

# Greenland Case study report with participatory maps

Lead author: Karl Brix Zinglersen

Participants: Hans Holt Poulsen, Jukka Wagnholt, Christie M. Berthelsen, Marie Søndergaard, and Ann Eileen Lennert.

## **Activity A.T1.4 Case study Greenland**

Use case centered on an area in Qeqqata Kommunia via the activities 1-3

Local knowledge is collected via PPGIS and interviews using tablets for school children already in use.

Data could incl. location narratives, mapping of camp sites, foot paths, hunting grounds and other uses of wilderness. GINR contributes with sci. & governm. data & knowledge & participates in interviews & mapping activities.

## **Deliverable D.T1.4.1 Case study report with participatory maps**

Report on the results of activities 1 to 3 applied to the case study within a local and regional framework.

Maps of collected data.

## Contents

Greenland Case study and activities	3
PPGIS infrastructure and data management	3
Website of the Greenland case study	4
Online or offline PPGIS surveys	5
Overview maps online	7
Story maps online	8
Digitization of specific areas and routes	9
Interviews	10
Interviews of elders in Sisimiut	10
Interviews with resource persons in Sarfannguit	11
Interview of young generation in Sisimiut	12
Digitization of previous interviews	15
Translation of previously recorded place names	16

### Greenland Case study and activities

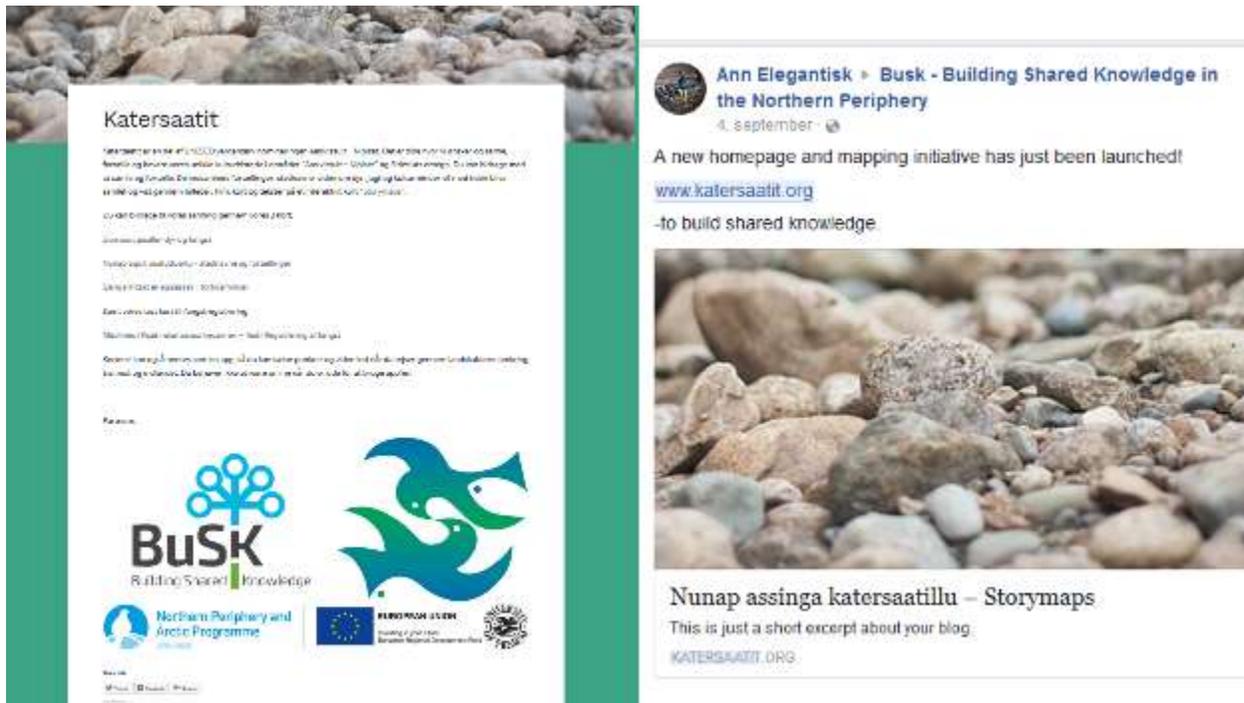
The partners of Greenland, Qeqqata Kommunia and Greenland Institute of Natural Resources, have carried out fieldwork and data collection in the case study area located in the municipality of Qeqqata Kommunia.

### PPGIS infrastructure and data management

Prior to the interviews, the team designed a specific website of the case study in Greenlandic and Danish, a GIS data repository, data collection applications for web, smartphones and tablets, and presenting maps and story maps within ArcGIS and ArcGIS Online, which the team has access to through a national agreement with the provider.

