

PROGRAMME & BOOK OF ABSTRACTS

1ST SMALL AND MEDIUM SIZED CARNIVORE CONFERENCE

CONSERVATION AND MANAGEMENT

APRIL 8TH – 10TH 2026

AALBORG UNIVERSITY – DENMARK



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ORGANIZING COMMITTEE

The organizing committee is happy to welcome you all to the first European Small and Medium Sized Carnivore Conference, 8-9 April 2026, at Aalborg University, Denmark.

The conference will gather researchers, practitioners, and policymakers to share knowledge, explore current challenges and future directions in carnivore management and conservation.

The conference is facilitated as follows:

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SPONSORS



THE VENUE AND THE SURROUNDINGS

The building at Fredrik Bajers Vej 7H, 9220 Aalborg Øst is part of the large campus of Aalborg University located in the eastern part of Aalborg. The building is used for teaching and academic activities, and the building contains study facilities as well as laboratory facilities for both Danish and international students. It forms part of the modern campus environment that characterizes Aalborg University.

Campus Aalborg East is not only defined by its buildings – it is also surrounded by green spaces and natural elements that create a pleasant and relaxing atmosphere. Within the campus area, there are landscaped green spaces designed to support biodiversity and provide areas for relaxation. Large parts of the campus are managed with a “wild nature” approach, allowing grass, wildflowers, and shrubs to grow more freely. This supports local plant and insect life while giving the area a softer, more natural appearance.

Walk & talk routes have been established around the campus, which can be used for informal meetings or simply to get some fresh air. This is a great opportunity for students and employees to get new energy and inspiration.



8 APRIL, WEDNESDAY

9:00-10:00	Coffee and bread
	Welcome and introduction to the conference
10:00-10:10	(Session chairs: Sussie Pagh and Katrine Møller-Lassesen)
10:10-11:00	KICK-OFF KEYNOTE: Professor Jens-Christian Svenning, ECONOVO, Aarhus University
	<i>Trophic Rewilding in a Novel Biosphere: Restoring Resilient, Biodiverse Ecosystems</i>
11:00-11:10	Coffee
	(Session chairs: Nadieh de Jonge)
11:10-12:00	KEYNOTE: Principal Conservation Scientist David Douglas, Royal Society for the Protection of Birds
	<i>Carnivores and bird conservation - an RSPB view as an evidence led UK conservation charity</i>
12:00-12:20	Peter Sunde, Professor, Ecoscience, Aarhus University
	<i>What Do We Know About the Population Impacts of Small- and Medium-Sized Mammalian Carnivores on Their Prey?</i>
12:20-12:40	Senior scientist Sussie Pagh, Environmental Biomonitoring, Aalborg University
	<i>Predation on Ground-Nesting Birds: Methodological Biases in Risk Assessment</i>
12:45-13:15	Lunch
	SESSION TWO: MOVING PREDATORS
	(Session chairs: Sussie Pagh)
13:20-14:10	KEYNOTE: Assistant professor Astrid Vik Stronen, University of Ljubljana
	<i>Jackal range expansion and population structure in southcentral Europe</i>
14:10-14:30	Fredrik Dahl, Researcher, Swedish University of Agricultural Sciences
	<i>How and when is culling efficient in IAS management – and is there any alternative?</i>
14:30-15:00	Poster session and coffee
	SESSION THREE: NON-LETHAL PREDATOR CONTROL
	(Session chairs: Niels Madsen)
15:00-15:50	KEYNOTE: Senior research Vesa Selonen, University of Turku
	<i>Non-lethal predator management for bird conservation</i>
15:50-16:20	Dr. Thomas Götz, University of St. Andrews
	<i>Non-lethal Management of Carnivore Depredation using the Targeted Acoustic Startle Technology (TAST): from the ocean onto land</i>
16:20-16:30	Coffee break
16:30-17:30	What did we learn today - Recap and discussion
18:00-20:00	Dinner

9 APRIL, THURSDAY

8:30-9:30	Coffee and bread
9:30-9:40	Recap and presentations of the day
	SESSION FOUR: MONITORING PREDATORS AND NEW TECHNOLOGIES
	(Session chairs: Sussie Pagh)
9:40-10:30	KEYNOTE: Professor Karol Zub, Mammal Research Institute, Polish Academy of Sciences
	<i>Insights into predator biology provided by modern monitoring</i>
10:30-10:40	Coffee
10:40-11:00	Nadieh de Jonge, Environmental Biomonitoring, Aalborg University

	<i>Enhanced monitoring of land-living and semi-aquatic predators using synergistic conventional and next-generation approaches</i>
11:00-11:20	Rasmus Mohr Mortensen, Ecoscience, Aarhus University <i>Timescape selection: a powerful and straightforward method to model diel activity variation in carnivorous mammals from camera trap data as function of multiple predictors</i>
11:20-11:40	Katrine Møller-Lassesen (Msc), Environmental Biomonitoring, Aalborg University <i>A novel drone- and AI-based approach to sampling mesopredator behaviour and habitat use</i>
11:40-12:00	Rasmus Worsøe Havmøller, Senior researcher, University of Agder <i>Monitoring mustelids—stoat (<i>Mustela erminea</i>) and weasel (<i>M. nivalis</i>) reveals low captures</i>
12:00-12:30	Lunch
SESSION FIVE: CARNIVORE ECOLOGY - BEHAVIOUR AND HABITAT CHOICE (Session chairs: Nadieh de Jonge)	
12:35-13:20	KEYNOTE: Dr. Carl Soulsbury, Professor, University of Lincoln <i>Mesocarnivores in the Anthropocene</i>
13:20-14:20	Oral Presentations
13:20-13:40	Jillian Sullivan, Student, Barnard College of Columbia University <i>Mesopredator Occupancy and Co-Occurrence in the Romanian Carpathians: Insights from Multispecies Camera Trap Modeling</i>
13:40-14:00	Aksel Bo Madsen, Phd., Otter Consult. <i>Successful recovery of otters in Denmark</i>
14:00-14:20	Tim R. Hofmeester, Associate Professor and Researcher, Swedish University of Agricultural Sciences <i>Latitudinal differences in reproductive timing of carnivores: management implications</i>
14:20-15:00	Coffee, poster session and mingle
SESSION SIX: DISCUSSION OF HISTORICAL VIEWS ON NATURE AND HUMAN PERCEPTIONS (Session chairs: Katrine Møller-Lassesen)	
15:00-15:50	KEYNOTE: - Associate professor Jes Lynning Harfeld, Culture and Communication, Aalborg University <i>Carnivores in the History of Philosophy.</i>
15:50-16:30	Discussions and opinions on carnivores
10 APRIL, FRIDAY	
9:00-15:00	Trip to the nature reserve Lille Vildmose

WELCOME TO THE SMALL AND MEDIUM SIZED CARNIVORE CONFERENCE

By Sussie Pagh & Katrine Møller-Lassesen

Thank you for being here today. This conference is made possible through the generous support of the 15 June Foundations. It is a unique opportunity to share new knowledge, challenge assumptions, and strengthen the dialogue across disciplines.

We hope over the coming days to explore scientific insights that can deepen our understanding of carnivores, their ecology, their role in the landscapes we share with them and reflect on our societal carnivore practices.

By bringing together researchers, managers, practitioners, and students, we hope to create a space where ideas can meet, evolve, and inspire new approaches to coexistence. We hope this conference will give space to rethink our role in nature and scientific goals. And a space to consider how conservation strategies can support both biodiversity, human interests and respect for individuals. A space to be inspired - by new perspectives, by each other, and by the possibilities that arise when science, ethics, and practical experience meet.

Before we begin, we would like to underline something essential: Science is driven by the testing and evaluation of hypotheses. Yet, at the same time, ethical considerations about animal welfare are becoming an increasingly important part of scientific practice, pushing researchers to reflect on their own normativity.

Most journals today require explicit ethical approval for studies involving animals or field interventions:

A typical statement might read:

"This research did not involve any procedures requiring ethical approval from an institutional or governmental review board. The experimental design and procedures posed no welfare or environmental risks. No animal was harmed during this study."

These expectations reflect a broader societal shift- one that recognizes that scientific integrity includes not only methodological rigour but also ethical responsibility. One might say that science, as a concept, is associated with value-free practice. But because we are subjects observing the world around us, our perspective — including in research — will always be shaped by values. This influences everything from the perspectives we choose to adopt, to the methods we select, and the way we interpret our results.

In addition to the goal of generating new knowledge about carnivore ecology, these value-related questions will also be at the center of the next day's discussions. Discussions that will be moderated by Hans Peter Hansen and Jes Lynning Harfeld.

VELKOMMEN TIL KONFERENCEN OM SMÅ OG MELLEMSTORE ROVDYR

Af Sussie Pagh & Katrine Møller-Lassesen

Tak fordi I er her i dag. Denne konference er muliggjort gennem generøs støtte fra 15. Juni Fonden. Det er en unik mulighed for at dele ny viden, udfordre antagelser og styrke dialogen på tværs af fagområder.

Vi håber, at vi i løbet af de kommende dage kan udforske videnskabelige indsigter, der kan uddybe vores forståelse af rovdyr, deres økologi og deres rolle i de landskaber, som vi deler med dem, samt give anledning til refleksion over vores samfundsmæssige sædvaner i forhold til rovdyr.

Ved at samle forskere, forvaltere, forvaltere og studerende håber vi at skabe et rum, hvor idéer kan mødes, udvikle sig og inspirere til nye tilgange til sameksistens. Vi håber, at denne konference vil give plads til at gentænke vores rolle i naturen og vores videnskabelige mål. Et rum til at overveje, hvordan bevaringsstrategier kan understøtte både biodiversitet, menneskelige interesser og respekt for det enkelte individ. Et rum til at blive inspireret af nye ideer, af hinanden og af de muligheder, der opstår, når videnskab, etik og praktisk erfaring mødes.

Før vi begynder, vil vi gerne understrege noget væsentligt: Videnskab drives af afprøvning og evaluering af hypoteser. Samtidig bliver etiske overvejelser om dyrevelfærd en stadig vigtigere del af videnskabelig praksis, hvilket udfordrer forskere til at reflektere over deres egne værdier.

De fleste tidsskrifter kræver i dag en etisk godkendelse af studier, der involverer dyr og feltarbejde:

En typisk formulering i et tidsskrift kan være:

“Denne forskning omfattede ikke procedurer, der krævede etisk godkendelse fra en institutionel eller statslig vurderingsinstans. Forsøgsdesign og metoder indebærer ingen velfærds- eller miljømæssige risici. Ingen dyr blev skadet under denne undersøgelse.”

