Capture and marking of wild seabirds for scientific purposes – state of the art and 3R considerations

Børge Moe

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- Senior researcher
- Seabird ecologist

Animal welfare unit NINA

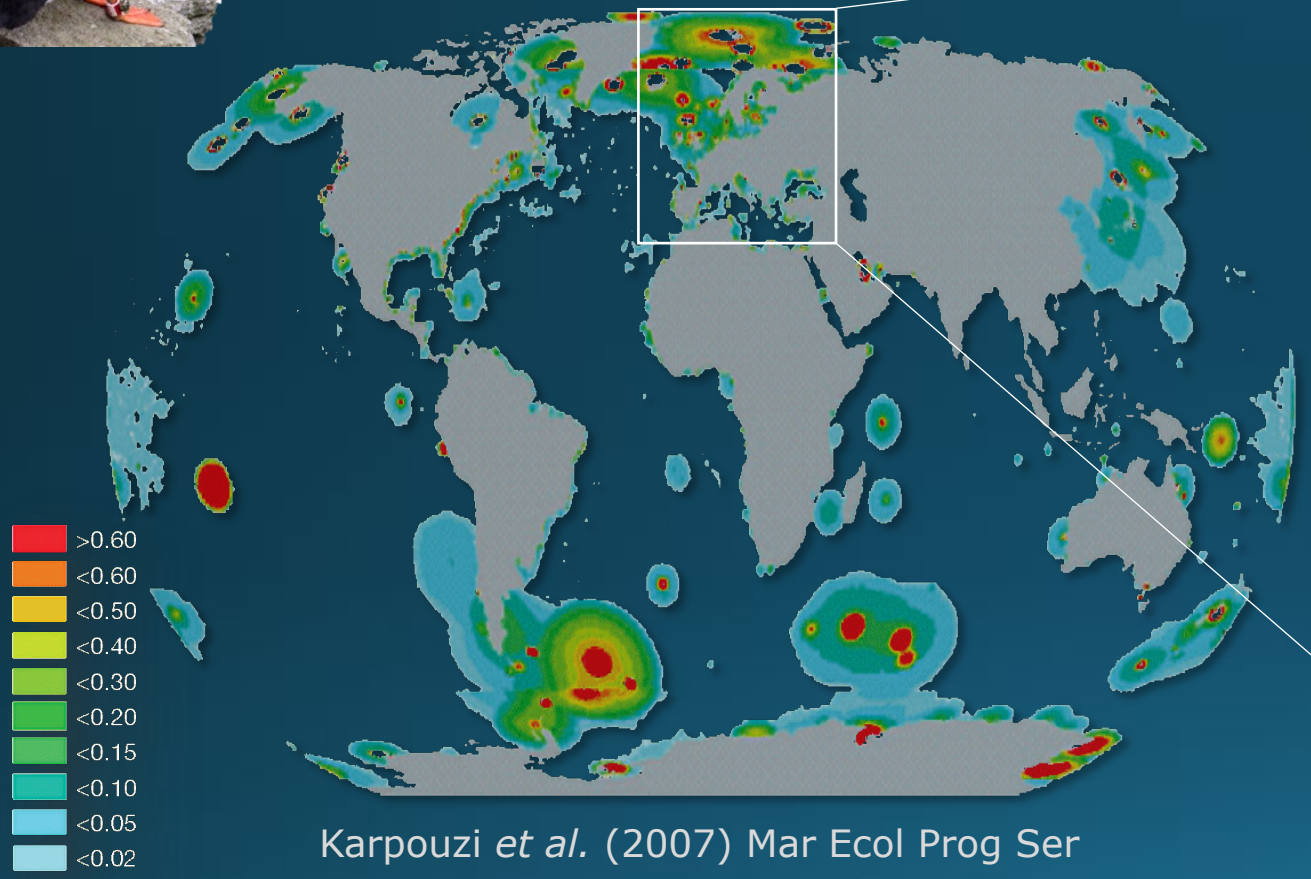
Responsible for birds (PMSK)

Marianne W. Furnes (leader)

VKM report 2024: 03

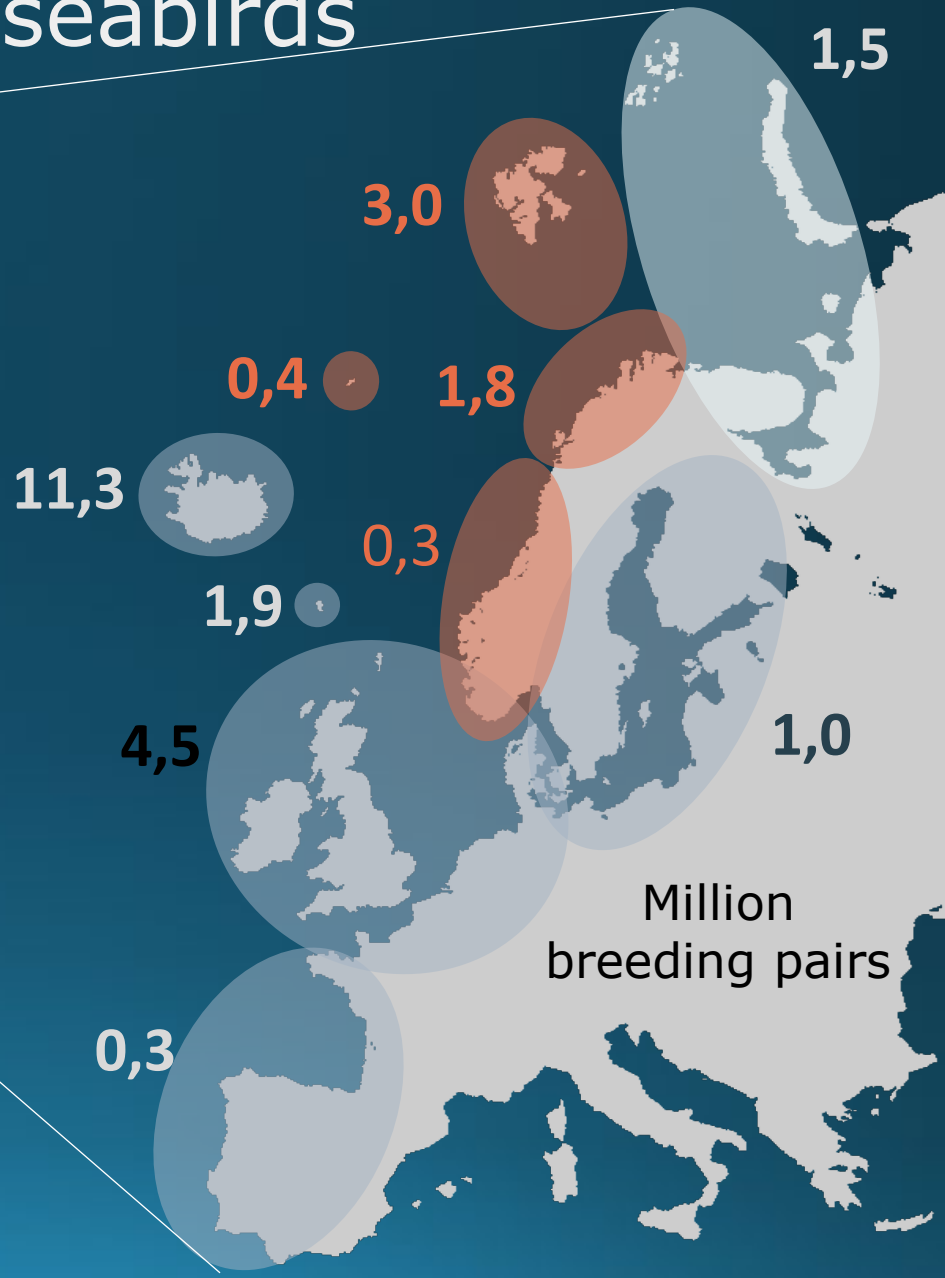
Effects of capture, marking, and tracking on the welfare of wild birds

