

# Mapping Europe's Last Wilderness

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# Wilderness definition

- IUCN Cat1b Wilderness Areas:
  - Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition



## Wilderness Protected Areas:

Management guidelines for IUCN Category 1b protected areas

Prepared by the IUCN WCPA Wilderness Specialist Group  
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Best Practice Protected Area Guidelines Series No. 25



# European wilderness

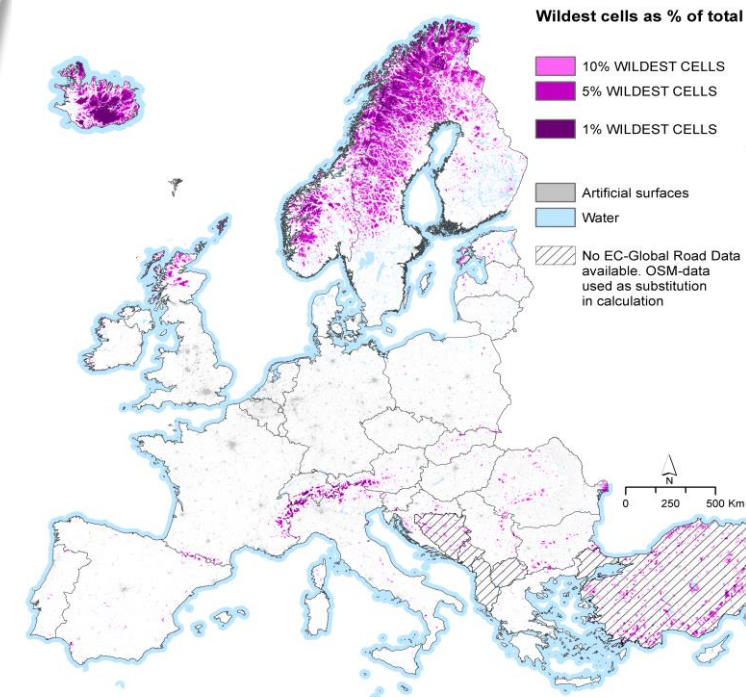
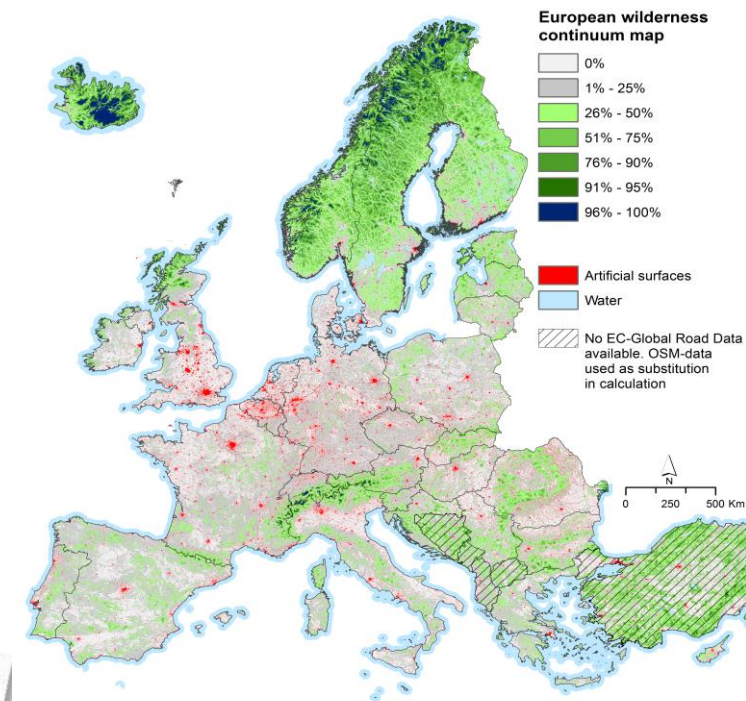
- 2013 EU Guidelines on Wilderness in Natura 2000
  - “A wilderness is an area governed by natural processes. It is composed of native habitats and species, and large enough for the effective ecological functioning of natural processes. It is unmodified or only slightly modified and without intrusive or extractive human activity, settlements, infrastructure or visual disturbance.”





