On the Road to EA in Greenland:

The use of spatial biodiversity data to identify important areas

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Greenland: Big Island – Small Population

Coexistence
Tourism and Hunting

In one area
(Cross Sector)
Overall Area Management Plan

Foto © Knud Falk

Foto © Knud Falk

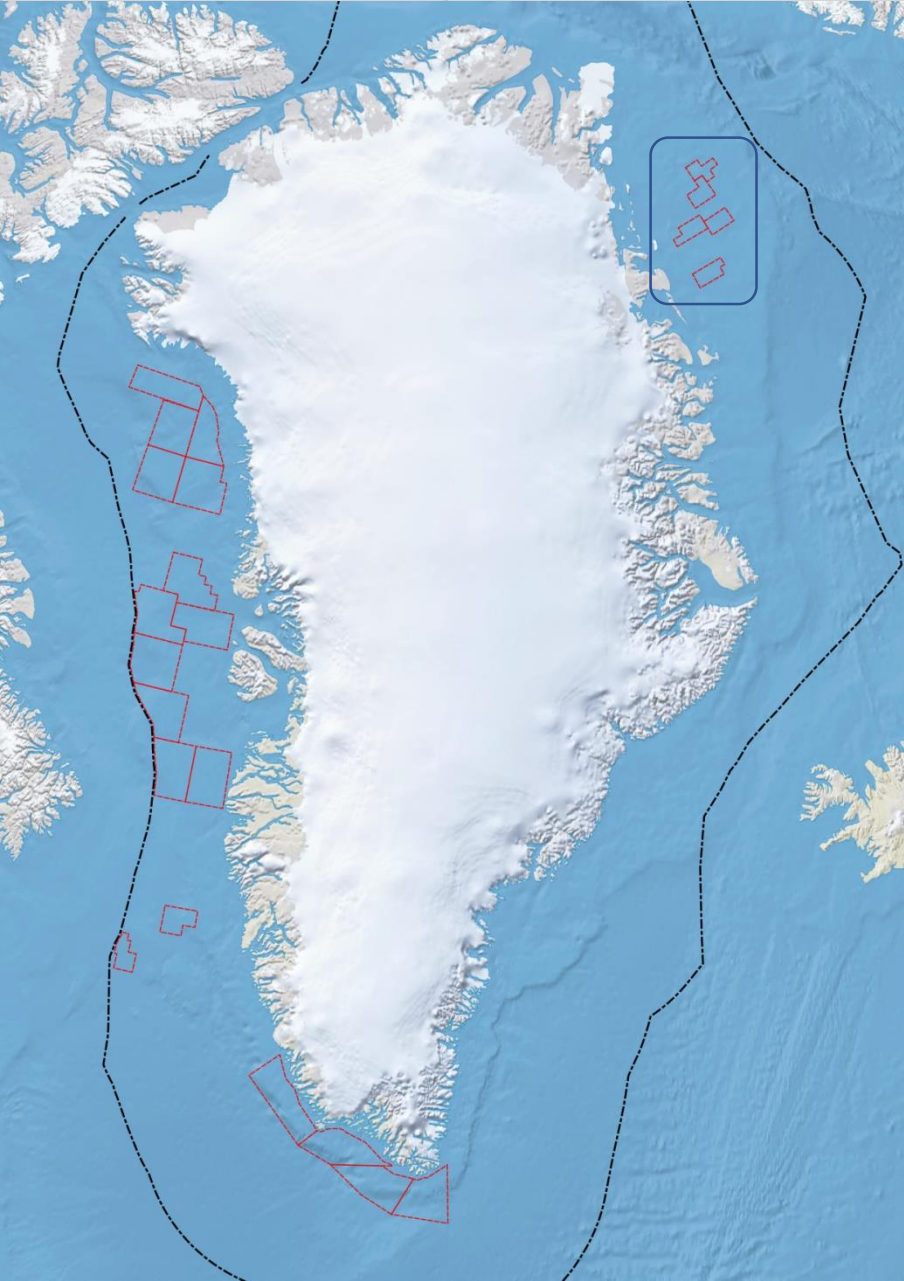# Living Resources

