

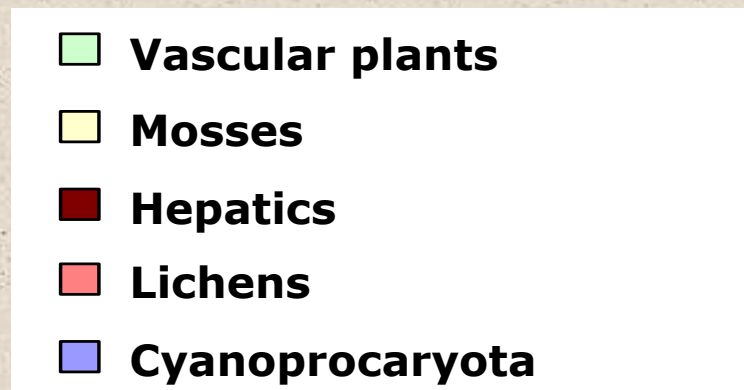
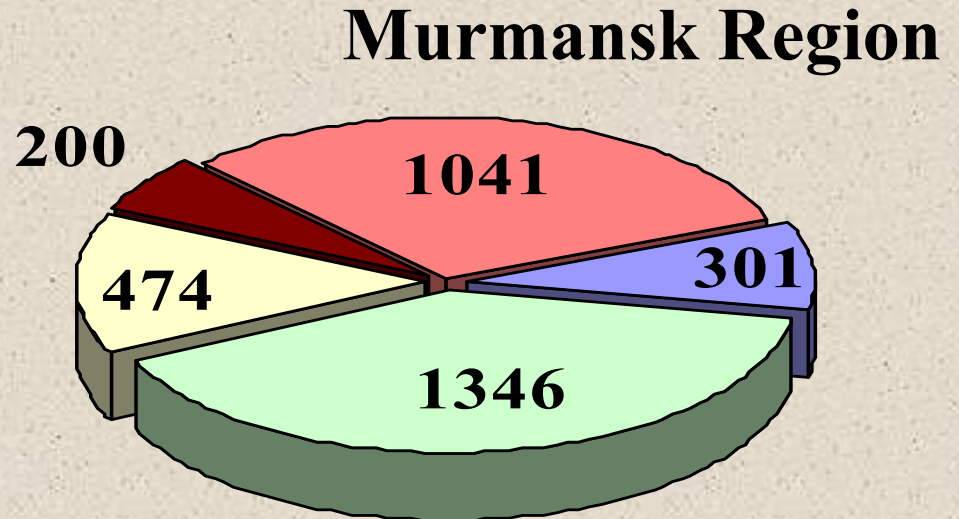
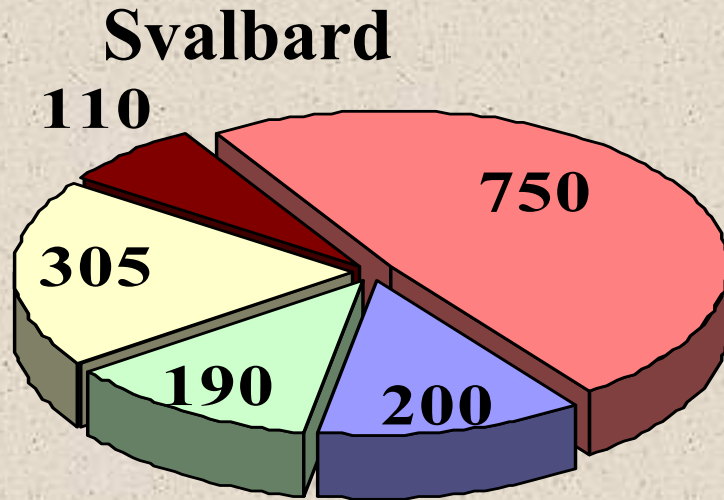
# Mapping of hepatics on the Svalbard as the basis of their future monitoring



**Konstantinova N.A.  
Savchenko A.N.**

**Polar-Alpine Botanical Garden-Institute  
of the Kola Sci Center of RAS**

# The rate of cryptogamic plants increases significantly to the far North



**b** In spite of long period of Arctic studies the diversity and distribution of the cryptogamic plants (and hepatics particularly) are insufficiently known

**b** It does not allow to reconstruct evolution of biota and to forecast its state in the future

# **The main goal of the project is to reveal diversity of mosses, hepatics, lichens and cyanoprokaryota in Svalbard**

**Main tasks are:**

**b Specification of species diversity, that include:**

- Discovery of new species for Svalbard flora**
- Identification and description of arctic forms and varieties**
- Recognition of the real distribution of species in Svalbard**

