First online training course

May 5th 2022

aimed at EOW participants

The Course

- To update milestones and achievements of ***ENETWILD***
- To present the ***European Observatory of Wildlife (EOW)***
    - *Aims*
    - *The plan (2022)*
- Providing specific trainning (update and refresh) on camera trapping methods and protocols which do not require identification of individuals
- Update on new IT tools

The Course

irec

Università degli Studi di Torino

Vlaanderen is wetenschap

INSTITUUT NATUUR- EN BOSONDERZOEK

Research Institute for Nature and Forest

uniss

UNIVERSITÀ DEGLI STUDI DI SASSARI

Content and structure

5th May

09:00-09:45h
Enetwild and the European Observatory of Wildlife: approach, organization, implementation of protopcols, principles of camera trapping
Joaquín Vicente

09:45-10:15h
Camera trap methods for density estimation
Pablo Palencia

10:15-10:30h
Coffer break

10:30-11:15h
"Introduction to Agoutí Platform: organizing CT surveys, process images, and obtain standardized output. Case example". Jim Casaer

11.15-11:45h
Study design field protocol
Pablo Palencia

11:45-12:30h
Database processing for analysis
Pablo Palencia

12:30-13:00h
The European Observatory of Wildlife: next steps and questions

50 participants

Name	Country
Jordi Sola	AD
Hèctor Del Val	AD
Bledi Hoxha	AL
Ilir Shyti	AL
Melitjan Nezaj	AL
Astghik Ghazaryan	AR
Georgy Papov	AR
Tigran Hayrapetyan	AR
Gor Kaloayn	AR
Garnik Gevorgyan	AR
Marine Arakelyan	AR
Damir Mrđenović	BA
Lynn Pallemaerts	BE
Stoyan Stoyanov	BG
Mihael Janjecic	CR
Jan Kaiser	DE
Marlene Thomas	DE
Nicolas Urbani	ES
Fernando Escribano Cánovas	ES
Juan Miguel Burgui Oltra	ES
Gregorio Mentaberre	ES
Amanda García Del Rincón Garoz	ES
Carlos Rodríguez Vigal	ES

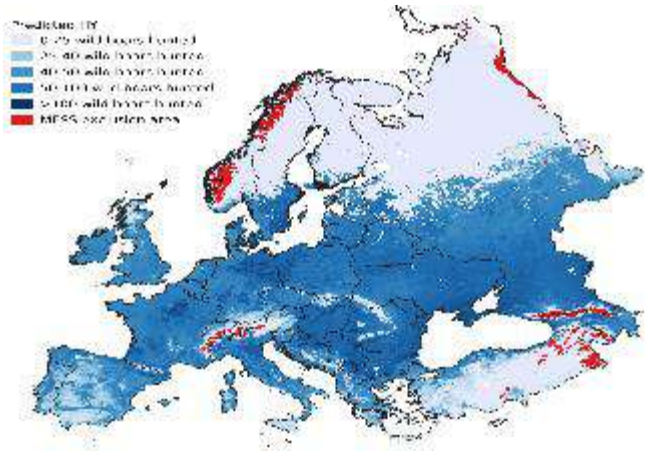
Alexios Giannakopoulos	GR
Csányi Sándor	HU
Mara Calvini	IT
Olgirda Belova	LT
Victoria Nistreanu	MD
Victor Sitnic	MD
Marina Radonjic	ME
Belma Sestovic	ME
Stefan Ralevic	ME
Stanko Deletic	ME
Lidija Fajdiga	MK
Denis Tancev	MK
Kamila Pils	PL
Tomasz Podgorski	PL
Patrícia Pereira	PT
Iván Gutiérrez	PT
João Santos	PT
Dragan Gacic	RS
Lars Hilström	SE
Jozef Bučko	SK
Luka Dunis	SL
Alper Erturk	TR
Adam F. Smith	UKR-UK

Email to: enetwild@uniss.it

or

- Repeatedly, a lack of comparable data on the geographical distribution and abundance of the wildlife hosts at European scale has hampered **risk assessments for shared emergent diseases**

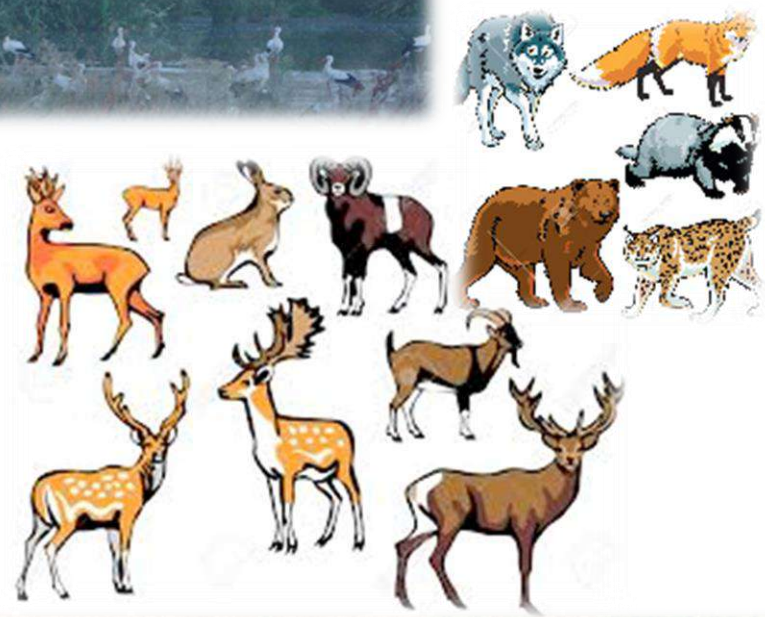
  - To compile valid information on abundance and distribution of wildlife species following harmonised methods and filtered by standards of quality
  - to promote and coordinate the generation of new data
  - further enhance the network of wildlife professionals to support data collection activities



WHY?

Population

Disease



Picture: Dragan Gacic

HOW?

Stds. for wildl. dis. coming

Mayor achievement!!!

1. **Harmonizing data collection: standards for distribution & abundance of wildlife & review methodology and propose density estimation protocols**

2. **Data collection (networking) and repository (open access)**

Mayor achievement!!!

Maps & models of species distribution

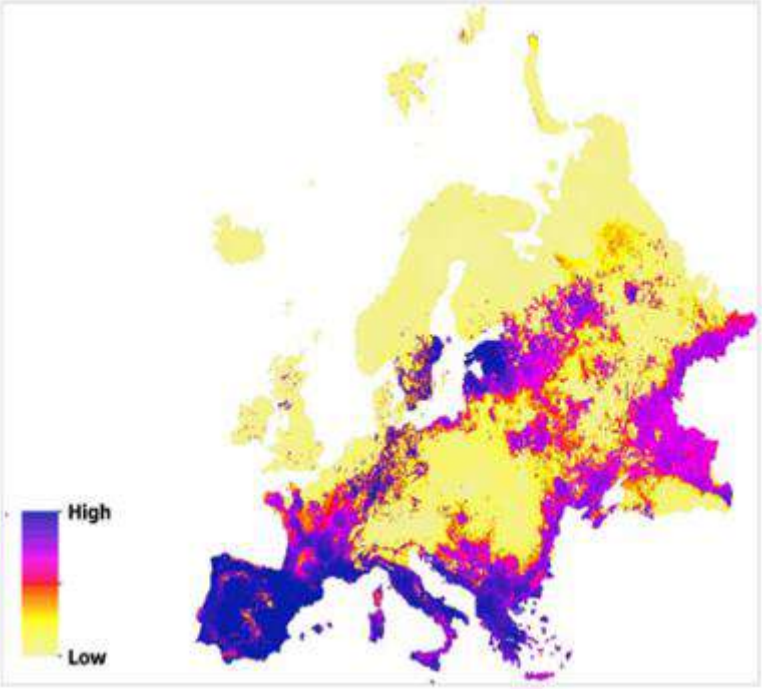
- **Use for risk assessment for diseases (EFSA, The Commission, any)**
- **Ecology & Management & Conservation of wildlife**

Report on standards: https://efsa.onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2020.EN-1841

Data collection

What do we need ?

- (I) distribution data
- (II) abundance (hunting)
- (III) density data



Croft el al. PloS ONE: https://doi.org/10.1371/journal.pone.0176339

Data collection: Data model

General Instructions

Data Sharing Agreement

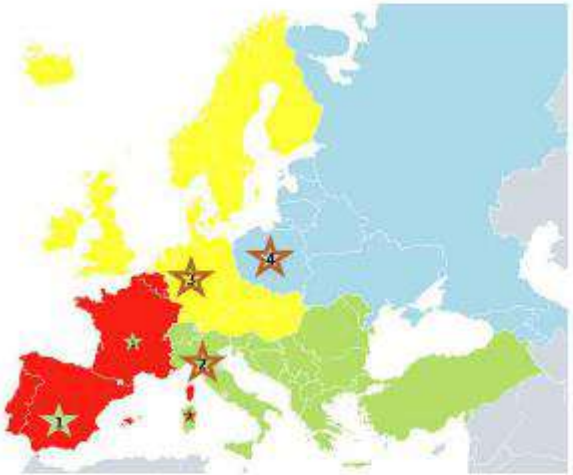
FAQs

ALL FILES excel2016 (zip)

ALL FILES excel2007 (zip)

One of the two available versions should work from xls2007 to xlsx of office365. If the drop-down menus do not work properly, select the other excel available option. After the new window is opened, download the compressed files using the top left download button