photos: Royal Greenland

Coexistence
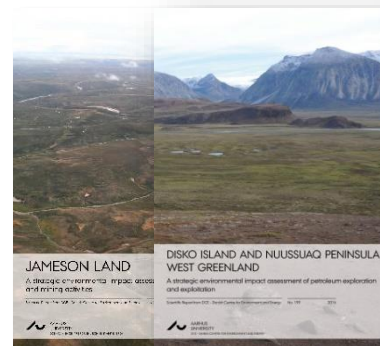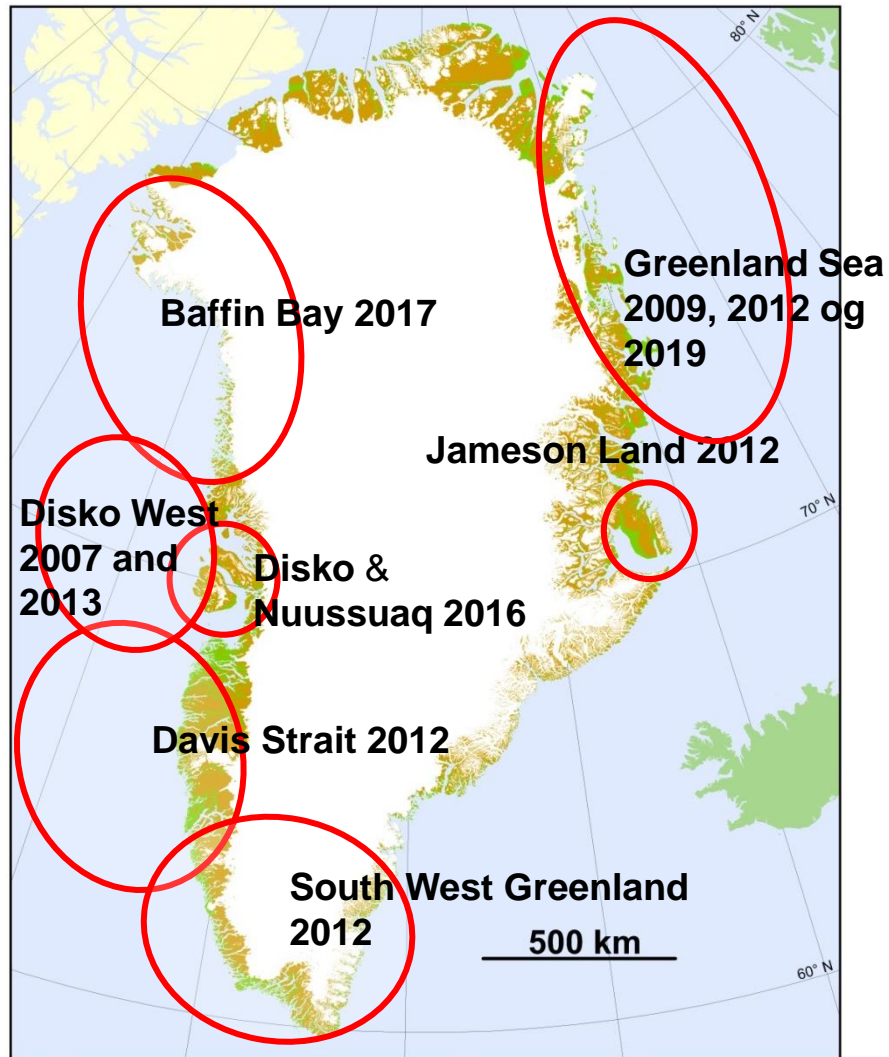# Fishery and Oil Extraction

Photo Courtesy of Shell Photographic Services, Shell International Ltd

Foto © Knud Falk

Oil license areas in the last decade and the Strategic Environmental Impact Studies and Assessment