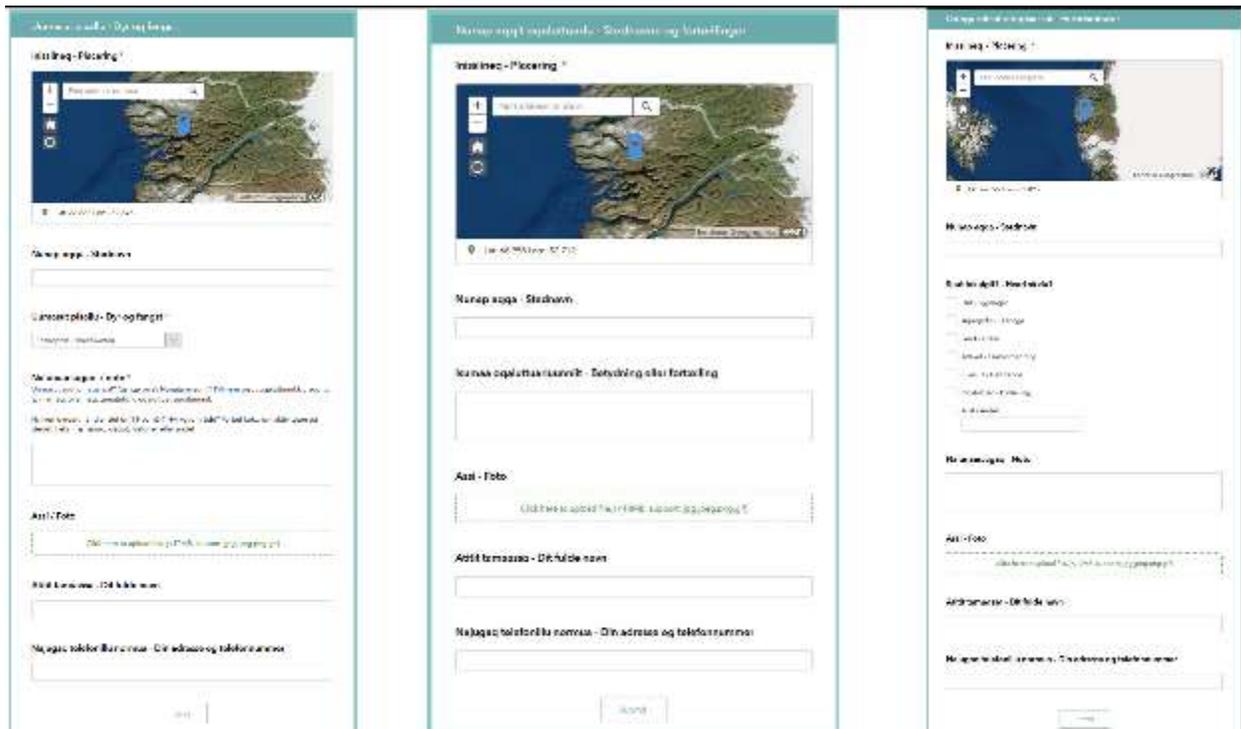
## Website of the Greenland case study

In order to be present locally on the web, the team designed a website specific to the case study. The website, <https://katersaatit.org>, presents the BuSK project and the case study, and refers to the online surveys and maps. The website has been used as the focus for presentation orally in the community, in links in emails, folder, letters and other written communication, and in appearances in social and traditional media. The website is designed in the Open Source platform Wordpress, and include pages for each of the four surveys, the overall presenting map, and description of the case study. It include contact information to the case study team and logos of the EU Northern Periphery and Arctic Programme, BuSK project, the Greenland case study, and the partners of Greenland Institute of Natural Resources and Qeqqata Kommunia.



## Online or offline PPGIS surveys

The team designed four digital surveys for the themes of community mapping of indigenous place names and stories, locally known wildlife resources and locations, reporting of archaeological finds and sites in the landscape, as well as a test registration system for reporting of hunting information for caribou and muskoxen. The surveys can be filled in online via an internet browser or using an app native to the Android and iOS systems of smartphones and tablets using the Survey123 framework of ESRI. The survey design is held simple with only very few required questions. All surveys include a map for pinpointing the location on a satellite image, a field for recording of the place name, a button for adding a photo or taking a picture on location, and the possibility of inserting the name and contact information of the informant.

