Remote monitoring of reed expansion on the coasts of the Baltic sea and on the shores of large shallow lakes

Urmas PETERSON
Liis KURESOO
Jaan LIIRA

Tartu Observatory
Tartu University
Estonian University of Life Sciences
Reed belt at lake Võrtsjärv, Central Estonia, August 2007
Reed belt at the Baltic sea coast, Western Estonia, July 2012
National Basic Map Orthophoto 03.07.2005

Landsat TM satellite image 09.08.2007

Vegetation Index NDVI color code
A forest patch on a National Basic Map orthophoto

The same patch on a Landsat TM satellite image,
30 m nominal pixel size
Determining the threshold in coastal vegetation mapping

The diagram shows a plot with NDVI on the y-axis and Pixel zone on the x-axis. The plot distinguishes between Water or lake bottom and Coastal vegetation. The distribution of observations is indicated, with a threshold shown at 98% and 2% for coastal vegetation.
National Basemap Orthophoto

Landsat TM satellite image 09.08. 2007, Vegetation index NDVI color code.
Coastal vegetation

1986

1120 ha

Pähksaar

Väike Emajõgi

1986

2007

1460 ha

Pähksaar

Väike Emajõgi
Area covered by coastal macrophytes in Lake Peipsi from 1986 to 2011

- the whole lake
- Lake Pihkva (*Southern part of the lake*)
- Lake Peipsi (*sensu strictu, Northern part of the lake*)
Dynamics of coastal reed patches at the Estonian Baltic Sea coast.

![Coastal reed patches map](image)
Possible factors influencing the width of the reed belt
Changes in the width of the coastal macrophyte belt at Lake Võrtsjärv relative to the distance to major inflows from 1985 to 2007.

Changes in the width of the reed belt in different parts of Lake Võrtsjärv from 1985 to 2007.