Disse forventninger afspejler et bredere samfundsmæssigt skifte – et skifte, der anerkender, at videnskabelig integritet ikke kun handler om metodisk stringens, men også om etisk ansvar. Man kan sige, at videnskab som begreb ofte forbindes med værdifri praksis. Men fordi vi som mennesker er subjekter, der iagttager verden omkring os, vil vores perspektiv også i forskning altid være præget af værdier. Dette påvirker alt fra de perspektiver, vi vælger at anlægge, til de metoder, vi anvender, og den måde, vi fortolker vores resultater på.

Ud over målet om at generere ny viden om rovdyrs økologi vil disse værdirelaterede spørgsmål også være centrale i de kommende dages diskussioner. Diskussioner, som vil blive modereret af Hans Peter Hansen og Jes Lynning Harfeld.

ABSTRACTS

Kick-off



Photo: Jan Skriver

TROPHIC REWILDING IN A NOVEL BIOSPHERE: RESTORING RESILIENT, BIODIVERSE ECOSYSTEMS

Jens-Christian Svenning¹

1. Center for Ecological Dynamics in a Novel Biosphere (ECONOVO), Department of Biology, Aarhus University

Speaker: Jens-Christian Svenning, svenning@bio.au.dk

Global change is driving the widespread emergence of novel ecosystems, creating both risks and opportunities for biodiversity. Trophic rewilding offers a forward-looking restoration approach, aiming to rebuild resilient, self-regulating ecosystems by re-establishing trophic complexity. This presentation outlines the general ecological mechanisms by which trophic interactions shape biodiversity and ecosystem functioning, the deep evolutionary background that underpins these processes, and the empirical evidence for their importance.

Common misunderstandings will also be addressed, including the view that large carnivores reduce overall herbivore biomass—whereas in intact ecosystems they instead restructure herbivore guilds, promoting larger species, and create spatial and behavioral heterogeneity. In addition, the overlooked contributions of small- and mesocarnivores will be highlighted. Overall, it is clear that restoring full trophic guilds will strengthen biodiversity and resilience under novel biosphere conditions.

TROFISK REWILDING: GENOPBYGNING AF ROBUSTE ØKOSYSTEMER FULDE AF LIV OG MANGFOLDIGHED

Globale forandringer skaber i stigende grad nye typer økosystemer, som giver både udfordringer og nye muligheder for naturens mangfoldighed. Trofisk rewilding er en tilgang, der ser fremad og forsøger at genskabe robuste, selvregulerende økosystemer ved at bringe den naturlige fødekædes kompleksitet tilbage.

Denne præsentation skitserer generelle økologiske mekanismer, herunder hvordan trofiske interaktioner former biodiversitet, hvordan evolutionære processer understøtter og genopretter økosystemfunktioner, samt den empiriske evidens for deres betydning.

Almindelige misforståelser bliver taget op, blandt andet forestillingen om, at store rovdyr mindsker den samlede mængde planteædere. I virkeligheden viser intakte økosystemer, at rovdyr først og fremmest ændrer sammensætningen og adfærden hos planteæderne, fremmer større arter og skaber mere variation i både, hvor dyrene opholder sig, og hvordan de bevæger sig. Samtidig bliver små og mellemstore rovdyrs ofte oversete rolle fremhævet. Overordnet set er det tydeligt, at genetablering af fulde trofiske samfund vil styrke biodiversitet og robusthed i en forandret biosfære.

ABSTRACTS

SESSION I

PREDATION OF RARE
BIRDS AND GAME SPECIES
AND THE EFFECTS OF
CULLING



Photo: Jan Skriver

CARNIVORES AND BIRD CONSERVATION - AN RSPB VIEW AS AN EVIDENCE-LED UK CONSERVATION CHARITY

David Douglas¹

1. RSPB Centre for Conservation Science, RSPB Scotland, Edinburgh, United Kingdom

Speaker: David Douglas, David.Douglas@rspb.org.uk

Reducing predation by abundant mesocarnivores on eggs and chicks of ground-nesting birds is one of the most intractable conservation issues in Europe. As a nature conservation charity, RSPB takes an evidence-led approach to predation management, balancing our mission to conserve threatened species, ethical and moral considerations around killing vertebrates, and cost-effective use of our charitable funds. Here I cover;

- i) The use of evidence to inform decision-making on deployment of, and delivery methods, for lethal and non-lethal interventions to manage predation;
- ii) Evidence for the effectiveness of interventions for breeding waders, drawing on several decades of solution testing;
- iii) Understanding the drivers of high mesopredator densities and how to reduce these. This recognises that predation

management is labour-intensive and has mixed effectiveness.

This work takes a broader perspective on the relative role of a) apex predators, b) food supply (especially from human-modified sources) and c) landscape configuration (habitat composition and fragmentation) as drivers of mesopredator abundance.

Here we have reviewed the literature and tested Europe-wide country-scale correlates of Red Fox, Carrion/Hooded Crow and Common Buzzard densities. Important correlates vary between species but relate to human-modified landscape structure and food supply. Reducing mesopredator densities and delivering positive outcomes for ground-nesting birds will be most achievable in natural/semi-natural habitats with lower agricultural footprint, less habitat fragmentation, and more natural prey base for predators.

ROVDYR OG FUGLEBESKYTTELSE – RSPB'S PERSPEKTIV PÅ SAGEN SOM EN EVIDENSBASERET BRITISK NATURBESKYTTELSESORGANISATION

At reducere prædation på æg og unger fra talrige mesoprædatorer hos jordrugende fugle er et af de vanskeligste naturforvaltningsproblemer i Europa. Som naturbeskyttelses-organisation tager RSPB en evidens-baseret tilgang til prædationsforvaltning, der balancerer vores mission om at bevare truede arter, tage etiske og moralske hensyn til af prædatorer, samt at fremme en omkostnings-effektiv anvendelse af midler. I præsentationen dækker jeg: i) Anvendelsen af evidens til at tage informerede beslutninger om, hvornår og hvordan man benytter dødelige og ikke-dødelige indsatser til at håndtere prædation; ii) Evidens for effektivitet af indgreb for ynglende vadefugle, baseret på flere årtiers afprøvning af løsninger; iii) Forståelsen af drivkræfterne bag høje mesoprædator-tætheder, og hvordan de kan reduceres. Dette i en anerkendelse af at

prædationsforvaltning er arbejdskrævende og har blandet effekt.

Arbejdet anlægger et bredere perspektiv på den relative betydning af a) top-prædatorer, b) fødegrundlag (særligt fra menneskeskabte kilder) og c) landskabskonfiguration (habitat-sammensætning og fragmentering) som drivere af mesoprædators udbredelse.

Vi har gennemgået litteraturen i Europa for tætheder af rød ræv, sort-/gråkrage og musvåge. Vigtige korrelationer varierer mellem arter, men relateres til menneske-påvirket landskabsstrukturer og fødegrundlag. At reducere tætheden af mesoprædatorer og at skabe positive resultater for jordrugende fugle vil være mest opnåeligt i naturlige/semi-naturlige habitater med lavere landbrugsaftryk, mindre habitatfragmentering og et mere naturligt byttedyrgrundlag for rovdyr.

WHAT DO WE KNOW ABOUT THE POPULATION IMPACTS OF SMALL- AND MEDIUM-SIZED MAMMALIAN CARNIVORES ON THEIR PREY?

Peter Sunde¹, Tony Fox², Morten Elmeros¹ & Fredrik Dahl¹

1. Department of Ecoscience, Aarhus University, Denmark

2. Department of Bioscience, Aarhus University, Denmark

Speaker: Peter Sunde, psu@ecos.au.dk

Understanding the extent to which native or non-native predators affect populations of conservation-priority prey species is critical for informing management decisions, including whether predator control or eradication should be considered to protect vulnerable fauna. However, establishing robust evidence of predator impacts on prey population abundance and dynamics is methodologically challenging.

The strongest evidence for predator impacts comes from experimental designs involving controlled manipulation of predator presence, or from well-validated ecological simulation models that incorporate empirically supported predator–prey interactions. Correlations between predator abundance and prey abundance, demography, or behaviour provide only circumstantial evidence and are often difficult to interpret due to unmeasured environmental drivers. Studies documenting

predation rates may demonstrate reductions in survival or nest success without clarifying whether these effects are compensatory or additive at the population level. Analyses of predator diet composition alone offer limited insight into population impacts unless translated into prey consumption rates, which can in turn—given appropriate assumptions—be converted into predation rates when predator–prey ratios are known. In this presentation, we first outline a hierarchical framework of evidence and study designs used to assess predator impacts on prey populations. We then review current knowledge of the population-level effects of red fox (*Vulpes vulpes*), American mink (*Neovison vison*), and raccoon dog (*Nyctereutes procyonoides*) on conservation-priority fauna in northern Europe. Finally, we discuss the extent to which past and ongoing predator management efforts are supported by empirical evidence.

HVAD VED VI OM BESTANDSEFFEKTERNE AF SMÅ OG MELLEMSTORE PATTEDYRROVDYR PÅ DERES BYTTE?

Viden om hvordan hjemmehørende eller ikke-hjemmehørende rovdyr påvirker byttedyrbestande med høj bevaringsprioritet er afgørende for, at kunne træffe informerede forvaltningsbeslutninger, om f.eks. bestandskontrol eller udryddelse af rovdyr for at beskytte anden fauna. At fremskaffe robust vidensgrundlag om rovdyrers effekt på byttedyrs bestandsstørrelse og dynamik er dog lettere sagt end gjort. Den stærkeste evidens er baseret på eksperimentelle undersøgelser, hvor rovdyrernes tæthed kan manipuleres, samt fra simulationsmodeller baseret på empirisk understøttede rovdyr–byttedyr-interaktioner. Beskrivende undersøgelser af korrelationer med rovdyr- og byttedyr-parametre giver kun indirekte evidens, som ofte er svær at tolke pga. mulige bagvedliggende miljøfaktorer. Studier af prædationsrater kan dokumentere reduktion i overlevelse eller ynglesucces, men ikke i hvilken grad effekterne slår

igennem på bestandsniveau. Undersøgelser af rovdyrers fødesammensætning giver kun begrænset indsigt i bestandsmæssige effekter. Dette forudsætter at de kan omsættes til byttedyrskonsum, som, igen med passende antagelser, skal konverteres til prædationsrater, hvis forholdet mellem rovdyr og byttedyr er kendt.

I denne præsentation opstiller vi først en hierarkisk ramme for evidens og studie-design for vurdering af prædatorers påvirkning af byttedyr-bestande. Ud fra dette gennemgår vi eksisterende viden om de bestandsmæssige effekter af rød ræv (*Vulpes vulpes*), amerikansk mink (*Neovison vison*), og mårhund (*Nyctereutes procyonoides*) på fauna af bevaringsmæssig prioritet i Nordeuropa. På dette grundlag, diskuterer vi i hvilken grad tidligere og igangværende forvaltningsindsatser rettet mod disse prædatorer er understøttet af empirisk evidens.