Strategic Environmental Impact Assessments of Oil Activities

Baffin Bay 2017

Greenland Sea 2009, 2012 og 2019

Jameson Land 2012

Disko West 2007 and 2013

Disko & Nuussuaq 2016

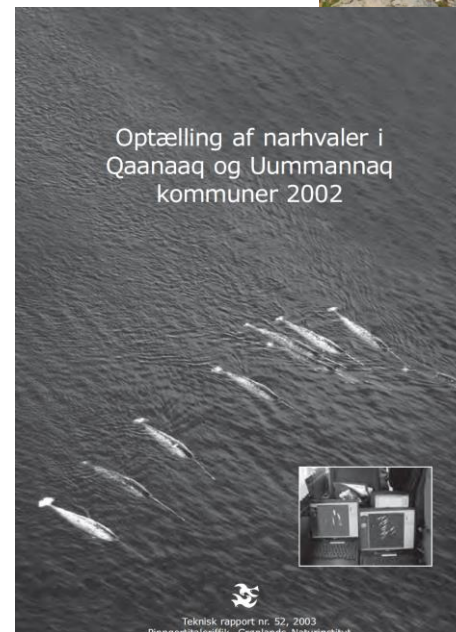Davis Strait 2012

South West Greenland 2012

500 km

SEIA Studies include spatial information about key habitats, migration routes, sensitive species etc.

**Important data source
Studies on sustainable use of
living resources**

Including status and trends on
several species of fish, mammals,
birds etc.

SEABIRDS AND MARINE MAMMALS IN SOUTH AND SOUTHEAST GREENLAND, JUNE 2008

Monitering af lomvier og rider i det nordlige Upernavik 2008

Teknisk rapport nr. 90, 2013
Pinngortitaleriffik
Grønlands Naturinstitut

Optælling af narhvaler i Qaanaaq og Uummannaq kommuner 2002

Teknisk rapport nr. 52, 2003

….. And more, including
scientific papers etc.

Local knowledge - Empowerment

The
Piniariarneq GPS method
(Flora et al. 2018)

An interdisciplinary, collaborative effort involving 2 anthropologist, 2 biologist, a GIS specialist and 17 occupational hunters.
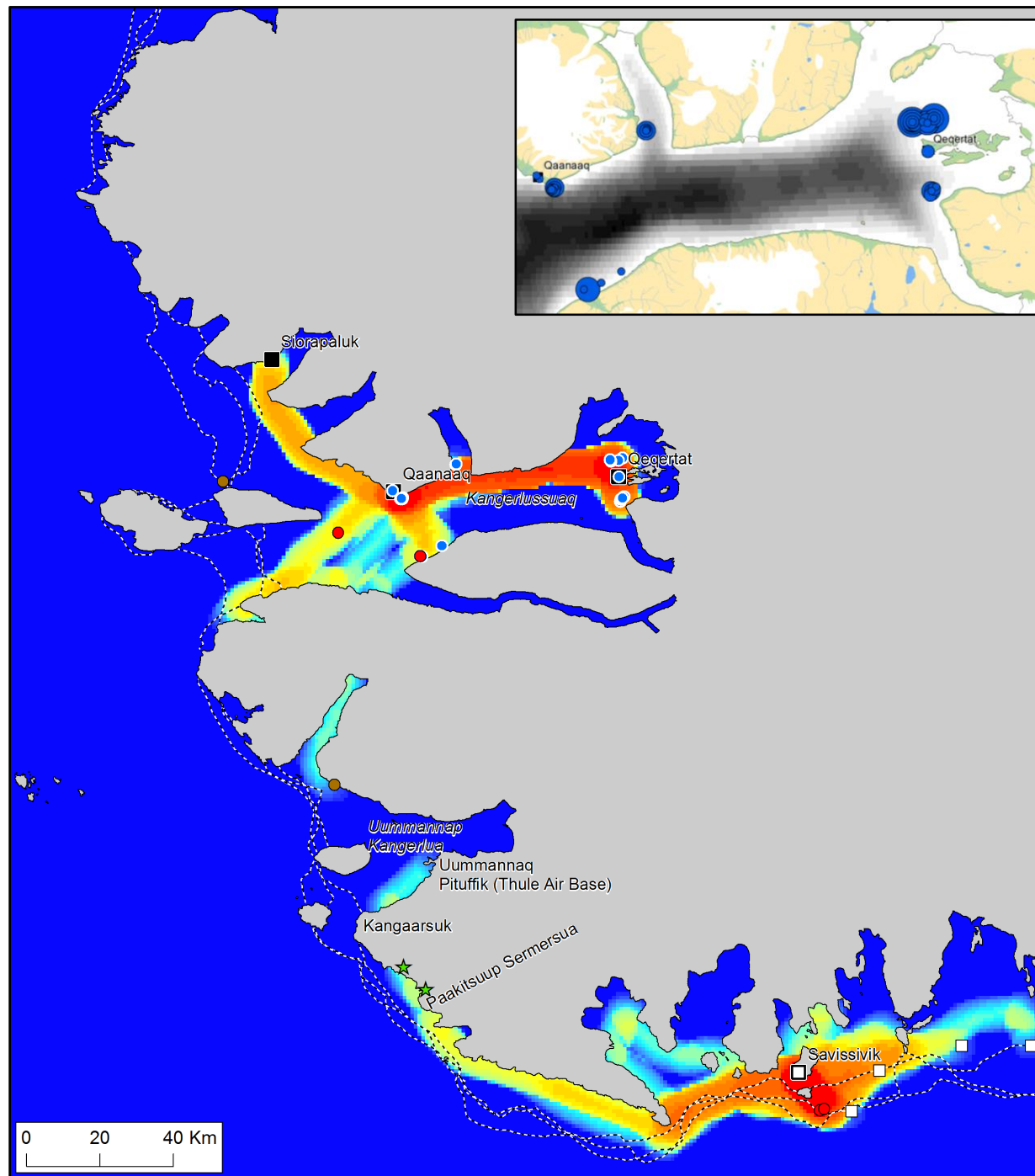
Overall aim was to map human use of living resources in the landscape, but many aims...