Video Tutorials for Wild Data Model



WBDM_Russian

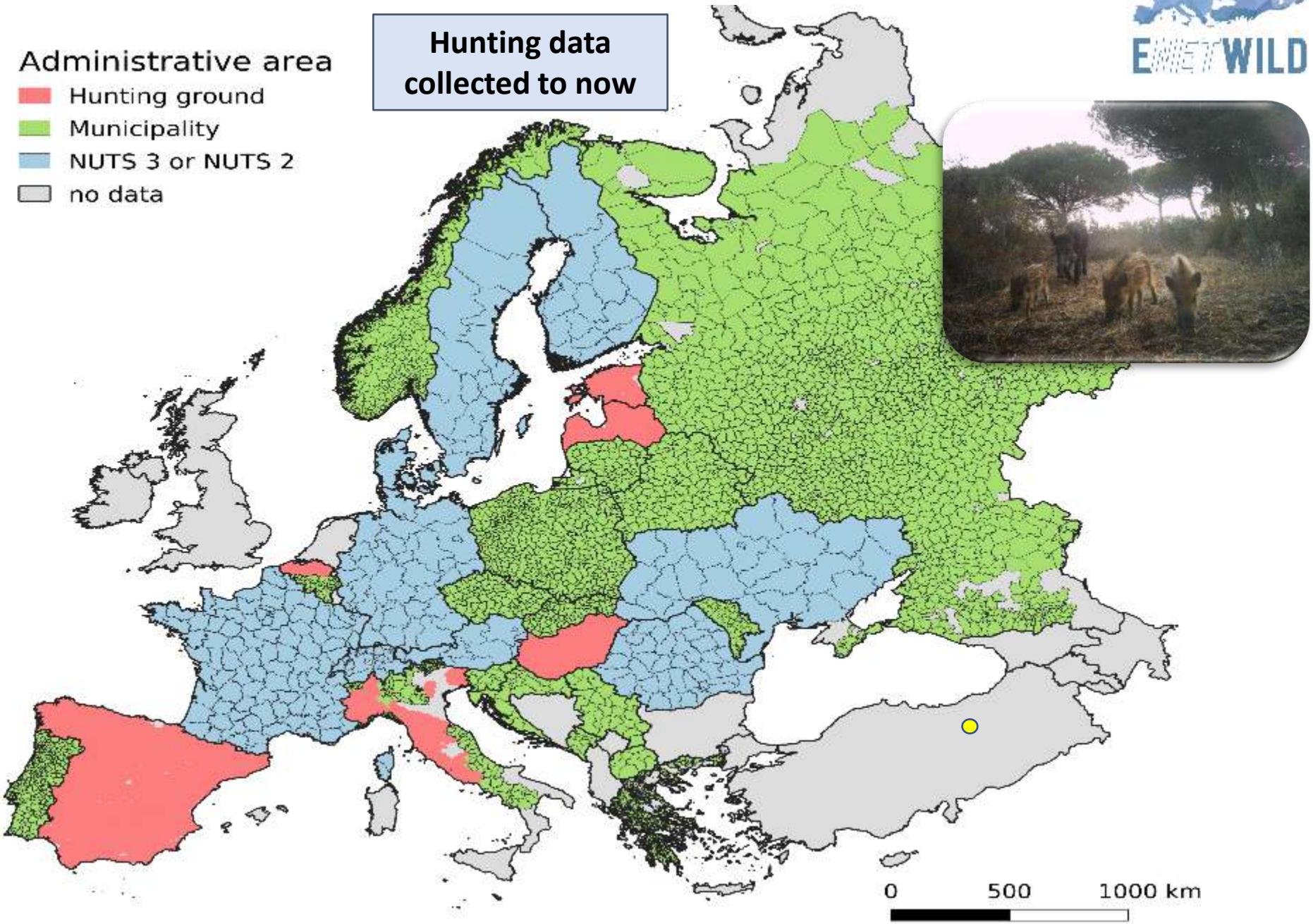
WBDM_Spanish

WBDM_Italian

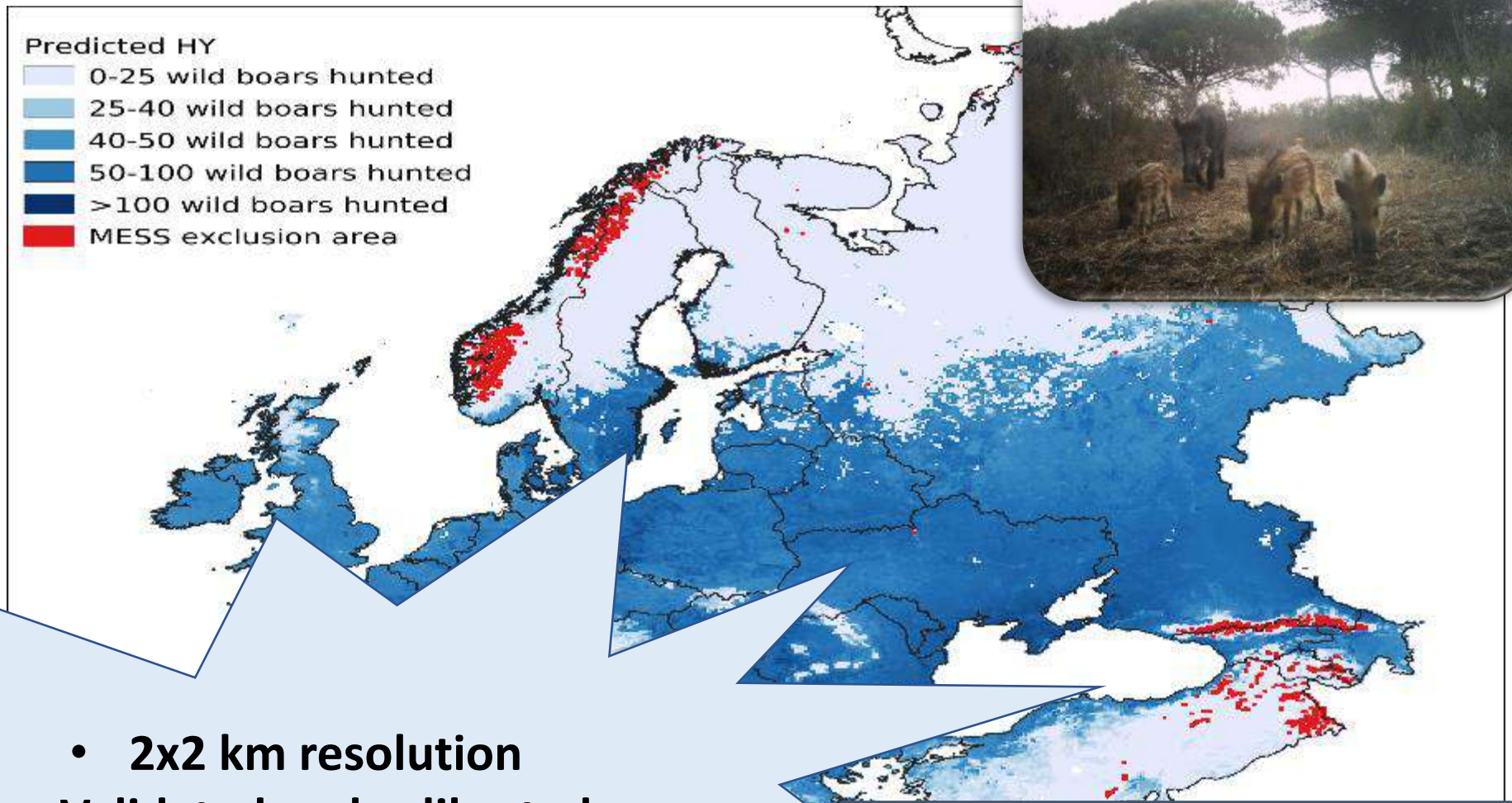
Data model all wildlife spp-compatible following international standards

Data sharing agreement

Data collection

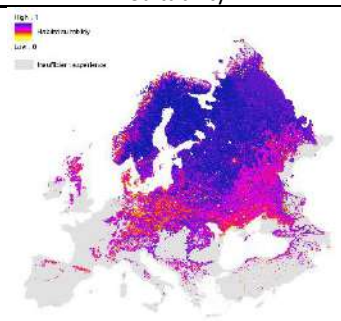
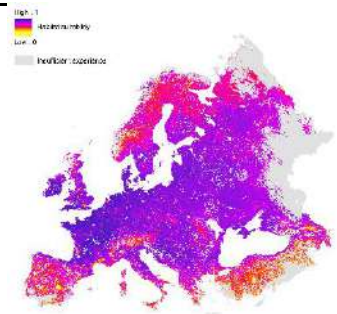
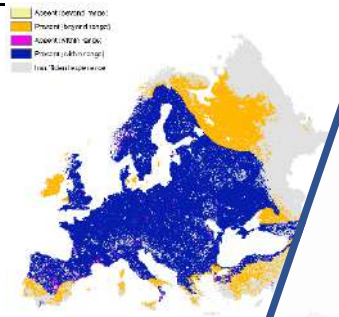
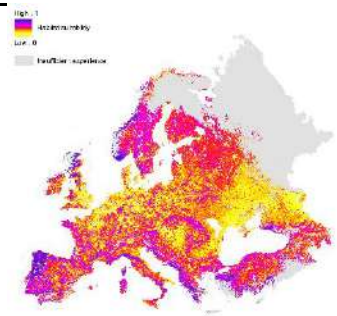
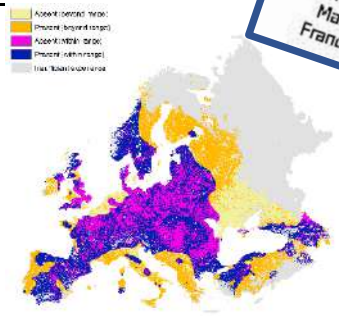
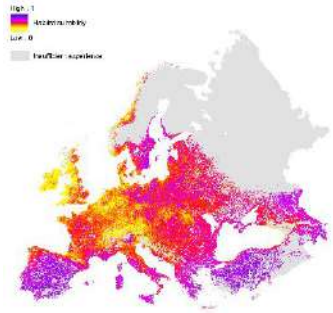
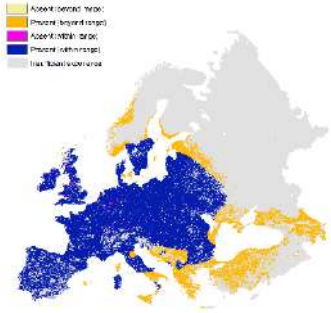


