Living Norway

Ecological Data Network

GBIF-seminar, Oslo, February 3rd, 2020

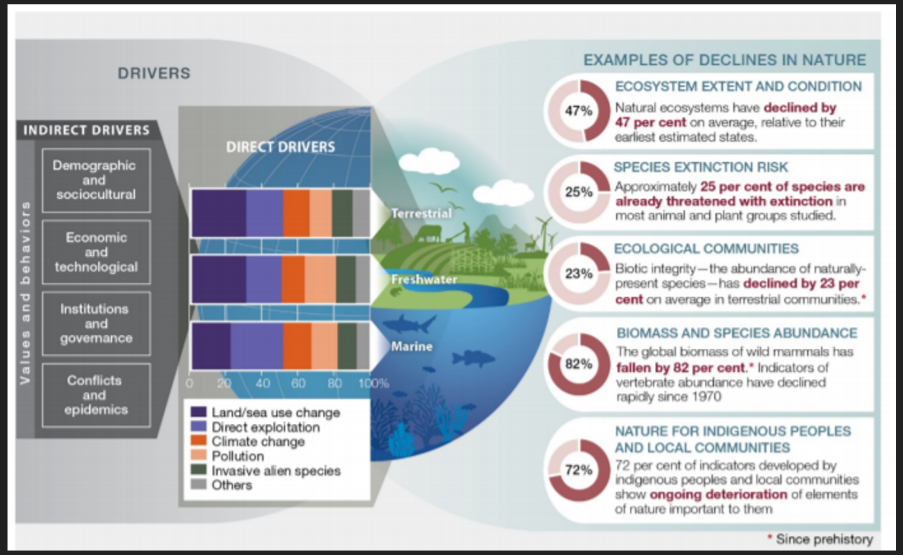
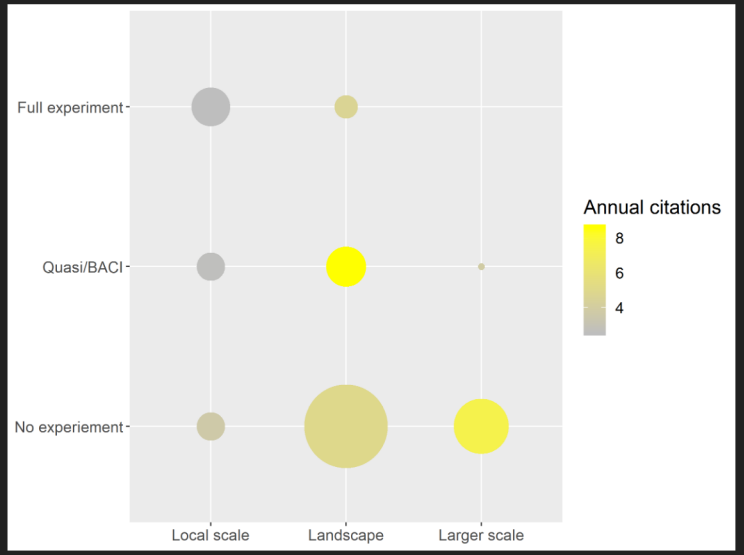


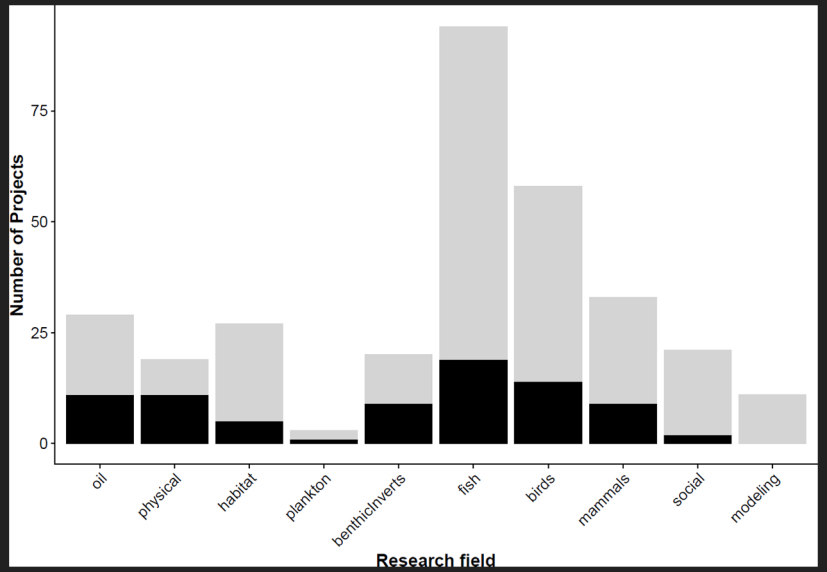
Fig 2 - Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