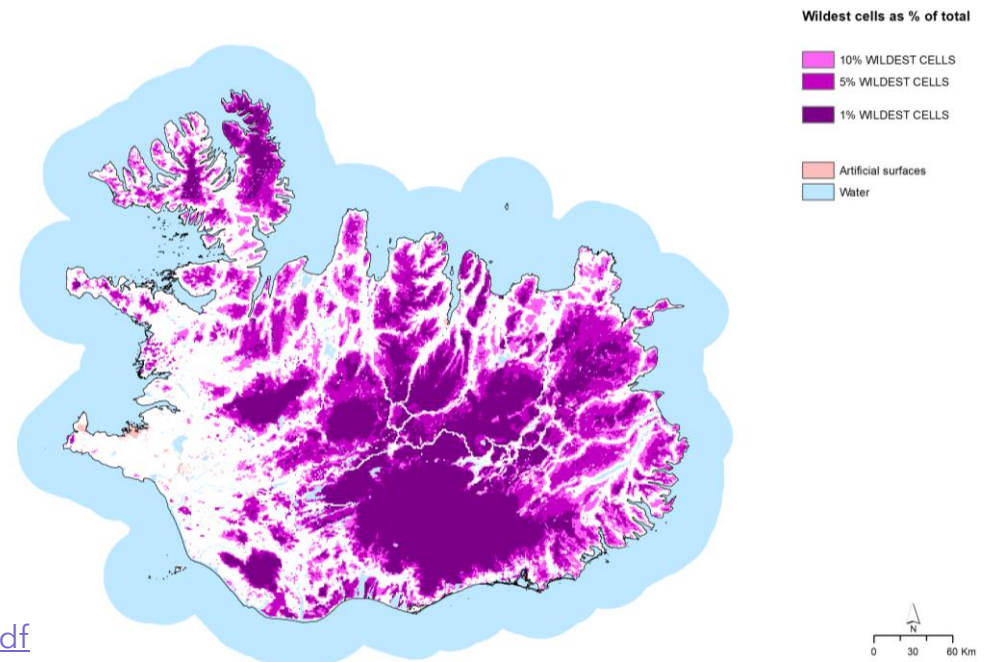
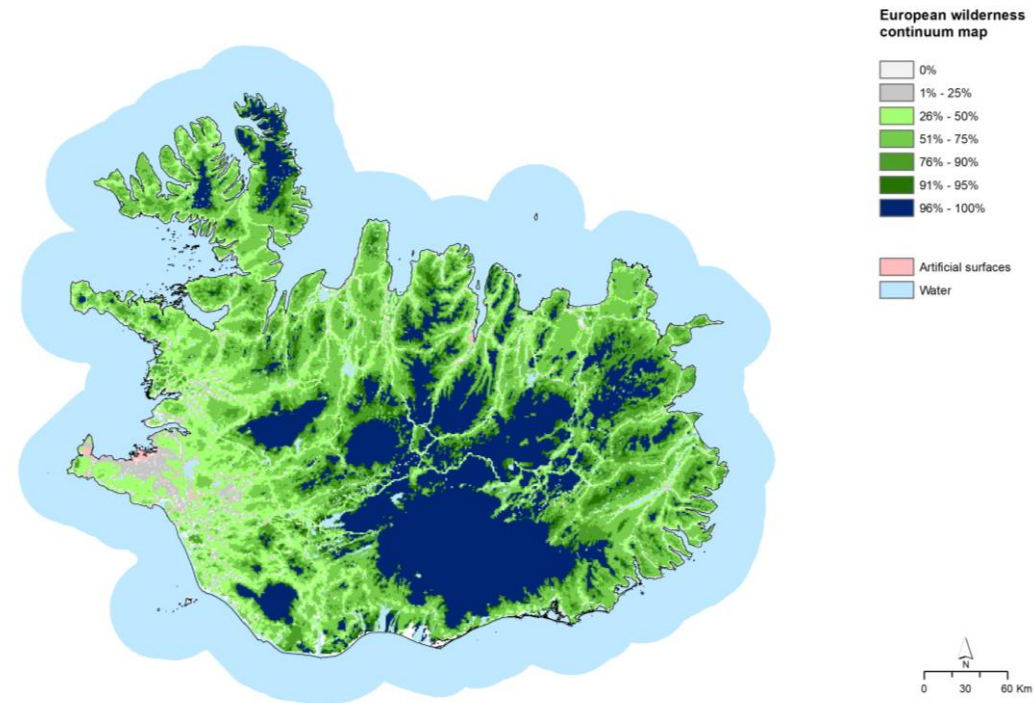
# Mapping Europe's wilderness?