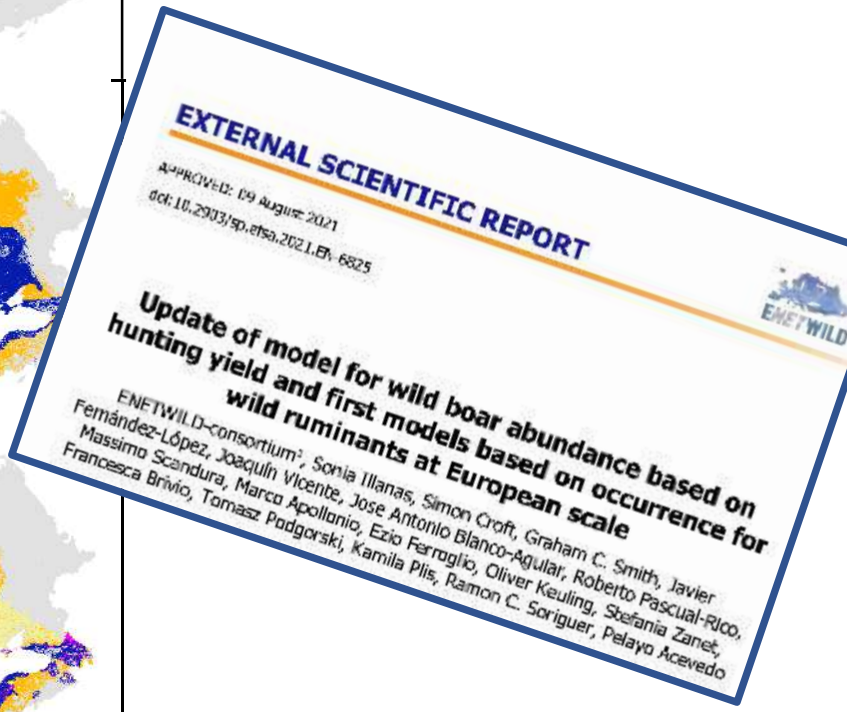
Spatial modelling



- 2x2 km resolution
- Validated and calibrated
- Used for risk assessment at nat & int. levels

Spatial modelling

	Suitability	Occurrence
Alces alces		
Capreolus capreolus		
Cervus elaphus		
Dama dama		



EXTERNAL SCIENTIFIC REPORT

APPROVED: 09 August 2021

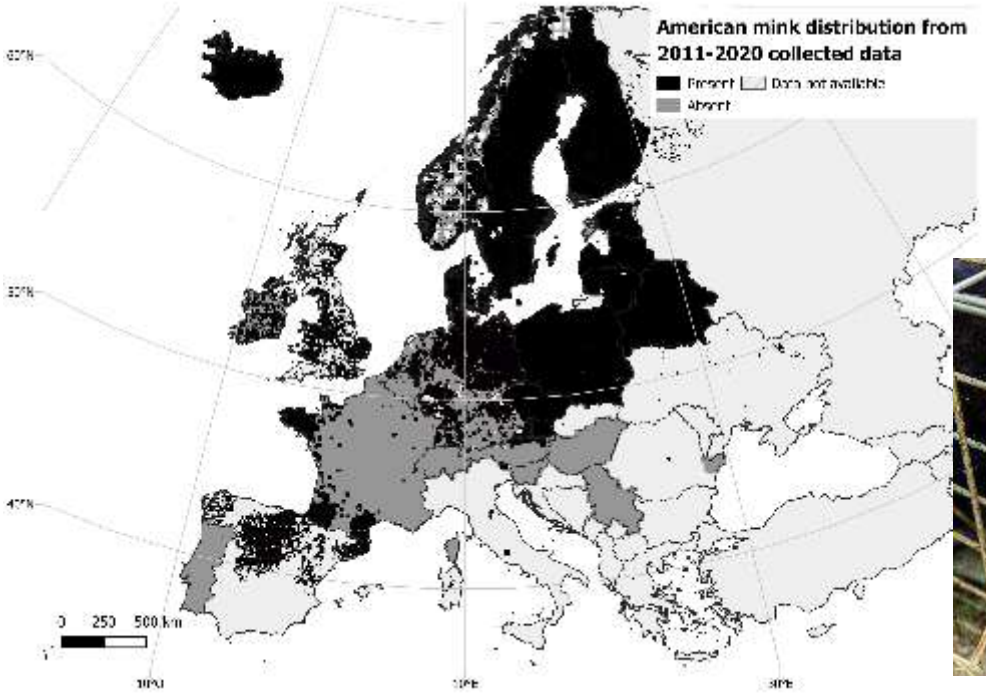
doi:10.2903/sp.efsa.2021.EN-6825

Update of model for wild boar abundance based on hunting yield and first models based on occurrence for wild ruminants at European scale

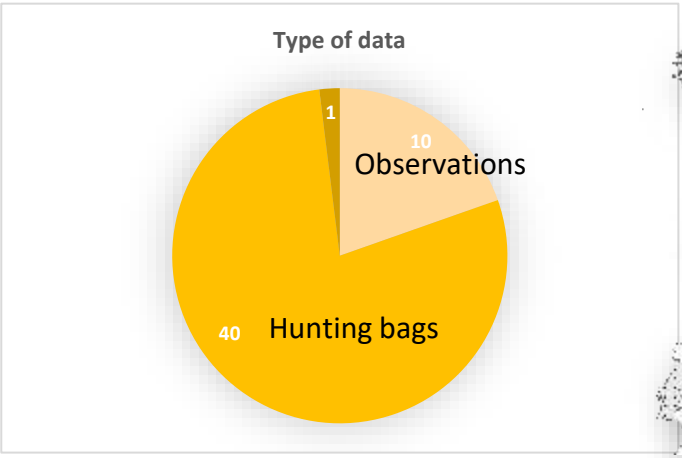
ENETWILD-consortium[1], Sonia Illanas, Simon Croft, Graham C. Smith, Javier Fernández-López, Joaquín Vicente, José Antonio Blanco-Aguiar, Roberto Pascual-Rico, Massimo Scandura, Marco Apollonio, Ezio Ferroglio, Oliver Keuling, Stefania Zanet, Francesca Brivio, Tomasz Podgorski, Kamila Plis, Ramon C. Soriguer, Pelayo Acevedo