Norway has 25 % of Europe's seabirds



Millions seabirds at sea/km²

Karpouzi *et al.* (2007) Mar Ecol Prog Ser



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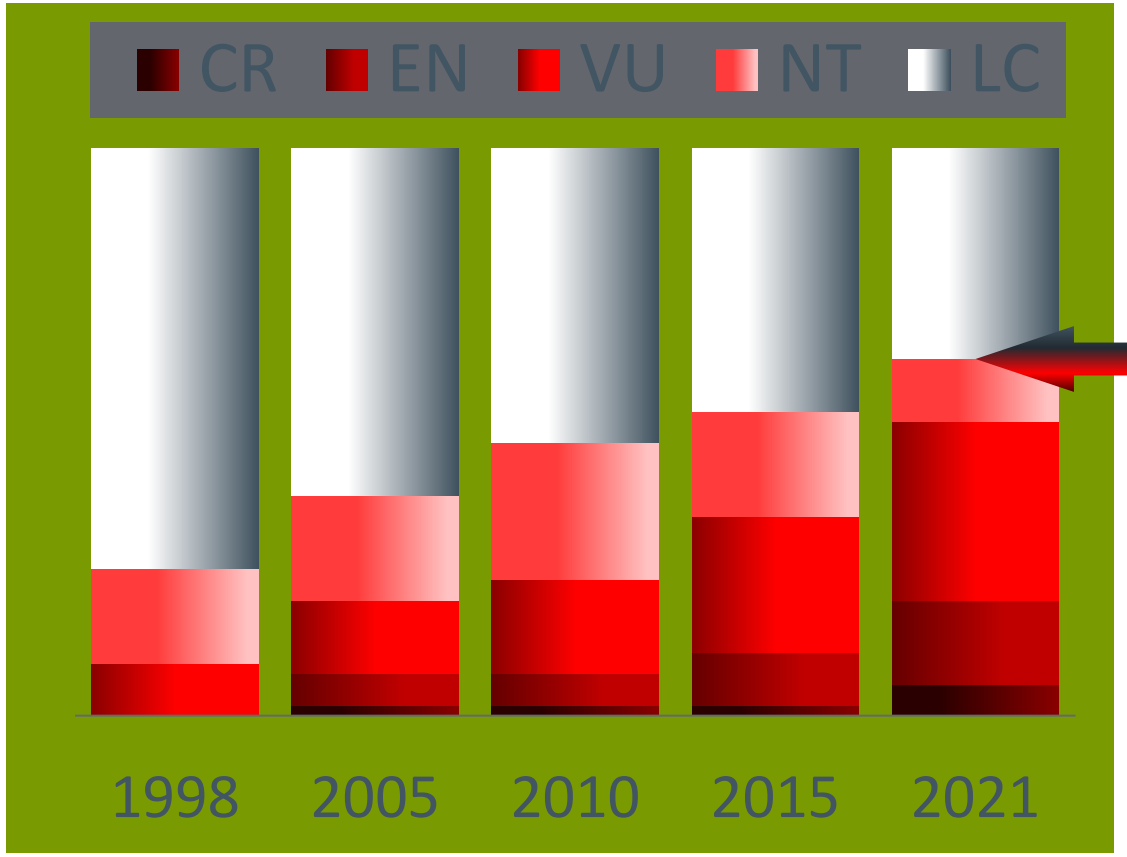
Redlist status seabirds in Norway



54 species

34 species (63 %) redlisted

Seabirds and global crises

- Nature Climate Energy
- Societal and scientific needs and challenges
- Green transition, war in Europe, 30% protection (CBD/COP 2022)

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Important need for tracking studies