**b Compiling of DB of identified specimens and mapping based on the data on distribution of all known species**

**b Precising of ecology of species**

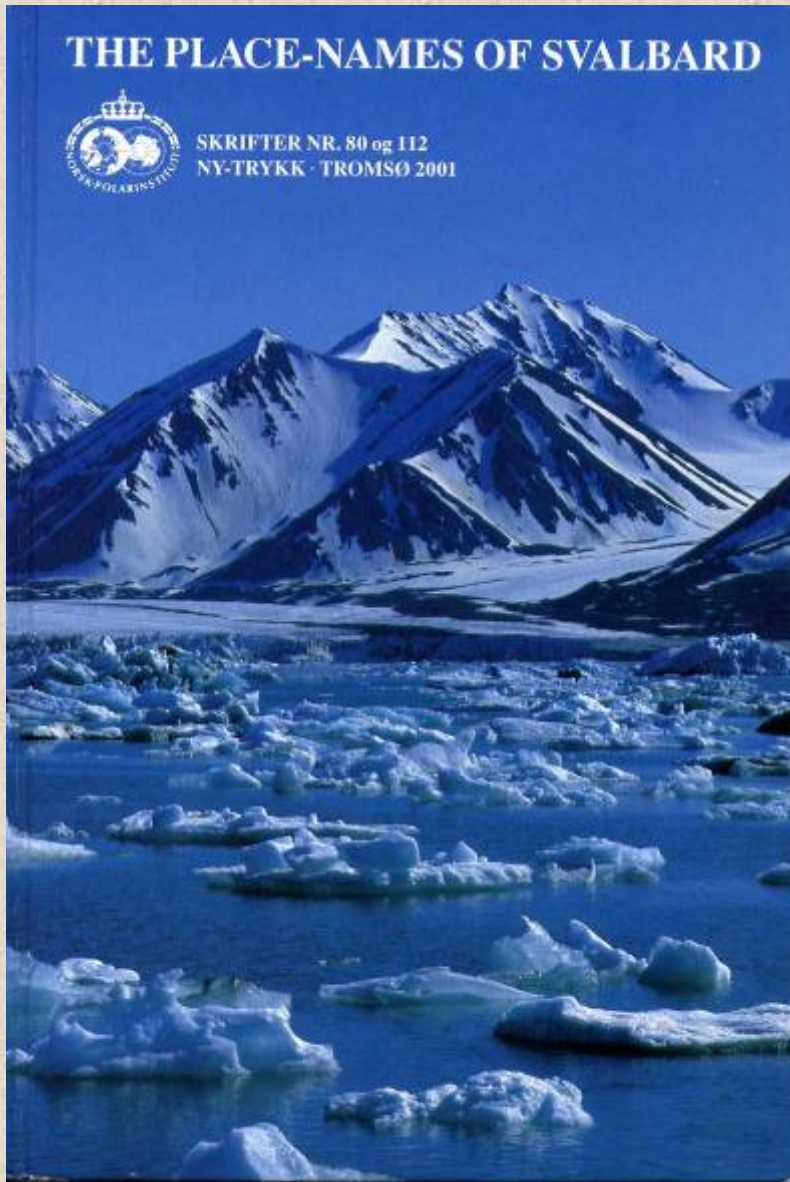
# Map of collecting sites of rare and very rare in Svalbard hepatics based on published data in 20 century



**b** We mapped known sites of hepatics basing on the literature to reveal insufficiently studied areas Data were taken mostly from Frisvoll & Elvebakk (1996)

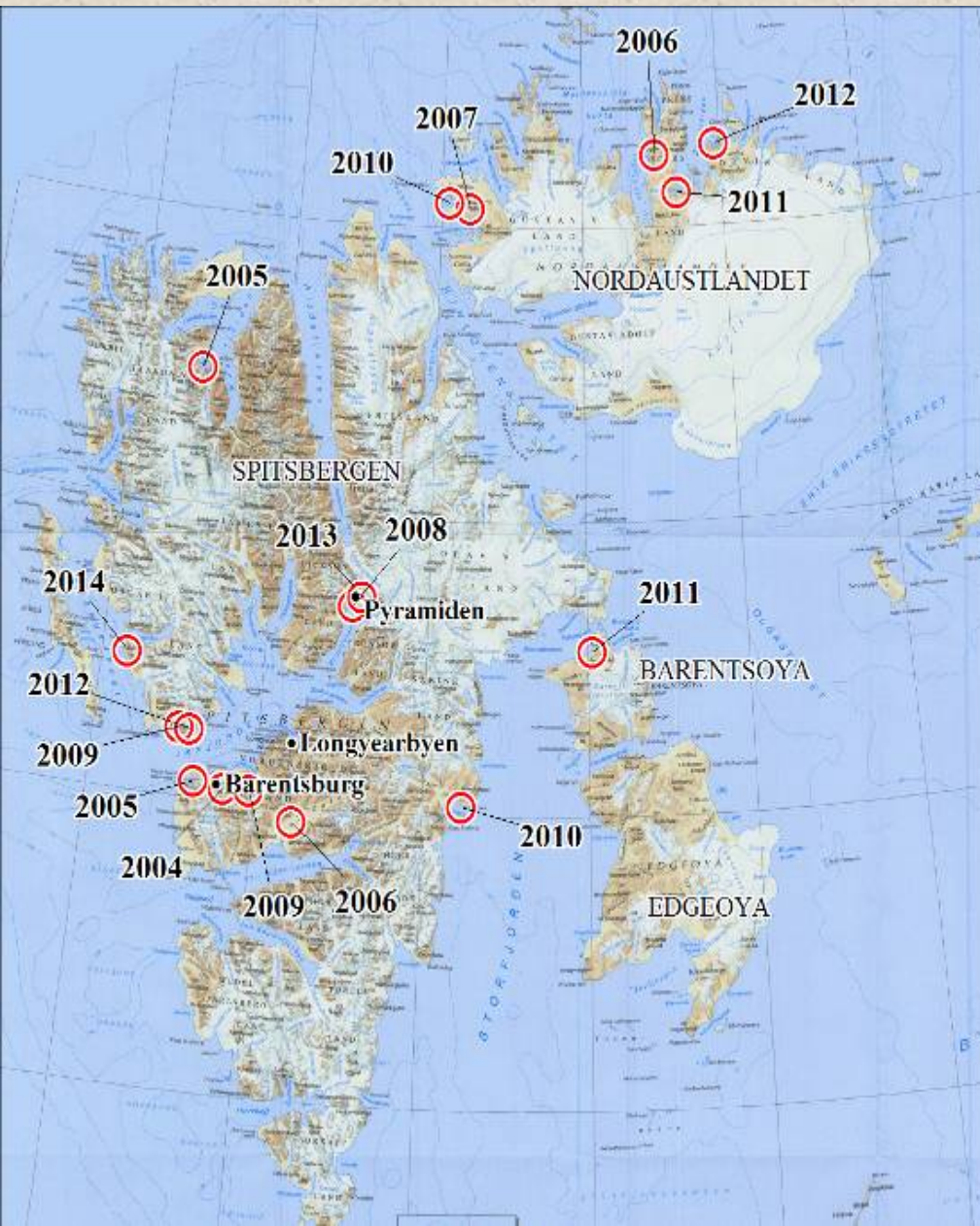
**b** Coordinates of sites of rare and very rare species were incorporated in DB

**b** The main problem in mapping was to find exact localities based on descriptions (often quite poor) because coordinates in old literature sources are often lacking