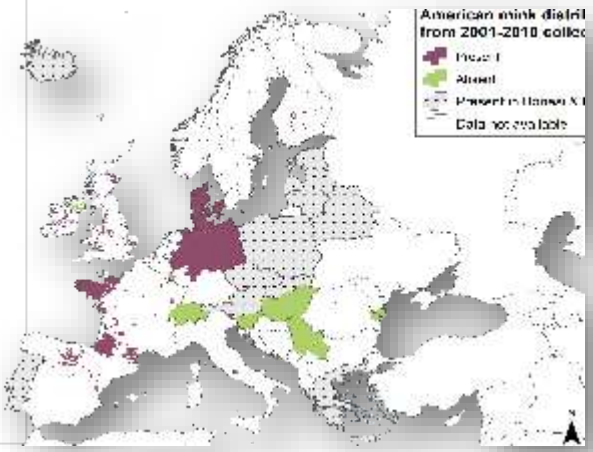
Next …… carnivores

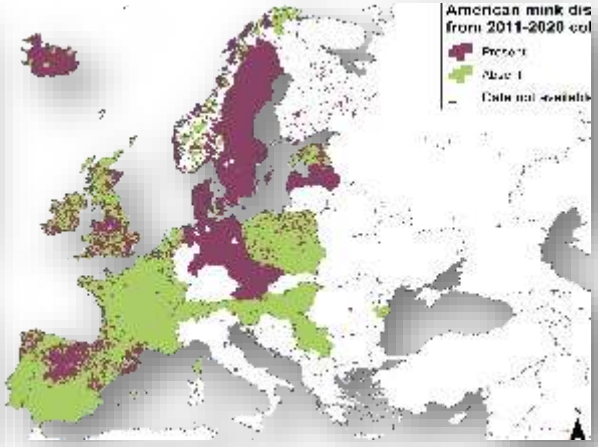
Data collection



Neovison vison



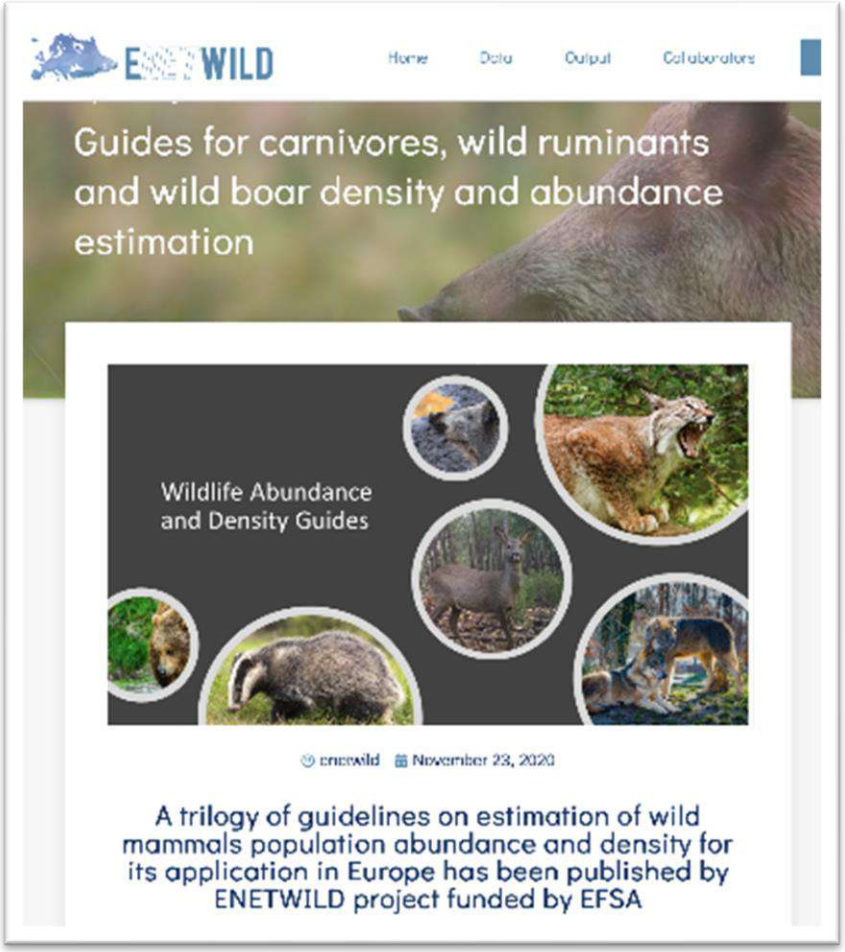


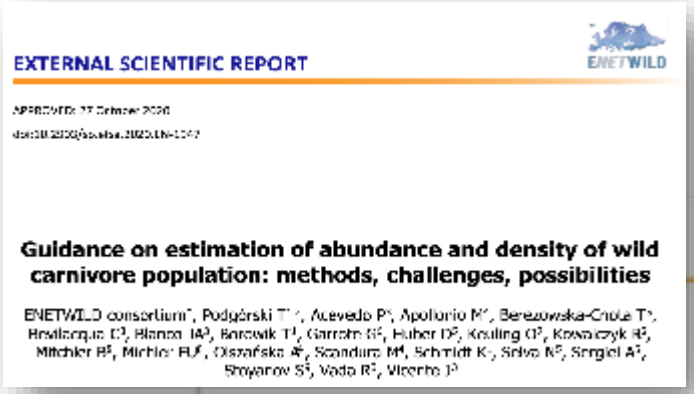


Harmonizing data collection: standards for distribution/validating methods to calculate abundance of wild mammals & protocols (CT)

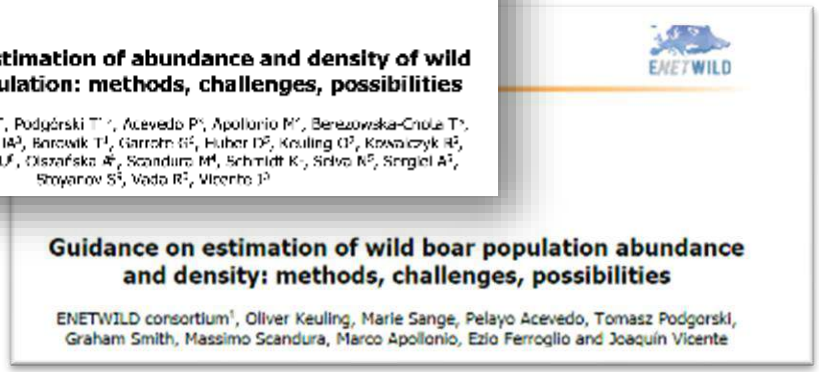
ENETWILD guidances on wildlife (mammal) abundance estimation

- Review and evaluate methods
- Providing practical detailed protocols,
  - if possible multi-species species
  - useful specially at wide range of densities
  - long-term monitoring




EXTERNAL SCIENTIFIC REPORT

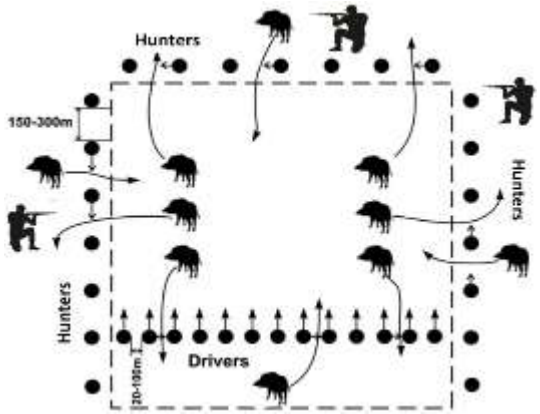
Guidance on estimation of abundance and density of wild carnivore population: methods, challenges, possibilities


Guidance on estimation of wild boar population abundance and density: methods, challenges, possibilities

ENETWILD consortium[1], Oliver Keuling, Marie Sange, Pelayo Acevedo, Tomasz Podgorski, Graham Smith, Massimo Scandura, Marco Apollonio, Ezio Ferroglio and Joaquin Vicente

Calibration of wild boar densities based on high quality hunting statistics

(drive counts: nº animals sighted per surface during drive hunts) *vs* CT based densities



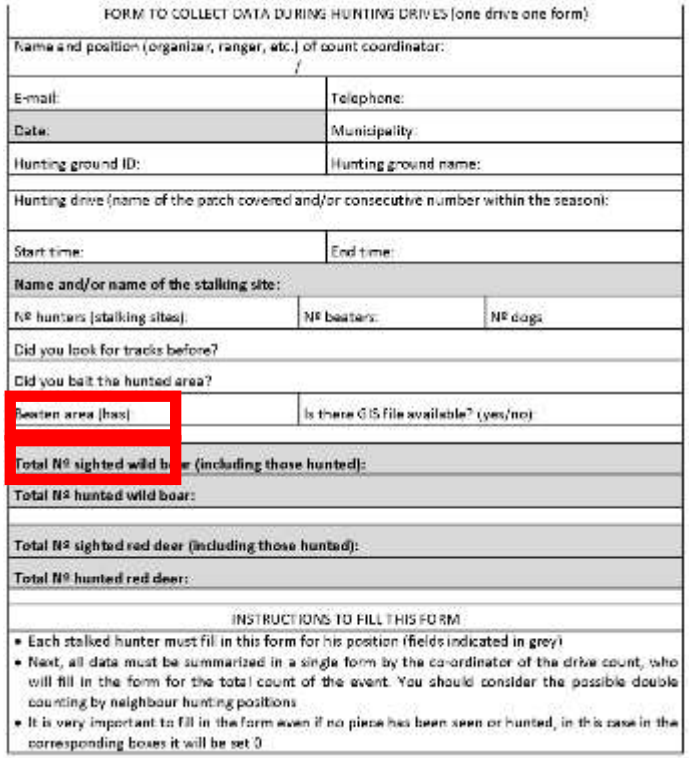
EXTERNAL SCIENTIFIC REPORT

APPROVED: 29 August 2019

doi:10.2903/sp.efsa.2019.EN-1706

Harmonization of the use of hunting statistics for wild boar density estimation in different study areas

Report based on comparison of case studies in different wild boar populations representative of the different management and habitat conditions across Europe

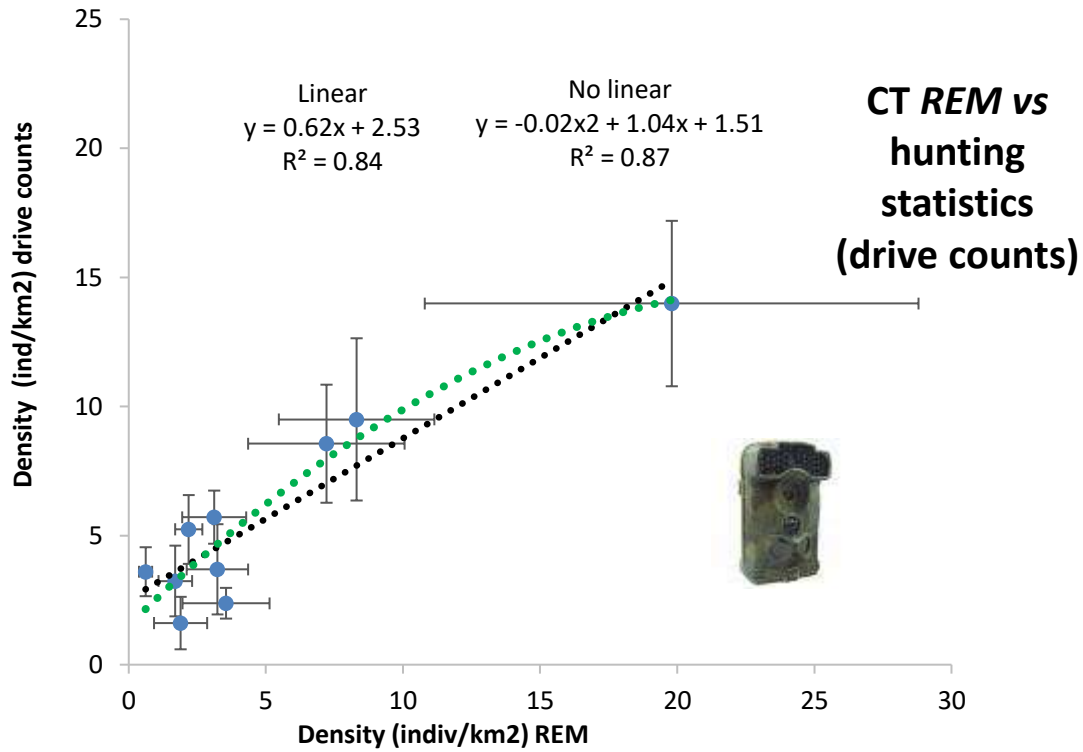


FORM TO COLLECT DATA DURING HUNTING DRIVES (one drive one form)