Science+

Societal needs

Animal welfare

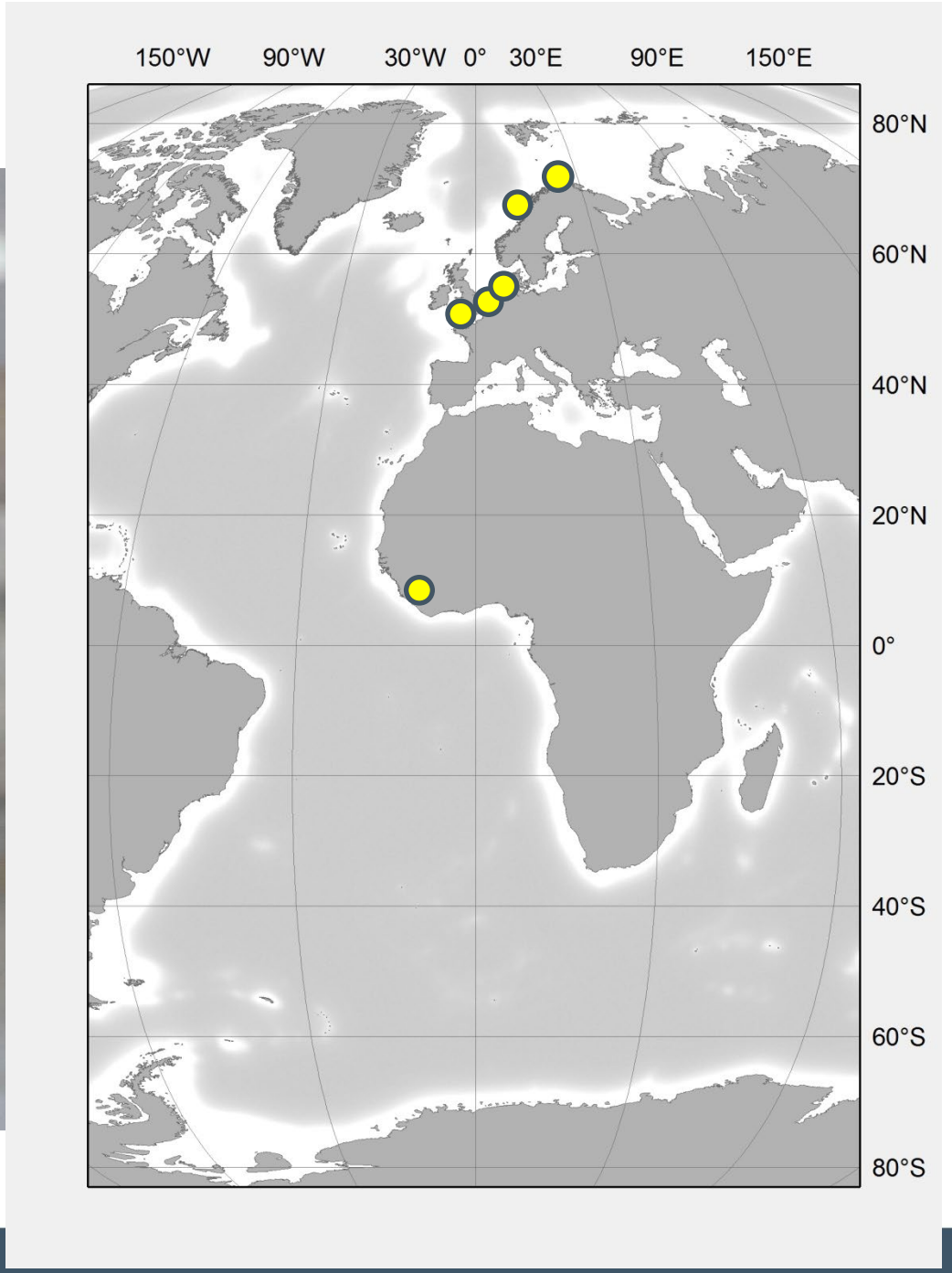
Basic and applied science

Tracking studies and the 3 R’s

- Replacement
- Reduction
- Refinement

Tracking studies and the 3 R's

- Replacement - by at-sea observations or ringing?
- Reduction
- Refinement



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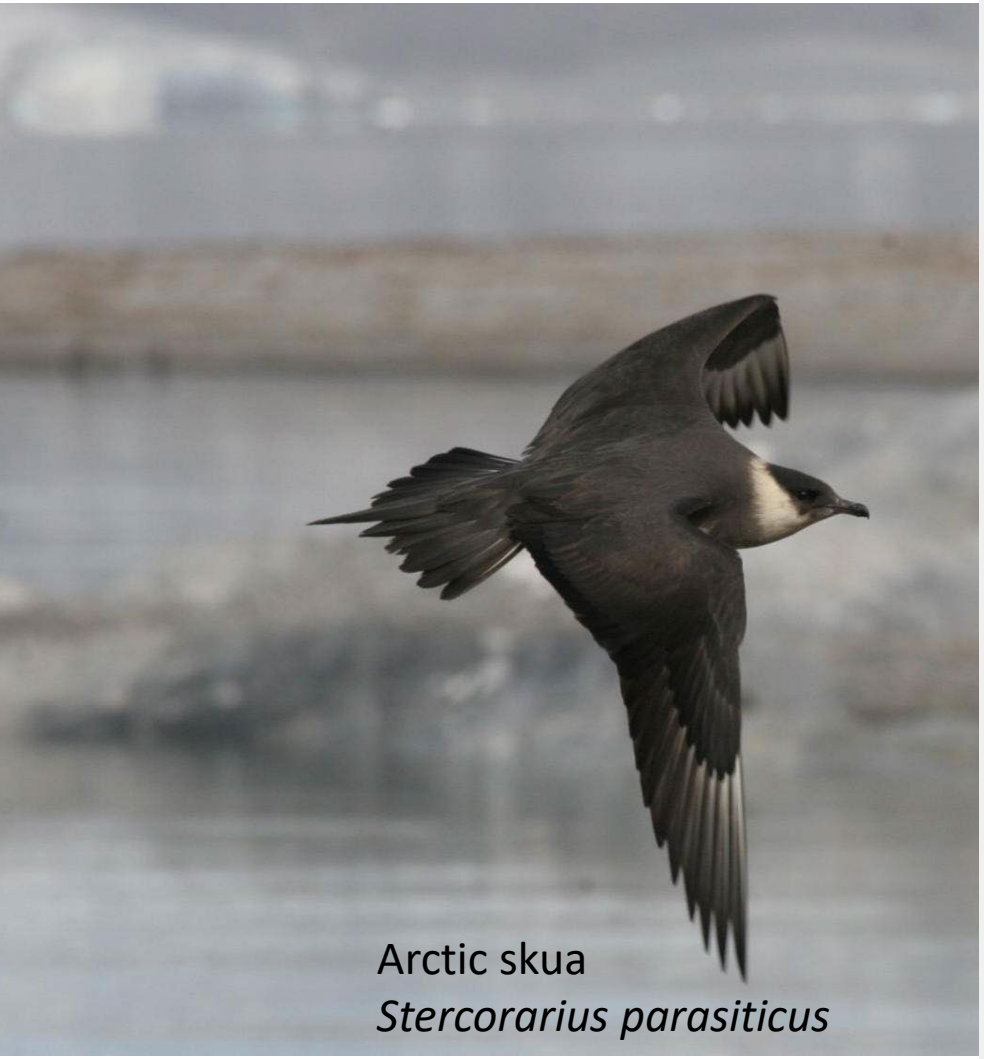