- 2013 EU Wilderness Register
- Wilderness Quality Index (WQI)
  - CORINE land cover and Potential Natural Vegetation (PNV) + FAO Grazing intensity
  - Remoteness from settlements
  - Remoteness from mechanised access
- Continuous data mapping
- High latitude and/or altitude



# Europe's last wilderness?

- 43% of Europe's top 1% wildest areas are found in Iceland
  - Significant figure (and responsibility)
  - Important that it is adequately protected
  - Threats:
    - Renewable energy (geothermal, hydro and wind)
    - 4x4 tourism





# Iceland

137

## Total Protected Areas

2 With management effectiveness evaluations

- Terrestrial Protected Areas
- Marine Protected Areas
- Other effective area-based conservation measures

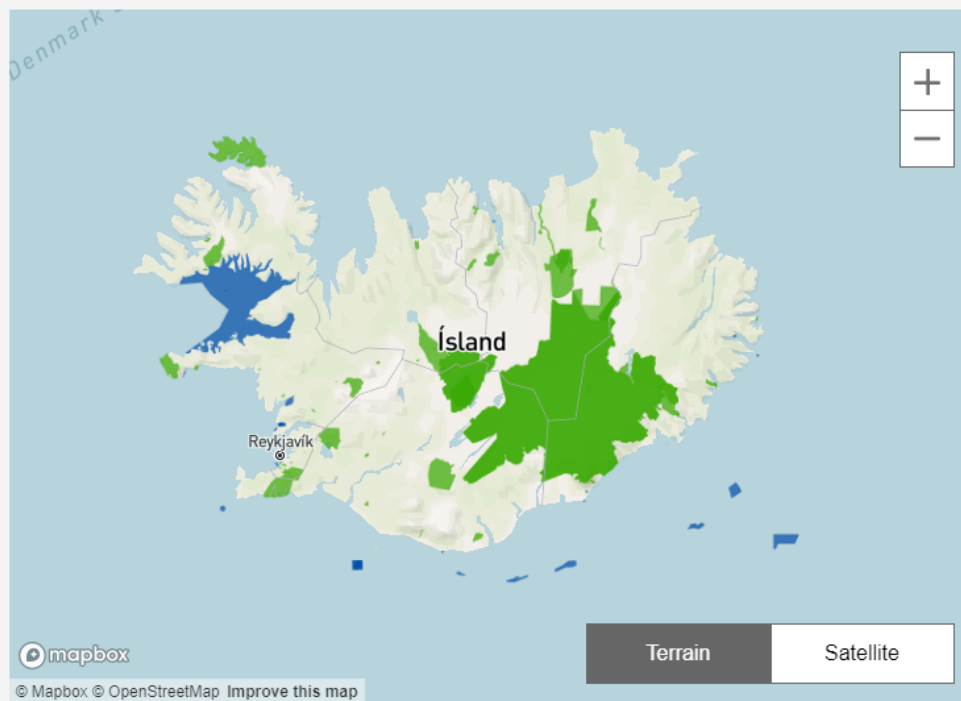
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## Total Other effective area-based conservation measures