Name and position (organizer, ranger, etc.) of count coordinator:		
E-mail:	Telephone:	
Date:	Municipality:	
Hunting ground ID:	Hunting ground name:	
Hunting drive (name of the patch covered and/or consecutive number within the season):		
Start time:	End time:	
Name and/or name of the stalking site:		
Nº hunters (stalking sites):	Nº beaters:	Nº dogs
Did you look for tracks before?		
Did you bait the hunted area?		
Beaten area (has)	Is there GIS file available? (yes/no)	
Total Nº sighted wild boar (including those hunted):		
Total Nº hunted wild boar:		
Total Nº sighted red deer (including those hunted):		
Total Nº hunted red deer:		

INSTRUCTIONS TO FILL THIS FORM

- Each stalked hunter must fill in this form for his position (fields indicated in grey)
- Next, all data must be summarized in a single form by the co-ordinator of the drive count, who will fill in the form for the total count of the event. You should consider the possible double counting by neighbour hunting positions
- It is very important to fill in the form even if no piece has been seen or hunted, in this case in the corresponding boxes it will be set 0



CT *REM vs* hunting statistics (drive counts)

APPROVED: xx January 2022

doi:10.2903/sp.efsa.2021.EN-xxxx

Data generated by camera trapping in 19 areas of Europe including East and South Europe

ENETWILD-consortium[1], Acevedo P, Aleksovski V, Apollonio M, Berdión O, Blanco-Aguiar JA, del Rio L, Ertürk A, Fajdiga L, Escribano F, Ferroglio E, Gruychev G, Gutiérrez I, Häberlein V, Hoxha B, Kavčić K, Keuling O, Martínez-Carrasco C, Palencia P, Pereira P, Plhal R, Plis K, Podgórski T, Ruiz C, Scandura M, Santos J, Sereno J, Sergeyev A, Shakun V, Soriguer R, Soyumert A, Sprem N, Stoyanov S, Smith GC, Traice A Urbani N, Zanet S and Vicente J.

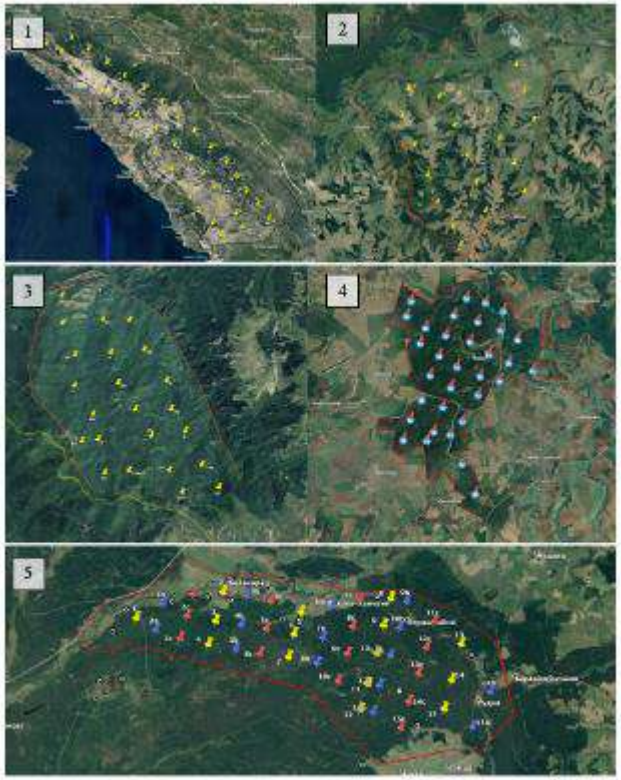
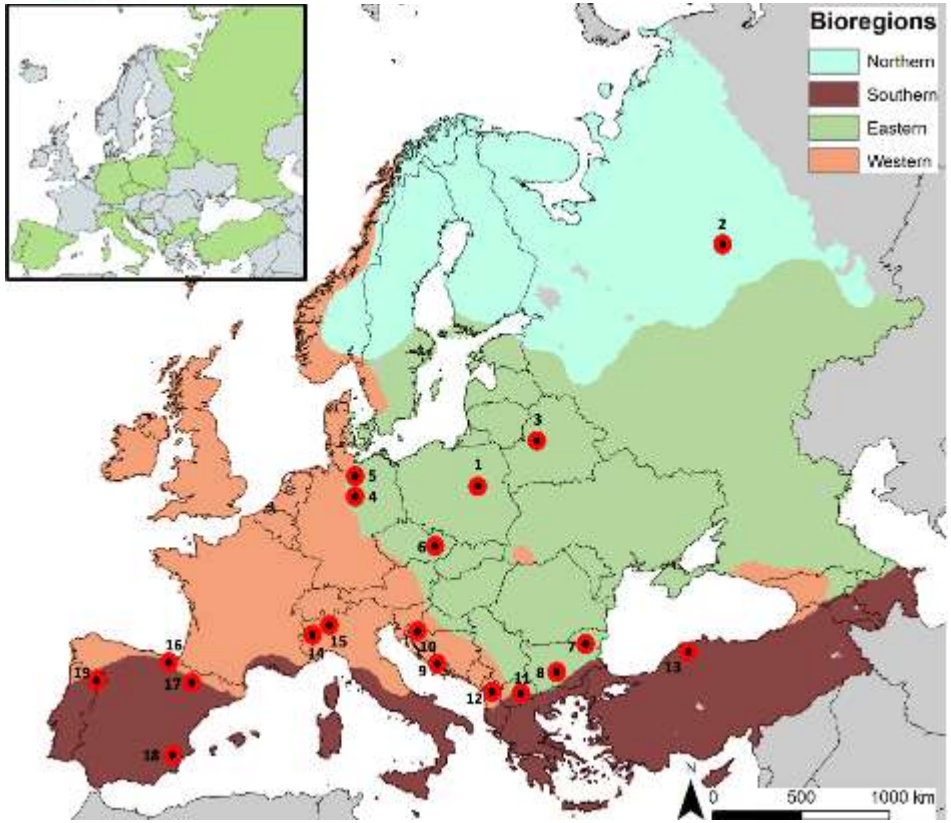
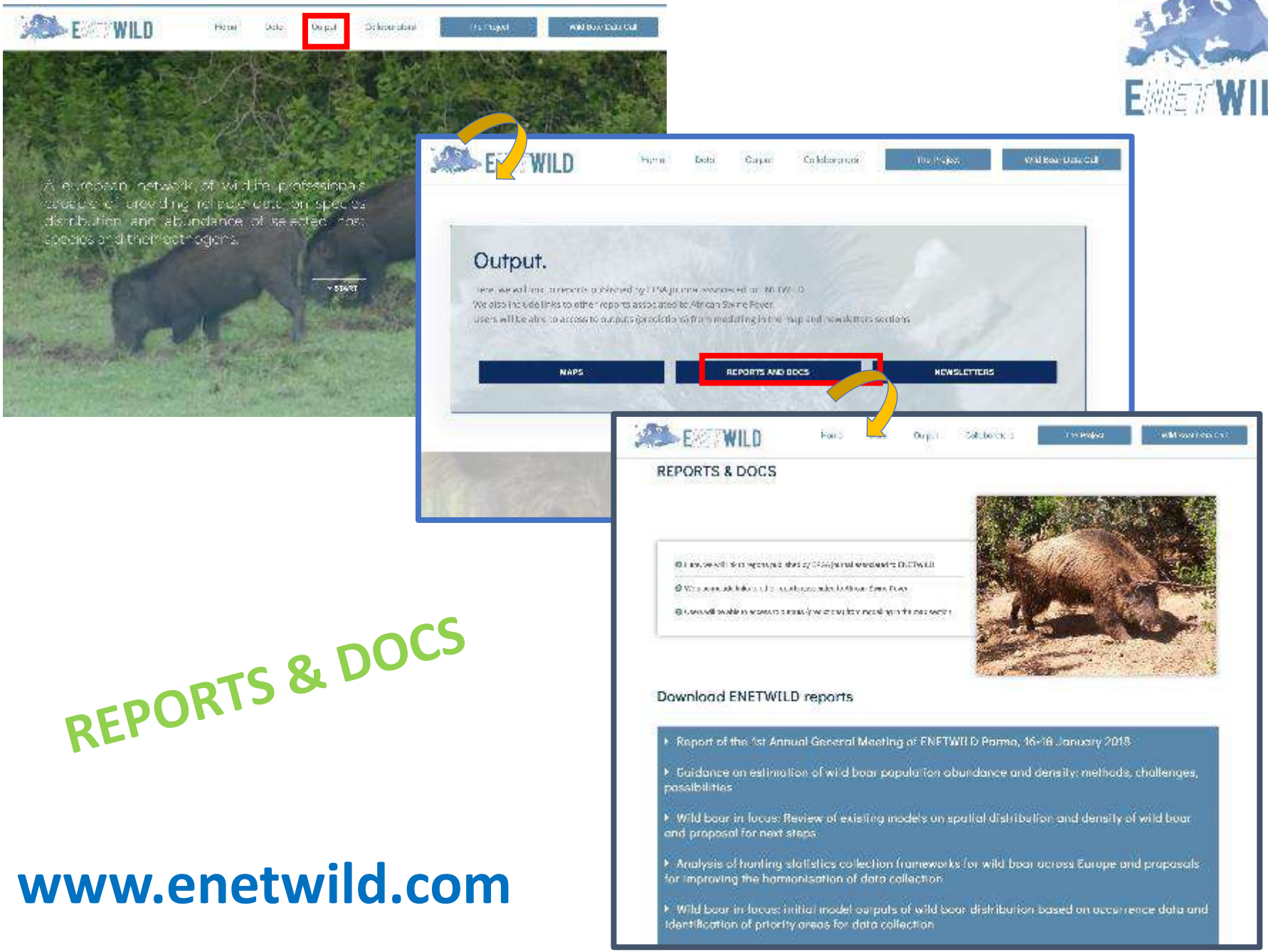


Figure 2. Examples of CT placements in different study sites: (1) Croatia, (2) Russia, (3) North Macedonia, (4) Bulgaria, and (5) Belarus.