PREDATION ON GROUND-NESTING BIRDS: METHODOLOGICAL BIASES IN RISK ASSESSMENT

Sussie Pagh¹

1. Department of Chemistry and Bioscience, Aalborg University, AAU

Speaker: Sussie Pagh, sup@bio.aau.dk

Predation by raccoon dogs and red foxes on ground-nesting birds remains a debated issue. Nest experiments consistently report high predation rates of wading birds, suggesting raccoon dogs and foxes are efficient egg predators. In contrast, diet studies often reveal negligible amounts of eggshells and wading birds in the diet of the two predators, leading to the assumption that raccoon dogs and foxes pose a minor threat to bird populations. This discrepancy raises critical questions about the reliability

of both approaches. Artificial nests may overestimate predation due to human placement, lack of antipredator defence by parent birds, and disturbance effects, while diet studies may underestimate consumption of eggs and wading birds. This presentation explores methodological biases, and future directions for more accurately assessing the impact of mesopredators on ground-nesting birds, aiming to find management and conservation strategies.

UOVERENSSTEMMELSE I RISIKO VURDERING: MÅRHUNDE OG RÆVE, JORDRUGENDE FUGLE OG METODISKE BIAS

Prædation fra mårhunde og ræve på jordrugende fugle er fortsat omdiskuteret. Redeeksperimenter viser høje prædationsrater for jordrugende fugle, hvilket antyder, at mårhunde og ræve er effektive æggerøvere. Modsat viser fødeanalyser ofte, at vadefugle og deres æg kun udgør en lille del af de to rovdyrs føde, hvilket medfører en antagelse om, at mårhunde og ræve har en begrænset effekt på ynglende vadefugle. Denne uoverensstemmelse rejser kritiske spørgsmål om begge metoders

anvendelighed. Kunstige reder kan overvurdere prædation på grund af menneskelig placering af rederne, manglende antiprædator adfærd fra forældrefuglene og effekter fra forstyrrelser af rederne, mens fødestudier kan undervurdere forbruget af æg og vadefugle. Denne præsentation udforsker metodiske skævheder, og fremtidige retninger for mere præcis vurdering af mesoprædatorers påvirkning af jordrugende fugle med det formål at understøtte forvaltning og naturbeskyttelsesstrategier.

ABSTRACTS

SESSION II MOVING PREDATORS



Photo: Morten Hilmer

JACKAL RANGE EXPANSION AND POPULATION STRUCTURE IN SOUTHCENTRAL EUROPE

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Wildlife worldwide is affected by rapid environmental changes, and some species are expanding their historical ranges. Understanding the causes and consequences of such range shifts is important for conservation planning and management. A relevant example is the golden jackal (*Canis aureus*), which has historically occupied parts of southern Europe. Over the past century, the species has been expanding its range northward and westward, and jackals have recently been documented in the Iberian and Scandinavian Peninsulas. This raises questions on the extent to which jackals in Dalmatia on the Adriatic Coast, where the species has been known to occur in a Mediterranean climate for over 500 years, has contributed to the rapid range expansion. Previous population genetic analyses have found a widely distributed Pannonian population in

southcentral Europe, and a distinct Dalmatian population on the Adriatic Coast. Recent analyses showed limited Dalmatian ancestry in a few individuals from Slovenia and Italy, although no individual was assigned to the Dalmatian population. However, telemetry and genetic profiles have demonstrated the presence of jackals with Pannonian ancestry on the Adriatic Coast. These results indicate the presence of bi-directional gene flow, and a contact zone extending southward from eastern Italy and comprising coastal islands in Dalmatia now being colonised by jackals. Future research is needed to clarify the distribution of Dalmatian and Pannonian ancestry and the ecosystem function of jackals in newly colonised habitats, including their emerging ecological role in northern Europe and on Adriatic Coastal islands.

SJAKALENS UDVIDELSE AF UDBREDELSESOMRÅDE OG POPULATIONSTRUKTUR I SYD- OG CENTRALEUROPA

Vildtlevende dyr over hele verden påvirkes af nutidens hurtige miljøforandringer, hvilket betyder at nogle arter udvider deres historiske udbredelsesområde. At forstå årsagerne til og konsekvenserne af, sådanne udbredelsesændringer er vigtigt for planlægning af naturbeskyttelse og forvaltning. Et relevant eksempel er guldsjakalen (*Canis aureus*), som historisk har været udbredt i dele af Sydeuropa. I løbet af det seneste århundrede har arten udvidet sin udbredelse mod nord og vest og sjakaler er for nylig blevet dokumenteret på de Iberiske og Skandinaviske halvøer. Dette rejser spørgsmål om sjakaler i Dalmatien ved Adriaterhavskysten, hvor arten har været kendt i et middelhavsklima i over 500 år, har bidraget til den hurtige udvidelse af deres udbredelse. Tidligere populations-genetiske analyser har identificeret en vidt udbredt pannonisk population i Syd- og Centraleuropa og en genetisk særskilt

dalmatisk population langs Adriaterhavskysten. Nye analyser viser begrænset dalmatisk herkomst i enkelte individer fra Slovenien og Italien, selvom ingen individer entydigt blev klassificeret som tilhørende den dalmatiske population. Telemetriske og genetiske profiler har dog dokumenteret tilstedeværelsen af sjakaler med pannonisk herkomst ved Adriaterhavskysten. Disse resultater indikerer et tovejs genflow og en kontaktzone, der strækker sig sydpå fra det østlige Italien og omfatter kystnære øer i Dalmatien, som nu koloniseres af sjakaler. Fremtidig forskning er nødvendig for at afklare fordelingen af dalmatisk og pannonisk herkomst og sjakalernes økosystemfunktion i nyligt koloniserede habitater, herunder deres fremvoksende økologiske rolle i Nordeuropa og på øerne ved Adriaterhavskysten.

HOW AND WHEN IS CULLING EFFICIENT IN IAS MANAGEMENT – AND IS THERE ANY ALTERNATIVE?

Fredrik Dahl¹

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This presentation is based on a paper that describes the raccoon dog management and its related results in our Nordic countries, especially contrasting Sweden and Denmark 2010-2023. The paper builds upon a common LIFE+ project 2010-2013, LIFE09 NAT/SE/000344 – MIRDINEC, and its continuation until today. While Sweden has gone from 100-200 to less than 20 raccoon dogs (total counts), Denmark has gone from 100-200 (total count) to 7.000-10 000 raccoon dogs shot annually.

Where lies the difference?

In Sweden one important part of the management has been sterilized Judas animals. Only about 600 animals have been culled in Sweden during 15 years, compared to well over 50.000 in Denmark, despite starting at approximately the same number in 2010. Judas animals are one reason to the success in Sweden, but far from the only one. We have used our still ongoing transnational raccoon dog project as a case study to disentangle the reasons behind both successes and failures in our respective raccoon dog management strategies.

HVORDAN OG HVORNÅR ER REGULERING EFFEKTIV I FORVALTNING – OG ER DER NOGET ALTERNATIV?

Denne præsentation bygger på en artikel, der beskriver forvaltningen af mårhund og de tilhørende resultater i vores nordiske lande, især med en sammenligning mellem Sverige og Danmark i perioden 2010–2023. Artiklen tager udgangspunkt i et fælles LIFE+-projekt fra 2010–2013, LIFE09 NAT/SE/000344 – MIRDINEC, og dets fortsættelse frem til i dag. Mens Sverige er gået fra 100–200 til under 20 mårhunde (samlet antal), er Danmark gået fra 100-200 (samlet antal) til 7.000-10.000 nedlagte mårhunde årligt. Hvor ligger forskellen?

I Sverige har steriliserede Judas-dyr været en vigtig del af forvaltningen. Kun omkring 600 dyr er blevet aflivet i Sverige over 15 år, sammenlignet med godt 50.000 i Danmark, selvom begge lande startede på omtrent samme niveau i 2010. Judas-dyr er én forklaring på Sveriges succes, men langt fra den eneste.

Vi har brugt vores stadig igangværende transnationale mårhundsprojekt som case for at afdække årsagerne til både succeser og udfordringer i vores respektive strategier for mårhundeforvaltning.

ABSTRACTS

SESSION III

NON-LETHAL PREDATOR CONTROL



NON-LETHAL PREDATOR MANAGEMENT FOR BIRD CONSERVATION

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Lethal predator control is frequently employed to protect prey species, yet its efficacy is often limited by high costs, ethical concerns, and rapid predator recolonization. Consequently, there is a growing need for non-lethal alternatives that influence predator behaviour. For ground nesting birds, methods such as enclosures and fences can be used to protect single nests, but these may be less applicable at the landscape scale. The method called chemical camouflage (CC) is a novel alternative. In CC, non-rewarding prey odours are spread in the landscape to reduce foraging efficiency of predators. In a landscape-scale experiment using artificial nests in southern Finland, we found that CC significantly reduced nest predation by red foxes, but it had no effect on invasive

raccoon dogs. We further tested this method on real waterfowl across 16 wetlands over two years. The number of waterfowl broods was significantly higher in treatment areas compared to controls, suggesting that CC can improve reproductive success. However, the efficacy of CC may vary by system and target species. In a smaller-scale study in Northern Finland aimed at protecting shorebird nests, the results were inconclusive, potentially due to differences in predator assemblages or environmental conditions. These findings suggest that while chemical camouflage offers a promising and ethical tool for bird conservation, its success may be context-dependent. Nevertheless, we call for wider use of non-lethal methods to reduce predator impacts on prey.

IKKE-DØDELIG ROVDYRFORVALTNING TIL FUGLEBESKYTTELSE

Letal (dødelig) rovdyrkontrol bruges ofte for at beskytte byttedyrarter, men dens effektivitet er ofte begrænset af høje omkostninger, etiske overvejelser og hurtig genkolonisering af rovdyr. Derfor er der et stigende behov for ikke-dødelige alternativer, der påvirker rovdynenes adfærd. For jordrugende fugle kan metoder som indhegninger og hegn bruges til at beskytte enkelte reder, men disse kan være mindre anvendelige i større landskaber. Metoden kaldet kemisk camouflage (CC) er et nyt alternativ. Ved CC spredes lugte fra byttedyr i landskabet for at reducere rovdyns effektivitet under fødesøgning. I et landskabsforsøg med kunstige reder i det sydlige Finland fandt vi, at CC markant

reducerede prædation på reder fra rød ræv, mens metoden ingen effekt havde på invasive mårhunde. Vi testede desuden metoden på virkelige vandfugle på 16 vådområder over to år. Antallet af vandfuglekuld var betydeligt højere i behandlingsområderne end i kontrolområderne, hvilket tyder på, at CC kan forbedre fuglenes reproduktions succes. Effekten af CC kan dog variere afhængigt af økosystem og art. I et mindre forsøg i Nordfinland, der havde til formål at beskytte vadefuglereder, var resultaterne uklare, muligvis på grund af forskelle i rovdynsamfund eller miljøforhold.