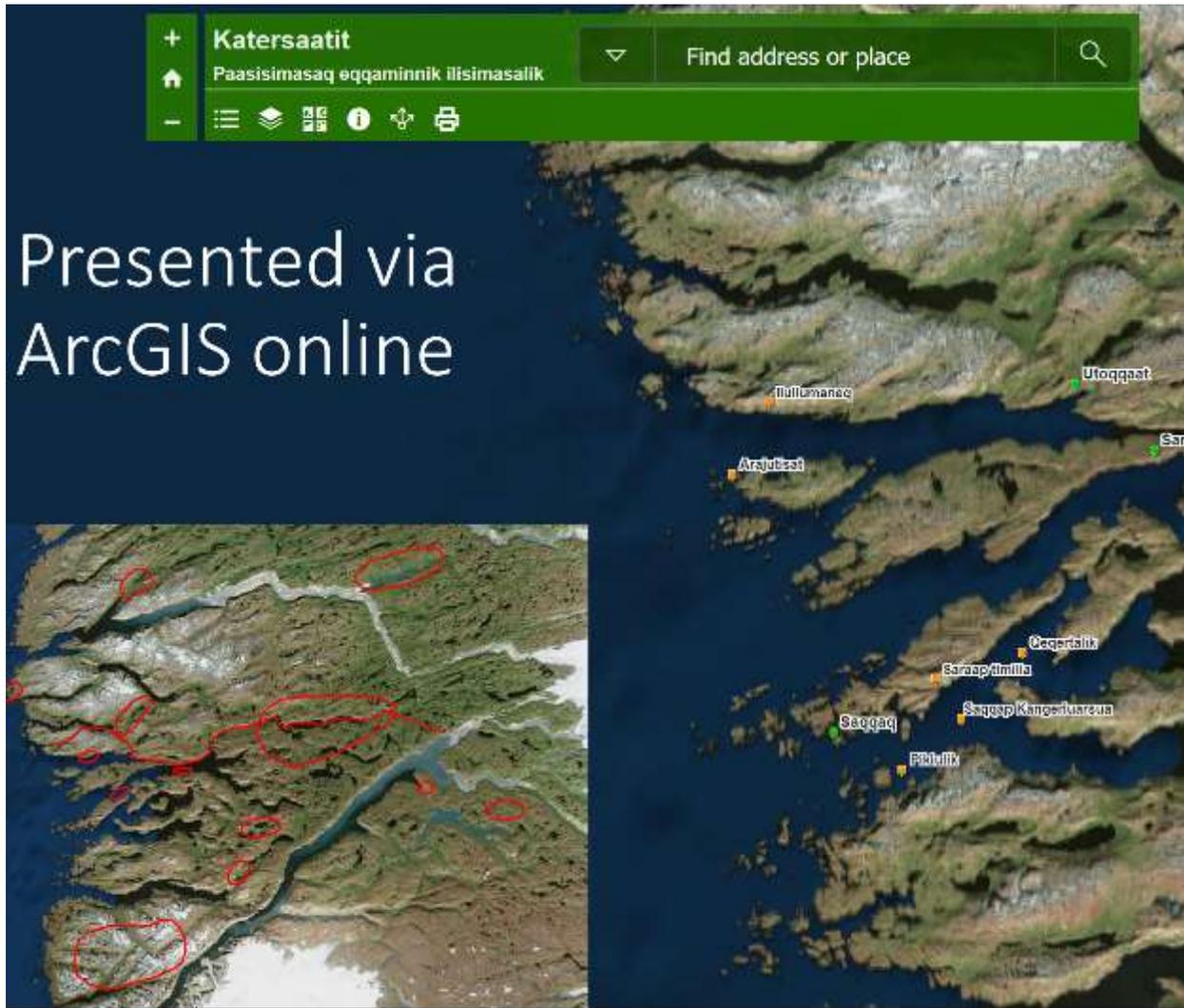


The survey of place names and stories includes information on the meaning of the place name or a story connected to the place. The survey concerning animals and hunting provides the possibility to select an animal species or activity, e.g. place for fishing of arctic char and explain more in text about the location, the animal, activity or other information. For archaeological finds and sites, the users can tick boxes to record their observation of e.g. remains of buildings, tent rings, graves, artefacts, or other, and write in a more detailed description of the find. When using the native app or the browser, the user can fill in multiple succeeding records, online as well as offline to be later uploaded.



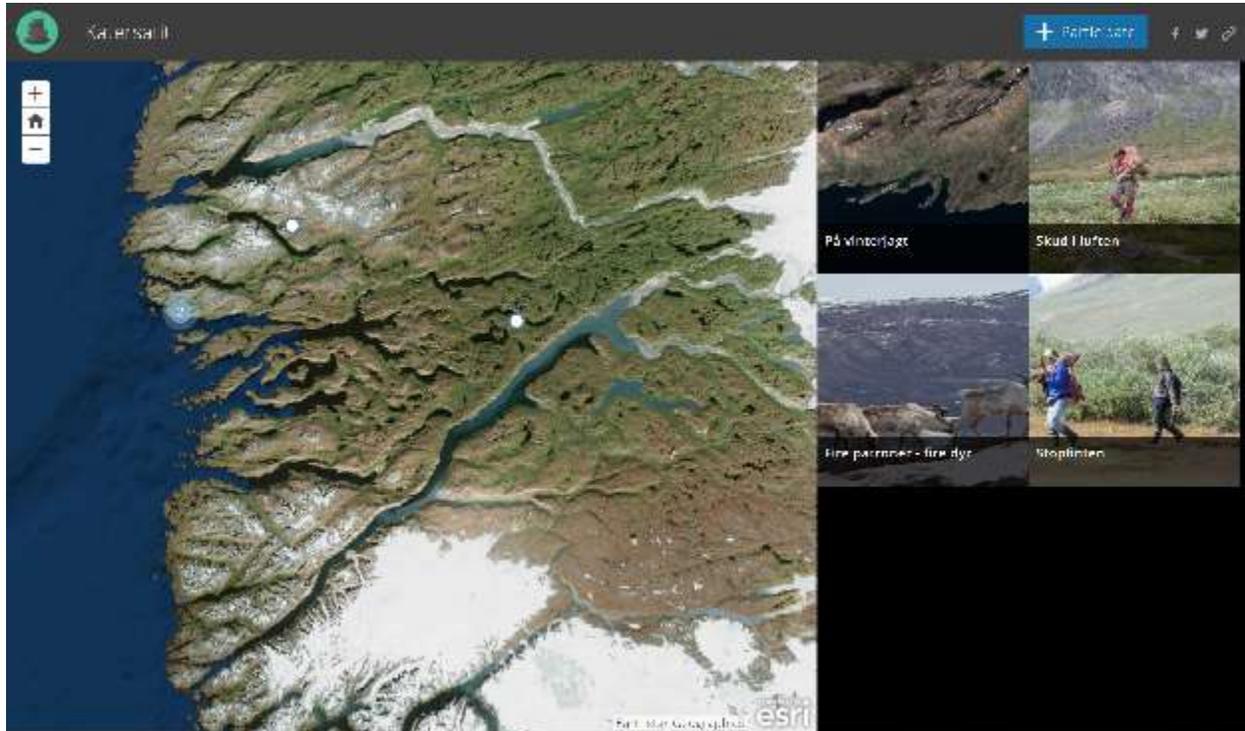
## Overview maps online

The data recorded through the online surveys are directly posted into an online GIS database, and the result is presented in an online map, where the user can query and select the data points for download. The map is a general interface to the collected indigenous and local knowledge and a point of distribution to other means of online, digital communication – in future also in the municipality planning GIS framework for representation of this information into the planning scheme.