REPORTS & DOCS

www.enetwild.com

european observatory of wildlife

A project by:

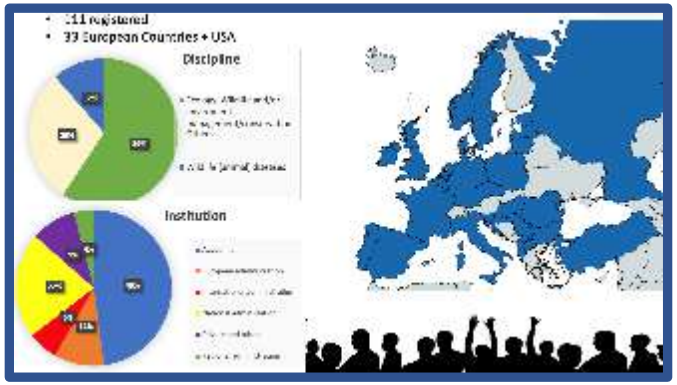
ENETWILD Funded by **EFSA**

https://wildlifeobservatory.org/

“Harmonized national and international wildlife monitoring and coordinated decision-making in Europe”

Stakeholder Online workshop, 5th-6th October 2021

- To contribute to improve the European capacities for a common, harmonized and reliable wildlife (population) monitoring
- For that purpose we bring together a number of experts, stakeholders to discussions



- ***Wildlife monitoring is an inherent part of the process of coordinated and informed wildlife decision-taking***
- **Factors that govern wildlife distribution, abundance, their impacts, and disease spread are not bound by national borders**

Time to bring proper wildlife (disease) management in Europe for public and environment health benefit

"Harmonized national and international wildlife monitoring and coordinated decision-making in Europe"

- ***Inter-institutional*** and **Inter-sectorial** coordination at *international level*
- ***Best approaches to wildlife population monitoring*** *and analysis* (incl. impacts) & **decision-making based *on scientific knowledge*** and interdisciplinarity

- **A basic set of actions, feasible in a medium term were recommended**
- **Aim to contribute to the foundations of a harmonized Europe-wide wildlife monitoring framework able to sustain coordinated transboundary decision-making**

ENETWILD

II Annual General Meeting

EFSA
Supporting Publications

External scientific report | Open Access

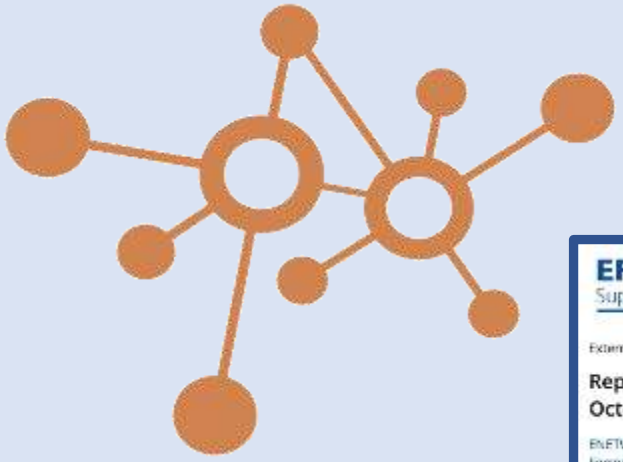
Report of the 2nd Annual General Meeting of ENETWILD 5-6th October 2021

ENETWILD-consortium, R Pascual, P Acevedo, M Apollonio, JA Blanco-Aguiar, G Body, J Casaer, E Ferroglio, A Gomez Molina, S Illanas, P Jansen, O Keuling, P Palencia, K Plis ... See all authors

First published: 20 December 2021 | https://doi.org/10.2903/sp.efsa.2021.EN-7053

An independent network of observation points and long-term wildlife monitoring is priceless to sustain international informed management

- It requires a careful design to become representative, to be centralised & secure long-term funding/management and proper infrastructure
- Combined with wildlife monitoring information obtained at lower cost for larger areas



EFSA
Supporting Publications

External scientific report | Open Access

Report of the 2nd Annual General Meeting of ENETWILD 5-6th October 2021

ENETWILD-consortium, R Pascual, P Arevalo, M Apollonio, JA Blanco-Aguiar, G Body, J Casaer, E Ferroglio, A Gomez-Molina, S Blanas, P Jansen, D Keuling, P Palencia, K Pis ... See all authors

First published: 20 December 2021 | https://doi.org/10.2903/sp.efsa.2021.EN-7053

https://wildlifeobservatory.org/

Protection and Preservation of Natural Environment in Albania (PPNEA)	Albania
University of Forestry, Sofia	Bulgaria
Faculty of Agriculture, University of Zagreb	Croatia
Mendel University in Brno	Czech Rep.
Czech University of Life Sciences & MRI	Germany
Institute for Terrestrial and Aquatic Wildlife Research- ITAW	Germany
UNITO-Piedmont Forets Service	Italy
UNITO-Comprensorio Alpino CACN1	Italy
Hunting Federation of Macedonia (HFM)	North Macedonia
Mammal Research Institute (MRI)	Poland
Palombar - Conservation of Nature and Rural Heritage	Portugal
Universidad de Murcia, C.A. de la Region de M;urcia	Spain
Aragon Hunting Federation	Spain
Araba caza	Spain
IREC-OAPN	Spain
IREC-EBD	Spain
University of Kastamonu	Turkey
Département de l'Environnement et du Développement du Andorra	Andorra
Yerevan State University	Armenia
Department of Natural and Agricultural Environment Studies, Wallonia	Belgium
Research Institute for Wildlife and Forest	Belgium
Faculty of Veterinary Science Thessaly	Greece
Ilia State University	Georgia
Szent István University	Hungary
Lithuanian Research Centre for Agriculture and Forestry	Lithuania
Ministry of Environment of Luxembourg	Luxembourg
Institute of Zoology Molvova	Moldova
NGO Wildlife Montenegro	Montenegro
Wageningen University and Research	Netherlands
University of Belgrade - Faculty of Forestry	Serbia
National Forest Centre	Slovakia
Ecotossicology - University of Primorska	Slovenia
University of Gävle	Sweden
Ilia State University	Ukraine

Objectives

To generate and provide information and unbiased trends on population abundance for those developing, adopting, implementing and evaluating enviromental policy in europe.

Objectives

Focused on mammals but looking to integrate other taxa and ecological variables and integrated monitoring (wildlife diseases).