NON-LETHAL MANAGEMENT OF CARNIVORE PREDATION USING THE TARGETED ACOUSTIC STARTLE TECHNOLOGY (TAST): FROM THE OCEAN ONTO LAND

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Traditional acoustic deterrence methods for mitigating human-wildlife conflict often emit high noise doses and animals habituate quickly. The targeted acoustic startle technology (TAST) provides an alternative by eliciting the acoustic startle reflex, an autonomous reflex arc which is conserved in all mammals. In experimental studies repeated elicitation of the startle reflex led to an increased responsiveness (sensitisation) in consecutive avoidance behaviour. Target-specificity can be achieved by tuning signals to the auditory sensitivity of species groups. TAST effectively deterred seals from marine fish farm pens without adversely affecting porpoise distribution, while operating at a low duty cycle (<1%). In a consecutive one-year study TAST achieved a ~91-97% reduction in seal depredation without any evidence for habituation. In a coastal fishery, mitigating seal predation led to a

74% increase in catches.

Applications in rivers demonstrated a strong reduction in seal predation on endangered salmon runs. The method also holds promise for preventing incidental bycatch and injury of protected seals, sea lions and dolphins in fishing nets. For example, TAST achieved a strong reduction in the presence of predating killer whales (orcas) around purse seine nets. These results also suggest that successful deterrence does not seem to depend on the trophic level of the predator but on their auditory sensitivity.

While most studies were conducted on marine predators preliminary results on terrestrial mammals indicate comparable responsiveness, TAST constitutes a novel tool for mitigating human-wildlife conflict (carnivores) and support re-forestation efforts (herbivores). I am looking for collaborators for future studies on terrestrial species (tg45@st-andrws.ac.uk).

IKKE-DØDELIG HÅNDTERING AF ROVDYRPRÆDATION VED HJÆLP AF TARGETED ACOUSTIC STARTLE TECHNOLOGY (TAST): FRA HAVET TIL LAND

Traditionelle akustiske skræmmeteknikker til at afbøde konflikter mellem mennesker og dyreliv udsender ofte støj, som dyr hurtigt vænner sig til. Targeted Acoustic Startle Technology (TAST) tilbyder et alternativ ved at udløse den akustiske startle-refleks (forskrækkelses reaktion), en autonom refleksbue, som findes hos alle pattedyr. I eksperimentelle studier førte gentagen aktivering af startle-refleksen til øget respons (sensitisering), hvilket resulterede i vedvarende undvigelsesadfærd. Måltrettet skræmning af bestemte arter kan opnås ved at tilpasse signaler til hørefølsomheden hos specifikke artsgrupper. TAST har vist sig at kunne skræmme sæler væk fra havbrug uden at påvirke marsvin bestandens fordeling negativt, samtidig med at systemet kun opererer med en lav arbejdsrytme (<1 %). I et efterfølgende étårigt studie opnåede teknologien en reduktion på ~91–97 % i prædation på sæler uden tegn på tilvænnning. I et kystfiskeri førte reduktionen af

prædation af sæler til en 74% stigning i fangster. Anvendelser i floder viste en markant reduktion i sælers prædation på truede laksebestande. Metoden har også potentiale til at forhindre bifangst og skader på sæler, søløver og delfiner som går i fiskegarn. F.eks. opnåede TAST en betydelig reduktion i tilstedeværelsen af spækhuggere omkring snurpenotgarn. Disse resultater indikerer, at succesfuld afskrækkelse ikke afhænger af rovdyrs trofiske niveau, men af deres høreevne og akustiske følsomhed.

Selvom de fleste studier er udført på marine rovdyr, viser foreløbige resultater fra terrestriske pattedyr en sammenlignelig respons. TAST udgør derfor et lovende, nyt værktøj til at reducere konflikter mellem mennesker og rovdyr på land, samt til at støtte genetablering af skov (via beskyttelse mod planteædere). Jeg søger samarbejdspartnere til fremtidige studier på terrestriske arter (tg45@st-andrws.ac.uk).

ABSTRACTS

SESSION IV MONITORING PREDATORS AND NEW TECHNOLOGY



Photo: Jan Skriver

INSIGHTS INTO PREDATOR BIOLOGY PROVIDED BY MODERN MONITORING TECHNIQUES

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Modern monitoring technologies, such as camera traps, thermal imaging, environmental DNA (eDNA), and detection dogs, have revolutionised the study of predator biology by enabling high-resolution, long-term, and non-invasive investigations. These methods yield critical insights into foraging behaviours, social interactions, spatio-temporal dynamics, and responses to environmental change, particularly in remote or inaccessible habitats where traditional approaches are infeasible. They provide insights to the biology of elusive species, facilitate empirical tests of predator-prey hypotheses, and inform conservation strategies.

Although these technologies are increasingly affordable, they are predominantly employed in observational studies focused on abundance, density, activity, and occupancy, with experimental designs remaining rare.

This pattern contributes to suboptimal publication outcomes, as many manuscripts are rejected for insufficient scientific novelty. Moreover, reliance on such methods shifts emphasis from fieldwork to modelling and data analysis, eroding the centrality of direct field engagement, which is essential for profound ecological understanding. Remote data collection also risks bias and oversimplification. Declines in fieldwork may diminish hands-on skills, personal expertise from field exposure, and the capacity to generate novel, pertinent hypotheses. Camera traps and detection dogs offer numerous advantages but also face limitations in detection efficacy for certain species and cost-effectiveness. Accordingly, methods should be tailored to specific research questions, with integrated approaches combining multiple techniques strongly recommended.

INDSIGTER IND I ROVDYRØKOLOGI MED MODERNE OVERVÅGNINGS TEKNIKKER

Moderne monitoreringsteknologier som vildtkameraer, termisk billeddannelse, miljø-DNA (eDNA) og specialtrænede detektionshunde har revolutioneret studiet af rovdyrsbologi ved at muliggøre højoopløselige, langvarige og ikke-invasive undersøgelser. Disse metoder giver afgørende indsigter i fourageringsadfærd, sociale interaktioner, rumlig og tidlig dynamik samt responser på miljøforandringer, særligt i fjerntliggende eller utilgængelige habitater, hvor traditionelle tilgange er upraktiske. De giver ny viden om arter, der er mere sky, muliggør empiriske test af rovdyr-bytte-hypoteser og understøtter naturforvaltningsstrategier. Selvom teknologierne stadig bliver mere tilgængelige, anvendes de overvejende i studier, der fokuserer på forekomst, tæthed, aktivitet og tilstedeværelse. Eksperimentelle designs er fortsat sjældne. Dette mønster bidrager til mindre optimale publikationer, da

mange manuskripter afvises på grund af utilstrækkelig videnskabelig nyhedsværdi. Derudover flytter afhængigheden af disse metoder fokus fra feltarbejde til modellering og dataanalyse, hvilket kan udhule betydningen af direkte feltindsigt, som er en nøglekomponent for dyb økologisk forståelse. Fjernindsamlende data kan også være forbundet med bias og forenkling. Et fald i feltarbejde kan reducere praktiske færdigheder, personlig ekspertise opnået gennem feltoplevelser og evnen til at udvikle nye, relevante hypoteser. Kamerafælder og detektionshunde tilbyder betydelige fordele, men har også begrænsninger i detektionsrate for visse arter og i omkostningseffektivitet. Derfor bør metoder skræddersys til specifikke forskningsspørgsmål og det anbefales stærkt at benytte integrerede tilgange, hvor flere teknikker kombineres.

ENHANCED MONITORING OF LAND-LIVING AND SEMI-AQUATIC PREDATORS USING SYNERGESTIC CONVENTIONAL AND NEXT-GENERATION APPROACHES

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Effective monitoring programmes for mammal species can contribute significantly to biodiversity monitoring across Denmark. Choosing a single approach always introduces limitations, and research suggests that complementary monitoring techniques achieve synergy to elevate some of these challenges.

In this project, we combine traditional monitoring methods (field observation and camera trapping), with next generation approaches as eDNA analysis to investigate how these methods complement each other to achieve the most effective monitoring strategies for land-living and semi-aquatic

Danish predator species. We focus on the native Danish red fox (*Vulpes vulpes*) and Eurasian otter (*Lutra lutra*), as well as the invasive American mink (*Neogale vison*). We show that we are able to detect the majority of the same mammals with camera trapping and eDNA, and that the eDNA data provides an additional layer of information regarding habitat overlaps, competitive relationships between predator species, and likely trophic links to prey species for the studied predators. Our results highlight the potential of monitoring programmes built upon synergistic combinations of effective monitoring approaches.

FORBEDRET OVERVÅGNING AF LANDLEVENDE OG SEMIAKVATISKE ROVDYR VED HJÆLP AF SYNERGISTISKE KONVENTIONELLE OG NYERE METODER

Effektive overvågningsprogrammer for pattedyr kan bidrage væsentligt til biodiversitetsovervågning i Danmark og i forhold til samspil mellem arter. Valget af én enkelt metode medfører altid begrænsninger og forskning viser, at komplementære overvågningsteknikker kan skabe synergier, der reducerer disse udfordringer.

I dette projekt kombinerer vi traditionelle overvågningsmetoder (feltobservation og kamerafælder) med nyere tilgange som eDNA-analyse for at undersøge, hvordan metoderne supplerer hinanden og tilsammen giver de mest effektive overvågningsstrategier for landlevende og semiakvatiske

danske rovdyrarter. Vi fokuserer på hjemmehørende arter som rød ræv (*Vulpes vulpes*) og odder (*Lutra lutra*) samt den invasive amerikanske mink (*Neogale vison*). Vi viser, at vi er i stand til at registrere hovedparten af de samme arter via både kamerafælder og eDNA og at eDNA-data giver et ekstra informationslag om habitat-overlap, konkurrenceforhold mellem rovdyrarter og sandsynlige trofiske relationer til byttedyr hos de undersøgte arter. Vores resultater fremhæver potentialet i overvågningsprogrammer, der bygger på kombinationer af forskellige monitoreringstilgange.