### Polygons/Points ratio



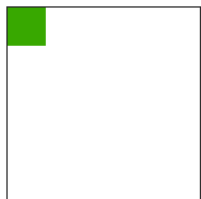
Polygons 99% Points 1%



### Map Disclaimer

The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

## Terrestrial protected area coverage



19.9%

Coverage

20,354km<sup>2</sup>  
Land area covered

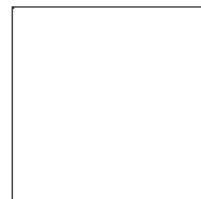
102,302km<sup>2</sup>  
Total land area

### PAME

0.65%  
With management effectiveness evaluations

661km<sup>2</sup>  
Areas assessed

## Marine protected area Coverage



0.42%

Coverage

3,170km<sup>2</sup>  
Marine and coastal area covered

752,784km<sup>2</sup>  
Total marine and coastal area

### PAME

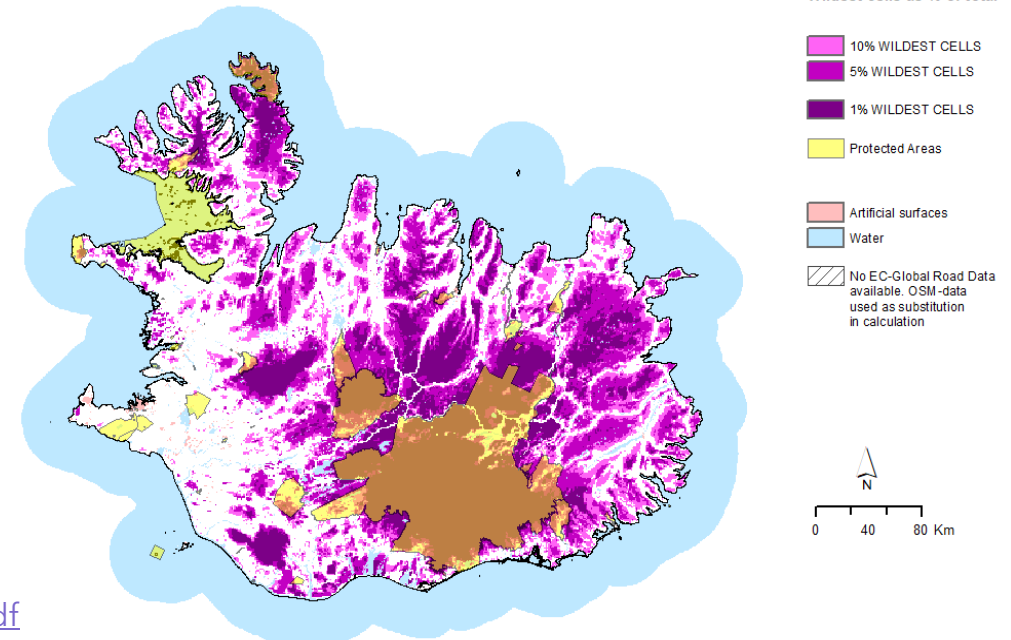
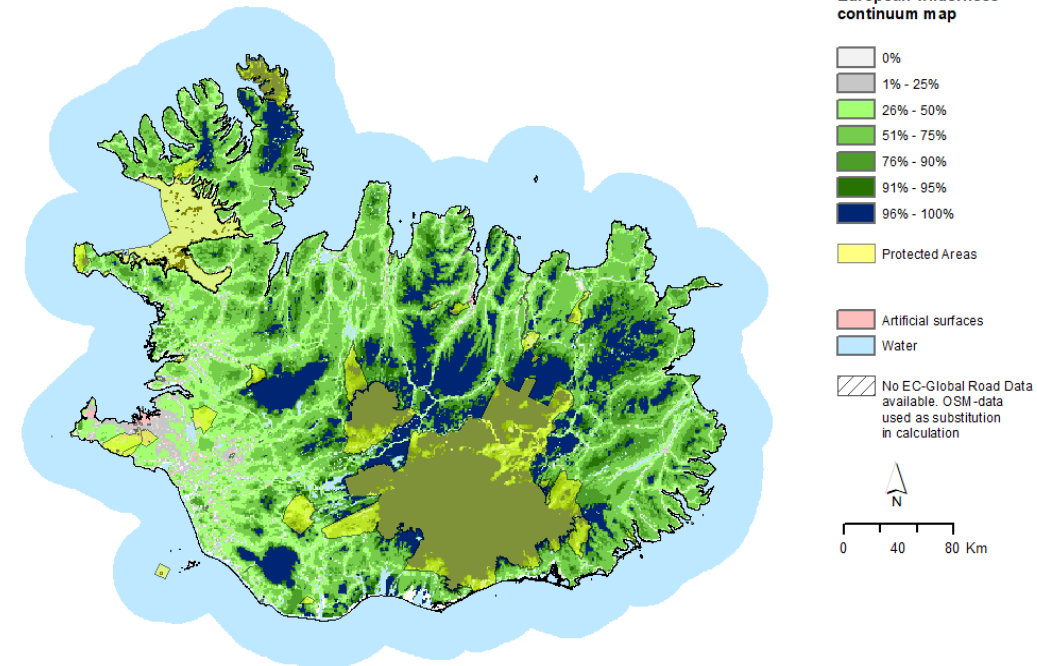
0%  
With management effectiveness evaluations