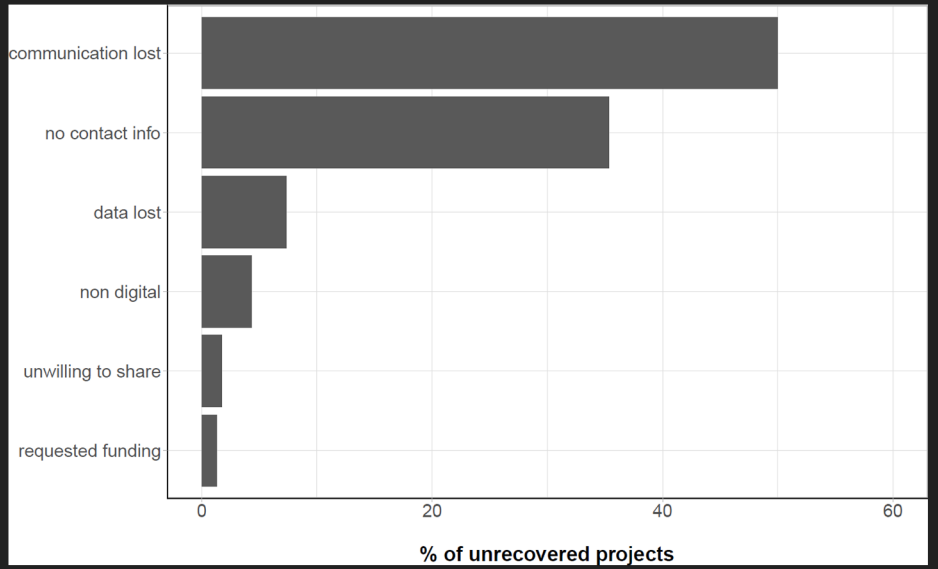


Nilsen, E. B., Bowler, D., & Linnell, J. D. C. (2019). Exploratory and confirmatory conservation research in the open science era. https://doi.org/10.32942/osf.io/75a6f

Living Norway
Ecological Data Network

Sorry, we cannot retrieve the data…..





Counture et al. 2018. A funder-imposed data publication requirement seldom inspired data sharing. PLOSOne (https://doi.org/10.1371/journal.pone.0199789)

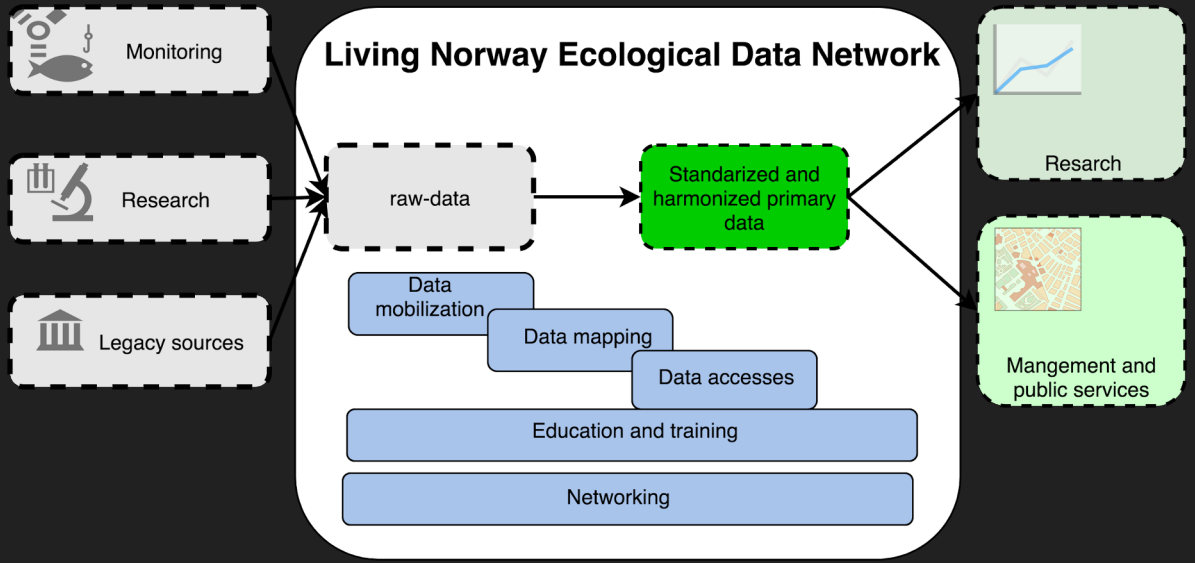
Living Norway
Ecological Data Network


Fagsystem for fastsetting av god økologisk tilstand
- FORSLAG FRA ET EKSPERTRÅD


NORWEGIAN BIODIVERSITY INFORMATION CENTRE
Norwegian Red List of Species
2015
– methods and results

Living Norway

Ecological Data Network



ARTSDATABANKEN · GBIF Norway · NINA Norwegian Institute for Nature Research · NTNU · NMBU · Universitas Bergensis · UiO Universitetet i Oslo · NIVA Norsk institutt for vannforskning

