 1985
Legend
Coniferous forest
shrubs
hardwood forest
fields/crops/meadows
wetlands
built-up/residential
water
N
Town of
Cēsis
0
4.5
9
18
27
36
Kilometers


Gauja National Park
July 1994
Legend
Coniferous forest
shrubs
hardwood forest
fields/crops/meadows
wetlands
built-up/residential
water
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Town of Cēsis
0
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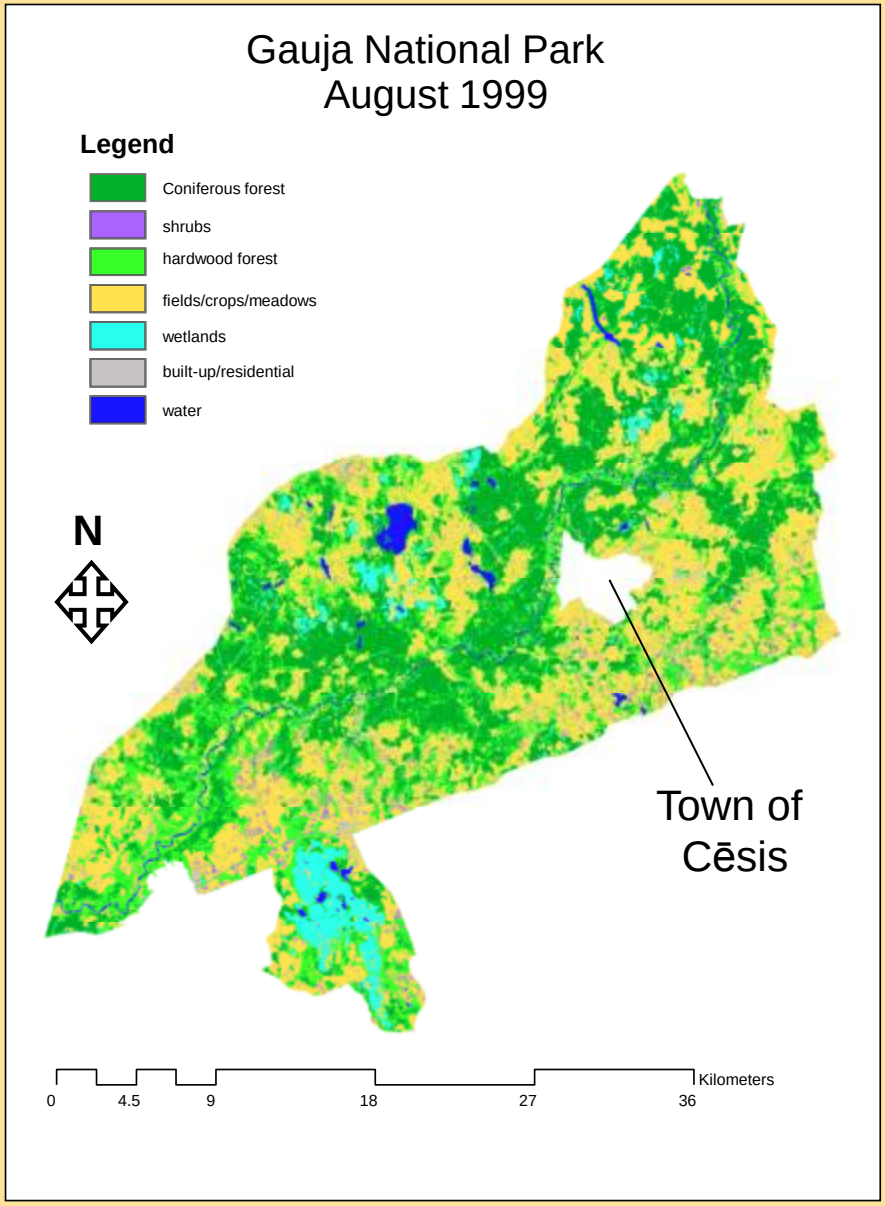
Kilometers