## Story maps online

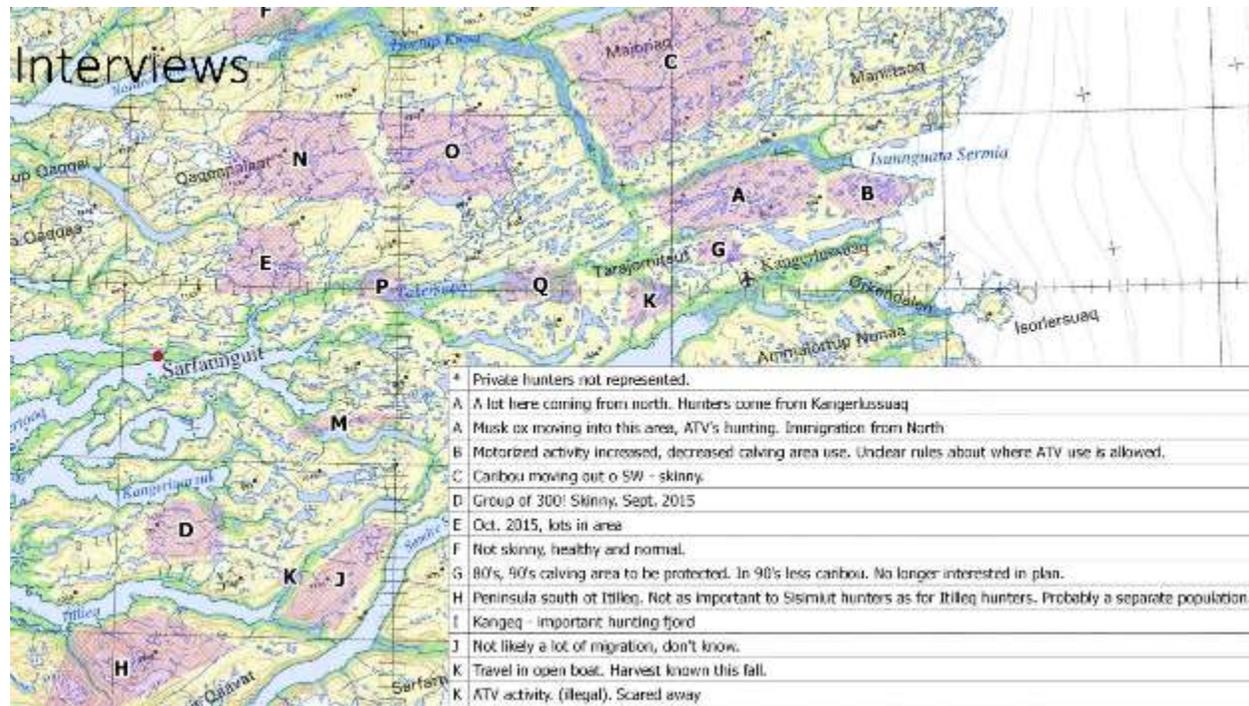
Certain recordings involve extended and complex storytelling by one or more persons. In these cases, the simple and condensed surveys are not sufficient to depict it fully. Consequently, the team has developed so-called story maps using the ArcGIS platform also. In the story map frame, it is possible to insert multiple locations, substantial descriptions and stories and link these together into an elongated story e.g. describing the experience and stories of a specific person or the resources and activities within an area in a coherent composition. The story map technology provides the possibility of adding recordings by other users. We have used story maps for interviews with specific, knowledgeable persons whose describing stories required a more thorough presentation than just a point on a map.



## Digitization of specific areas and routes

For information of certain activities and resources the definition of specific areas are required. The Survey123 can only be used for point data acquisition, and not polygons demarking a certain area of e.g. abundance of a specific species or resource, or poly lines showing a hiking, dog sled or sailing route on the map.

For this purpose, we have drawn these figures on the web mapping system providing more geometric variations, which is, however, more difficult to use for non-experts. Equal to the interview points, the results are displayed on the internet map available for interpretation and interrogation.



## Interviews

The fieldwork has been divided into four parts: A) Interviews in the town Sisimiut focusing on traditional knowledge of elders of both genders. B) Fieldwork in the village Sarfannguit focusing on adaptation of the community to the plans and future development of the proposed UNESCO World Heritage site Aavernersuit – Nipisa in the municipality. C) Interviews and resource mapping with the younger generation of hunters and fishermen in Sisimiut. D) Attempt to develop an online recording system for hunting reports to the government.

### Interviews of elders in Sisimiut

The interview team conducted four interview sessions with elders in Sisimiut. These sessions include three individual interviews with Aron Olsen, Martin (Martikassik) Olsen, Samuel P.V.D. Olsen as individuals recognized in the communities for their extensive knowledge on the natural resources, places names, and stories of the region. The team held a session in the elder's association, Innerulaat, with a larger group of men and women from Sisimiut – some born in the region, others originally from other towns and villages.



The elders gave insight into their memories and knowledge of the area through recording of specific areas for abundance of species, e.g. caribou, arctic char, redfish, cod, and Greenland halibut. Using simple tools of a paper map, a pen, and a microphone, their input to the mapping of species were recorded on site and subsequently digitized in GIS.