Living Norway

Ecological Data Network

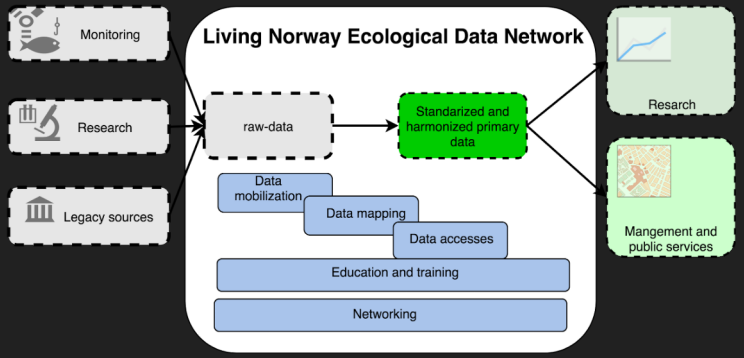
Network established

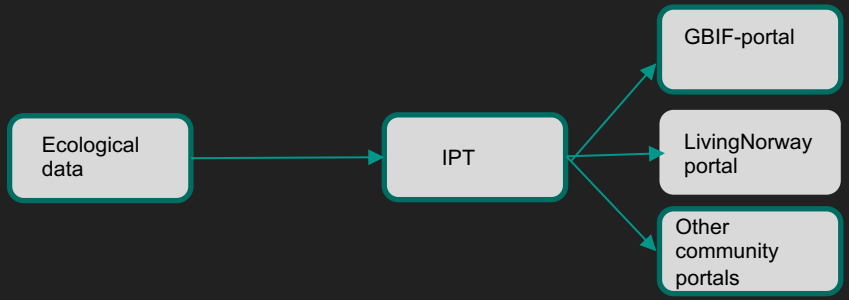
- NINA
- NTNU
- GBIF / UiO (NHM)
- UiB
- NMBU
- Artsdatabanken
- NIVA

Under establishment

- Start-up based on in-kind resources
- Seek to estblish external funding

Living Norway
Ecological Data Network





➢ Living Norway will contribute to and be part of the global Living Atlas community, and a central collaborator with the Norwegian GBIF node

➢ All data made avialble based on GBIF data flow model (via IPT) and Darwin Core with extentions

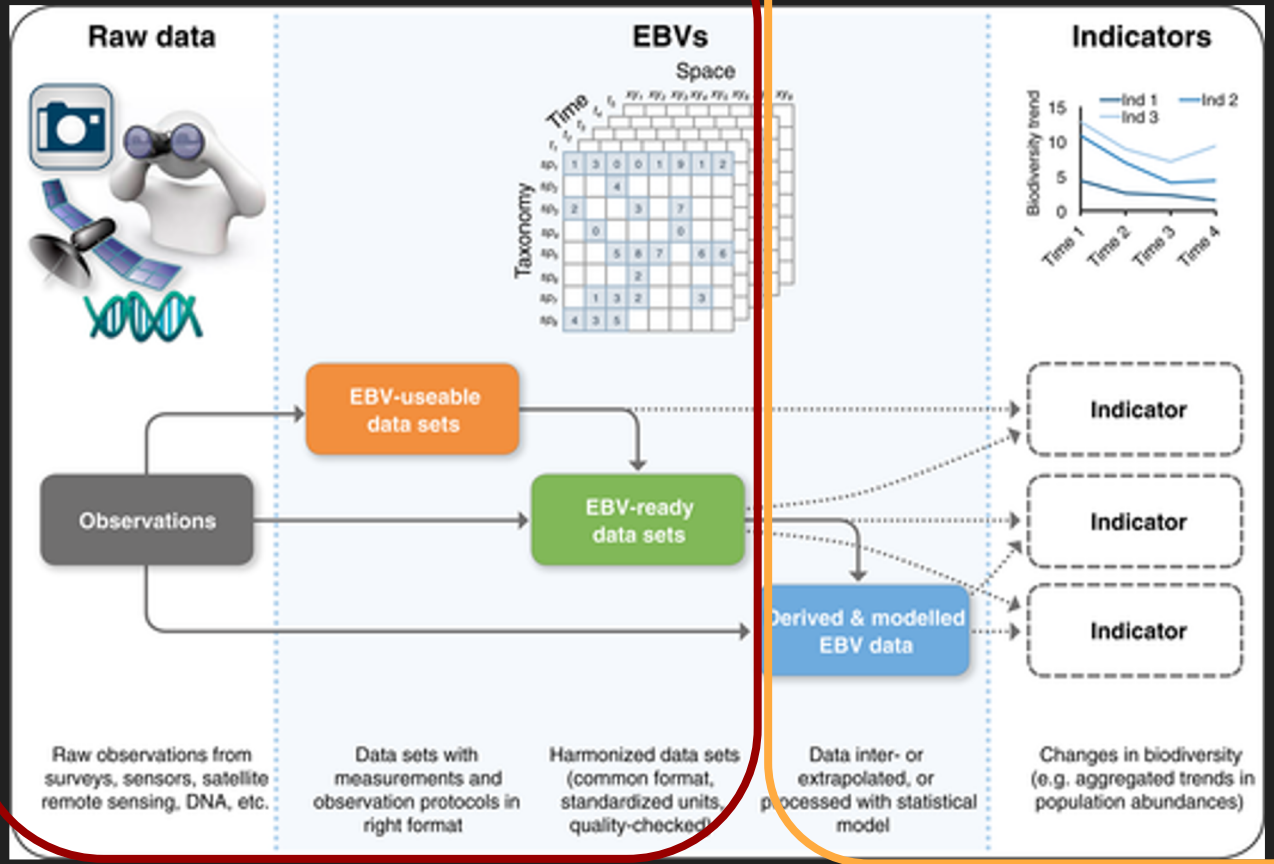
➢ Living Norway aim to actively promote data mobilization and FAIR data management of ecological data