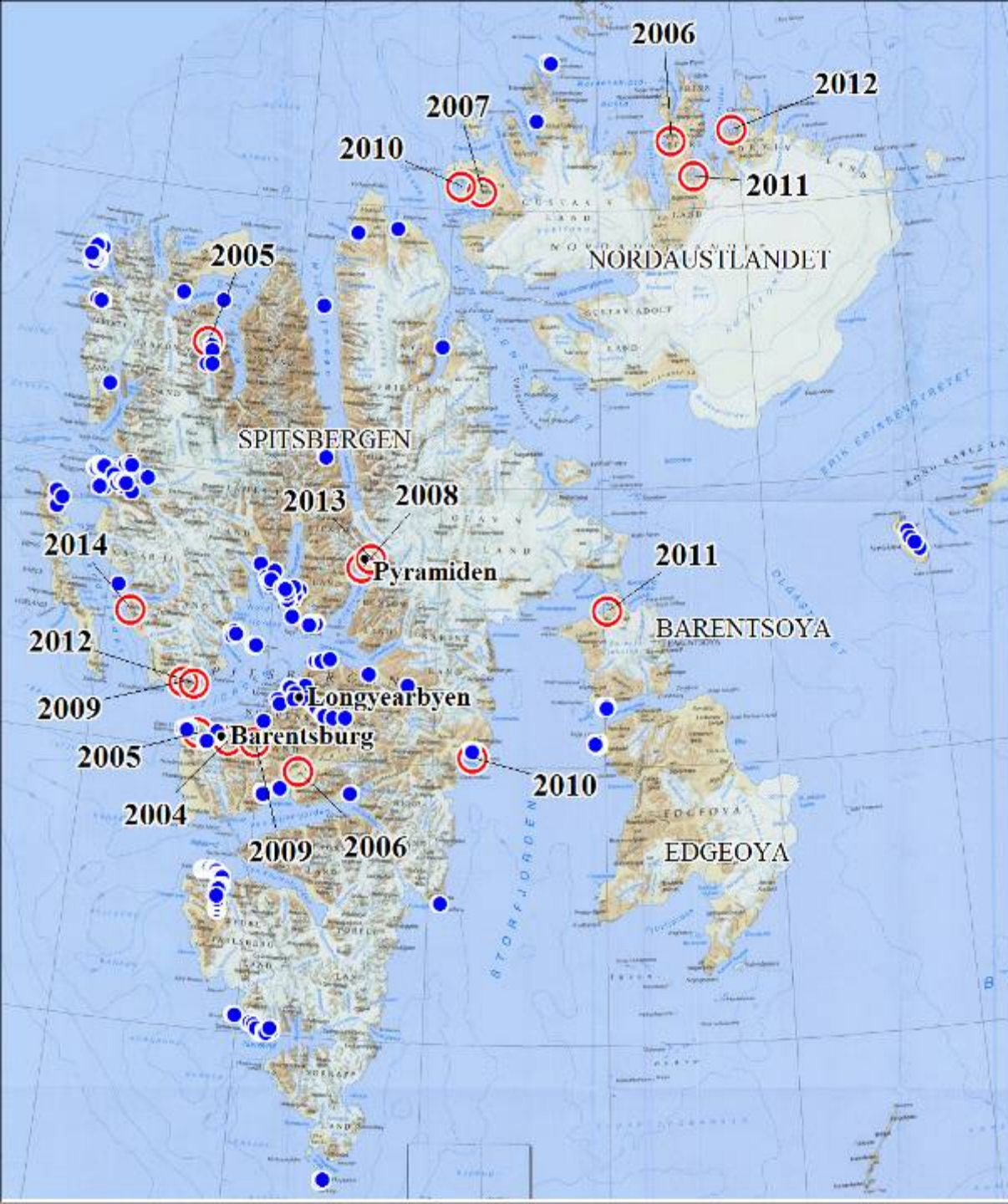
**b** Very helpful for finding of mentioned in literature localities is the book “The place-names of Svalbard” published by Norsk Polarinstittutt (Ny-Trykk-2001) that was gifted during our visit in Polarinstittutt

# Areas studied by botanists of Polar-Alpine Botanical Garden of the Kola Sci Center of RAS



- Our group studied diversity of cryptogams in Svalbard since 2004
- Studies covered 15 areas
- We collected ca. 2500 specimens of hepatics, 5500 specimens of mosses, 5000 specimens of lichens and 2000 – of cyanoprokaryota that are preserved in KPABG herbarium