32km<sup>2</sup>  
Areas assessed



# Protecting wilderness

- Map it or lose it!
  - *De facto* versus *De Jure* wilderness
  - Large areas of Iceland's wilderness remain without designation or protected area status
  - Ice caps and central Highlands
  - Other areas (e.g. Drangar Peninsula, Tröllaskagi, Vatnaleiðin, Smjörfjöll, Skeiðarársandur, Búrfellsheiði etc.)



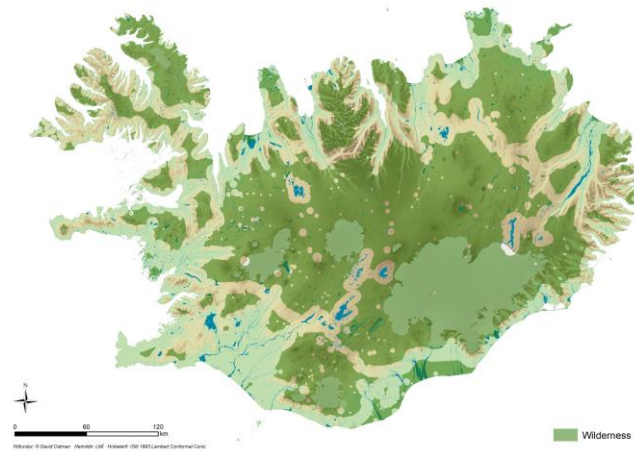
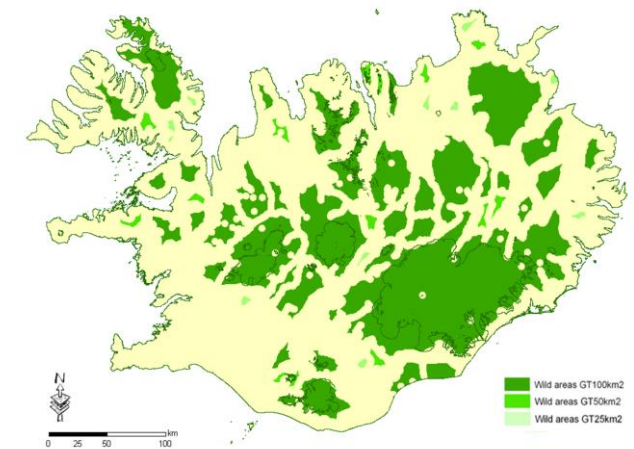
# Legal Framework

- Nature Conservation Act no. 60/2013
  - **Preparatory work** refers to the international IUCN Category Ib definition of wilderness
  - **Article 3 (e)** Wilderness conservation one of the main conservation objectives
  - **Article 5 (19)** Legal definition: An area within uninhabited land at least in principle 25 km<sup>2</sup> in size or in such a way that solitude and nature can be enjoyed there without interruption by structures or motorized traffic and in principle at least 5 km away from structures and other technical traces, such as power lines, power plants, reservoirs and built roads.
  - **Article 73 (a)** as added by Amendment Act in February 2021. The Minister may issue a regulation on the mapping of wilderness. The regulation shall, among other things, stipulate the criteria and assumptions on which the mapping is based. Preparatory work: mapping shall be based on internationally recognised criteria. Reference to the Article 46 designation category, referring to IUCN Category Ib
  - **Temporary provision**, added by Amendment Act in February 2021, establishes the legal obligation to map all wilderness areas across Iceland by 1 June 2023
  - **Article 46** The formal designation of a defined wilderness area for protection, adopted by the Minister
- Planning Act - National Planning Strategy 2015-2026 adopted 2016
  - Recently proposed revision of Landsskipulagsstefna 2015-2026, proposing criteria for mapping wilderness across Iceland