➢ Targeted network activity and stakeholder involvement

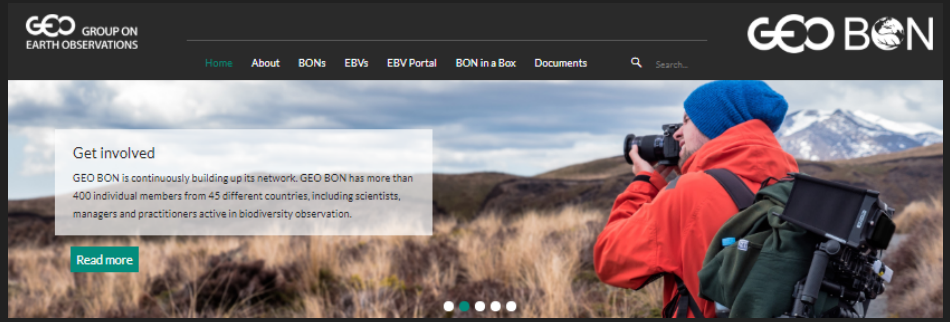
➢ Living Norway aim to develop new curriculum for academic courses and end-user training, incorporating knowledge about infrastructure usage and related research ethics

Generiv part

Specific part



Kissling et al. (2017) Biol. Rew. https://doi.org/10.1111/brv.12359



EBV classes and candidates

There are 6 EBV classes with 21 EBV candidates.

Click on each EBV class to get more detailed information about the candidates for each class.

show all EBV classes & candidates

EBV class	EBV candidate
Genetic composition	Co-ancestry
	Allelic diversity
	Population genetic differentiation
	Breed and variety diversity
Species populations	Species distribution
	Population abundance
	Population structure by age/size class
Species traits	Phenology
	Morphology
	Reproduction
	Physiology
	Movement
Community composition	Taxonomic diversity
	Species interactions
Ecosystem function	Net primary productivity
	Secondary productivity
	Nutrient retention
	Disturbance regime
Ecosystem structure	Habitat structure
	Ecosystem extent and fragmentation
	Ecosystem composition by functional type

Ecology is the scientific study of the interactions that determine the distribution and abundance of organisms

Krebs, 1972

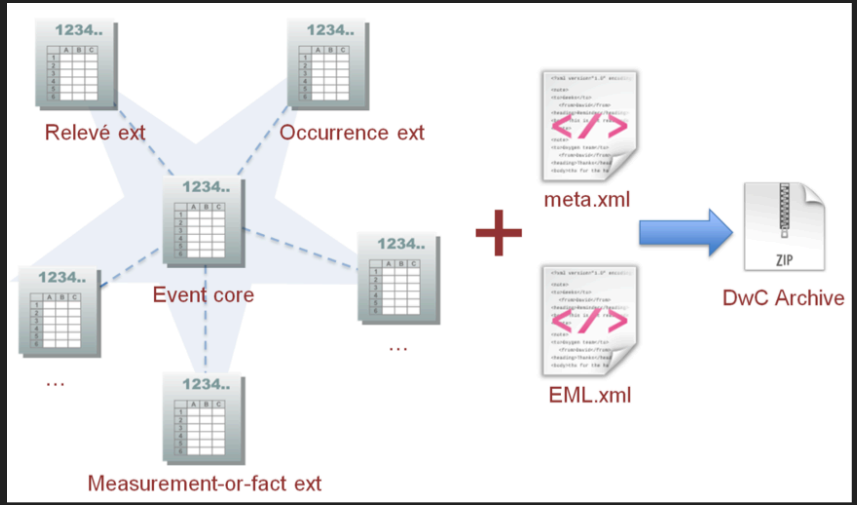
The scientific study of the processes influencing the distribution and abundance of organisms, the interactions among organisms, and the interactions between organisms and the transformation and flux of energy and matter

https://www.caryinstitute.org/

Quantitative time series data can be published using community standards!