TIMESCAPE SELECTION: A POWERFUL AND STRAIGHTFORWARD METHOD TO MODEL DIEL ACTIVITY VARIATION IN CARNIVOROUS MAMMALS FROM CAMERA TRAP DATA AS FUNCTION OF MULTIPLE PREDICTORS

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Assessing variation in diel activity based on camera trap data has been increasingly popular amongst carnivore ecologists. The current most used analytical method is to estimate diel activity as kernel distributions, using the relative overlap between pairs of kernels as measure of the relative temporal segregation between samples (e.g. species A and B, or habitat X and Y). Albeit easy to use and interpret, this popular method has its shortcomings in situations where more than two categories shall be compared, nor does the method adjust for multilevel effects such as different cameras or territories within populations. Here we present a simple but powerful analytical framework for analyzing variation in diel activity as a function of multiple fixed effects with adjustment for dependency between camera traps and territories. The method is based on the Resource Selection Function framework, normally used for modelling

habitat selection based on a use-availability design. With our approach, every time-stamped camera image is contrasted with 24 regularly distributed availability observations and the relative probability of an observation being true is modelled as a function of temporally variable parameters such as light conditions, relative prey activity or human activity. The extent to which a species avoids or selects to be active as a function of another temporal factor (e.g. human activity) is expressed as a selection coefficient. Multiple effects can be entered into the same model, whereby the confounders can be teased apart so those effects that are most important as predictors can be identified. We illustrate the applicability of the method with examples from wolves (*Canis lupus*) and martens (*Martes foina* and *M. martes*) in Denmark, quantifying temporal avoidance of humans under different habitat conditions.

TIMESCAPE SELEKTION: EN SIKKER OG LIGEFREM METODE TIL AT MODELLERE DØGNRYTMIK OG AKTIVITETSvariation hos ROVPATTEDYR MED VILDTKAMERA SOM FUNKTION AF FLERE FORUDSIGENDE FAKTORER

Det er blevet stadig mere almindeligt blandt rovdyrforskere at bruge vildtkameraer til at undersøge, hvordan dyr fordeler deres aktivitet over døgnet. Den mest brugte analysemetode i dag er at beskrive døgnaktiviteten som "kernelfordelinger" og måle, hvor meget to fordelinger overlapper. Det bruges fx til at sammenligne: to arter (fx art A og B) eller to habitater (fx område X og Y). Metoden er let at bruge og forstå, men den har klare begrænsninger, når man skal sammenligne mere end to kategorier, og den kan heller ikke tage højde for forskelle mellem kameraer eller territorier i en population. Her præsenterer vi derfor en enkel men stærk analysemetode, der kan undersøge variation i døgnaktivitet ud fra flere faktorer på én gang og samtidig justere for, at observationer fra samme kamera eller territorium ikke er uafhængige. Metoden bygger på *Resource Selection Function*-tilgangen, som normalt bruges til at modellere dyrs habitatvalg ud fra et

"brug-tilgængelig"-design. I vores tilgang sammenlignes hvert enkelt vildtkamera-billede med tidsstempel med 24 jævnt fordelte "tilgængelig-tidspunkter" over døgnet. Derefter modelleres sandsynligheden for, at observationen er en reel registrering, som en funktion af tidsafhængige forhold som lysforhold, byttedyrsaktivitet eller menneskelig aktivitet. Denne tilgang gør det muligt at analysere, hvordan en art vælger eller undgår at være aktiv i forhold til en tidlig faktor, og graden af dette udtrykkes som en selektionskoefficient. Flere faktorer kan indgå i samme model, så man kan adskille overlappende effekter og identificere de vigtigste faktorer til variation i døgnaktivitet. Vi illustrerer metodens anvendelighed med eksempler fra ulve (*Canis lupus*) og mårdyr (*Martes foina* og *M. martes*) i Danmark, hvor vi kvantificerer den tidsmæssige undgåelse af mennesker under forskellige habitatforhold.

A NOVEL DRONE- AND AI-BASED APPROACH TO SAMPLING MESOPREDATOR BEHAVIOUR AND HABITAT USE

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There is generally a significant lack of knowledge about predator populations and habitats, including which habitats they occupy, how long they remain in different habitats, and which behaviors are performed in which habitats. This study presents a new method for effective monitoring of predators in their natural habitat and initially focus on red fox (*Vulpes vulpes*), Eurasian otter (*Lutra lutra*), and European badger (*Meles meles*). Thermal drone recordings, combined with artificial intelligence, can improve the monitoring of mesopredators and other animals. Researchers at Aalborg University

have been working with thermal drone monitoring of mammals for several years with promising results in relation to monitoring mammals. By using drones equipped with thermal cameras, researchers can observe predator behavior and interactions without disturbing the animals. By combining behavioral observations via the software LabGym with geocoding of the location for species and behavior from the recordings through GIS, species and their behavior can be identified and linked to habitat use.

EN NY DRONE- OG AI-BASERET TILGANG TIL INDSAMLING AF ADFÆRD FRA MESOPRÆDATORER OG HABITATBRUG

Der er generelt stor mangel på viden om rovdyrbestande og deres levesteder, herunder hvilke habitater de foretrækker, og hvad de bruger habitater til. Studiet præsenterer en ny metode til effektiv monitorering af rovdyr i deres naturlige habitat og fokuserede i første omgang på ræv (*Vulpes vulpes*), odder (*Lutra lutra*) og grævling (*Meles meles*). Termiske droneoptagelser kan i kombination med kunstig intelligens revolutionere monitoreringen af rovpattedyr og andre dyr i deres naturlige omgivelser. Forskere og studerende ved Aalborg Universitet har i en

del år arbejdet med termisk dronemonitering af pattedyr og studierne viser lovende resultater i forhold til monitorering af mellemstore rovdyr. Ved hjælp af droner med termiske kameraer kan forskere observere rovdynenes adfærd og interaktioner uden at dyrene forstyrres. Ved at kombinere adfærdsobservationen analyseret med softwaren LabGym, med geokodning af lokaliteten for art og adfærd fra videooptagelserne, kan art og adfærd identificeres og kobles til bedre forståelse af habitatbrug.

MONITORING MUSTELIDS - STOAT (*MUSTELA ERMINEA*) AND WEASEL (*M. NIVALIS*) REVEALS LOW CAPTURES

Rasmus Worsøe Havmøller¹

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Recent developments of modified camera trap boxes (Mostelas) for monitoring small mustelids have been successfully used to monitor stoats and weasels in the Netherlands, the UK and Ireland. However, the landscape features that were important for placing the mostelas to obtain high detections where hedge rows and stone fence, features that are largely absent in the Danish landscape.

In this project we used modified mostela boxes to investigate 1) if we could perform capture-mark-recapture with camera traps for estimating densities of stoat and weasels in Denmark, while 2) testing out US-produced scent lures and 3) try to understand which landscape features were important for detecting small mustelids in Denmark.

MONITORING AF MUSTELIDER - LÆKAT (*MUSTELA ERMINEA*) OG BRUD (*M. NIVALIS*) VISER LAV FANGST

Nylige udviklinger inden for tilpassede kamerafælde (Mostelaer) til overvågning af små mårdyr er blevet anvendt med succes til at monitorere husmår og lækat i Holland, Storbritannien og Irland. De landskabselementer, der var vigtige for at placere mostela-kasserne for at opnå høje registreringsrater, var levende hegn og stengærder - landskabstyper som stort set mangler i Danmark.

I dette projekt brugte vi mostela-kasser til at undersøge: 1) om vi kunne gennemføre fangst genfangst analyser via kamerafælder for at estimere tætheder af lækat og brud i Danmark, 2) afprøvning af amerikansk-producerede duftlokkemidler og 3) hvilke landskabselementer der er afgørende for at registrere små mårdyr i danske habitater.

ABSTRACTS

SESSION V BEHAVIOUR AND HABITAT CHOICE



Photo: Morten Hilmer

MESOCARNIVORES IN THE ANTHROPOCENE

Carl Soulsbury¹

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Many mesocarnivore species have been profoundly impacted by environmental changes during the Anthropocene. While many species are resilient and adaptable to human-modified landscapes, they face continued threats from habitat fragmentation, novel mortality sources (e.g. vehicle collisions, disease) and retaliatory

hunting. Using examples from across Europe, this presentation focusses on the future of mesocarnivores in this changing world, their oft-forgotten importance for ecosystems, their interactions with humans and considers how populations will and are continuing to change and adapt, in this ever-changing world.

MESOCARNIVORER I MENNESKETS TIDSALDER

Mange mesocarnivore-arter er dybt påvirket af miljøforandringer skabt af mennesker. Selvom mange arter er robuste og tilpasningsdygtige i menneskeskabte landskaber, står de fortsat overfor trusler som habitatfragmentering, nye dødsårsager (f.eks. trafikdrab og sygdomme) og hævn jagt. Med eksempler fra hele Europa

fokuserer denne præsentation på mesocarnivorers fremtid i en verden i forandring, deres ofte oversete vigtighed for økosystemer, deres interaktioner med mennesker og på, hvordan deres bestande både vil komme til at ændre og tilpasse sig i denne stadigt skiftende verden.

MESOPREDATOR OCCUPANCY AND CO-OCCURRENCE IN THE ROMANIAN CARPATHIANS: INSIGHTS FROM MULTISPECIES CAMERA TRAP MODELING

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Across Europe, mammalian carnivores have been extirpated from their historical ranges due to human activities. Conservation efforts often employ trophic rewilding, which entails restoring keystone species to promote trophic cascades and improve the functioning and self-regulation of ecosystems. Despite previous research on the effects of reintroducing top carnivores to disturbed ecosystems, mesopredator interactions are generally poorly understood, limiting the knowledge needed for mesopredator conservation. Using a 2-year camera trap dataset (41 cameras deployed in 2021-2022), the present study seeks to identify predictors of marginal occupancy, co-occupancy, and conditional occupancy among three mesopredator species in an intact mammal community in the Romanian Carpathians: European wildcat (*Felis silvestris*), marten (*Martes*), and badger

(*Meles meles*). Using a multispecies occupancy modeling framework accounting for imperfect detection, we evaluate the effects of species interactions and habitat variables on occupancy probability. Preliminary analyses for the cold season found that mean predicted marginal occupancy probabilities were relatively high (wildcat: 0.72; marten: 0.73; badger: 0.78). Rates of co-occurrence were 0.52 for wildcat-marten, 0.63 for wildcat-badger, and 0.55 for marten-badger. Early results show that habitat variables like elevation and forest type are key predictors of species occupancy and mediate their co-occurrence. These results support understanding of niche overlap and partitioning among mesopredators in a system where they and their predators are abundant, offering insights that may inform wildlife management and carnivore conservation.

MESOPRÆDATORERS TILSTEDEVÆELSE OG SAM-EKSISTENS I DE RUMÆNSKE KARPATER: MODELERING BASERET PÅ MONITERING MED VILDTKAMERAER

I hele Europa er rovpattedyr blevet udryddet fra deres historiske udbredelsesområder som følge af menneskelige aktiviteter. Natur-beskyttelsesindsatser anvender ofte trofisk rewilding, som indebærer genetablering af nøglearter for at fremme trofiske kaskader og forbedre økosystemers funktion og selvregulering. På trods af tidligere forskning i effekterne af at genindføre toprovdyr i økosystemer er mesoprædator-interaktioner generelt dårligt forstået, hvilket begrænser den viden, der er nødvendig for bevaring af mesoprædatorer. Ved hjælp af et toårigt kamerafælde-datasæt (41 kameraer opsat i 2021-2022) søger det nuværende studie at identificere indikatorer for forekomst og sameksistens hos tre mesoprædatorarter i et intakt pattedyr-samfund i de rumænske Karpater: europæisk vildkat, mår og grævling.