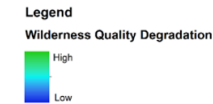
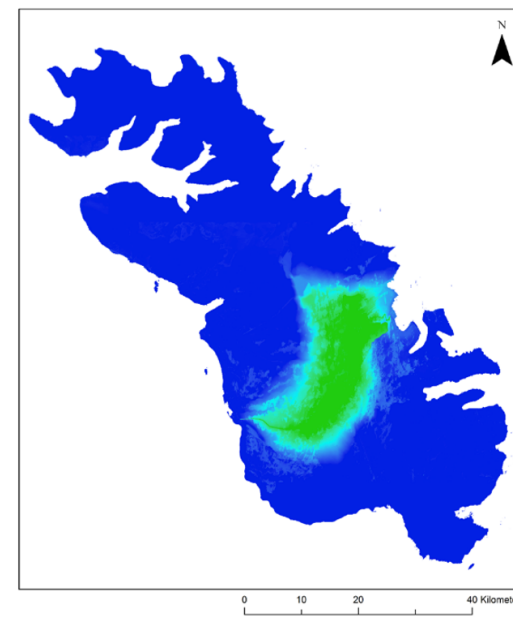
# Mapping projects in Iceland

- Current post 2013 Act mapping projects
  - Ólafsdóttir, R. et al 2016. Purism scale approach for wilderness mapping in Iceland.  
<http://ndl.ethernet.edu.et/bitstream/123456789/77673/1/Stephen%20J.%20Carver.pdf#page=172>
  - Árnason, Þ. et al 2017 and 2020. Kortlagning víðerna á miðhálandi Íslands: Tillögur að nýrri aðferðafræði. *Proposals*.  
[https://www.landsskipulag.is/media/pdf-skjol/OstmanArnason2020\\_KortlagningViderna\\_WEB.pdf](https://www.landsskipulag.is/media/pdf-skjol/OstmanArnason2020_KortlagningViderna_WEB.pdf)
  - Icelandic Institute of Natural History 2018 Geoportal, hypothetical wilderness map. *Unfinished*.  
<https://iinh.maps.arcgis.com/apps/webappviewer/index.html?id=f843cb215b1244778856859d4911373e>

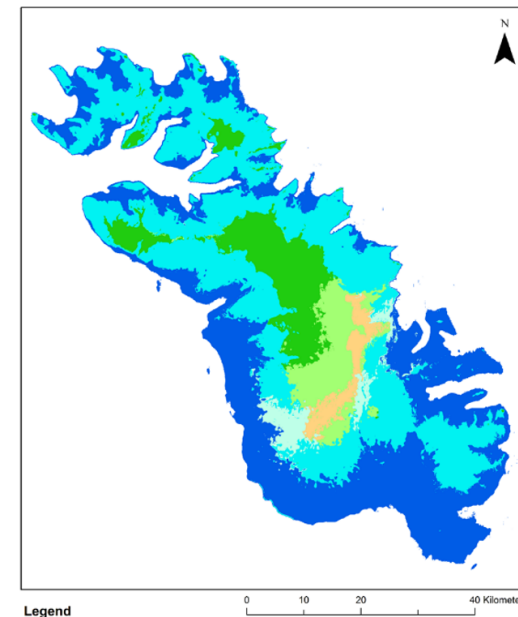


# Our mapping projects

- Current mapping projects based on international definitions
- Hvalá (ÓFEIG náttúruvernd)
  - Drangar Peninsula
  - Hvalávirkjun Hydro power plant
  - Scottish mapping methods
  - “Before and after” modelling
  - Predict spatial impacts on wilderness quality