NINA
Norwegian Institute for Nature Research

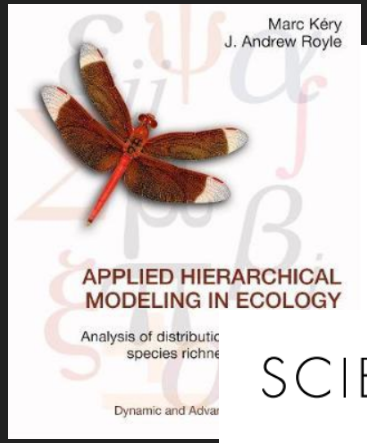
GBIF



https://github.com/gbif/ipt/wiki/BestPracticesSamplingEventData#sampling-event-data

New tools are steadily being developed that allow integration of data from disparate sources

NINA
Norwegian Institute for Nature Research



Received: 19 March 2018 | Accepted: 2 October 2018
DOI: 10.1111/2041-210X.13130

ADVANCES IN MODELLING DEMOGRAPHIC PROCESSES

Methods in Ecology and Evolution

The recent past and promising future for data integration methods to estimate species' distributions

David A. W. Miller[1] | Krishna Pacifici[2] | Jamie S. Sanderlin[3] | Brian J. Reich[4]

[1]Department of Ecosystem Science and Management, Penn State University, University Park, Pennsylvania
[2]Department of Forestry and Environmental Resources, Program in Fisheries, Wildlife, and Conservation Biology, North Carolina State University, Raleigh, North Carolina
[3]Rocky Mountain Research Station, USDA Forest Service, Flagstaff, Arizona
[4]Department of Statistics, North Carolina State University, Raleigh, North Carolina

Abstract

1. With the advance of methods for estimating species distribution models has come an interest in how to best combine datasets to improve estimates of species distributions. This has spurred the development of data integration methods that simultaneously harness information from multiple datasets while dealing with the specific strengths and weaknesses of each dataset.
2. We outline the general principles that have guided data integration methods and review recent developments in the field. We then outline key areas t
a more general framework for integrating data and provide suggest

PLOS ONE

RESEARCH ARTICLE

Integrating data from multiple sources for insights into demographic processes: Simulation studies and proof of concept for hierarchical change-in-ratio models

Erlend B. Nilsen*, Olav Strand

Methods in Ecology and Evolution

Methods in Ecology and Evolution 2014, **5**, 751–760 doi: 10.1111/2041-210X.12221

Quantifying range-wide variation in population trends from local abundance surveys and widespread opportunistic occurrence records

Jörn Pagel[1,2*], Barbara J. Anderson[3,4], Robert B. O'Hara[5], Wolfgang Cramer[6], Richard Fox[7], Florian Jeltsch[1], David B. Roy[8], Chris D. Thomas[4] and Frank M. Schurr[2,9]

SCIENTIFIC REPORTS

OPEN

Integrating data from differe survey types for population monitoring of an endangered species: the case of the Eld's deer

Received: 12 April 2018
Accepted: 8 May 2019
Published online: 23 May 2019

Diana E. Bowler[1], Erlend B. Nilsen[1], Richard Bischof[2], Robert B. O'Hara[3], Thin Thin Yu[4], Tun Oo[5], Myint Aung[5] & John D. C. Linnell[1]

Trends in Ecology & Evolution

CellPress REVIEWS

Review

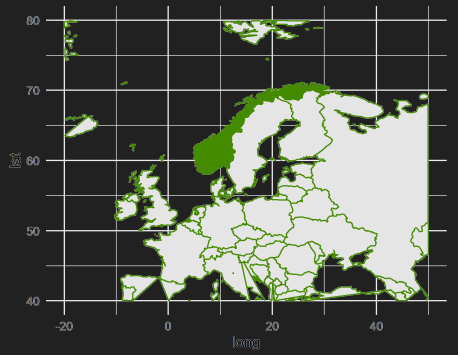
Data Integration for Large-Scale Models of Species Distributions

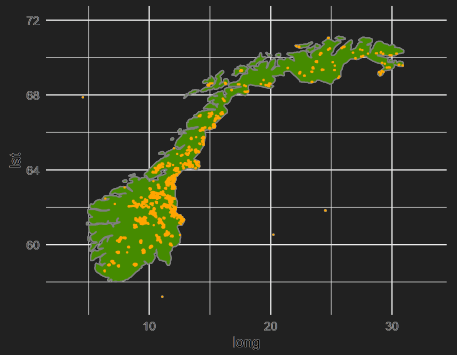
Nick J.B. Isaac,[1,2,*] Marta A. Jarzyna,[3] Petr Keil,[4,5] Lea I. Dambly,[1,2] Philipp H. Boersch-Supan,[6,7] Ella Browning,[2,8] Stephen N. Freeman,[1] Nick Golding,[9] Gurutzeta Guillera-Arroita,[9] Peter A. Henrys,[10] Susan Jarvis,[10] José Lahoz-Monfort,[9] Jörn Pagel,[11] Oliver L. Pescott,[1] Reto Schmucki,[1] Emily G. Simmonds,[12] and Robert B. O'Hara[12]