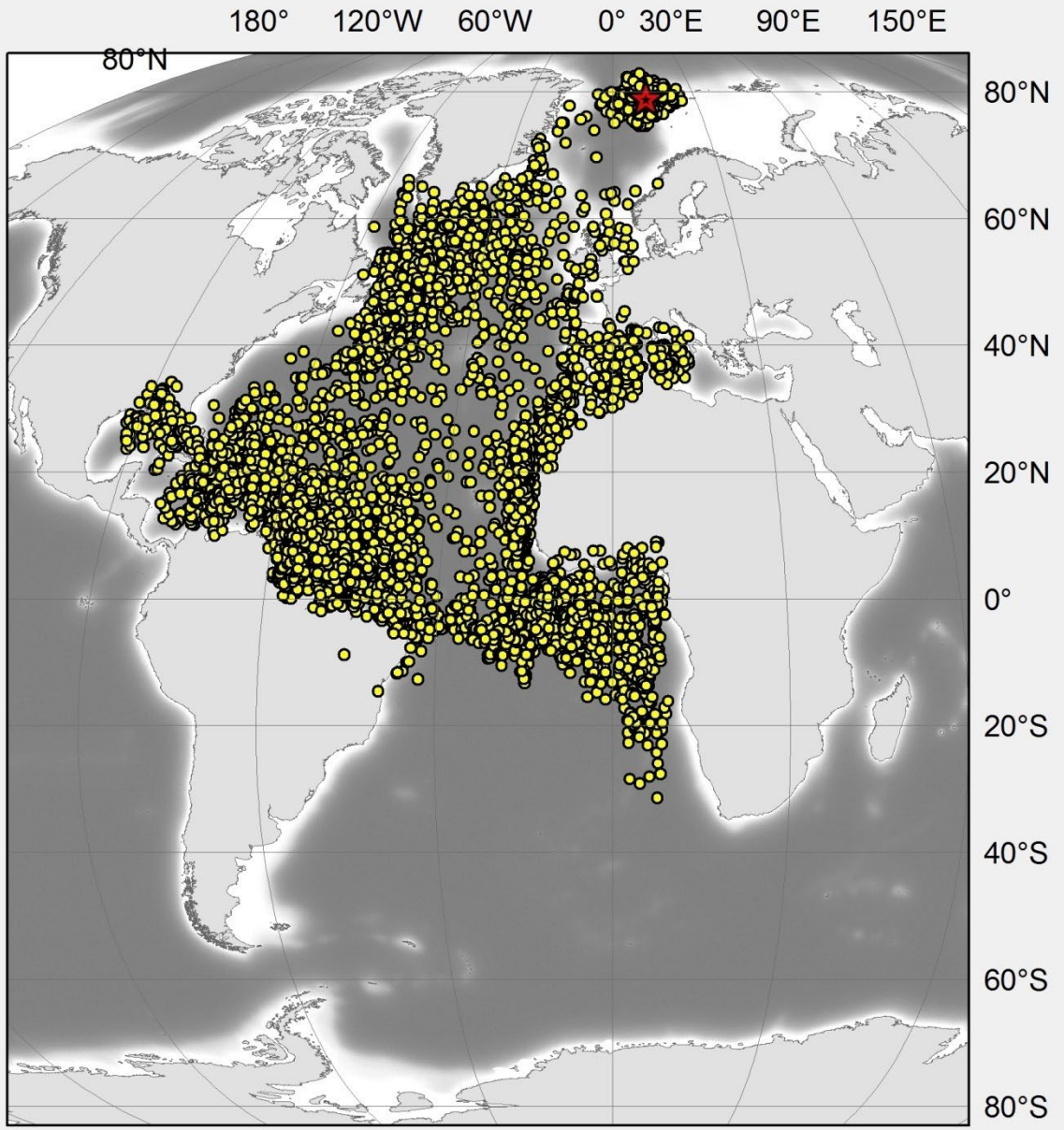


Arctic skua
Stercorarius parasiticus



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Tracking studies and the 3 R's

- Replacement
- Reduction
- Refinement

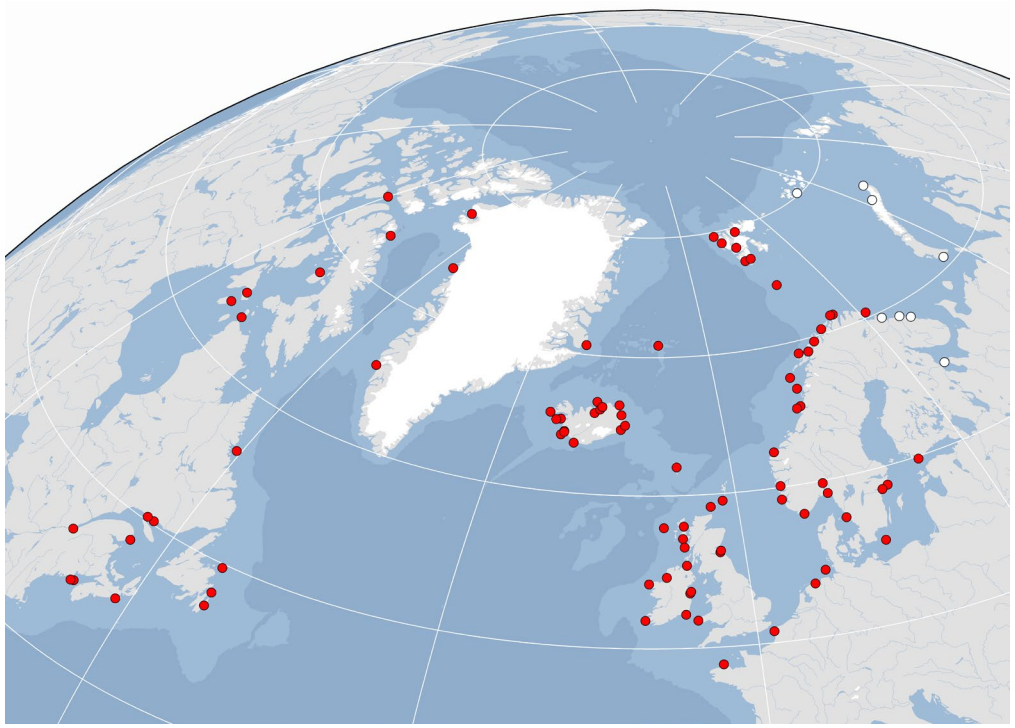
- The sample size required to answer the study question
- Not only low sample size
- Large scale tracking -high value for conservation and management