Sources: ArcticDEM, Nýjalund Forsða, © OpenStreetMap contributors, Landsat imagery courtesy of NASA/Goddard Space Flight Center and U.S. Geological Survey and Based on data from National Land Survey of Iceland



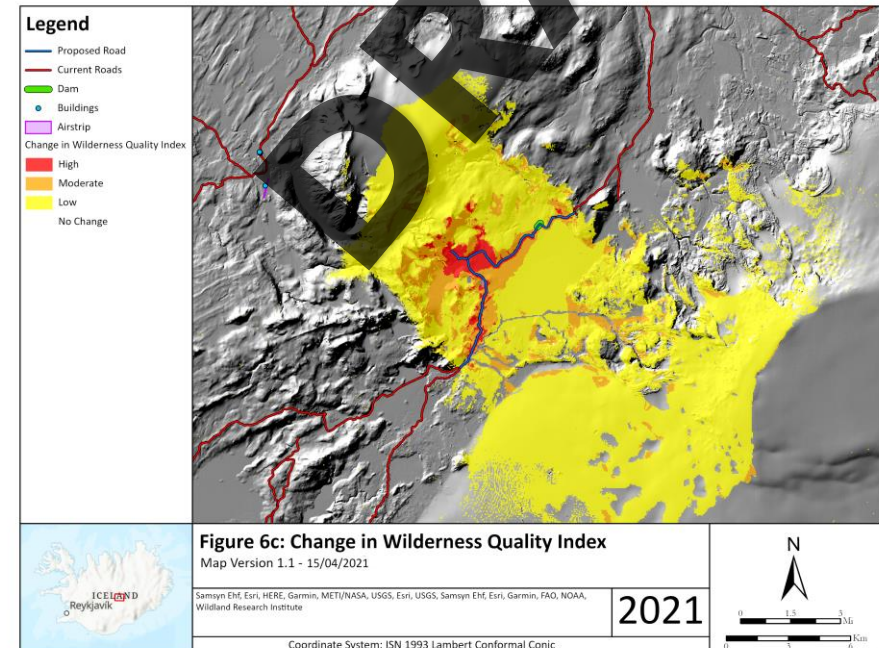
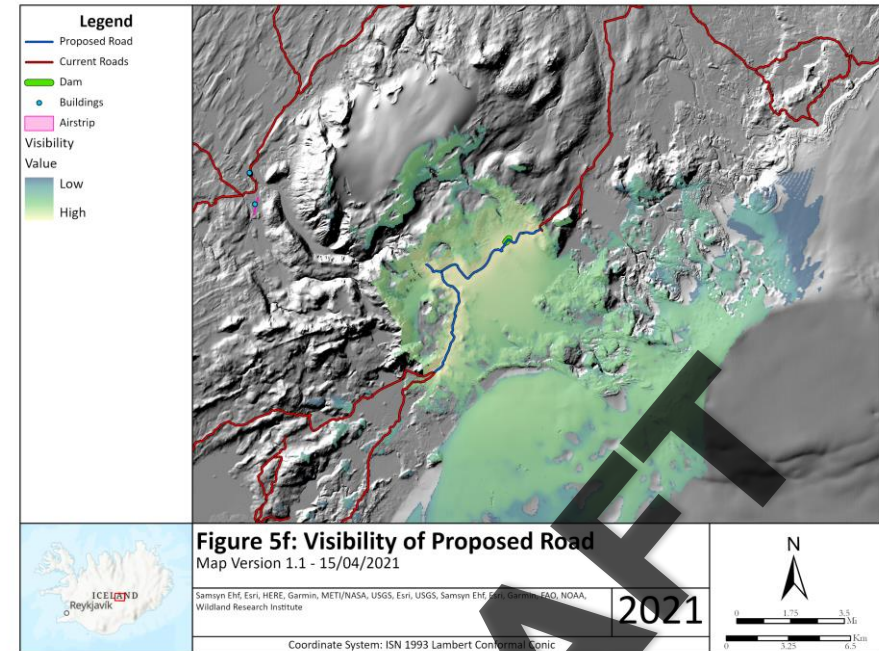
Sources: ArcticDEM, Nýjalund Forsða, © OpenStreetMap contributors, Landsat imagery courtesy of NASA/Goddard Space Flight Center and U.S. Geological Survey and Based on data from National Land Survey of Iceland