Ved brug af en kamerafælde og modellering, som tager højde for ufuldstændig detektion, vurderer vi effekten af artsinteraktioner og habitatvariabler på sandsynligheden for tilstedeværelse af arten. Foreløbige analyser for den kolde sæson viste, at de gennemsnitlige forudsagte tilstedeværelsessandsynligheder var relativt høje (vildkat: 0,72; mår: 0,73; grævling: 0,78). Samforekomst-raterne var 0,52 for vildkat-mår, 0,63 for vildkat-grævling og 0,55 for mår-grævling. Tidlige resultater viser, at habitatvariabler som højde og skovtype er vigtige indikatorer for arternes tilstedeværelse og påvirker deres sameksistens. Disse resultater bidrager til forståelsen af nicheoverlap og nicheopdeling blandt mesoprædatorer i et system, hvor både de og deres rovdyr er talrige og giver indsigter, der kan informere vildtforvaltning og rovdyrbevaring.

SUCCESFULL RECOVERY OF OTTERS IN DENMARK

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Otters in Denmark, once nearly extinct in the early 1980s, have rebounded across most of the country over 45 years due to strong collaboration among researchers, authorities and private organisations. The otter's recovery is now seen as a significant achievement in Danish nature management. In 1984, Animal Protection Denmark and the WWF World Wildlife Fund initiated Project Otter, which was subsequently managed by the Danish Forest and Nature Agency, the National Environmental Research Institute, and Aarhus University. The lecture provides an overview of the management actions and scientific investigations conducted, focusing on otter distribution and population development, challenges related to otters drowning in fish traps, and fatalities caused

by traffic. The importance of research, management, and communication as three equally essential areas for effective nature conservation is underscored throughout. Project Otter serves as a strong example of targeted species management and the application of expert knowledge in practical conservation efforts, including the implementation of stop grids and stop nets in fishing equipment and the development of fauna passages.

A generous donation from the Aage V. Jensen Foundation has made it possible to collect all the experiences from the project in the book: 'Odderen - en succeshistorie i dansk naturforvaltning' illustrated with photos and figures in colors.

SUCCESFULD GENETABLERING AF ODDEREN I DANMARK

Odderne i Danmark, som næsten var udryddet i begyndelsen af 1980'erne, har reetableret udbredelsen i store dele af Danmark over de sidste 45 år takket være et stærkt samarbejde mellem forskere, myndigheder og private organisationer. Odderens tilbagekomst betragtes i dag som en succes i dansk naturforvaltning. I 1984 igangsatte Dyrenes Beskyttelse og WWF Verdensnaturfonden Projekt Odder, som senere blev videreført af Skov- og Naturstyrelsen, Danmarks Miljøundersøgelser og Aarhus Universitet. Oplægget giver et overblik over de gennemførte forvaltningstiltag og de videnskabelige undersøgelser, med fokus på odderens udbredelse og bestandsudvikling,

udfordringer med drukning i fiskerfuser og dødsfald forårsaget af trafik. Betydningen af forskning, forvaltning og kommunikation var tre ligeværdige indsatsområder for en effektiv beskyttelse af arten.

Projekt Odder er et godt eksempel på hvordan målrettet artsforvaltning og anvendelsen af ekspertviden kan supplere hinanden i den praktiske naturforvaltning, herunder bl.a. implementeringen af stopriste og stopnet i fiskeredskaber samt udviklingen og etableringen af faunapassager.

En generøs donation fra Aage V. Jensen Fonden har gjort det muligt at samle alle erfaringerne fra projektet i bogen: 'Odderen - en succeshistorie i dansk naturforvaltning', illustreret med fotos og figurer i farver.

LATITUDINAL DIFFERENCES IN REPRODUCTIVE TIMING OF CARNIVORES: MANAGEMENT IMPLICATIONS

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Many small and medium-sized carnivores are hunted, often to reduce their impact on species of concern for conservation, livelihoods (livestock), or recreation. However, monitoring data related to the impact of hunting on population densities and demography are often lacking. As part of this, we often have limited or outdated information on the reproductive biology of these carnivores. In Sweden, the timing of birth and the independence of young is considered, for ethical reasons, when determining the start and end of hunting seasons. However, current knowledge of these timings is limited, and evidence suggests that they vary among populations at different latitudes. This raises the possibility that climate change may further

alter these patterns. Here, we investigate the timing of birth and independence of young for four hunted small and medium-sized carnivores, red fox (*Vulpes vulpes*), Eurasian badger (*Meles meles*), pine marten (*Martes martes*), and European polecat (*Mustela putorius*) over a latitudinal gradient in Sweden. We used a combination of methods, including camera traps, citizen-science observations, and hormone levels derived from faecal samples, to determine the timing of birth and when young of the year were observed independent of their mother. We will present preliminary results on all four species, focusing on the usability of the different methodologies to determine the timing of birth and independence.

BREDDEGRADENS BETYDNING FOR TIMING AF REPRODUKTION HOS ROVDYR: KONSEKVENSER FOR FORVALTNING

Mange små og mellemstore rovdyr jages for at reducere deres påvirkning af sjældne arter, af husdyr eller arter med jagtrelaterede interesser. Der mangler imidlertid ofte monitoreringsdata som dokumenterer effekten af jagt på bestandstætheder og demografi. Herunder mangler vi også ofte aktuel viden om disse rovdyrers reproduktionsbiologi. I Sverige indgår reproduktionstidspunktet og tidspunktet for afkomets selvstændighed, af etiske årsager, grundlaget for fastlæggelsen af jagtsæsonernes start og slutning. Viden om disse tidspunkter er begrænset og undersøgelser tyder på, at de varierer mellem populationer på forskellige breddegrader. Også klimaforandringer kan ændre disse mønstre yderligere.

Her undersøger vi reproduktionstidspunktet og tidspunktet for, hvor unger bliver selvstændige, for fire jagtbare små og mellemstore rovdyr: rød ræv (*Vulpes vulpes*), europæisk grævling (*Meles meles*), skovmår (*Martes martes*) og ilder (*Mustela putorius*) langs en breddegradsgradient i Sverige. Vi anvendte en kombination af metoder, herunder kamerafælder, citizen-science-observationer og hormonanalyser fra fæcesprøver, for at fastslå både reproduktionstidspunkt og hvornår årets unger blev observeret uafhængige af deres mor. Vi vil præsentere foreløbige resultater for disse fire arter med fokus på anvendeligheden af de forskellige metoder til at bestemme reproduktionstidspunkt og tidspunktet for ungernes selvstændighed.

ABSTRACTS

SESSION VI DISCUSSION OF HISTORICAL VIEWS ON NATURE AND HUMAN PERCEPTIONS



Photo: Morten Hilmer

CARNVIORES IN THE HISTORY OF PHILOSOPHY

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The history of animals and animals in the history of philosophy have been an established part of academia throughout the last few decades. However, very little has been written on what role carnivorous animals have played in philosophy. In this talk I will show how present day discussions about carnivores – in societal debates as well as in philosophy/ethics – draw on ideas and concepts identifiable in ancient Greek and ancient Arab-language philosophy. These sources, although few in number, clearly show the carnivore as an adversarial being in relation to humans. An enemy, even. By the 20th century, however, two new types of philosophical thinking relates to carnivores. On the one hand, environmental philosophies reversed the old narrative:

predators came to be seen as integral to ecosystems and worthy of moral respect in their own right as well as systemically. Deep ecology (Arne Næss) and Land Ethic (Aldo Leopold) traditions assert that carnivores (from wolves to lynxes) possess intrinsic value beyond their utility, marking a shift from viewing carnivores as symbols of brutality to recognizing them as vital participants in the moral community of life. On the other hand, modern versions of utilitarianism, with roots in originally Jeremy Bentham's theories and later Peter Singer', propose radical solutions to what they see as a massive suffering problem brought about by carnivorous animals. Their proposals range from eradication through birth control to genetically altering carnivores in order to avoid predation.

ROVDYR I FILOSOFIENS HISTORIE

Dyrenes historie og dyrenes rolle i filosofiens historie er i de seneste årtier blevet et etableret akademisk felt. Der er dog skrevet meget lidt om, hvilken rolle rovdyr har spillet i filosofien. I dette oplæg vil jeg vise, hvordan nutidige diskussioner om rovdyr - både i samfundsdebatter og i filosofi/etik - bygger på idéer og begreber, der kan spores tilbage til oldgræsk og old-arabisk filosofi. Disse kilder, selvom de er få, viser tydeligt rovdyrret som et væsen, der står i et modsætningsforhold til mennesker. Endda som fjende.

I det 20. århundrede opstod der imidlertid to nye måder at tænke filosofisk om rovdyr på. På den ene side vendte miljøfilosofier den gamle fortælling på hovedet: rovdyr kom til at blive set som integrerede dele af

økosystemer og værdige til moralsk respekt, både i sig selv og i en systemisk forstand. Dybdøkologi (Arne Næss) og Land Ethic-traditionen (Aldo Leopold) hævder, at rovdyr (fra ulve til losser) har en iboende værdi ud over deres nytte, hvilket markerer et skifte fra at se rovdyr som symboler på brutalitet til at betragte dem som vigtige deltagere i livets moralske fællesskab.

På den anden side foreslår moderne versioner af utilitarismen, med rødder i Jeremy Bentham's teorier og senere Peter Singers, radikale løsninger på det, de opfatter som et massivt lidelsesproblem forårsaget af rovdyr. Deres forslag spænder fra udryddelse via fødselskontrol til genetisk ændring af rovdyr for at undgå prædation.

ABSTRACTS

POSTERS



Photo: Morten Hilmer

ZOONOTIC HELMINTHS AT THE WILDLIFE–HUMAN INTERFACE: PRELIMINARY EVIDENCE FROM FREE-RANGING MARTENS (*MARTES* SP.) IN CENTRAL TÜRKIYE

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Martens (*Martes spp.*) are small carnivores that can occur in habitats overlapping with human-modified landscapes, increasing their relevance in the transmission dynamics of zoonotic parasites. The Nallıhan–Sarıyar region of Ankara comprises forested areas, villages, and a large dam ecosystem, where both pine marten (*Martes martes*) and stone marten (*Martes foina*) are known to be present. Due to overlapping distribution and the non-invasive nature of fecal sampling, host species identification was not performed at this stage, and samples were evaluated as *Martes sp.*

In this preliminary study, a total of ten fecal samples collected from free-ranging martens were examined using flotation, sedimentation, and Baermann–Wetzel techniques to investigate helminths belonging to this species. Parasitological examination revealed that two samples were

positive for *Toxocara spp.*, three for *Alaria spp.*, three for hookworms (*Ancylostomatidae*), and four for *Acanthocephala*. All detected parasite taxa are recognized as zoonotic, highlighting the potential public health significance of martens inhabiting areas in proximity to human settlements and livestock.