An experiment in collaboration across disciplinary boundaries, centered on the use of a particular GPS-based data recording technology.
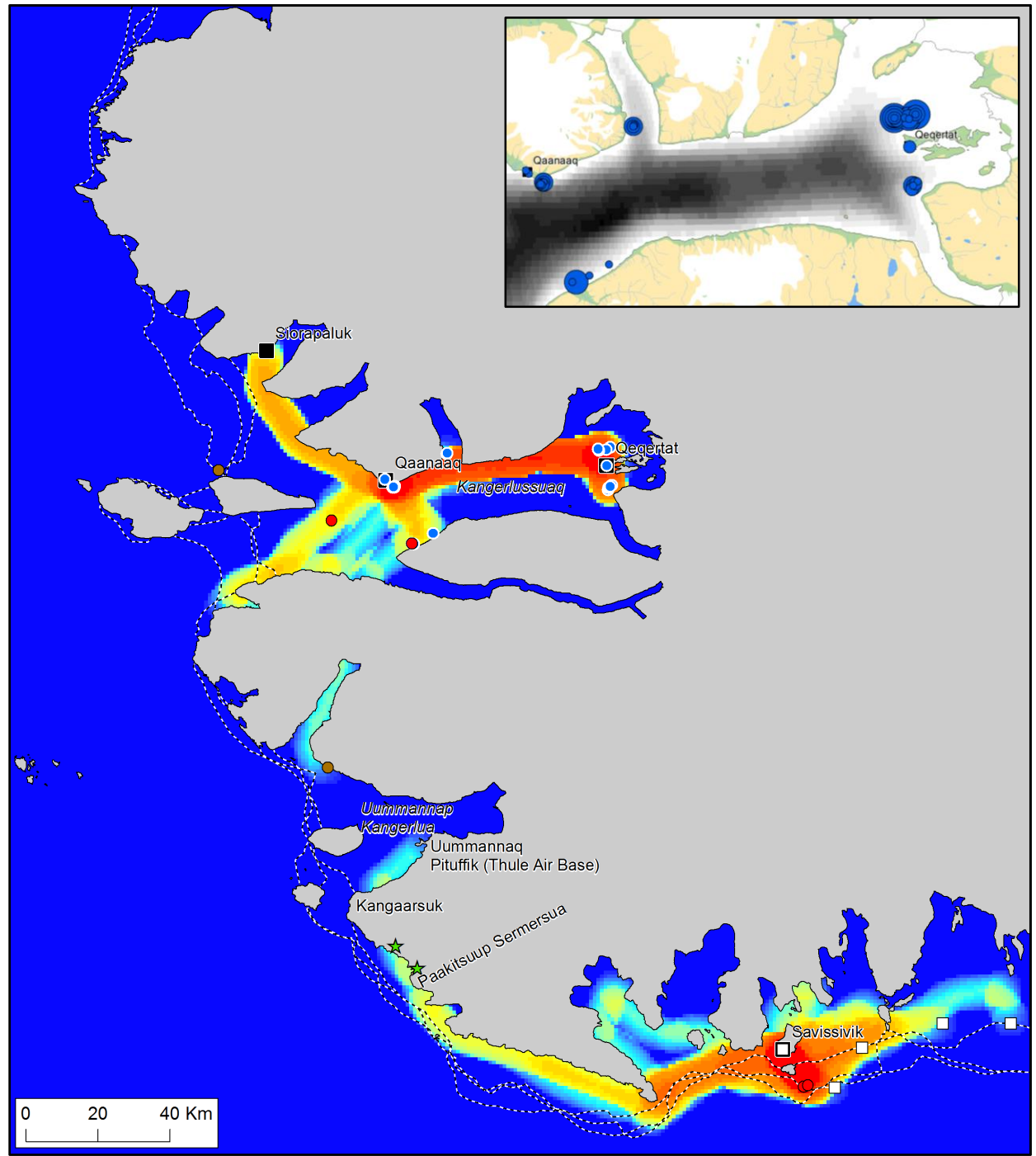
January – March 2016