# Our mapping projects

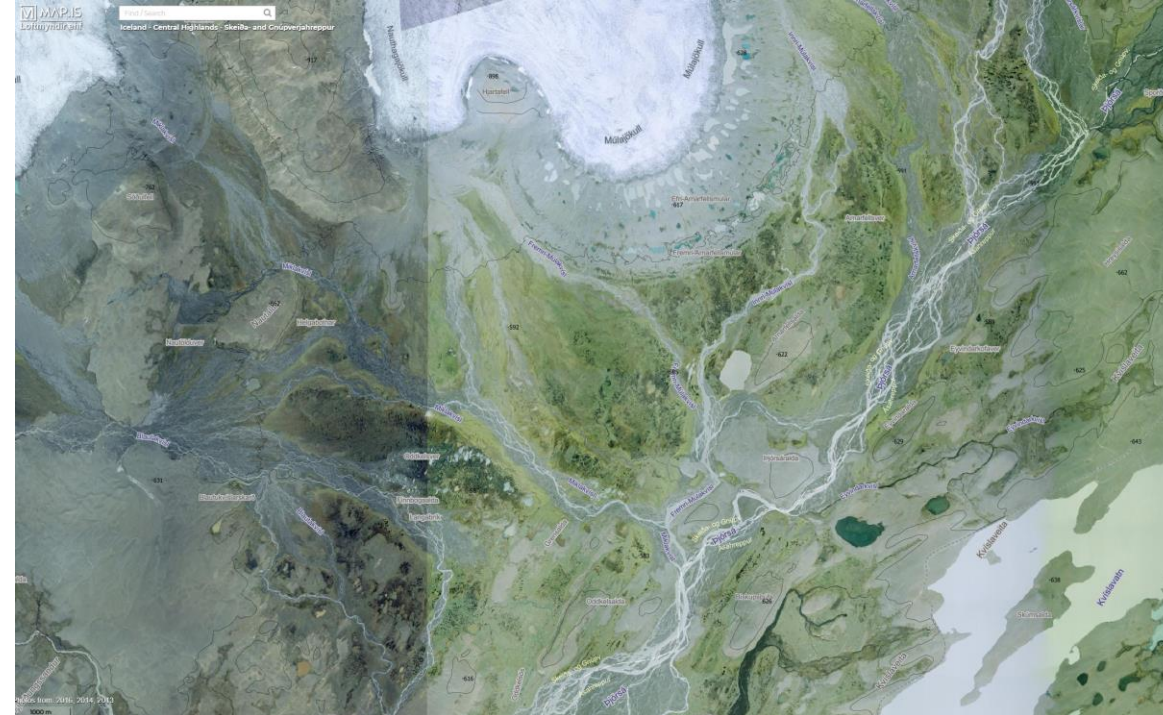
- Current mapping projects based on international definitions
- Hvalá (ÓFEIG náttúruvernd)
- Vonarskarð (Skrauti)
  - Vatnajökull National Park
  - Model impact from 4x4 track
  - Impacts on remoteness and visual impact





# Our mapping projects

- Current mapping projects based on international definitions
  - Hvalá (ÓFEIG)
  - Vonarskarð (Skrauti)
  - Þjórsárver/Hofsjökull (Other NGO)
    - Pink Footed Goose breeding area
    - Potential designated wilderness
    - Map wilderness quality and character
    - Define wilderness boundaries





# Concluding remarks

- Iceland's responsibility to protect remaining wilderness areas across the island (not just the central Highlands)
- Wilderness is best mapped using continuous/fuzzy definitions
- Bill of Law (Feb 2021) and amendments to Nature Conservation Act no. 60/2013 make mapping mandatory but also present opportunity to supplement definition, assumptions and mapping criteria with reference to IUCN Cat1b and EU wilderness guidelines