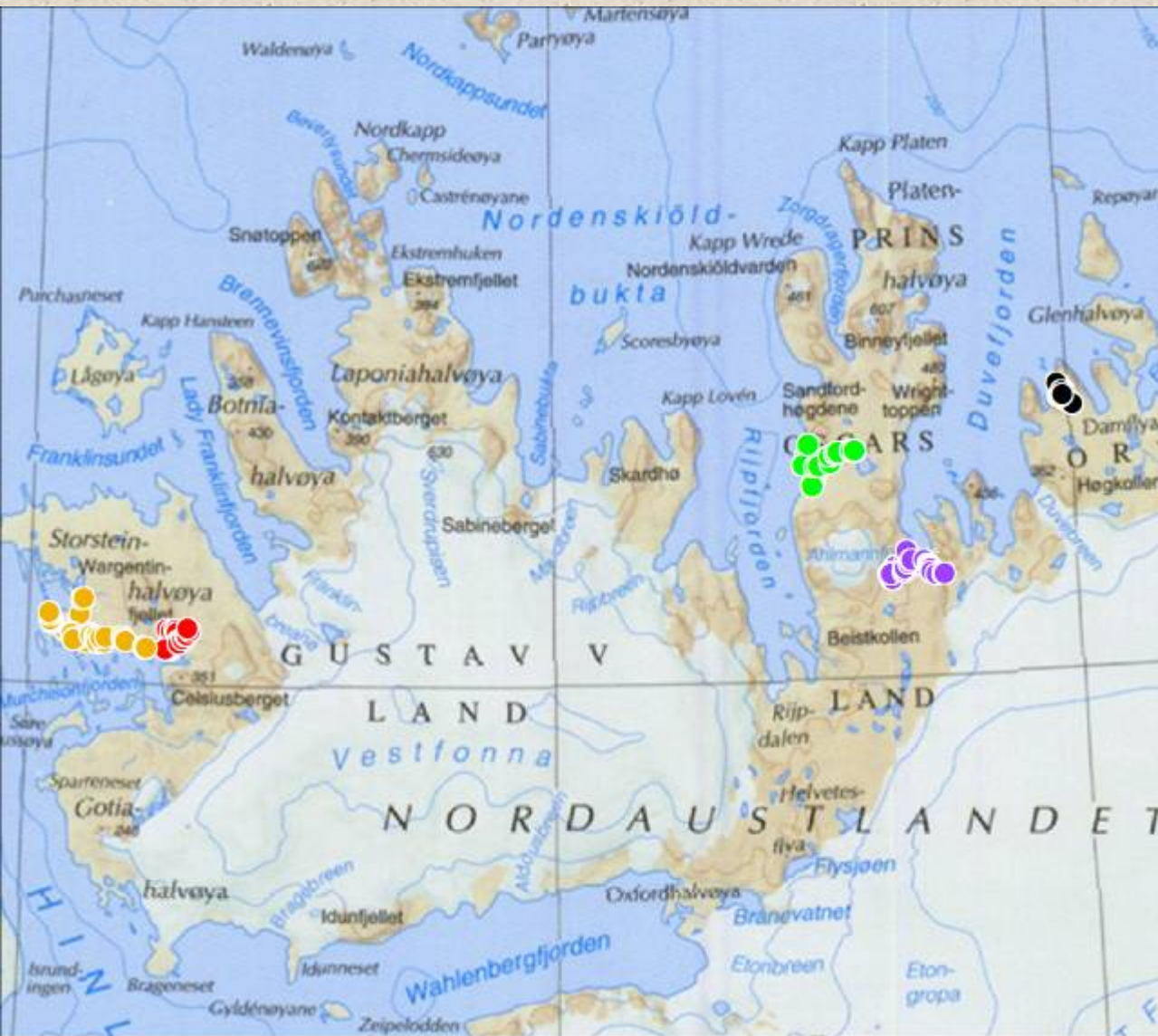




**b** As it is clear from constructed map the most previous collections (blue dots) are concentrated near Norwegian settlements as well as Polish scientific Stations. Some dots on the far North and on islands show the samples collected mostly during expeditions of 19 century

**b** Important task of our group was to study unvisited by specialists areas

# Collecting sites in Nordaustlandet

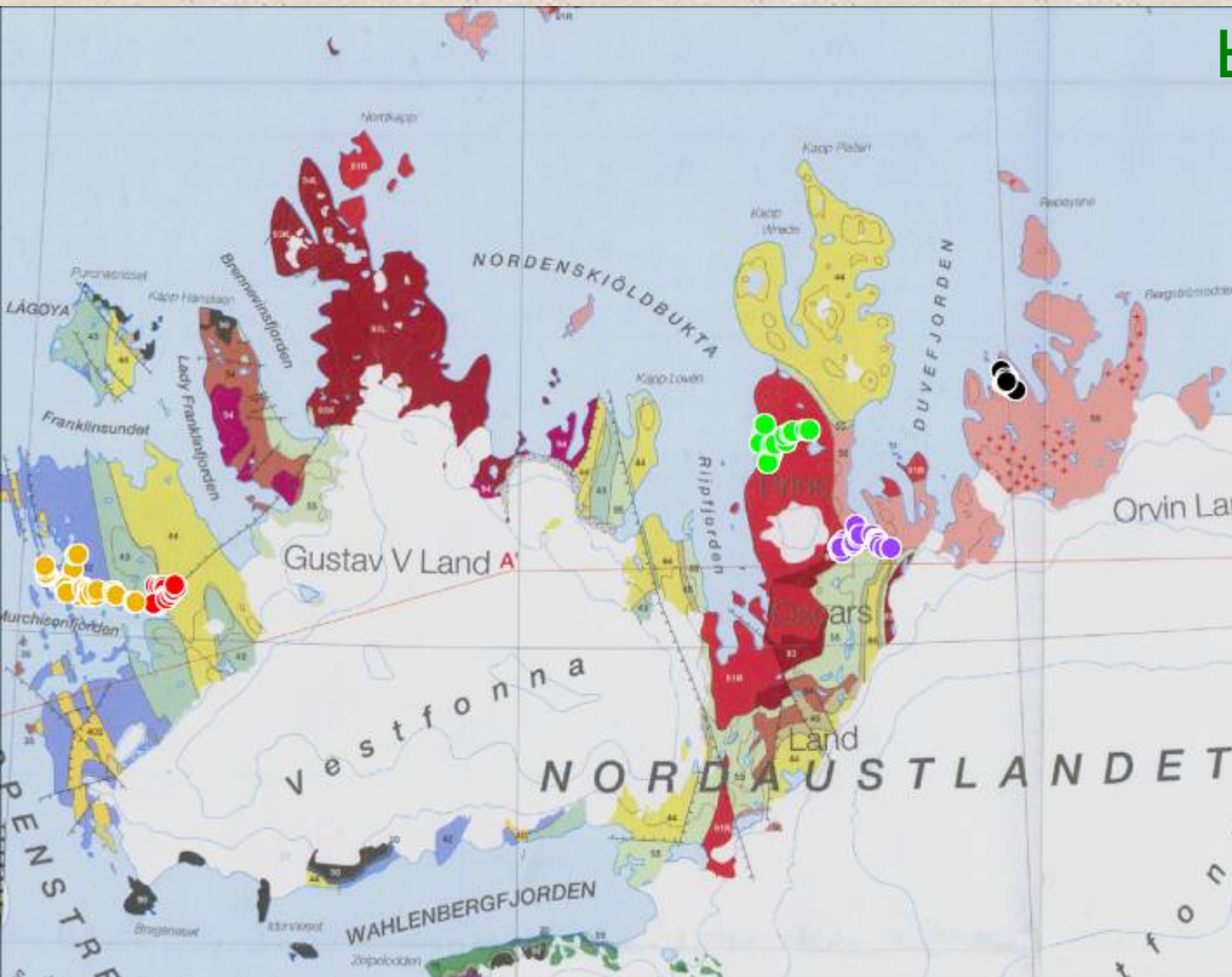


The most poorly studied area of Svalbard is Nordaustlandet

We were lucky to collect hepatics in 5 different areas:

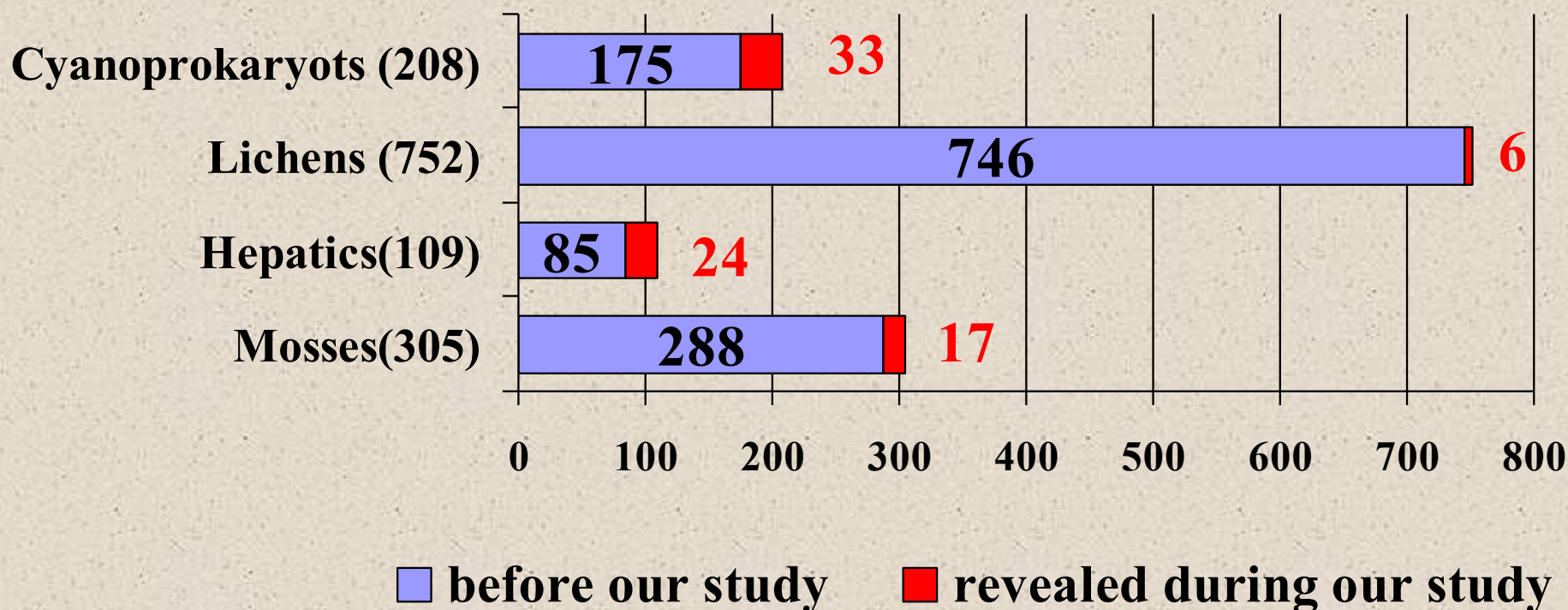
- Northern coast of Murchisonfjorden including Nordvika bay and Kinnvika
- Prins Oscars Land including Innvika Bay
- Orvin Land (Lusegrasvika Bay)

# Geological map and collecting sites



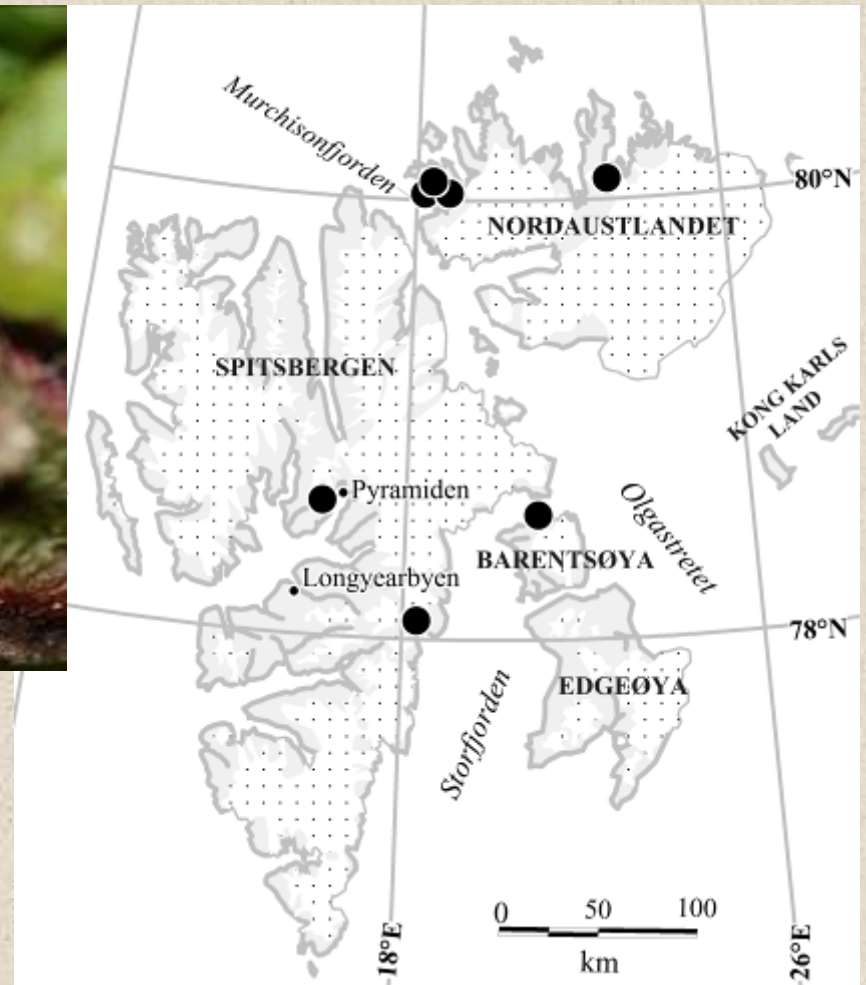
**b** New for Svalbard hepatics were collected both on granites (Prins Oscars Land, Orvin Land) and in calcareous areas (Nordvika Bay, Kinnvika)

# As a result of our study known diversity of cryptogamic plants on Svalbard increased significantly



# Discovery of new for Svalbard species

- b** *Bucegia romanica*, worldwide very rare species, is recorded for the first time for Svalbard. It was collected in many sites in different areas (Konstantinova N.A, Vilnet A.A., Ștefănuț S. 2014. On the distribution and variability of *Bucegia romanica* Radian // *Arctoa*. 23. P. 137-144)