Traffic intensity and catches

- ● Greenland halibut (55/4887)
- ● Ringed seal (33/83)
- □ Polar bear (6/6)
- ● Bearded seal (3/5)
- ★ Muskox (2/2)
- ■ Towns

Map labels: Siorapaluk, Qaanaaq, Qeqertat, Kangerlussuaq, Uummannap Kangerlua, Uummannaq, Pituffik (Thule Air Base), Kangaarsuk, Paakitsuup Sermersua, Savissivik

Scale: 0 20 40 Km

Using the IMO PSSA criteria for Greenland/ Denmark (2012)

- 12 areas identified and prioritized

- Areas are prioritized; two areas – *North Water Polynya* and *Disko Bay area* – stand out, and are ranked priority 1

| Area – number and name	PSSA Criteria											(Super) EBSA	PRIORITY
XXX = High extend XX = medium extend X = some extend	Unique/ rarity	Critical habitat	Dependency	Representativeness	Diversity	Produktivity	Spawning/ Breeding grounds	Naturalness	Integrity	Frigility	Biogeo-graphic importance		
V1: North Water Polynia	XXX	XXX	XXX	XXX	XX	XXX	XXX	XXX	XXX	XXX	XXX	S	1
V2: Melville Bay		XX	XX				X	XXX				E	3
V3: Northwest Greenland Shelf	X	XXX	XXX	XX	XX	X	XX	XXX	X	XX	XX	E	2