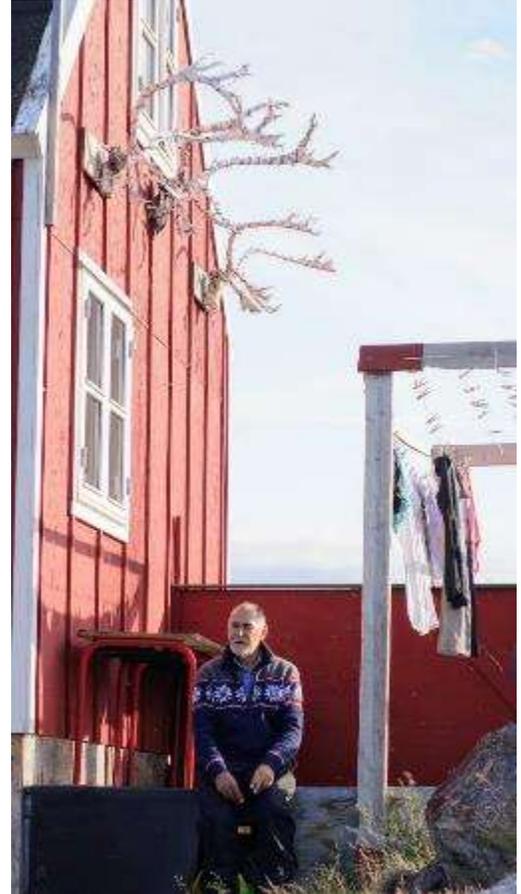
### Interviews with resource persons in Sarfannguit

During two seasons of field work studies the team has visited Sarfannguit, a small village south east of the main town Sisimiut located in the center of the UNESCO World Heritage Site Aasivissuit – Nipisat.

In the settlement, we have interviewed the local resource person Aron Olsen, who is the local employee of the municipality of Qeqqata Kommunian managing the village office. More importantly, he is a great enthusiast of the village and the person behind a number of activities in the settlement supporting the community's children and families. He has a great knowledge of the area living there for many years.

Mr. Aron Olsen took during both visits the interview team for a boat trip to the surrounding fjord waters explaining the past and current use of the area, stories and cultural landmarks. His input has been included in the digital maps forming a large portion of its content for the area around Sarfannguit.

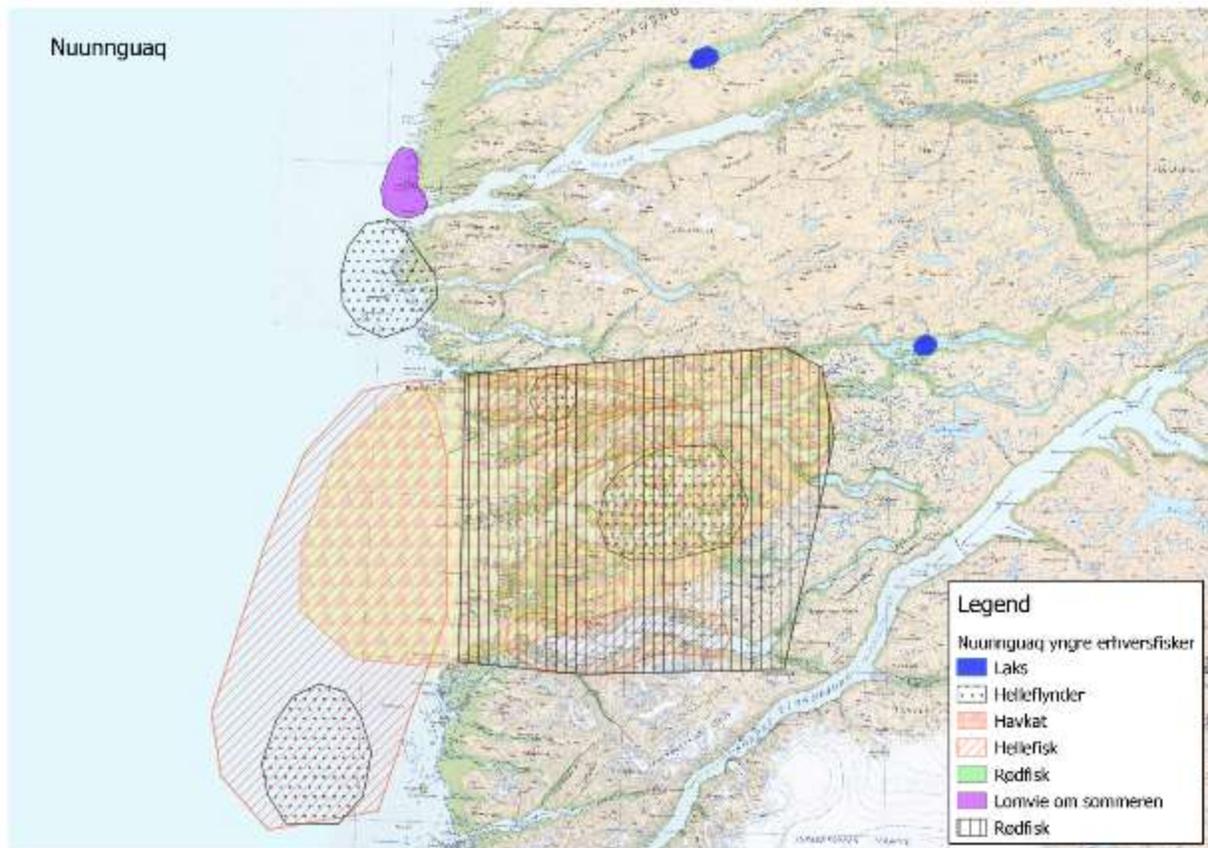
In Sarfannguit, a citizen-meeting interview was established. During the meeting, it became evident that the local community felt detached from the municipality planning activities concerning the designation of the UNESCO World Heritage Site. They were frustrated of the slow process and had no specific idea of how and when they would be included in the further development of the settlement to meet the goals and future of the UNESCO site, and how would be the right way for the settlement to approach the future within the UNESCO designation.