Gauja National Park
August 1999
Legend
Coniferous forest
shrubs
hardwood forest
fields/crops/meadows
wetlands
built-up/residential
water
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Town of
Cēsis
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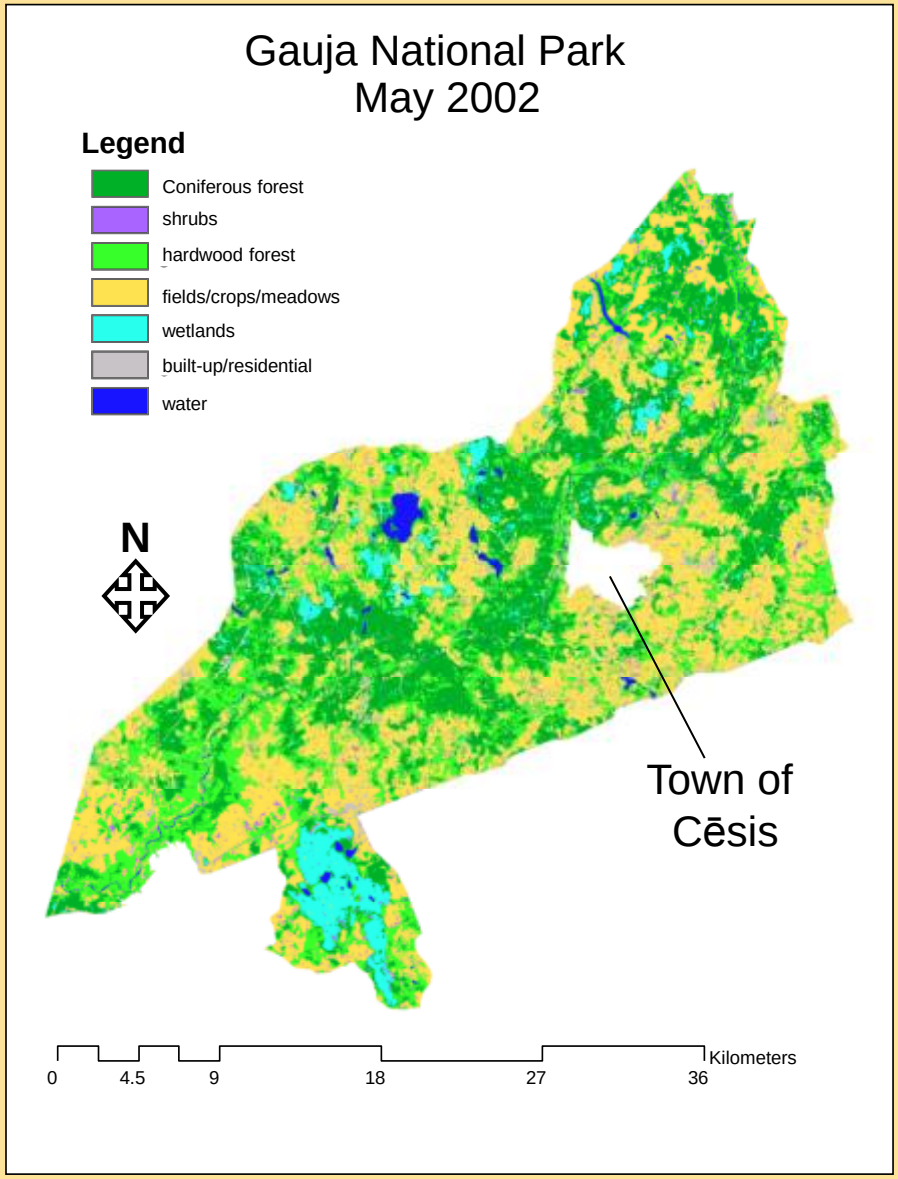
Kilometers