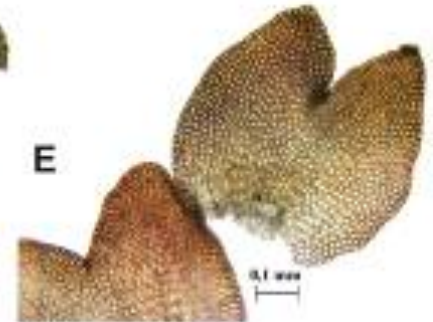
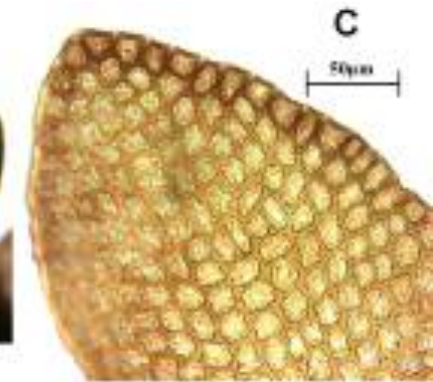
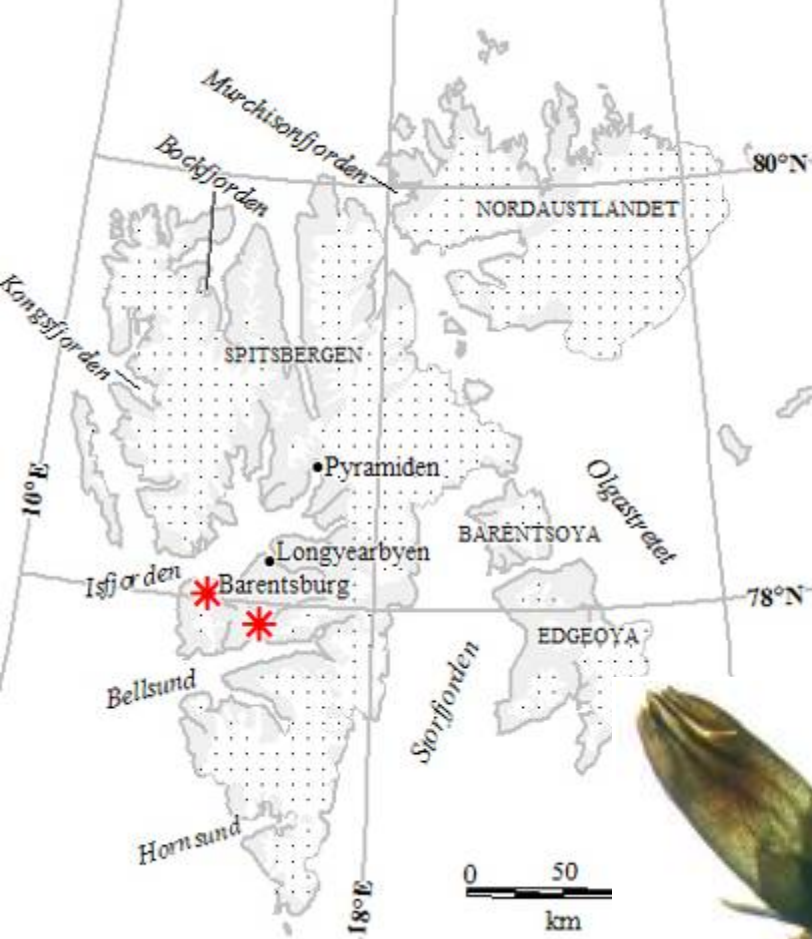


- b** 24 new for Svalbard species of hepatics were recorded at all (Konstantiniva & Savchenko, 2008; 2011 etc.)