To the best of our knowledge, this study provides the first parasitological data obtained from free-ranging martens in Türkiye based on non-invasive fecal examination. The findings underline the possible role of small carnivores in environmental contamination and zoonotic parasite transmission at the wildlife–human interface. Future studies will focus on PCR-based molecular identification of host species and expansion of sample size to better assess species-specific parasite patterns and zoonotic risk.

ZOONOTISKE HELMINTHER I GRÆNSEFLADEN MELLEM VILDE DYR OG MENNESKER: PRÆLIMINÆR EVIDENS FRA FRITLEVENDE MÅRER (*MARTES* SP.) I DET CENTRALE TYRKIET (TÜRKIYE)

Mårer (*Martes spp.*) er små rovdyr, som kan forekomme i habitater med overlap til menneskepåvirkede landskaber, hvilket øger deres relevans i smittedynamikken for zoonotiske parasitter. Nallıhan–Sarıyar-regionen i Ankara omfatter skovområder, landsbyer og et stort dæmningsøkosystem, hvor både skovmår (*Martes martes*) og husmår (*Martes foina*) kan forekomme. På grund af overlappende udbredelse og den ikke-invasive karakter af fækal prøvetagning blev artsbestemmelse af værten ikke foretaget på dette stadie, og prøverne blev derfor vurderet som *Martes sp.*

I dette præliminære studie blev i alt ti fækalprøver indsamlet fra fritlevende mårer og undersøgt ved hjælp af flotations-, sedimentations- og Baermann–Wetzel-teknikker for at kortlægge forekomsten af helminther tilknyttet denne værtsgruppe. Den parasitologiske undersøgelse viste, at to prøver var positive for *Toxocara spp.*, tre

for *Alaria spp.*, tre for hageorme (*Ancylostomatidae*) og fire for *Acanthocephala*. Alle de påviste parasitter er anerkendt som zoonotiske, hvilket understreger den potentielle folkesundhedsmæssige betydning af mårer, der lever i nærheden af menneskelige beboelser og husdyr.

Så vidt vi ved, præsenterer dette studie de første parasitologiske data baseret på ikke-invasiv fækalundersøgelse fra fritlevende mårer i Tyrkiet (Türkiye). Resultaterne fremhæver den mulige rolle, som små rovdyr spiller i overførsel af zoonotiske parasitter i grænsefladen mellem vilde dyr og mennesker. Fremtidige studier vil fokusere på PCR-baseret molekylær identifikation af værtsarter samt en udvidelse af stikprøvestørrelsen for bedre at kunne vurdere arts-specifikke parasitmønstre og zoonotisk risiko.

BEYOND TRADITION: WHEN DANISH FOX HUNTING AND REGULATION FAILS CONSERVATION ETHICS – BIOLOGY, EVIDENCE, AND SHIFTING VALUES

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Denmark's red fox (*Vulpes vulpes*) is a native, adaptable predator widespread across farmland, forests, and cities. The fox is categorized as "Near Threatened" on the Danish Red List, due to a long-term decline in the Danish fox population. Despite its Red List status, the fox is still subject to extensive hunting and regulation. In Denmark, the red fox is legally hunted under the National Hunting Act with an open season from September to January, plus regulation without a specific permit throughout February. Furthermore, year-round regulation may occur if they pose a supposed threat to livestock or poultry, game populations or to protect endangered species. Fox cubs may be regulated outside dens from June–August.

From a conservation biologist perspective, ethical lethal control is defensible only for targeted, monitored interventions protecting vulnerable prey like ground-nesting birds, where benefits are measured pre- and post-cull. General recreational hunting, untargeted "regulation," and cub shooting outside dens often lack robust evidence of ecological gain, as fox populations show strong density-dependent resilience to culling. Urban adaptation, combined with shifting public attitudes away from "vermin" views, further undermine traditional hunting justifications. This article argues for evidence-based reform: mandate monitoring for all fox control, critically assess the effects of cub hunting and prioritize non-lethal alternatives to align management with modern conservation ethics.

HINSIDES TRADITION: NÅR DANSK RÆVEJAGT OG REGULERING SVIGTER NATURBEVARELSSENS ETIK - BIOLOGI, EVIDENS OG SKIFTENDE VÆRDIER

Den røde ræv (*Vulpes vulpes*) i Danmark er en hjemmehørende og tilpasningsdygtig prædator, som er vidt udbredt i landbrugs-landskaber, skove og byområder. Ræven kategoriseres som "Næsten truet" på den danske rødliste som følge af en langsigtet nedgang i den danske rævebestand. På trods af sin rødliste-status er ræven fortsat genstand for omfattende jagt og regulering. I Danmark er den røde ræv lovligt jagtbar i henhold til jagtloven med en åben jagtsæson fra september til januar samt regulering uden særlig tilladelse hele februar. Derudover kan helårsregulering finde sted, hvis ræve vurderes at udgøre en formodet trussel mod husdyr, fjerkræ, vildtbestande eller med henblik på beskyttelse af truede arter. Rævehvalpe må reguleres uden for rævegraven i perioden juni–august.

Set fra et bevaringsbiologisk perspektiv kan etisk regulering kun retfærdiggøres som målrettede, overvågede indsatser til

beskyttelse af sårbare byttedyr, såsom jordrugende fugle, hvor effekterne dokumenteres før og efter indgrebet. Generel rekreativ jagt, ikke-målrettet "regulering" og skydning af hvalpe uden for grav mangler ofte solid dokumentation for den økologisk gevinst, da rævebestande udviser en stærk modstandsdygtighed over for afskydning, som afhænger af tæthed. Tilpasning til byområder kombineret med skiftende offentlige holdninger væk fra et "skadedyrs-syn" underminerer yderligere de traditionelle begrundelser for jagt.

Denne artikel argumenterer for en evidensbaseret reform: obligatorisk overvågning af al ræve-regulering, kritisk vurdering af effekterne af hvalpejagt samt prioritering af ikke-dødelige alternativer for at bringe forvaltningen i overensstemmelse med den moderne naturbevarelsesetik.

PLASTICITY IN THE REPRODUCTION OF RED FOXES

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INCREASED REPRODUCTIVE OUTPUT OF DANISH RED FOX FEMALES FOLLOWING AN OUTBREAK OF CANINE DISTEMPER

A decline in the Danish population of red foxes (*Vulpes vulpes*) due to an outbreak of canine distemper (CDV) in 2012 gave us the opportunity to test the hypothesis that the reproductive performance of foxes increases when the population density declines. The reproductive performance of 280 female foxes from two periods (mainly shot or road killed) in 1997-2000 and 2012-16, were compared. Game Bag During the period 1997-1999, barrenness was relatively high especially in yearlings, and the reproducing yearling foxes made up only 6% of the breeding females compared to 2012-13 and 2015-16 where breeding yearling females made up 53% and 61%,

respectively. Age related differences in litter size and productivity were found in years with a relatively high population density, when older females in their third and fourth breeding seasons had the largest litter sizes and highest productivity. This was in contrast to the years with low population size, when no age-related reproduction was found, and when young females had relatively large litter sizes and high productivity. This study confirms that the number of barren females drops, and that the proportion of yearling females and litter size increases with reduced population density e.g. by diseases or culling.

ØGET REPRODUKTION HOS DANSKE HUNRÆVE EFTER ET UDBRUD AF HUNDESYGE

Et fald i den danske bestand af rød ræv (*Vulpes vulpes*) som følge af et udbrud af hundesyge (CDV) i 2012 gav os mulighed for at teste hypotesen om, at rævenes reproduktionsevne stiger, når bestands-tætheden falder. Reproduktionsevnen hos 280 hunræve fra to perioder (primært nedlagt ved jagt eller trafikdræbt) i hhv. 1997-2000 og 2012-2016 blev sammenlignet.

I perioden 1997-1999 var andelen af ikke-drægtige hunner relativt høj, især blandt etårs hunner. De etårs hunner, der faktisk ynglede, udgjorde kun 6% af de reproducerende hunner. Til sammenligning

udgjorde etårs ynglehunner 53% i 2012-13 og 61% i 2015-16.

I år med høj bestandstæthed fandt man aldersrelaterede forskelle i kuldstørrelse og produktivitet: ældre hunner i deres tredje og fjerde ynglesæson havde de største kuld og den højeste produktivitet. Det stod i kontrast til år med lav bestandstæthed, hvor der ikke var aldersforskelle i reproduktionen, og hvor unge hunner havde relativt store kuld og høj produktivitet.

Studiet bekræfter, at antallet af ikke-drægtige hunner falder, og at både andelen af etårs ynglehunner og kuldstørrelsen stiger, når bestandstætheden reduceres – fx på grund af sygdom eller regulering.

MONITORING EURASIAN OTTER (*LUTRA LUTRA*) IN ENVIRONMENTAL RISK ASSESSMENTS (EAS)

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1. Sweco A/S

The eurasian otter (*Lutra lutra*) is an Annex IV species under the EU Habitats Directive.

The regulations provide a system of strict protection for the animal species listed in Annex IV in their natural range, prohibiting

- 1) Deliberately capture or kill any specimen of these species in the wild.

- 2) Deliberately disturb these species particularly during the periods of breeding, rearing, hibernation and migration.

- 3) Damage or destroy a breeding site or resting place of such an animal.

All projects must be assessed in order to exclude any of the above impacts before a permit can be granted. This means that knowledge of otter presence and habitat use is needed in most project types impacting potential otter habitats. We show examples of monitoring otters by camera traps and field surveys in a range of project sites and possible uses of the results in Annex IV assessments. The monitoring gives valuable insights into the use of an area by otters and in some cases numbers and ages (juvenile/adults) in project areas.

MONITERING AF DEN EUROPÆISKE ODDER (*LUTRA LUTRA*) I MILJØMÆSSIGE RISIKOVURDERINGER (EAS)

Den europæiske odder (*Lutra lutra*) er en Bilag IV-art i henhold til EU's habitatdirektiv. Bestemmelserne fastlægger et system for streng beskyttelse af de dyrearter, der er en del af Bilag IV, inden for deres naturlige udbredelsesområde, og forbyder:

1. Forsætlig indfangning eller drab af individer af disse arter i naturen.
2. Forsætlig forstyrrelse af arterne, særligt i perioder med yngel, opfostring, dvale og migration.
3. Beskadigelse eller ødelæggelse af artens yngle- eller rasteområder.