Gauja National Park
May 2002
Legend
Coniferous forest
shrubs
hardwood forest
fields/crops/meadows
wetlands
built-up/residential
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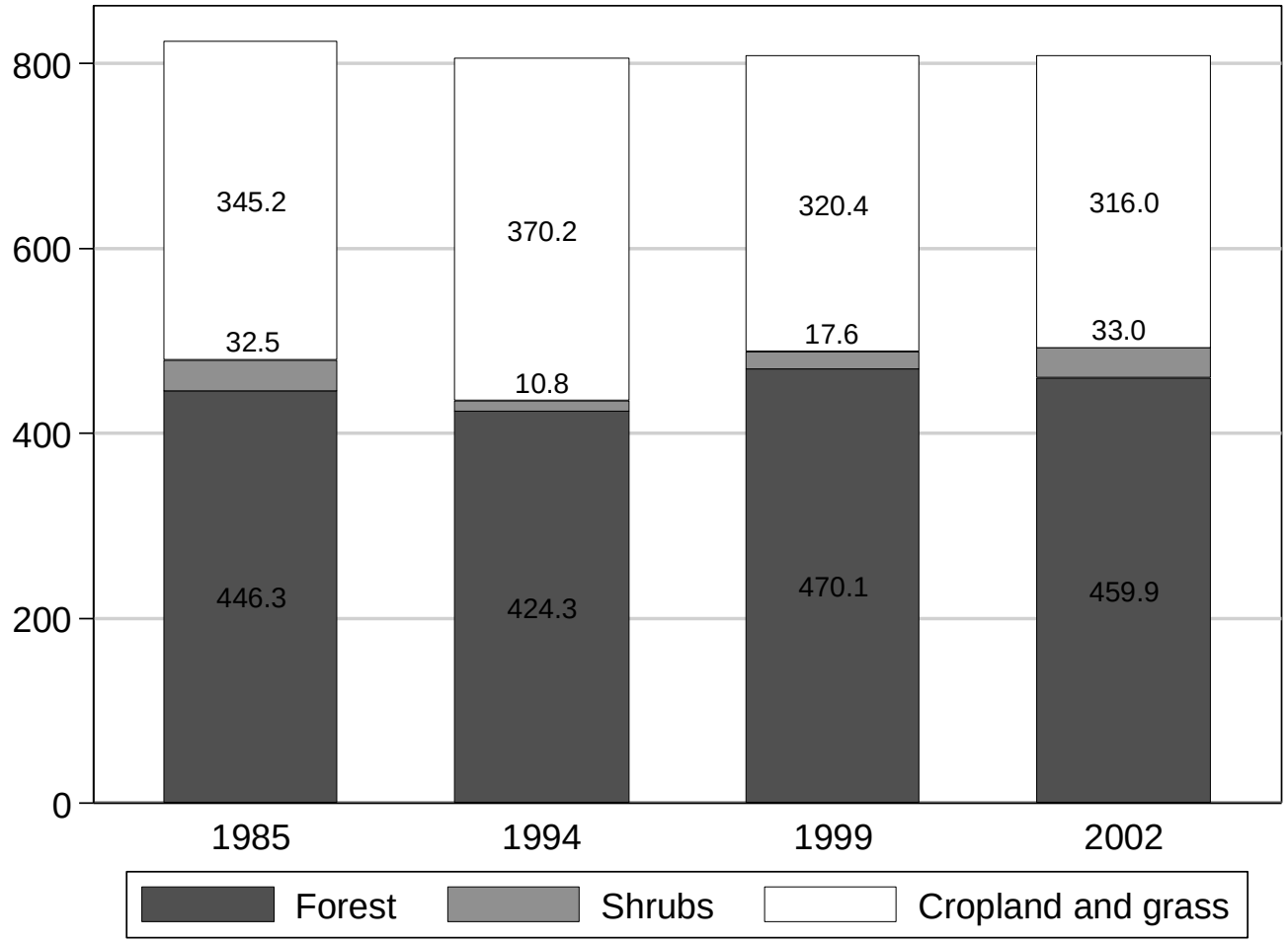
Landcover changes in Gauja National Park, Latvia (1985 – 2002)



Just after 1991: forest harvesting

Late 1990's: secondary succession on abandoned cropland

Early 2000's: corporate farming on restituted lands

Source: satellite image analysis by author

Cultural landscapes and biodiversity

- Cultural landscapes: prevalent concept throughout Eastern Europe
- Cultural landscapes play important roles in national identity
- Biodiversity important
  - EU directives
  - Environmental NGO's influence