CASE STUDY:
Willow ptarmigan in Norway

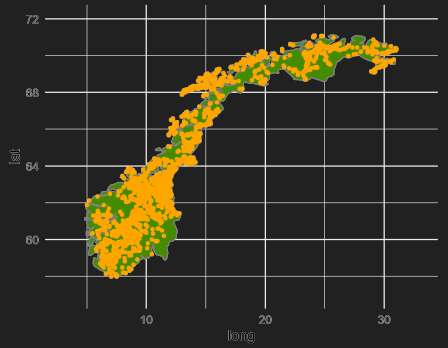
NINA
Norwegian Institute for Nature Research

1: Line Transect distance sampling data

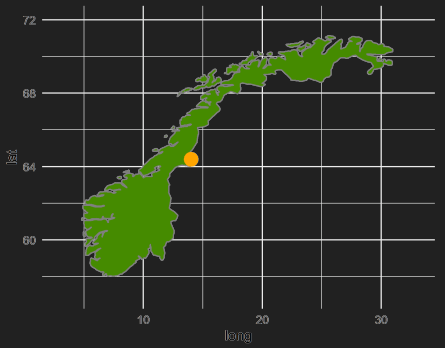




2: Occurence data



3: Individual based data from marked individuals



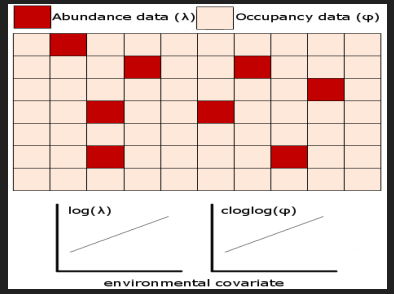
UPSCALING:
Integrating occurence data and abundance data

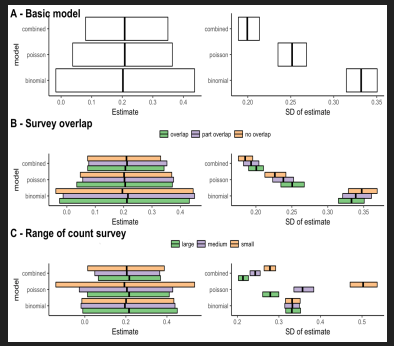
RELATIONSHIP BETWEEN OCCURENCE AND ABUNDANCE:

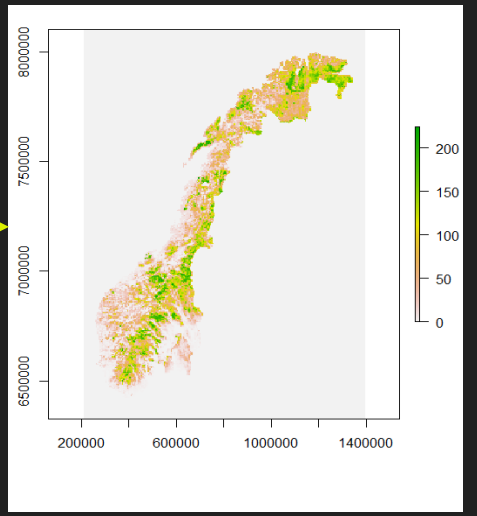
φ is Occurrence probability
λ is Expected abundance

THE LINK CAN BE SPECIFIED AS:

$$\log(-\log(1-\varphi)) = \log(\lambda)$$

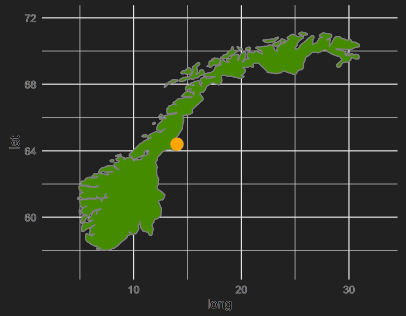






Bowler, D.E., Nilsen, E.B., et al. (2019).
Scientific Reports, ***9, 7766.***

DOWNSCALING:
A novel stage-structured distance sampling model allow integration of demographic data



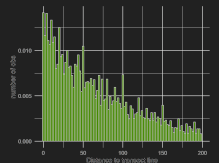
STATE PROCESS

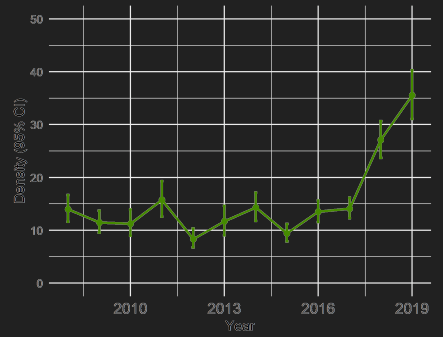
$$D_t = D_{t-1}\boldsymbol{A}_t$$

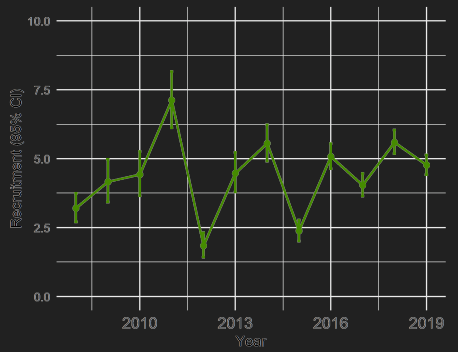
$$A_t = \begin{bmatrix} R_t & R_t \\ S_t & S_t \end{bmatrix}$$