I. Step by step.

1. Promoting networking applying harmonized wildlife population monitoring

Initial inclusion of different study areas representing all European countries

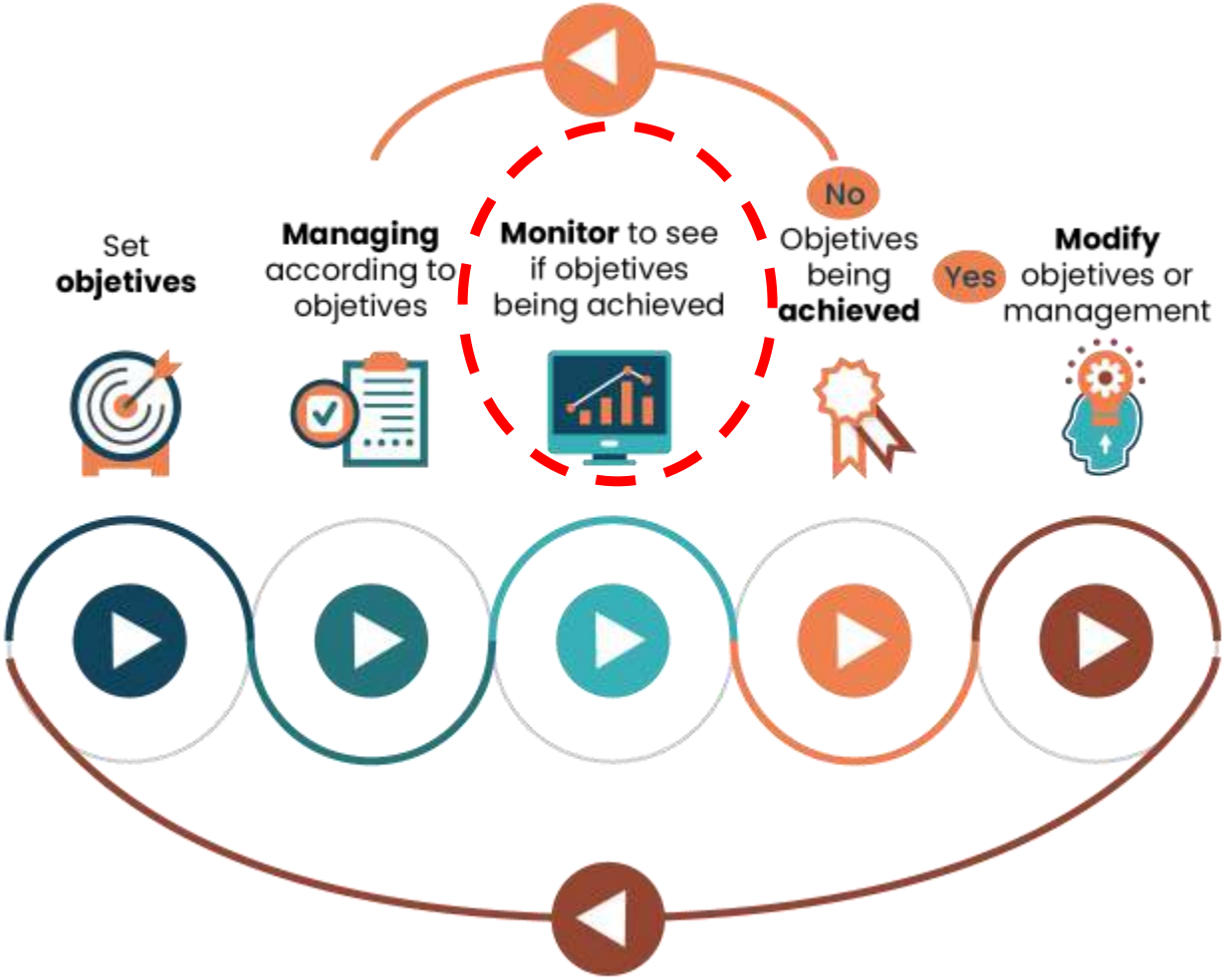
European Observatory of Wildlife

A project by: ENETWILD Funded by *EFSA*

- **Demonstrative: harmonized approach, sharing data and results**
- **Field laboratory**
- **Training and transfer**

II. Wildlife Population monitoring for SCIENCE-management

II. Wildlife Population monitoring for SCIENCE-management



III. INTERNATIONAL SCIENTIFIC-TECHNICAL STANDARDS allowing comparisons and joint use of data

III. INTERNATIONAL SCIENTIFIC-TECHNICAL STANDARDS allowing comparisons and joint use of data

A network of observation points to harmoniously monitor wildlife at European scale

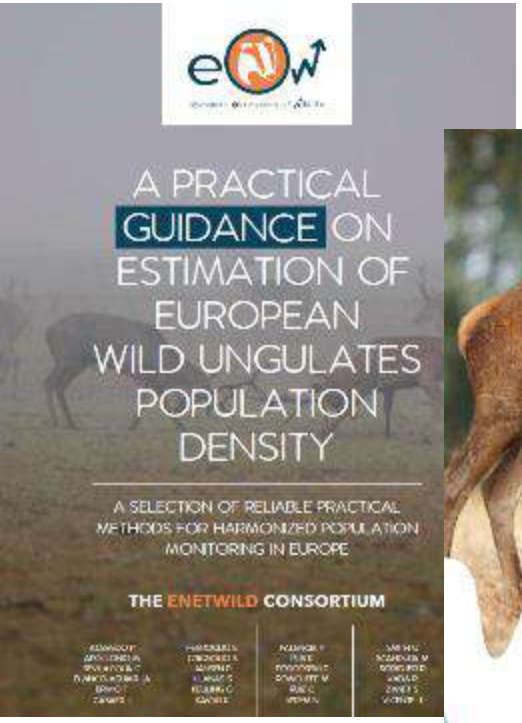
IV. A collaborative approach

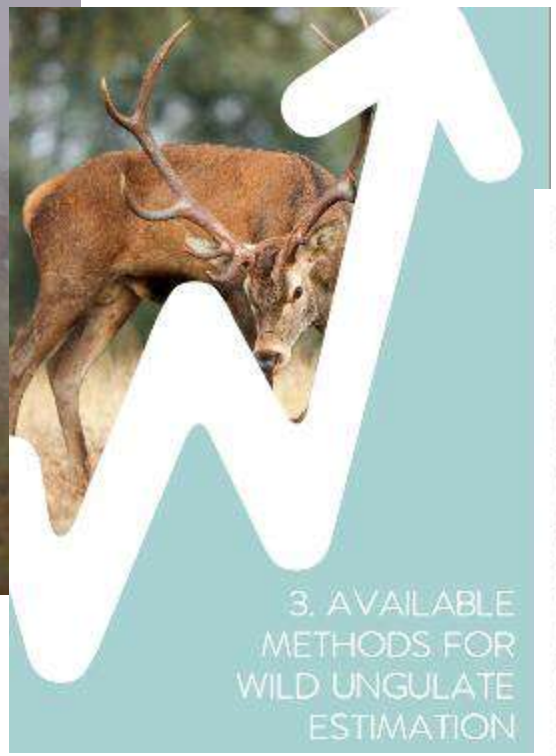
A collaborative approach

- The **EOW** is open to professionals, researchers, administrations, NGOs, etc. who wish to contribute by providing at least one observation point in Europe

The EOW provides collaborators with:

- Resources in the form of camera traps to a number of collaborators (core)
- Training on the estimation of wildlife population density
- Protocols for density calculation (multi-species, multi-method: phototrapping)
- Ongoing support: study design, field implementation, data processing and analysis
- ITs & artificial intelligence for phototrapping density, available in summer 2022!
- Participation in work networks, conferences, webinars, publications





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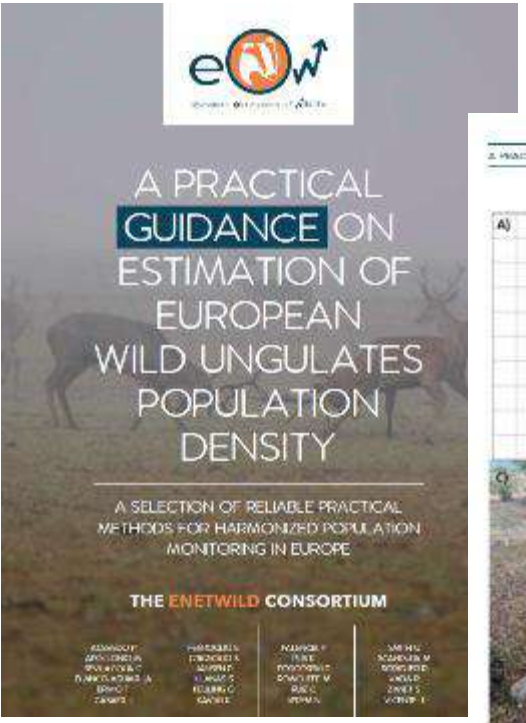
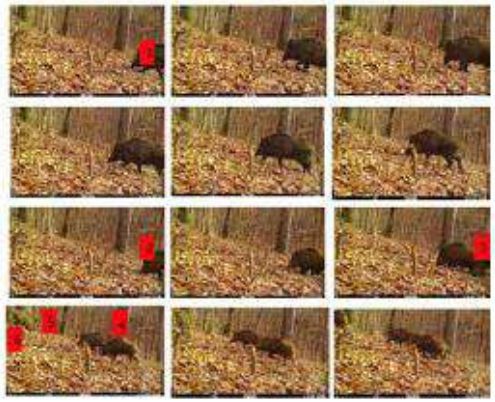
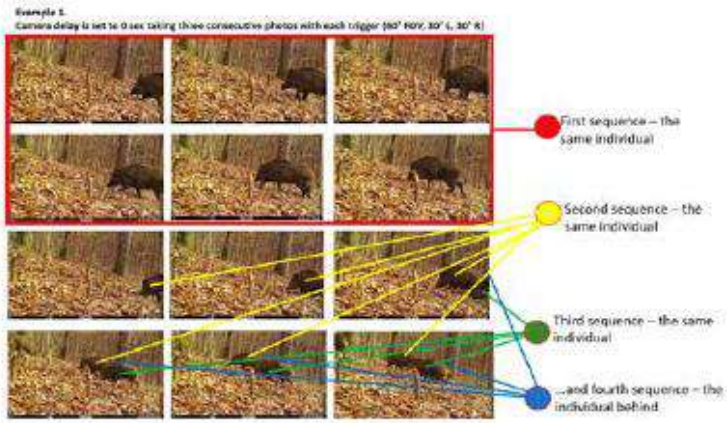
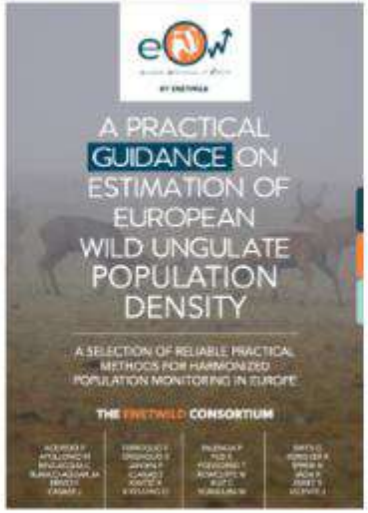








A practical guidance on estimation of European wild ungulate population density

Read

Camera trapping protocol for wild boar density estimation

Read

Guides for carnivores, wild ruminants and wild boar density and abundance estimation

Read

Cards on density estimation methods

Methods for wild ungulate estimation

Direct Methods

1. Distance sampling on transects with thermographic cameras or spotlighting, and point transect
2. Vantage point counts
3. Block counts
4. Aerial counts
5. Drive counts
6. Capture-Mark-Recapture (CMR)
7. Camera trapping (CT) without individual recognition

Indirect Methods

1. Pellet counts
2. DNA: Genetic analyses to determine population size or density

EXTERNAL SCIENTIFIC REPORT

APPROVED: 27 October 2020

doi:10.2903/sp.efsa.2020.EN-1947

Guidance on estimation of abundance and density of wild carnivore population: methods, challenges, possibilities

ENETWILD consortium*, Podgórski T[1,2], Acevedo P[3], Apollonio M[4], Berezowska-Cnota T[5], Bevilacqua C[3], Blanco JA[3], Borowik T[1], Garrote G[6], Huber D[5], Keuling O[7], Kowalczyk R[2], Mitchler B[8], Michler FU[8], Olszańska A[4], Scandura M[4], Schmidt K[1], Selva N[5], Sergiel A[5], Stoyanov S[9], Vada R[3], Vicente J[3]

Next .....