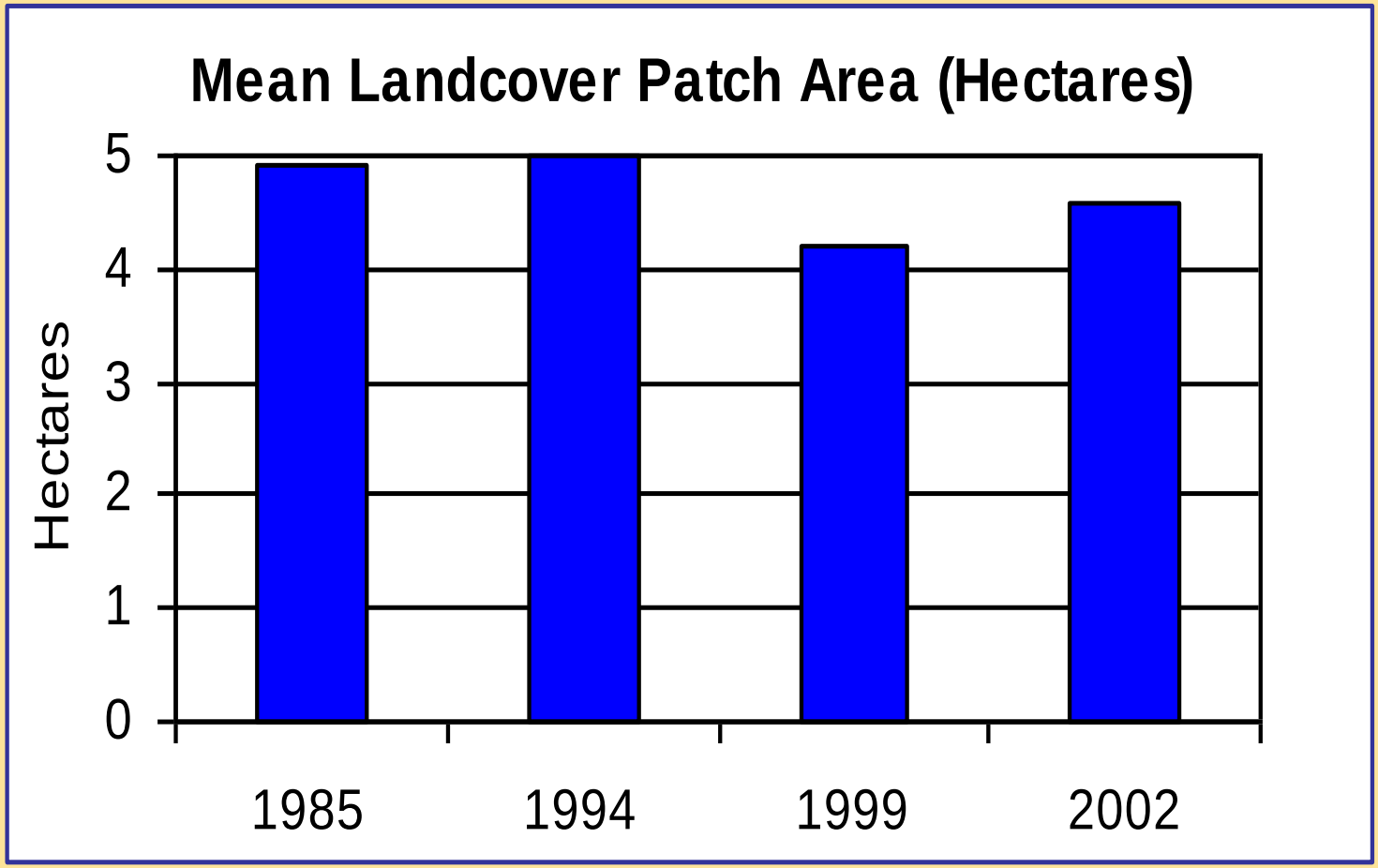
Latvian cultural landscape in GNP

An icon of national pride

Latvia's cultural landscape is "characterized not by rural villages, but by a dispersed rural settlement pattern of family farmsteads made up of small clusters of distinct buildings… surrounded by a ***matrix of small***, well-maintained ***forest patches***, ***agricultural fields and meadows***, with churches and pubs interspersed throughout the landscape" (Bunkše, 2000).