### Interview of young generation in Sisimiut

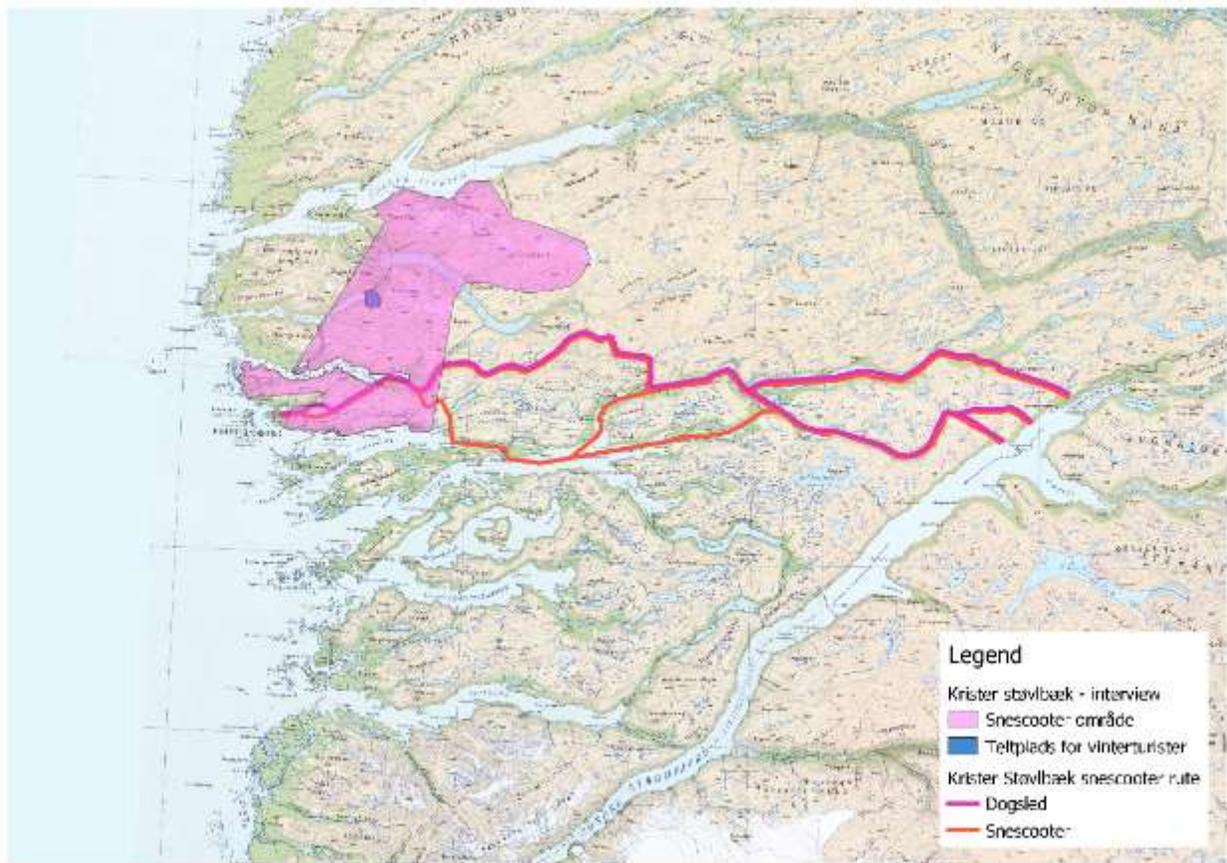
The young, Greenlandic speaking employees Jukka Wagnholt and Christie Møller Berthelsen of Greenland Institute of Natural Resources conducted field work in Sisimiut in May 2018. The goal was to approach and interview the young and middle aged generations concerning hunting and utilization of nature of today. The team interviewed fishermen, hunters, and nature users.

A young fisherman described his profession of today and the fishing grounds for the different species in the region, e.g. Greenland halibut fishery is done off Sisimiut, and in the fjords of Itilleq Kangia, Ikertoog, and Amerloq different from a few decades earlier. As a completely new information to biologist, he told that Atlantic Salmon (*Salmo salar*) was now found in the lakes and connected downstream river of Tasersuaq (70 km east of Sisimiut) and Egalussussuit Tasia (70 km north east of Sisimiut). The only known salmon lake and river in Greenland is Kapisillit (75 km east of Nuuk). The young fisherman was eager to share his knowledge of contemporary fishery in the region and the areas of resources.