V4: Baffin Bay / Uummaannaq		XXX	XXX					XX					4
V5: Disko Bay/ St. Hellefiskebanke	XX	XXX	XXX	XX	XXX	XXX	XX	X	XX	X	XX	S	1
V6: Southwest Greenland shelf	X	XXX	XXX	XX	XXX	XXX	XX	X	XX	X	X	E	2
V7: Labrador sea and drift ice		XX	XX				XX	X				E	4
SØ1: Southeast Greenland/ DK str.		X	X				X	X				(E)	4
NØ1: Northeast Water polynia	XX	XX	XX	XX	X	XX	XX	XXX	XXX	X	XX	E	2
NØ2: Scoresby Sund	XX	XXX	XX	XX	XX	XX	XXX	XXX	XX	X	X	E	2
NØ3: Sirius Water/ Young Sund	X	X	X	X	XX	X	XX	XXX	X	XX		E	3
NØ4: Southwestern Greenland Sea		XX	XXX		X	XX	XXX	XXX		XX		E	3
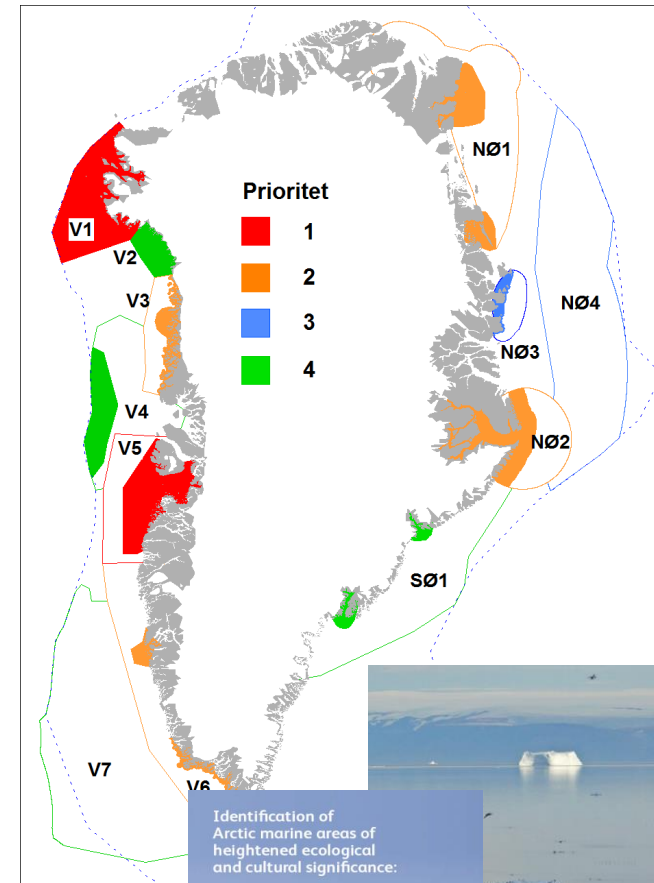
Recent ID of Ecologic and Biologic valuable areas
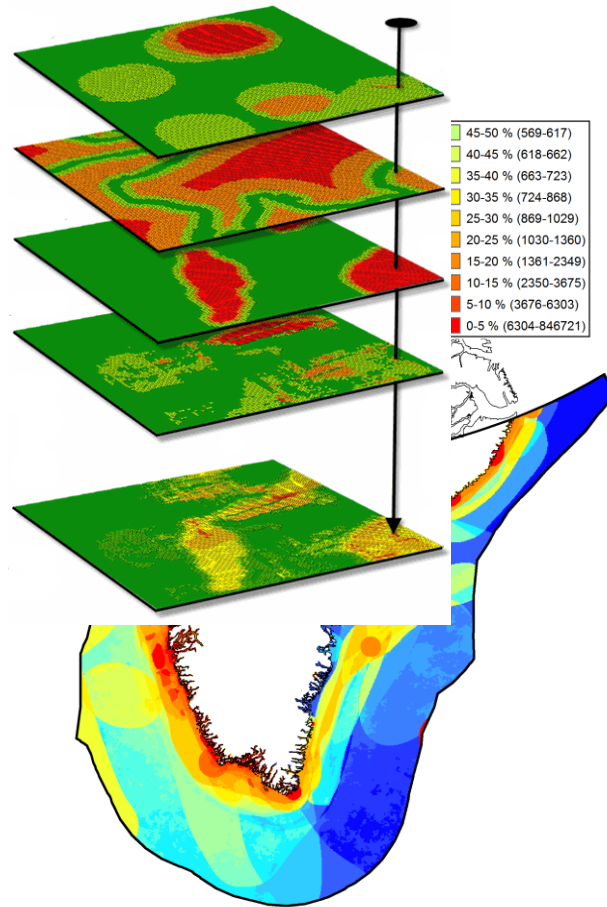
The identification of important biological areas builds on two parallel processes:

- Small expert workshops (Expert judgement)

- Use of GIS overlay analysis

  - Each biological layer is ranked according to the importance (based on national priorities, Ramsar criteria, PSSA criteria, EBSA criteria etc. -inspired by Halpern et al. 2008)