Abandoned agriculture resulting in forest regrowth damages the cultural landscape.

Preservation of the Latvian cultural landscape

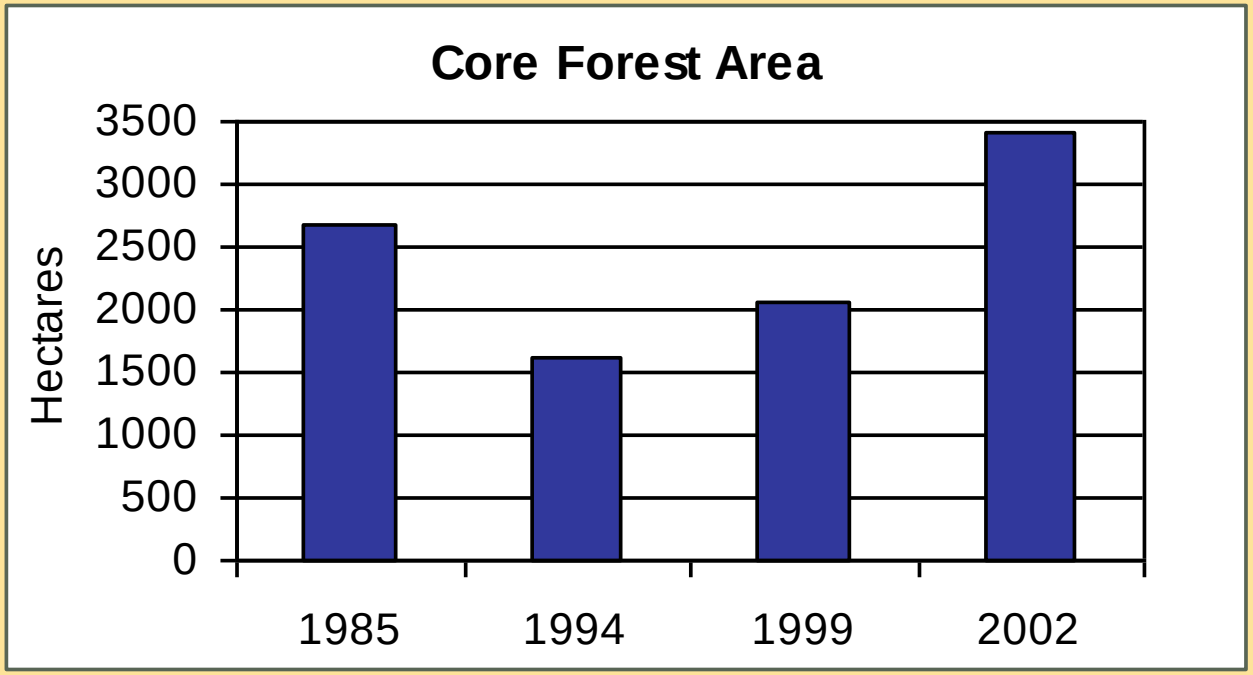


Mean area is taken of all landcover patches in GNP

Species habitat in the natural landscape

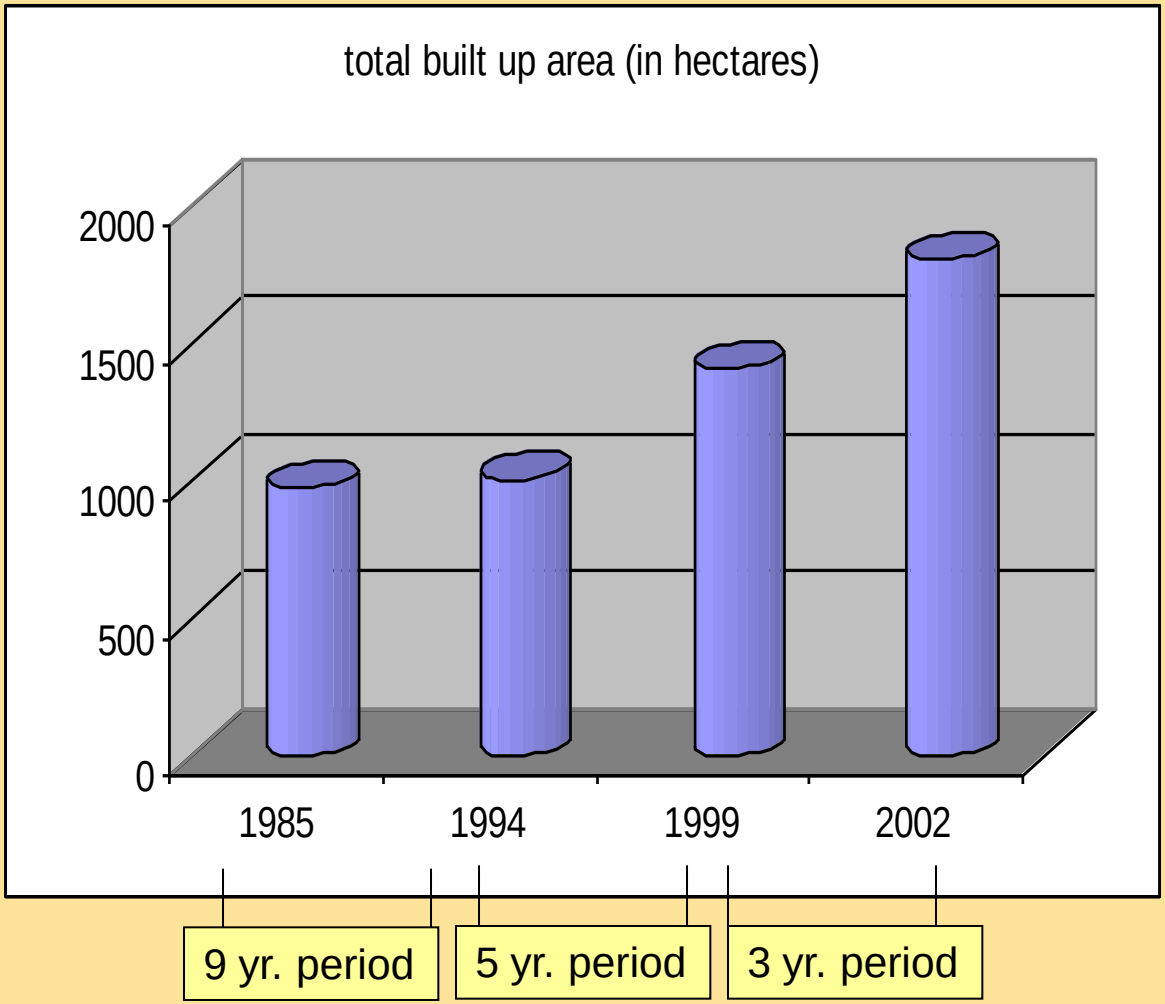
In Latvia, the threatened Black Stork (*Ciconia nigre*) and Lesser Spotted Eagle (*Aquila pomarina*) require large forest tracts and generally nest at least 250 meters from the forest edge.

Core forested area is defined here as forest that is *greater than 250 meters from its patch edge*.



Park's protection policies since 1994 successful.

Development in GNP



Exponential development occurring in market economy after privatization.

Argeş County, Romania

- Forest area essentially unchanged 1990 – 2005
- Some forest degradation – illegal logging via selective cutting
- Agricultural abandonment occurred
  - No new forest growth
  - Abandoned agricultural areas lightly grazed

Eastern Albania

- Total forest area (1988 – 2003) essentially unchanged
- Forest degradation occurred (partial cutting, decrease forest density)
  - Illegal sale of timber on local market
    - heating
    - cooking
  - Other forest uses
    - grazing of animals
    - the collection of non-timber forest products
      - medicinal herbs
      - pine resin

Conclusion

1. East Europe experiencing overall increase in forest cover.
2. Forest degradation may be more common than deforestation in this region; much illegal cutting.
3. Nature protection laws may be protecting some species (in GNP, Latvia)
4. Cultural landscapes may be at risk from secondary succession on abandoned agricultural fields.
   - Reports that this has led to a loss of biodiversity
     - Plant species in non-intensively farmed fields
     - Bird species living in forests, feeding in nearby fields (edge species)