Tracking studies and the 3 R's

- Replacement
- Reduction
- Refinement

– Large scale tracking – SEATRACK

16 species, >60 colonies, North Atlantic



SEATRACK
Seabird Tracking

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Tracking studies and the 3 R’s

- Replacement – Best practise
- Reduction
- Refinement

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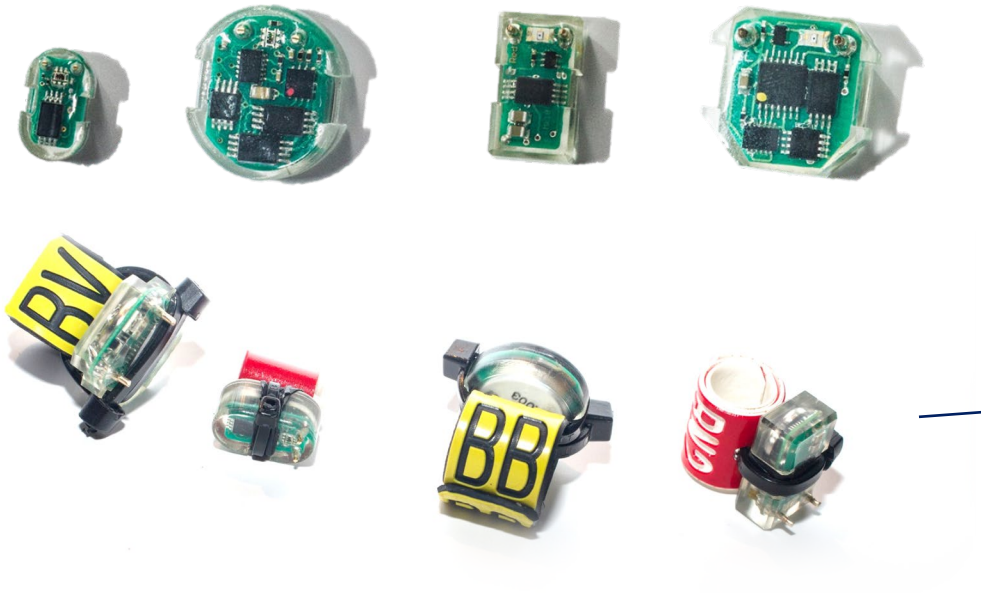
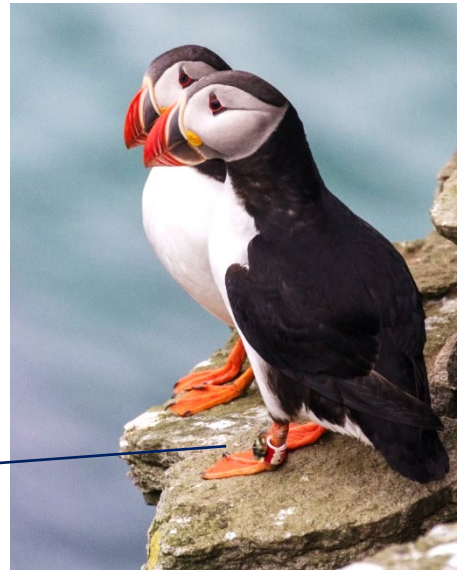
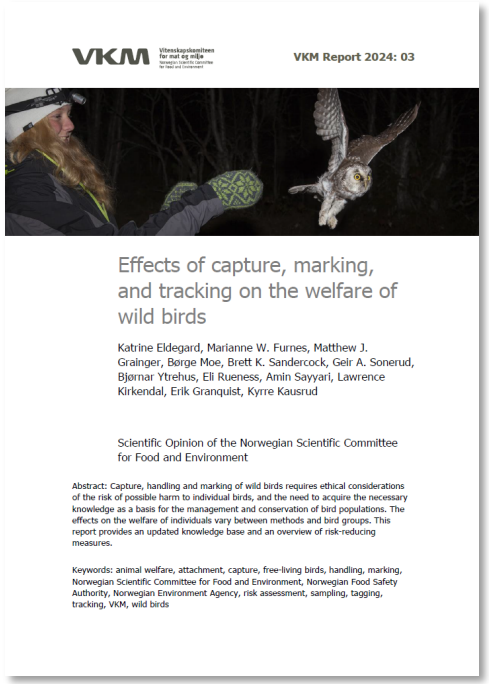
Best practise

- Leg-mounted tracking devices
- Generally considered as low risk
- The pros: small, easy to mount







SEATRACK
Seabird Tracking

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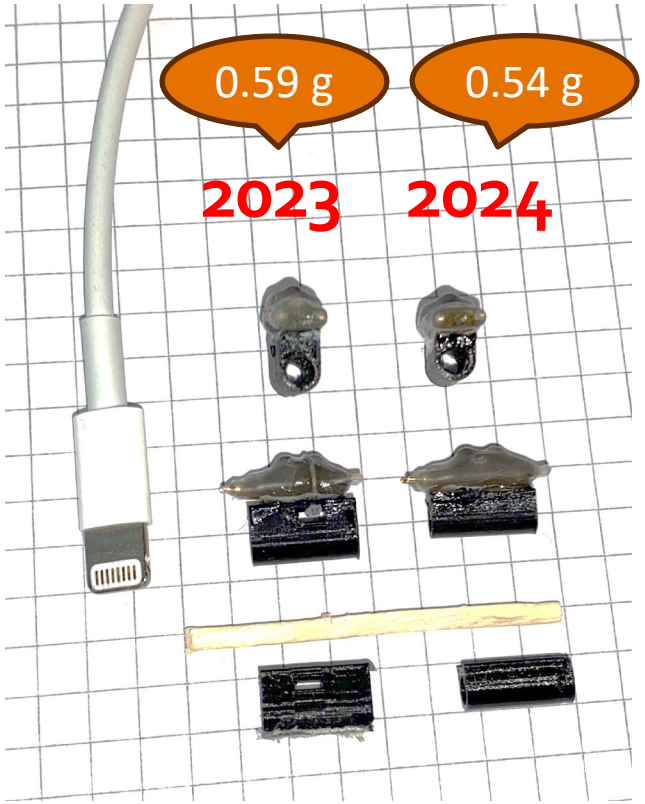
Miniaturization for the smallest seabirds