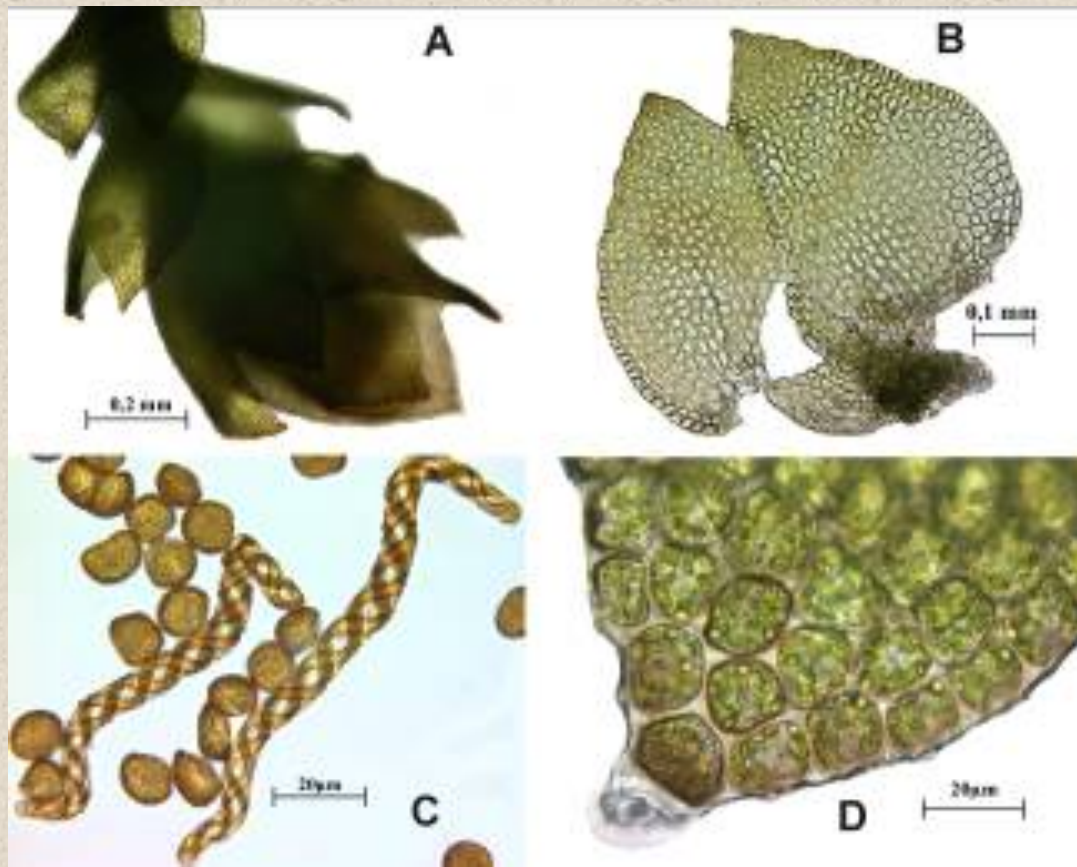
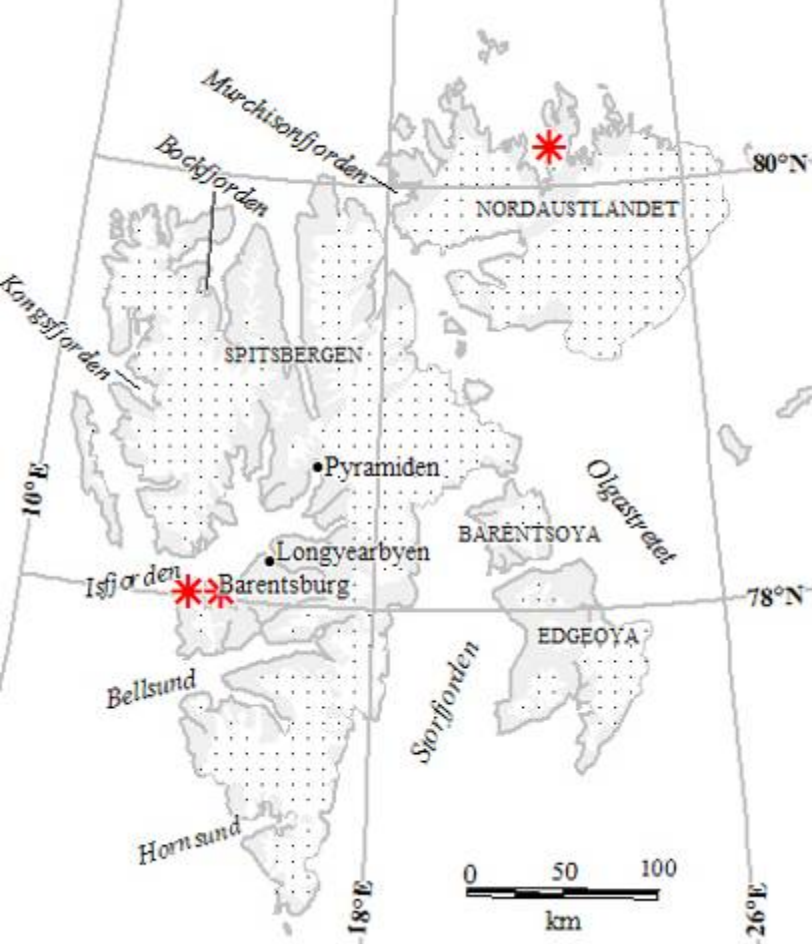


**One of the characteristic for *Bucegia romanica* locality (near Pyramiden)**

Rare and poorly known  
arctic hepatic  
*Anastrophyllum*  
*sphenoloboides*  
R.M. Schust. was firstly  
recorded on Svalbard



***Marsupella sprucei* (Limpr.) H. Bern.)**  
– hepatic that was excluded from Svalbard's flora by Frisvoll & Elbebakk (1996) because no voucher specimens were found. We collected it in several localities including Nordaustlandet

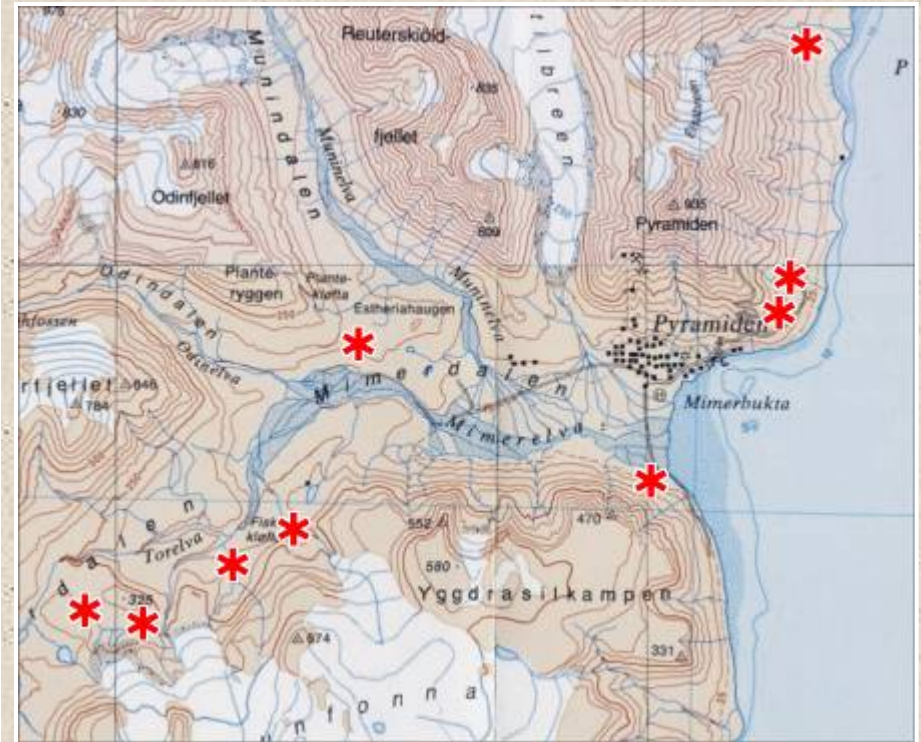
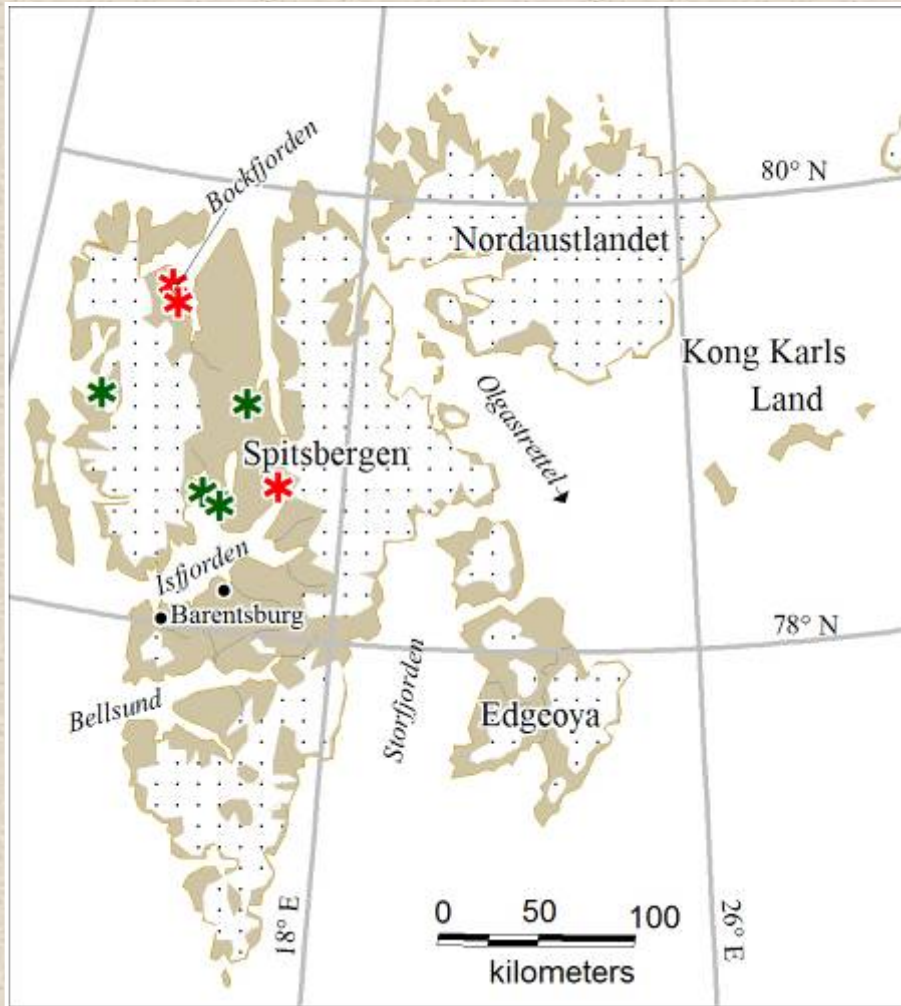