  - Layers are divided into grids (2.5x2.5 km) and each cell will get a score

  - Biological valuable areas: Areas where many and/or important FECs overlap

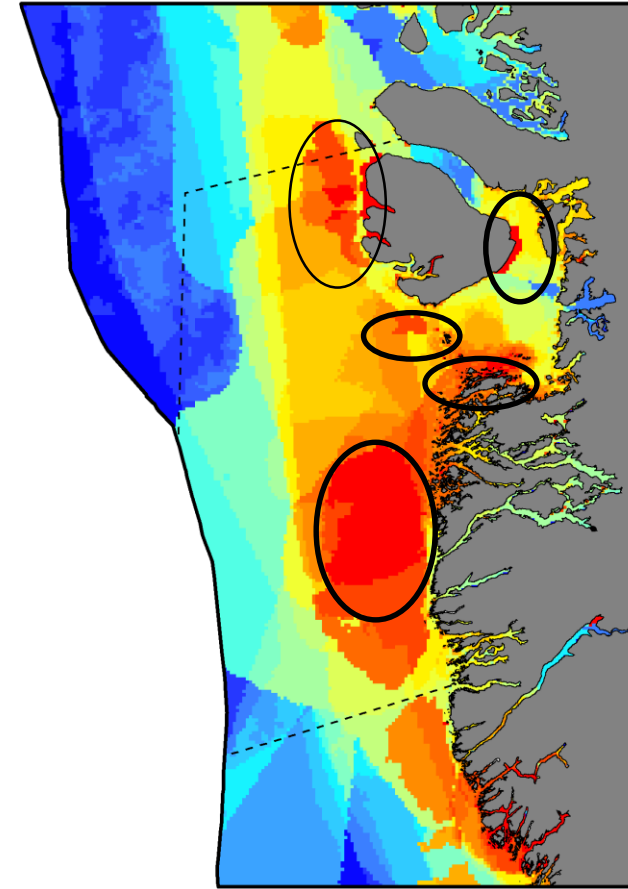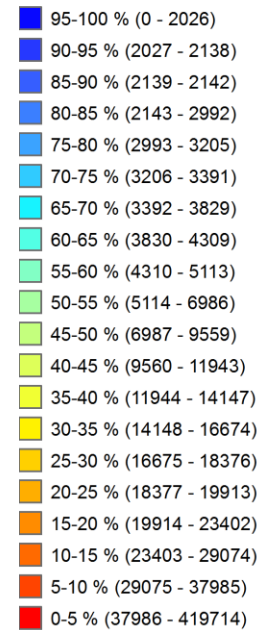# ID of Ecologically and Biologically valuable areas
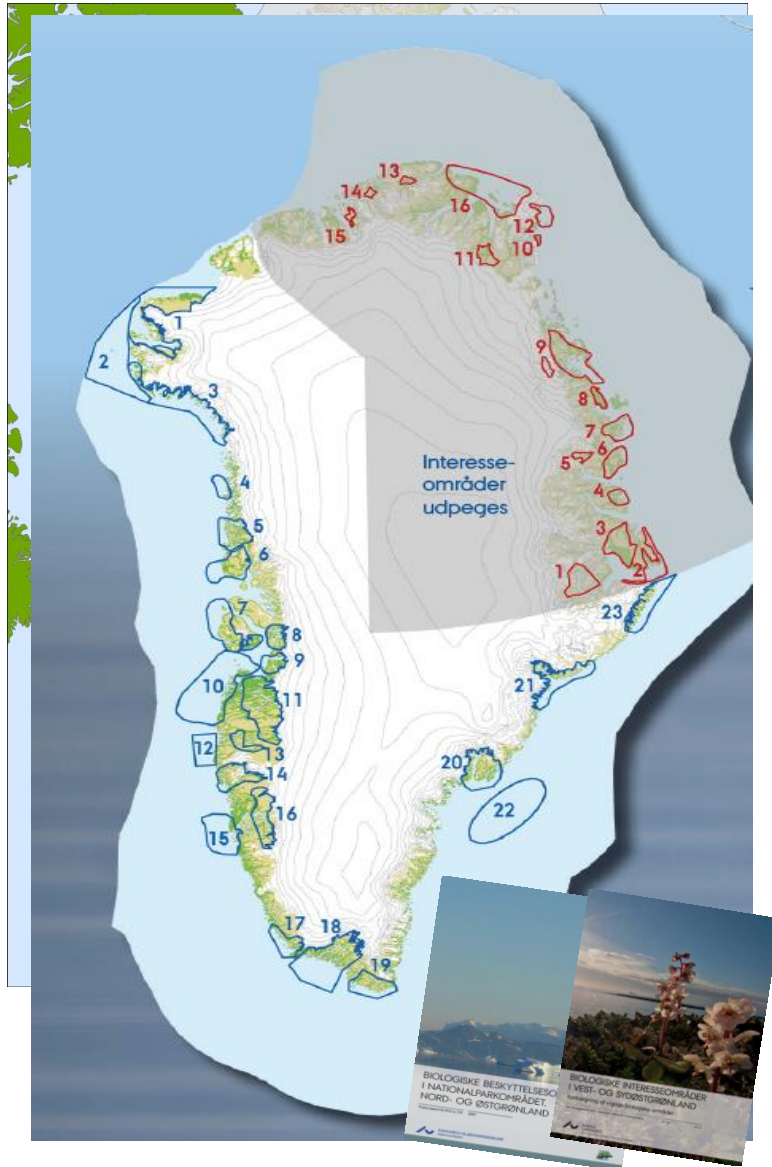
- Based on these methods 23 Ecol. and Biologically important areas in West- and Southeast Greenland are identified