GLS leg-attachment using 3d-printed rings

Leach's storm petrel (LSP), 40-50 grams



Method/design: D Fifield, A Hedd, B Moe

2023 NYLON and GLUE

After 1 yr, i.e at retrival in 2024

2024 GLUE ONLY

Smaller ring, GLS closer to the leg

At deployment in 2024

SEATRACK Seabird Tracking

SEAGHOSTS

biodiversa+ European Biodiversity Partnership

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Photos: T Anker-Nilssen, B Moe

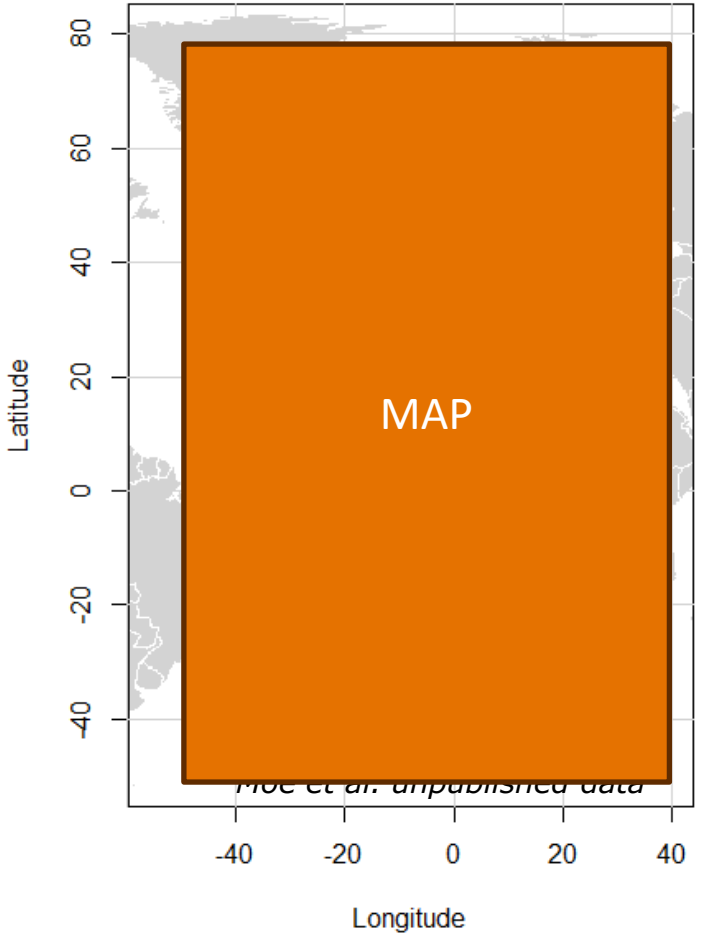
Miniaturization for the smallest seabirds