# Description of arctic forms and varieties

Unusual arctic form of *Clevea hyalina* (Sommerf.) Lindb.  
[*Athalamia hyalina* (Sommerf.) S. Hatt.] var. *rufescens* (S.  
W. Arnell) Konstant. was found. It is dark red to dark violet

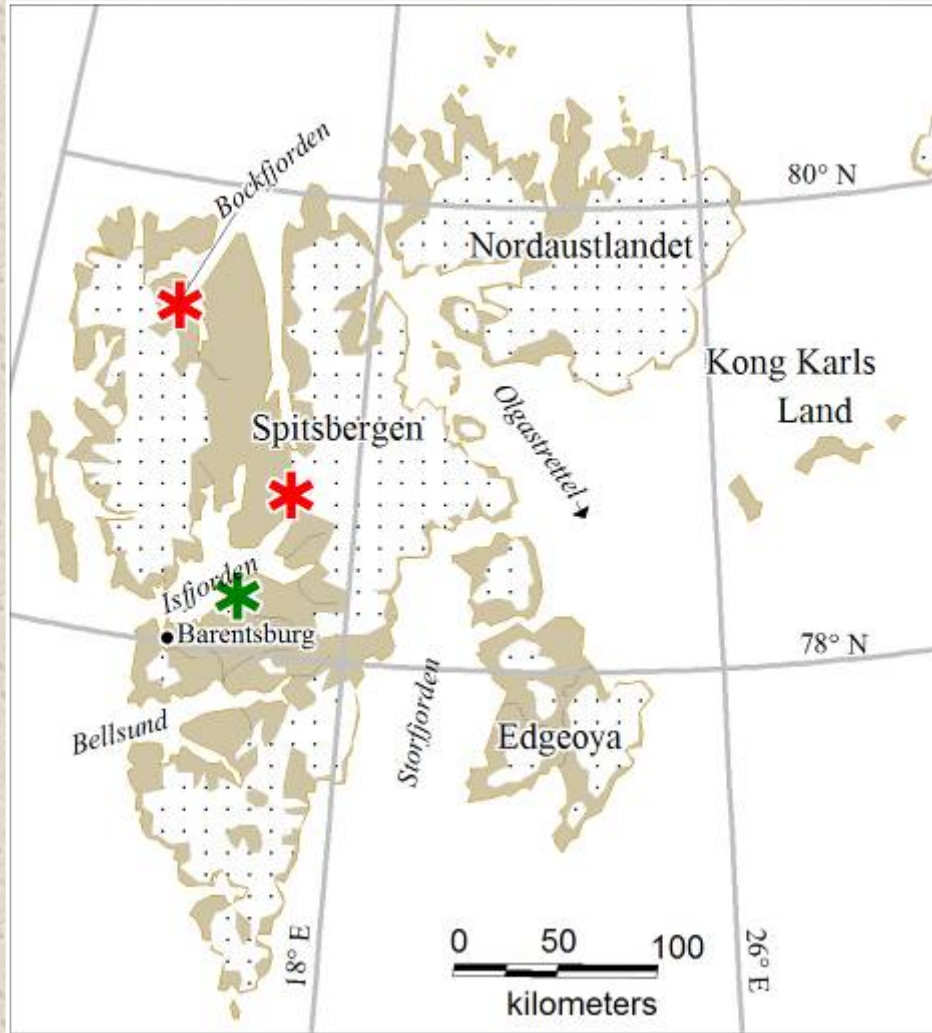


# Specification of distribution of the rare species in Svalbard



Distribution on Svalbard *Leiocolea gillmanii* (Austin) Evans, species that was known previously as very rare (green asterisks – previously known localities, red – localities discovered during our study)

# Distribution on Svalbard *Schistochilopsis grandiretis* species that was known previously as very rare



green asterisks – previously known localities, red – localities discovered during our study



**Thanks for your attention**