- Combined with an older study from Northeast Greenland in total 39 areas are identified

Finer scale information and sensitivity to shipping
Disko Bay/ Store Hellefiskebanke

- The sensitivity of each of the biological layers towards five pressures related to ship traffic was weighted

- Accumulated map: Five areas in the region requires special attention.

95-100 % (0 - 2026)
90-95 % (2027 - 2138)
85-90 % (2139 - 2142)
80-85 % (2143 - 2992)
75-80 % (2993 - 3205)
70-75 % (3206 - 3391)
65-70 % (3392 - 3829)
60-65 % (3830 - 4309)
55-60 % (4310 - 5113)
50-55 % (5114 - 6986)
45-50 % (6987 - 9559)
40-45 % (9560 - 11943)
35-40 % (11944 - 14147)
30-35 % (14148 - 16674)
25-30 % (16675 - 18376)
20-25 % (18377 - 19913)
15-20 % (19914 - 23402)
10-15 % (23403 - 29074)
5-10 % (29075 - 37985)
0-5 % (37986 - 419714)

AMAP 2017

ADAPTATION ACTIONS FOR A CHANGING ARCTIC

PERSPECTIVES FROM THE BAFFIN BAY/DAVIS STR...

AMAP

Arctic Monitoring and Assessment Programme (AMAP)

Canada

Greenland

Baffin Island

Alert
Ellesmere Island
Axel Heiberg Island
Qaanaaq
Grise Fiord
Pituffik/Thule
Resolute
Devon Island
Kane Basin
Lancaster Sound
Baffin Bay
Upernavik
Uummannaq
Prince Regent Inlet
Nanisivik
Pond Inlet
Clyde River
Qeqertarsuaq
Ilulissat
Igloolik
Aasiaat
Kangaatsiaq
Hall Beach
Qikiqtarjuaq
Sisimiut
Pangnirtung
Davis Strait
Manjitsoq
Foxe Basin
Nuuk
Cape Dorset
Paamiut
Narsaq
Iqaluit
Nanortalik
Kimmirut
Hudson Strait
Labrador Sea
Ungava Bay
Labrador Peninsula

AACA | TILPASNING TIL ARKTIS I FORANDRING

BAFFINBUGTEN / DAVISSTRÆDET REGIONEN

OVERSIGTSRAPPORT

AACA | ISSITTUP ALLANNGORIARTUAARNERANUT NALEQQUSSARNEQ

AVANNAATA IMAANIIT IKERSUAQ DAVISIMUT IMARTAQ PILLUGU

TAKUSSUTISSATUT NALUNAARUSIAQ

AMAP

EA workshop in Nuuk May 2019

Discussing the potential for a more EA based approach to spatial planning in Greenland

- **EA Idea generally positive (administration, industry, ngo´s)**
- **Facilitates Eco certification, potentiel conflict mediation….**
- **but lack of administrative resources hamper the development**
- **A greenlandic "model" for EA has to be developed – planning a case study**
- **The need for local involvement and outreach was underlined, as well as Monitoring to secure sustainable use**

Qujanaq