GLS leg-attachment using 3d-printed rings

Leach’s storm petrel (LSP), 40-50 grams

Photo: T Anker-Nilssen

LSP Hernyken 2023/2024

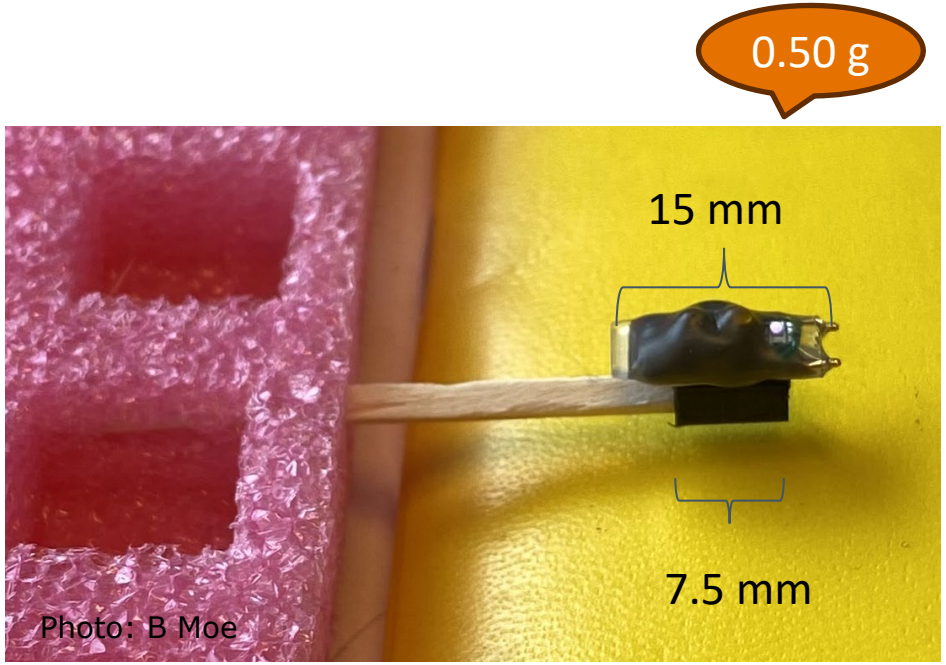


Miniaturization for the smallest seabirds

GLS leg-attachment using 3d-printed rings

European storm petrel

- 22-32 grams



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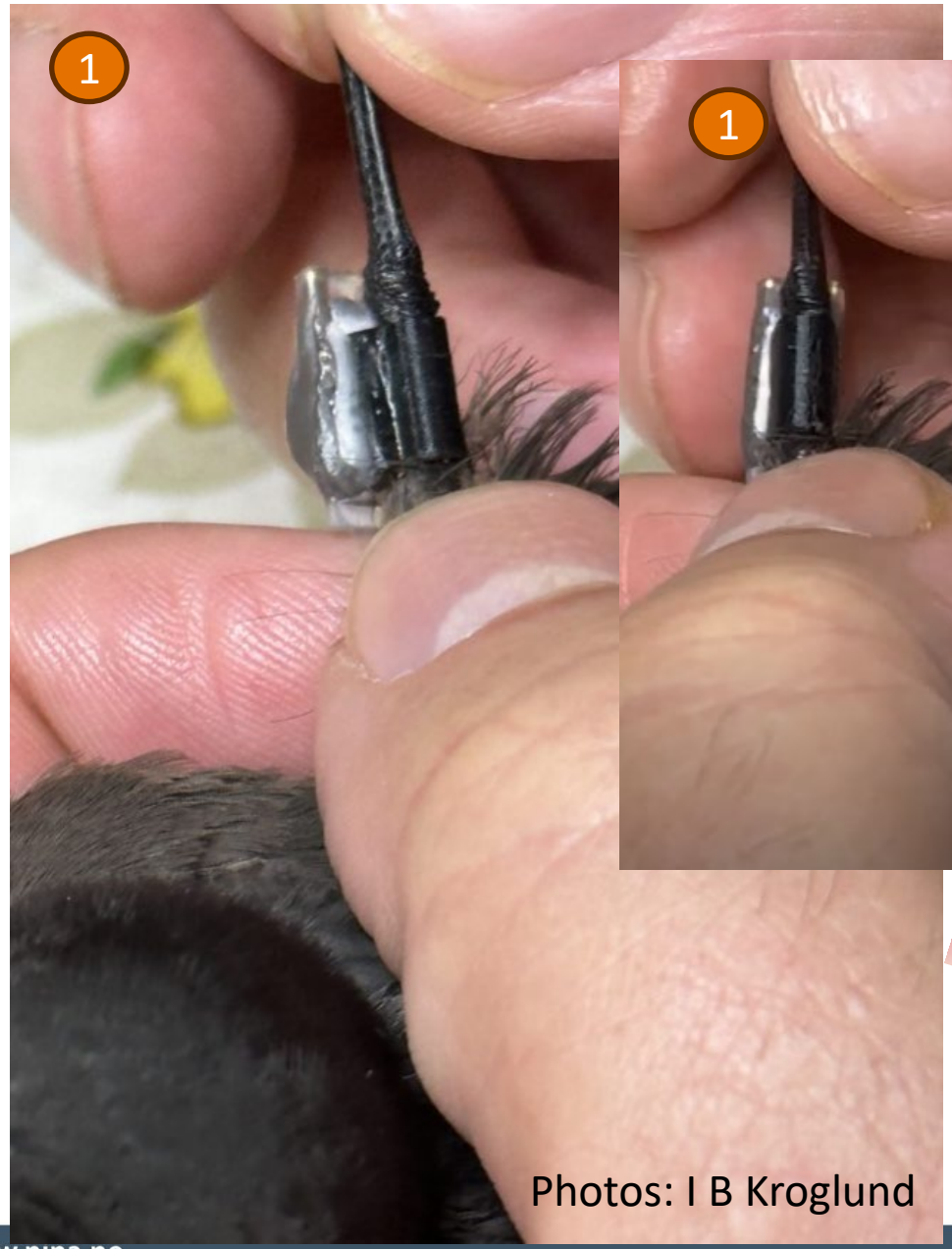

Photos: I B Kroglund

1. Ensure that ring stops at the heel
2. Ring+GEO well deployed

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Miniaturization for the smallest seabirds

GLS leg-attachment using 3d-printed rings

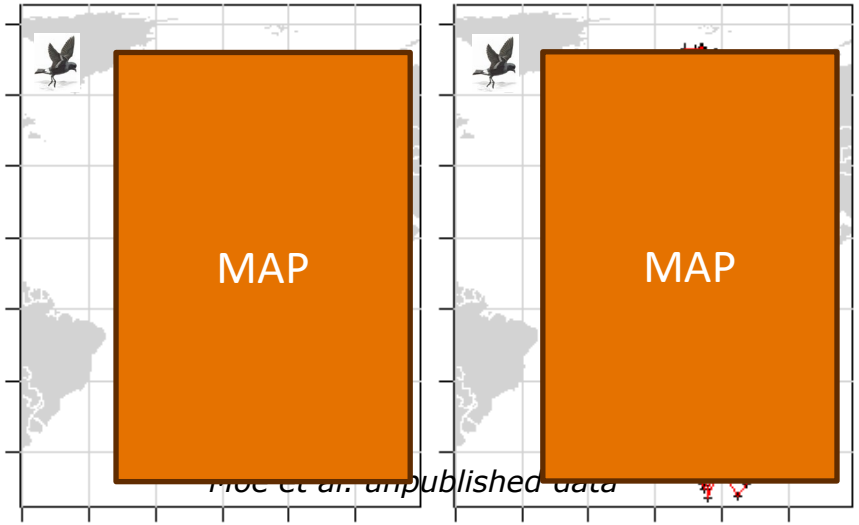
Effect study 2023-2024

GLS attached on 3d-printed ring

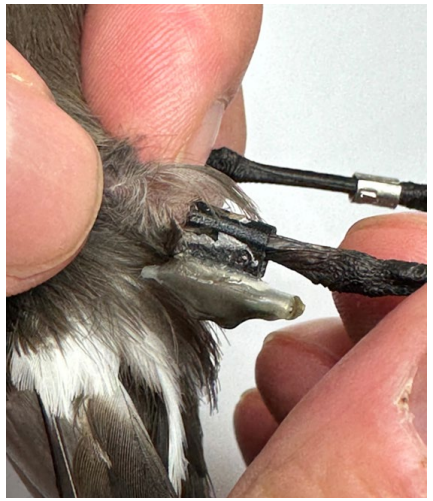
depl 2023 / recap 2024

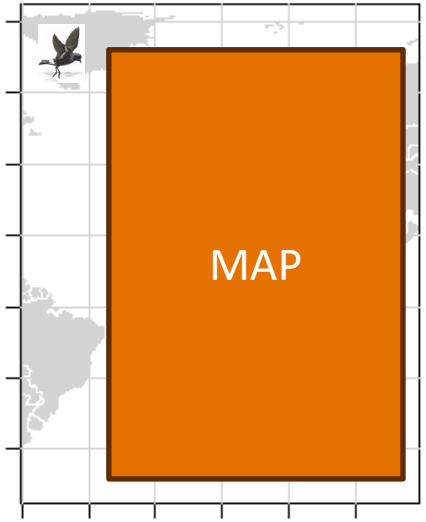
GLS	22 / 3 (14 %)
Controls	10 / 2 (20 %)