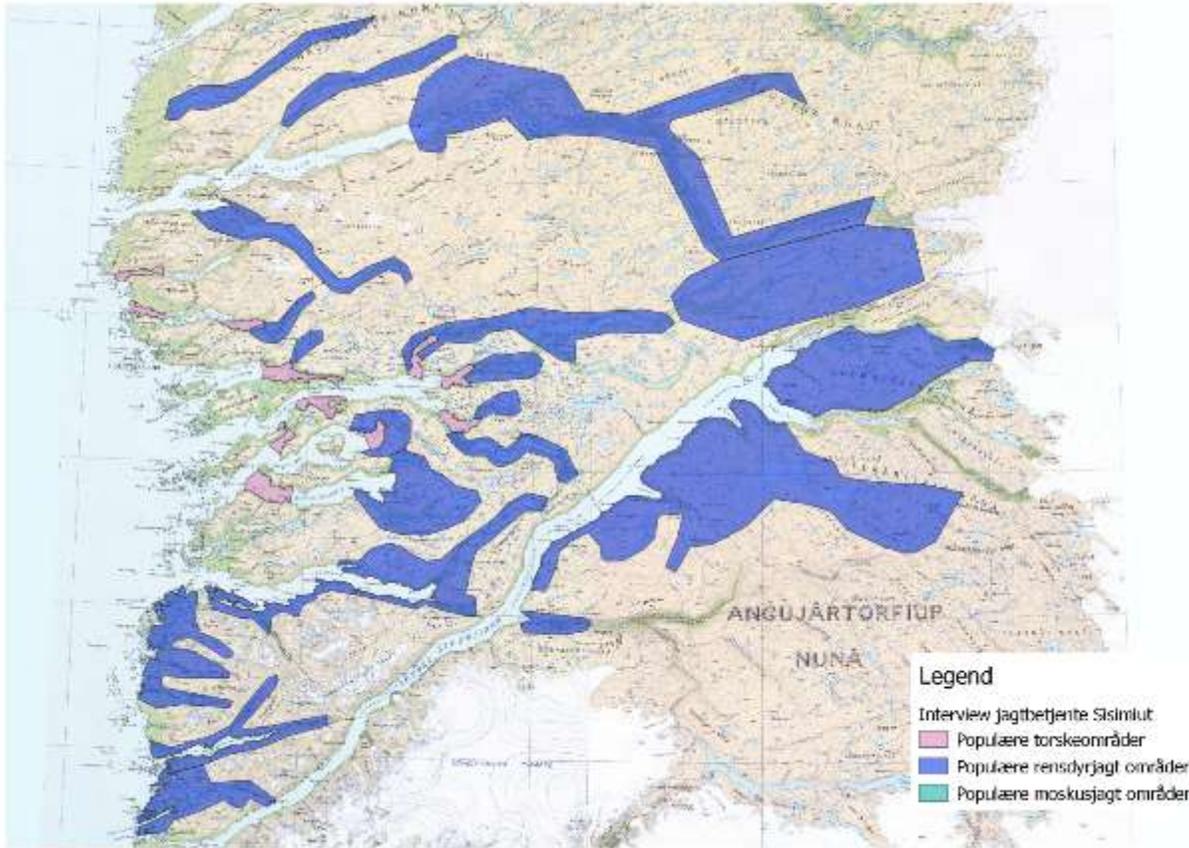
Figur 1: Areas of fishery resources near Sisimiut: Greenland halibut, halibut, catfish, redfish.

Another younger person from Sisimiut explained how the land area is utilized for leisure driving of snowmobiles. The landscape is relatively open, so there are no specified routes to follow, and driving is based on environmental conditions of wind, weather and terrain. It happens often the snowmobile drivers and their families drives to Kangerlussuaq, 160 km from Sisimiut, for weekends, concerts, and other activities. The drive is 5-6 hours, but the record is said to be 1,5 hours, and the ice covered lakes and eventually fjords are used for high speed driving. A larger area northeast of Sisimiut is used for leisure driving and small trips by many inhabitants of the town. There are plans to develop snow mobile routes in the Itilleq fjord area. Snow mobiles are used as means of transport for backcountry skiing, randonee, telemark, and similar mountain ski sports. In the Summer, extreme sports are popular, and on particular ice caps also using snow mobiles. In Sisimiut, fat tyre bikes and mountain biking is popular.



Figur 2: Snow mobile areas and routes. Tenting for winter tourism.

Hunting in the Qeqqata Kommunia region, in which Sisimiut and Kangerlussuaq are located, is controlled by two hunting officers using boat and snow mobile. In their experience, there are often many caribous all the way from Sisimiut to Kangerlussuaq during Winter, but 5 to 10 days after the snow mobile season starts, the caribous move to other more remote areas, likely due to noise and disturbance from snow mobile drivers. The officers would like to utilize new technology in their job more, and recommend a smart phone application with GPS positions enabled for reporting of caribou and musk oxen catches. The officers patrol also 36 rivers with Arctic char (*Salvelinus alpinus*) and to receive a better overview, they would like to utilize small drones. The officers could map the popular areas for caribou and musk ox hunting.