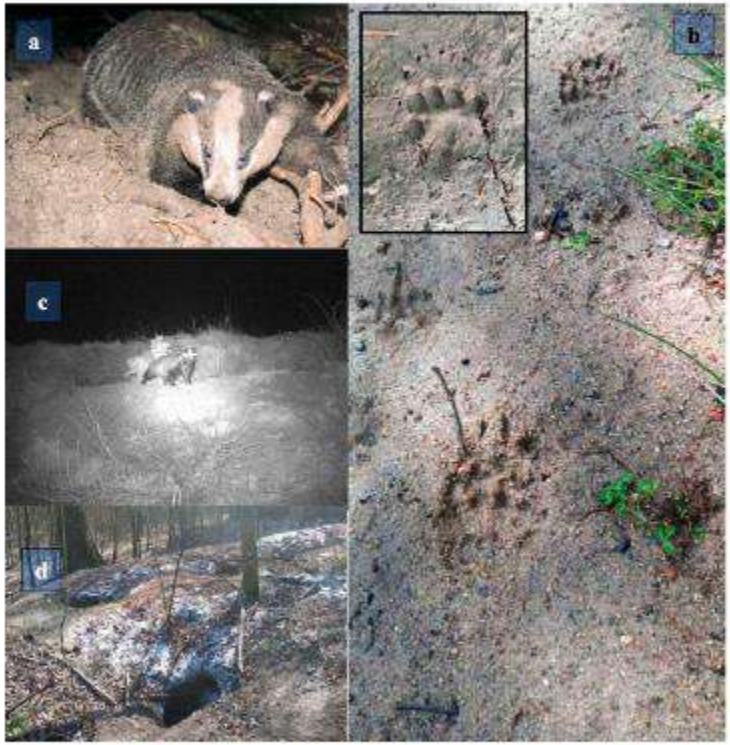


Figure 14. Eurasian badger (*Meles meles*). (a) badger characteristic striped face (Image: W. Jędrzejewski). In high density populations capture-recapture methods can be applied. (b) Footprints (images: J. Ferreres and N. Fabijanic). (c) camera trap picture during night-time at the badger sett (image: A. Schnneider) and (d) badger sett (Image: M. Beblot). A widely used method for badger density estimation is sett survey. Badgers are normally caught in cage-traps placed near active setts for capture-recapture methods.

Data collection: training

Report of the first annual general meeting of ENETWILD

ENETWILD

Report of the ENETWILD workshop: "Harmonizing wild boar monitoring in North Eastern Europe: Progress meeting of the ENETWILD consortium"

Białowieża, Poland 13-14th May 2019

Report of the ENETWILD workshop on wild boar monitoring in South Eastern Europe

ENETWILD

Report of the ENETWILD workshop: "Harmonizing wild boar monitoring in South Eastern Europe: Progress meeting of the ENETWILD consortium"

Senj, Croatia 17-18th September 2019

- Reinforced the network of international collaborators from East Europe which are willing to share expertise with ENETWILD and provide reliable data on wildlife density, abundance and distribution

- Interest in expanding collaboration to other species (carnivores and ungulates) & citizen science

Data collection (density): development and transfer of practical IT tools

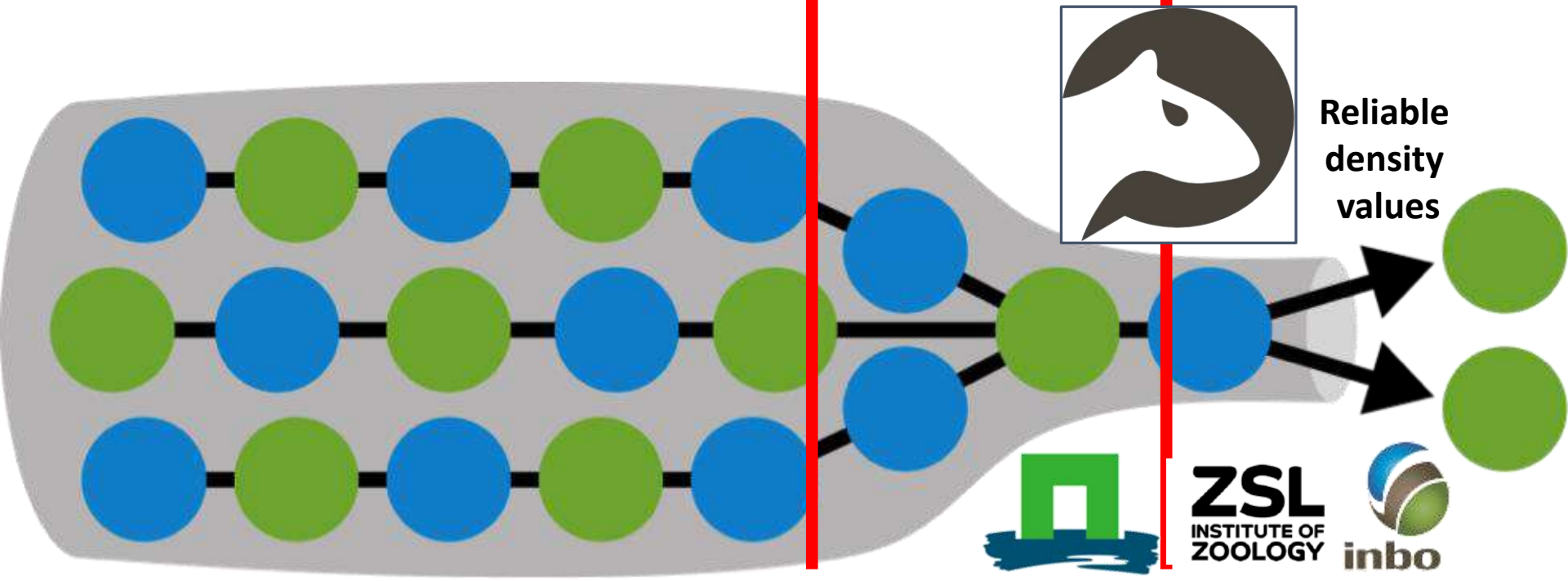
Field work

AI: authomatic Identification spp & other attributes

Data processing

Friendly online interface

Data analysis



Implementation of the protocol

- CTs deployed for a minimum of 2 months July-Sep 22
- Field protocol based on ENETWILD guidance: min. 12 CTs 2000-4000ha.

The criteria to select the study sites

- Intensive feeding not provided (occasional feeding or baiting for hunting not problem)
- Hunting statistics recorded by event: nº animals shot, sighted and surface beaten

Data processing and density estimation

- Our goal is to make participants independent in processing and calculating density
- All images will be processed in *AGOUTI* app, where a specific project will be created for each study area

May Reporting

- Training I (material shared nex)
- Information on characteristics of the study area and Shapefile of the study area
- Provide coordinates of proposed CT placements (agree)
- CTs sent & final protocol provided by *ENETWILD*

June-July Initiate field work & reporting

- Definitive coordinates of CTs provided once they are placed in the field

August-Sep work & reporting

- New coordinates of the CTs provi are moved the first and second time

September-October Data processing & reporting

-- 2nd course early SEP (***AGOUTI*** app use, AI & automatic data analysis) --

- Following up report (template provided)
- Create project in AGOUTÍ, and data processed

10th November Data analysis & reporting

- Information extracted from images provided (Excel/CSVC file provided)
- Density estimations provided

Preparation and reporting

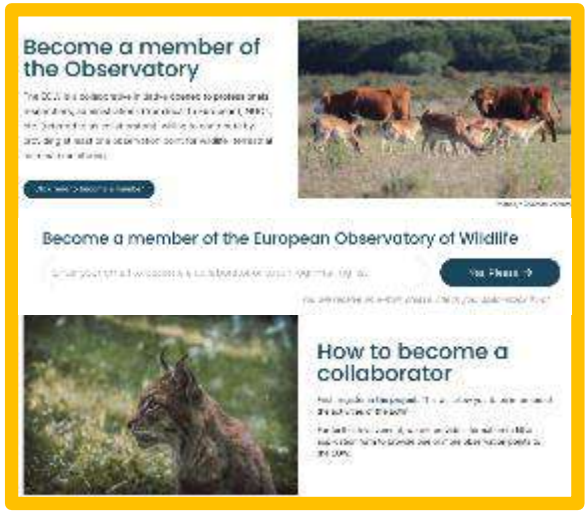
Field work and reporting

Data processing and reporting

Data analysis and reporting

Next …..

- EFSA plans to keep active the network at least until 2023 (continue funding the core group of participants)
- The present week the EOW will be advertised and promoted at International level as a collaborative initiative to continue growing and achieving objectives



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Please, disseminate in your country and among collaborators in international networks

- New functionalities of AI tools to facilitate the analysis of data, reduce workload and increase accuracy of estimations
- The EOW as a "Field laboratory". ……. be proactive! proposals are welcome

- We explore European funding and becoming the official reference on Eur. wildl. Mon.

Cycle of Webinars:
Towards harmonised and integrated wildlife disease surveillance in Europe: approaches, opportunities and Citizen Science tools

9th–31st May 2022

eow

european observatory of wildlife

A project by:

ENETWILD

Contact

enetwild@uniss.it

project.enetwild@uclm.es

ENETWILD

THANK YOU!!

@enetwild

Mammal Research Institute Polish Academy of Sciences Bialowieża

Vlaanderen is wetenschap

INSTITUUT NATUUR- EN BOSONDERZOEK

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Animal & Plant Health Agency

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