Recaptured GLS birds
tibia inspected, no skin abrasion



Moe et al. unpublished data





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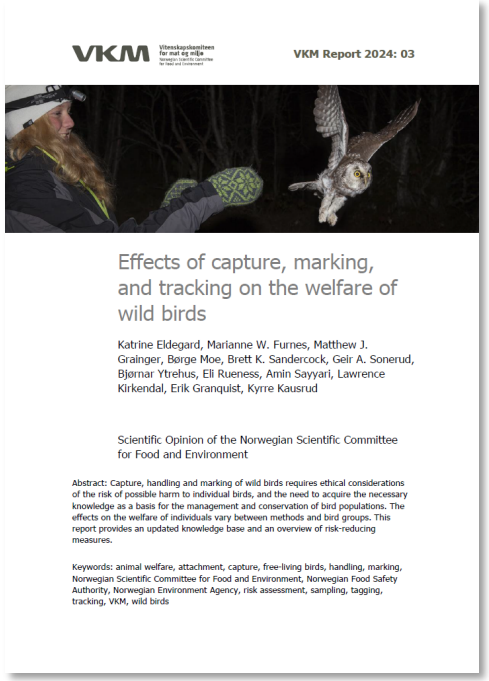
GPS attached with harness

- Associated with high risk for seabirds
- Some seabirds can be tracked year-round safely with harness, e.g. some large gulls
- Norway has been restrictive


VKM Vitenskapskomiteen for mat og miljø

VKM Report 2024: 03

Effects of capture, marking, and tracking on the welfare of wild birds

Katrine Eldegard, Marianne W. Furnes, Matthew J. Grainger, Børge Moe, Brett K. Sandercock, Geir A. Sonerud, Bjørnar Ytrehus, Eli Rueness, Amin Sayyari, Lawrence Kirkendal, Erik Granquist, Kyrre Kausrud

Scientific Opinion of the Norwegian Scientific Committee for Food and Environment

Abstract: Capture, handling and marking of wild birds requires ethical considerations of the risk of possible harm to individual birds, and the need to acquire the necessary knowledge as a basis for the management and conservation of bird populations. The effects on the welfare of individuals vary between methods and bird groups. This report provides an updated knowledge base and an overview of risk-reducing measures.

Keywords: animal welfare, attachment, capture, free-living birds, handling, marking, Norwegian Scientific Committee for Food and Environment, Norwegian Food Safety Authority, Norwegian Environment Agency, risk assessment, sampling, tagging, tracking, VKM, wild birds

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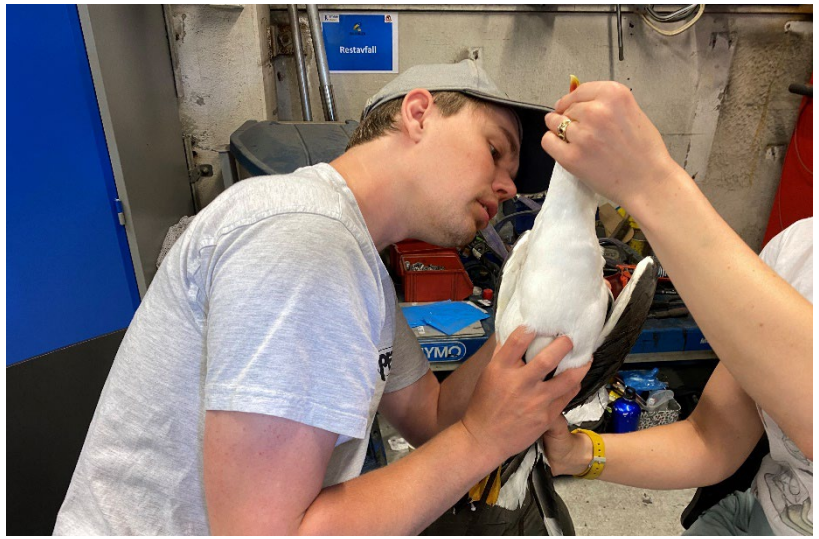
Year-round tracking

GPS-GSM attached with harness

Pilot/effect-study

Herring gull and Lesser black-backed gull

- BTO weak-link protocol/Gary Clewley
- 15 thoracic harness
- 15 leg-loop, 15 control-birds



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Photos: B Moe

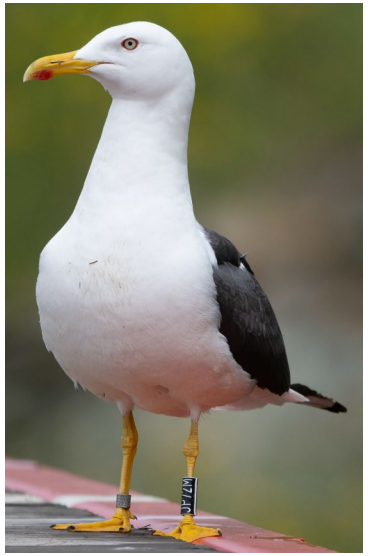
Year-round tracking

GPS-GSM attached with harness

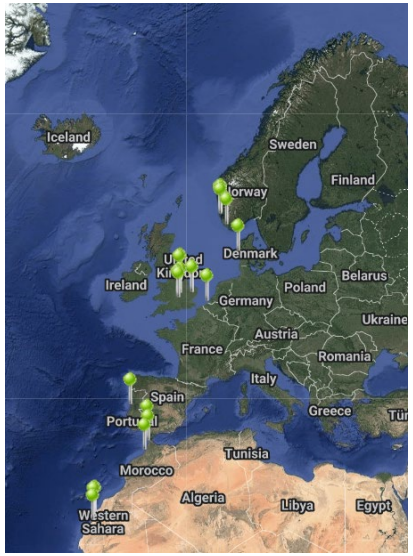
Pilot/effect-study

Herring gull and Lesser black-backed gull

- No short term neg. effect in breeding season
- Return rate/survival will be recorded in 2025



Photos: O Bjørnstad



Current positions of tagged birds

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International collaboration

- **Development, harmonisation best practise, licensing**
- Year-round tracking of large gulls with GPS-GSM on harness
- Gary Clewley (Marine Scotland), British Trust for Ornithology (BTO)
- BTO protocol

Best practise from UK applied in Norway

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International collaboration

- **Development, harmonisation best practise, licensing**
- Miniatyrization, 3d-printed rings for storm-petrels
- Dave Fifield (ECCC, Canada), April Hedd (ECCC), B Moe (NINA)
- Raul Ramos Garcia (Univ. Barcelona, Spain)
- Mark Bolton (RSPB, UK)

- British Trust for Ornithology (BTO) will use the results from Norway

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