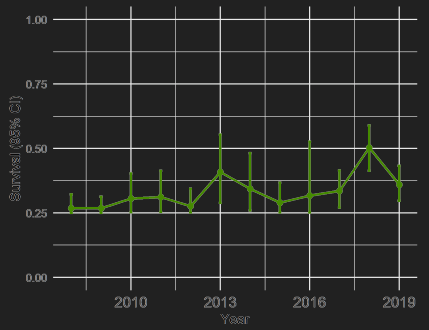
$$R_t = S_t * F_t$$

OBSERVATION PROCESS







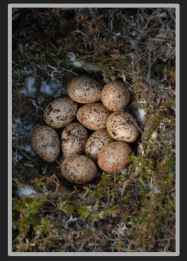


NINA
Norwegian Institute for Nature Research

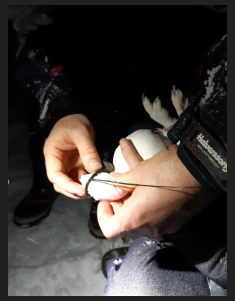
Integrating data from an ongoing study based on marked individuals…

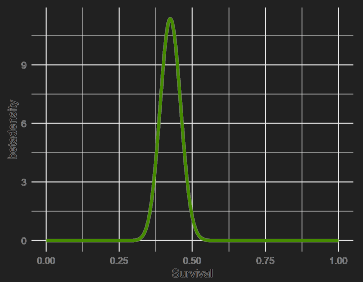


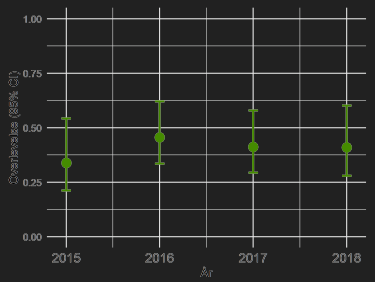





DOWNSCALING:
Integrating data from marked individuals
1: Increased precision in survival estimates



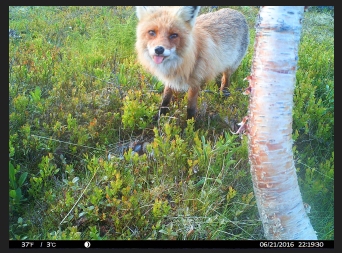




$$A_t = \begin{bmatrix} R_t & R_t \\ S_t & S_t \end{bmatrix}$$

DOWNSCALING:
Integrating data from marked individuals
2: Estimating juvenile summer survival as a latent variable

NINA
Norwegian Institute for Nature Research

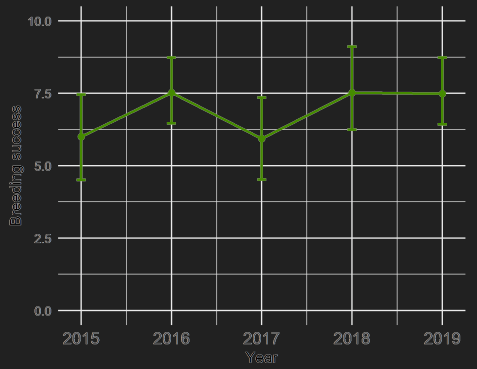


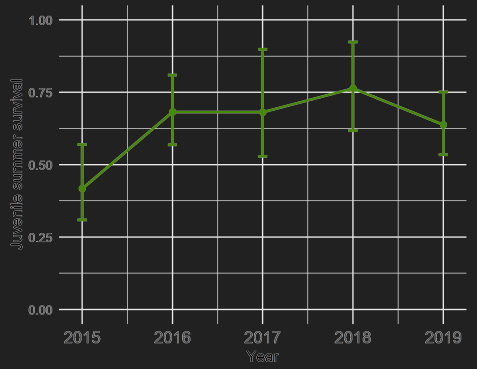
$$A_t = \begin{bmatrix} R_t & R_t \\ S_t & S_t \end{bmatrix}$$