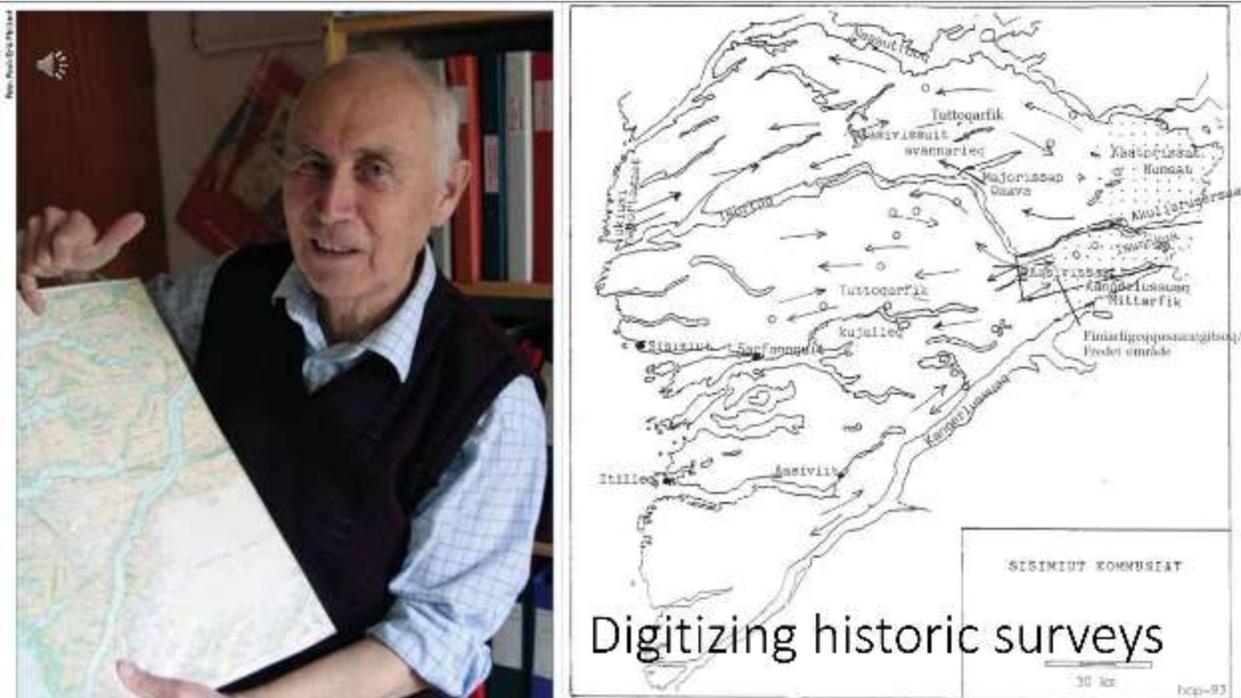
Figur 3: Popular hunting areas for caribou and musk oxen, as well as fishing areas for cod.

A middle-aged hunter accessing the terrain with more traditional means of transports: boat or dog sled, are worried about the growing use of snow mobiles and All-Terrain Vehicles (ATV), as well as the new mine centrally in the Kangerlussuaq fjord where it meets the Itilleq fjord. The ATV use is not monitored, although it is illegal, and the illegal hunting using snow mobiles in winter and ATV in summer is providing only small chances to the animals to survive and consequently becoming less abundant.

The interview in Sisimiut May 2018 consequently provided some interesting insights into changing utilization of the nature and resources presenting a clash between traditions and technology, young and older generations, as well as a disturbance to wildlife.

## Digitization of previous interviews

In the late 1980's and early 1990's, the Government of Greenland initiated a project on collecting knowledge from the indigenous people and resource persons throughout the country concerning natural resources and changes in the climate. This including mapping of caribou or whale travelling paths, areas of fishery for Greenland halibut, redfish, cod, arctic char and other species, changes in the extent of the sea ice in the fjords, used routes for dog sledge, walking or sailing, tent camps and many other interesting observations, knowledge or traditions in the communities. The project was run by HC Petersen, head of the high school of Sisimiut, and he and GINR employees traversed the country for interviews with knowledgeable persons. The result was a number of reports, one for each area.



Within this project, we have digitized these reports making them alive in geographical information systems and online content mapping. The data is marked as historical, because many conditions have changed the past almost thirty years. However, much of the information is still of interest for managing the area, particularly concerning the UNESCO world heritage site, and can be included in planning – and as a starting point for new interviews and changes in the situation. The data is available online via ArcGIS Online.

## Translation of previously recorded place names

The locations and landmarks of Greenland are named by the indigenous people of the country and visitors from Europe.

The European or Western visitors, being colonist, whalers, fishermen or explorers have often named the places after to person names, such as royal family or economic funders, or otherwise names connected to their activity or naming traditions of their business or craft, eg. Cape Farewell, Good Hope, Good Harbour, Holsteinsborg etc.

The place names of the indigenous Greenlanders are different. The names are often descriptive to the landscape in its type or form. This could be 'the big island', 'the fjord', 'the small lake' and so on. Other names are related to indigenous traditions in using the place, eg. for large gatherings, fishing, hunting, tenting and more, or how people cross the area. A few names hold hints of past stories or legends of the oral tradition, identifying where it happened.

The place names of Greenland is recorded during studies going back to the 19th century, and later in the mid-20th century, a commission for place-names were established for recording and identifying the known and accepted names under certain regulations, minimizing the use of naming styles used by the colonial and western traditions.

The recent decade, the Oqaasileriffik, the Language Secretariat, has maintained a GIS database of the place names of Greenland. The names are collected from interviews with indigenous and local people all around Greenland, and is used in the production of new topographical and nautical maps to cover the country, replacing the old, paper maps, which were inaccurate in their positioning and were labelled with Greenlandic place names in their old spelling as well as colonial, Danish naming.

The place database of Oqaasileriffik is available online for public use through the governmental GIS platform NunaGIS. For the project, we have retrieved the part of the database covering our study area, and have translated the meaning of the place names. This work provides some interesting insights into the local use and traditions of the landscape.