$$R_t = S_t * F_t$$

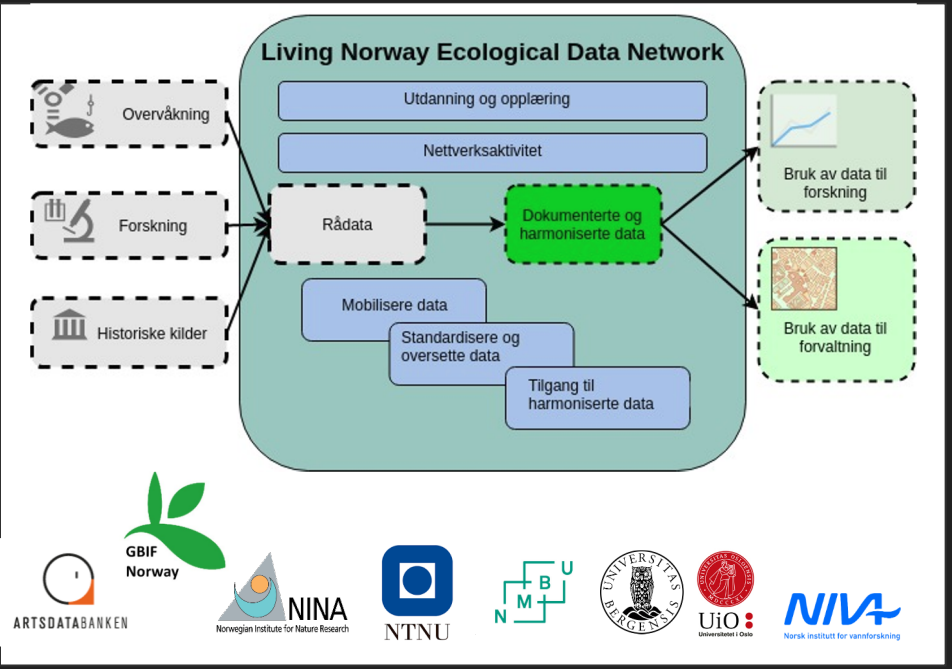
$$F_t = S\_juv_t * BS_t$$

Latent variable





Living Norway Ecological Data Network



- Increased data mobilization from research and monitoring
- Contribute to training and education in open data and open science
- Part of national and global network
- New and rich data types

Provide the community with harmonized data from ecology and related diciplines

Living Norway seminar 2020

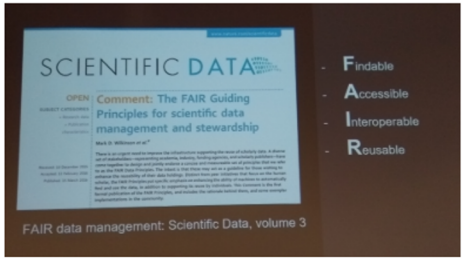
Living Norway
Ecological Data Network
Promoting FAIR data management

Home Contact Blog About Living Norway

A fruitful two days seminar

Written by Benjamin Cretois, Lasse F Eriksen and Wouter Koch – PhD students at The Norwegian University of Science and Technology.

There is a rapidly increasing awareness of the importance of ecological data. With the climate crisis and global biodiversity loss as a background for much of today's ecological research, we cannot afford wasting any resources in the search for more knowledge. Thus, as scientists we have to be aware of not only the need for collecting data, but also how we make the most of the data we collect. A part of this is making data Findable, Accessible, Interoperable and Reusable (FAIR). This was highlighted during the 2 days Living Norway seminar at the Norwegian Institute for Nature Research (NINA) last week, where a group of ca. 70 participants met to discuss the challenges, opportunities and infrastructure needed to improve the ways data is shared within the scientific community.



What is FAIR and how to develop this paradigm within the scientific community, a recurrent theme of this seminar

First day was dedicated to introducing the participants to the Open Science philosophy, emphasizing that a FAIR management of data is a step forward to this scientific ideal. Finding and formatting data is a difficult and time consuming step in research as it can take up 79% of the researcher's time (Data

NEWS

- A fruitful two days seminar
- Detailed program
- Living Norway Seminar 2019

TWEETS FROM GBIF NORWAY

Tweets by @GBIFNorway

GBIF Norway
@GBIFNorway
#BioDataGbif in Bialowieza national park in Belarus
@GBIFPoland @GbifEs @GBIF @dschige l @GBIFNorway #GbifRussia #GbifBelarus

Embed View on Twitter

Home Contact Blog About Living Norway

Detailed program

Fair data management and open science in ecology, wildlife management and conservation

June 11. – 12. 2019

Seminar invitation can be found here.

June 11th:

Open seminar at NINA-huset

Time	Program
09:30 – 10:00	Registration and coffee
	Session chair: Bob O'Hara, NTNU
10:00 – 10:10	Welcome (Einar Hjorthol, Director of Norwegian Biodiversity Information Centre)
10:10 – 10:30	Towards FAIR data management of ecological data? (Erlend B. Nilsen, NINA)
10:30 – 10:50	Challenges in dissemination of biodiversity knowledge (Arild Lindgaard, Norwegian Biodiversity Information Centre)
10:50 – 11:10	Why, when and how do we need ecological data for environmental policy and management (Ingunn Limstrand, Norwegian Environment Agency)
11:10 – 11:30	Norwegian participation in international biodiversity research infrastructures (Frank Hanssen, NINA)
11:30 – 12:30	Lunch

NEWS

- A fruitful two days seminar
- Detailed program
- Living Norway Seminar 2019

TWEETS FROM GBIF NORWAY

Tweets by @GBIFNorway

GBIF Norway
@GBIFNorway
#BioDataGbif in Bialowieza national park in Belarus
@GBIFPoland @GbifEs @GBIF @dschige l @GBIFNorway #GbifRussia #GbifBelarus

Embed View on Twitter