Alle projekter skal vurderes med henblik på at udelukke enhver af ovenstående

påvirkninger, før der kan gives tilladelse.

Dette indebærer, at viden om odderens tilstedeværelse og habitatbrug er nødvendig i de fleste projekttyper, som kan påvirke potentielle odderhabitater.

Vi præsenterer eksempler på overvågning af odder ved hjælp af kamerafælder og feltundersøgelser på en række projektkaliteter samt mulige anvendelser af resultaterne i forbindelse med Bilag IV-vurderinger. Overvågningen giver værdifuld indsigt i odderens brug af et område og i visse tilfælde også oplysninger om antal og alderssammensætning (unger/voksne) inden for projektområder.

ECOLOGY, DIET, AND POPULATION VIABILITY OF FERAL AMERICAN MINK (NEOGALE VISON) IN DENMARK

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The American mink (*Neogale vison*) is a non-native species in Denmark. The wild population was established following the introduction of mink farming in Denmark. Originally, the mink was brought to Denmark during the establishment of fur production in the 1920–1930s. Mink found in the wild in Denmark are escaped individuals of the American mink kept on fur farms for pelt production. Hunting bags increased sharply in the late 1980s, from around 1,300–1,500 mink annually to 7,913 mink in 1999. Thereafter, the hunting bag declined to 708 mink in 2022/23. VORTEX simulations show that with present reproduction and mortality, the feral mink populations in Jutland and

Zealand could decrease and go extinct within 15 to 30 years, while the mink population on Bornholm will continue to persist. American mink may lose terrain in the competition with native predators on mainland. On Bornholm, there are no other native predators. Results from Bornholm indicate that mink are capable of adaptation to a Danish ecosystem without competition from other wild predators. No significant differences were found between the diets of escaped captive-born mink and wild-born mink in nature. Fish, voles, birds, and crustaceans constituted the main components of the mink diet.

ØKOLOGI, FØDEVALG OG BESTANDSLEVEDYGTIGHED HOS FORVILDEDE AMERIKANSKE MINK (NEOGALE VISON) I DANMARK

Den amerikanske mink (*Neogale vison*) er en ikke-hjemmehørende i Danmark. Den vilde bestand opstod i forbindelse med indførelsen af minkavl i landet. Oprindeligt blev minken bragt til Danmark i forbindelse med etableringen af pelsproduktionen i 1920'erne og 1930'erne. De mink, der findes i naturen i Danmark, stammer fra dyr, der er undsluppet fra pelsfarme. Antallet af nedlagte mink steg kraftigt i slutningen af 1980'erne – fra omkring 1.300–1.500 mink om året til 7.913 mink i 1999. Siden da er antallet faldet til 708 mink i jagtsæsonen 2022/23. VORTEX-modeller viser, at med den nuværende reproduktion og dødelighed

kan de vilde minkbestande i Jylland og på Sjælland falde og uddø inden for 15–30 år, mens bestanden på Bornholm forventes at fortsætte med at eksistere. På fastlandet kan den amerikanske mink blive presset af konkurrencen fra hjemmehørende rovdyr. På Bornholm findes der ingen andre naturlige rovdyr. Resultaterne viser, at minken kan tilpasse sig et dansk økosystem uden konkurrence fra andre rovdyr. Der blev ikke fundet væsentlige forskelle mellem føden hos undslupne, opdrættede mink og vilde mink født i naturen. Fisk, mus, fugle og krebsdyr udgjorde de vigtigste dele af minkens kost.

BADGER BEHAVIOUR ACROSS HUMAN LANDSCAPES

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The project compared the behaviour of badgers (*Meles meles*) between an undisturbed island habitat and a human-impacted mainland habitat. Two distinct habitats in Denmark: The undisturbed island of Vorskø and a highly human-impacted mainland of Jutland. Badger behaviour on the mainland and island was quantified using LabGym (v2.5), a machine-learning tool for automated behavioural classification. Five predefined behaviours were classified: Foraging, Grooming, Locomotion, Vigilance, and Social behaviour, for approximately 2,000 videos. LabGym generated confidence scored classifications and exported timestamps, counts, and durations for each behaviour for later statistical analysis. The figure illustrates an example of LabGym

categorising the behaviour Vigilance with 99% accuracy.

This study revealed: 1) Clear behavioural differences between island and mainland badgers, shaped by varying levels of human disturbance. 2) Island individuals showed more continuous activity and greater variation in Locomotion, while mainland individuals displayed more variable Social behaviour and heightened Vigilance. 3) These findings emphasise the importance of behavioural plasticity and context-dependent responses in disturbed environments. As badgers are ecosystem engineers, preserving behavioural diversity may support broader ecological communities and should be considered in conservation strategies.

GRÆVLINGEADFÆRD PÅ TVÆRS AF MENNESKEPÅVIRKEDE LANDSKABER

Projektet sammenlignede grævlingers (*Meles meles*) adfærd i to meget forskellige danske habitater: den uforstyrrede ø Vorskø og et menneskepåvirket område på fastlandet i Jylland. Grævlingernes adfærd blev analyseret ved hjælp af LabGym (v2.5), et maskinlæringsværktøj til automatisk klassificering af adfærd. Fem adfærdstyper blev undersøgt: fødesøgning, soignering, bevægelse, årvågenhed og social adfærd – baseret på omkring 2.000 videoklip. LabGym leverede klassifikationer med tilhørende sikkerhedsscorer og eksporterede tidsstempler, antal og varighed for hver adfærd til senere statistisk analyse. Figuren viser et eksempel, hvor LabGym klassificerer adfærden *årvågenhed* med 99 % sikkerhed. Studiet viste:

1. Tydelige adfærdsforskelle mellem ø- og fastlandsgrævlinger, påvirket af graden af menneskelig forstyrrelse.
2. Grævlingerne på øen havde mere kontinuerlig aktivitet og større variation i bevægelse, mens fastlandsgrævlingerne viste mere varieret social adfærd og øget årvågenhed.
3. Resultaterne understreger, hvordan grævlingernes adfærdsmæssige fleksibilitet påvirkes af forskellige miljøer. Da grævlinger fungerer som økosystemingeniører, kan bevarelse af adfærdsmæssig diversitet understøtte bredere økologiske fællesskaber og bør indgå i naturforvaltningsstrategier.

DISCUSSION



Photo: Jan Skriver

DISCUSSION APRIL 8 (1. HOUR).



Moderator Hans Peter Hansen

Moderator Hans Peter Hansen Ph.D. in Social Science, Expert on Participative Processes, Wildlife Management, Wildlife Conflict & Wildlife Crime

Hans Peter Hansen holds a degree in public planning and a PhD in social science. He worked for many years as a researcher, first at Roskilde University, Denmark, then at the Swedish University of Agricultural Sciences, and later at Aarhus University, Denmark. His primary focus has been on the sociopolitical aspects of natural resource management in general and hunting and wildlife management in particular. With a foothold in action research, he has led several research projects exploring novel ways to manage wildlife conflicts and wildlife crime, and to overcome political populism, fake news, and the general legitimacy challenges of natural resource management. Today he works as a private consultant.

INTRODUCTION AND FRAMING FOR DISCUSSION BY HANS PETER HANSEN

Before opening the discussion, I would like to note that this session will be recorded by Copilot or at least we will make every effort to record it. There is a computer set up in the room, and the discussion will be documented, hopefully transcribed, with the assistance of an automated system in Copilot. The intention is to document as much as possible of what we discuss here today. For this reason, it is very important that when you speak, you do so loud and clearly. Otherwise, the documentation may be incomplete.

Before we begin, I would like to establish three ground rules for our discussion, and I hope you will respect them.

- **First**, please do not interrupt each other. I will serve as the moderator, and I will be the only one intervening if necessary.
- **Second**, there should be no personal attacks, let us focus on the issues and arguments themselves.
- **Third**, I encourage you to share your thoughts and reflections in short, concise statements, so that as many participants as possible have the opportunity to contribute.

Having listened to the presentations and discussions today, I would like to offer a few reflections to frame our dialogue.

One key question concerns our role as scientists and researchers: are we truly objective scientists? Or is there, despite our best efforts, an inevitable element of normativity embedded in our work? This tension appears to surface repeatedly in both research and practice. Related to this is the provocative question of equality and valuation: are all animals equal, but are some animals “*more equal than others*”? We have seen this issue implicitly emerge in several of today's presentations and discussions.

We have also touched upon management principles -some of "*What was the truth yesterday might not be the truth today, and what is the truth today might not be the truth tomorrow*". Things change all the time. The old management practices which may seem established today are in fact increasingly under pressure. Knowledge and "truths" are not static: what was taken as true yesterday may no longer hold today, and today's truths may be challenged tomorrow.

These questions extend to discussions of risk assessments of invasive species, as well as to debates around invasive versus non-invasive species, native versus non-native species, and notions of authenticity. Concepts that once seemed stable- such as the preference for native species are now being questioned, and in some cases rejected.

Furthermore, we have addressed regulatory frameworks, legal instruments, challenged by animal welfare considerations. Alongside this is an apparent shift in management approaches: from detailed micromanagement and the belief that everything can and should be controlled, toward more holistic perspectives on human–nature relations.

With this background, I propose that our discussion focus over the next hour on the paradoxes we encounter in social practices related to environmental and wildlife management. Are we witnessing paradigm shifts in values and governance? How do questions of scale shape our decision-making? And how do power relations influence who defines truth, authority, and appropriate social practice? Finally, there is a more fundamental question that I continually return to: what is the role of human beings in all of this? If we accept that humans are themselves part of nature, then the traditional division between culture and nature appears increasingly artificial. How, then, do we understand and justify our interactions with the rest of the natural world? And then there's also a movement from micromanagement, and the idea that we can control everything, to the details- to a more holistic perspectives on management.

These are some of the key themes and questions that may guide our discussion. I invite you to share your thoughts and reflections on any aspect of today's sessions that you found particularly striking or challenging.

Please feel free to begin.

CONFERENCE DISCUSSION SUMMARY

Participant: I am a biologist, and I do not question whether we are biological beings. We are part of the biosphere and subject to biological laws; in that sense, we are part of nature and also next science. However, I would also argue that it is useful to maintain a distinction between nature and culture, precisely because of the power humans possess. We are engaging in biological modifications and transformations on a scale never seen before. We have science, but we also have a responsibility to society to act, to reflect, and to take responsibility. So, while we must recognize that we are part of nature, it is still useful to distinguish between culture and nature. We need to work on both levels simultaneously.

Moderator: Any other reflections?

Participant: Listening to today's talks, I think the question of scale is. We gain enormous benefits from cross-boundary monitoring and data sharing. If we restrict ourselves to national perspectives, we miss many important patterns. When monitoring species, we see range shifts and changes that can only be understood at a larger scale. Thinking in this broader context is challenging, but essential.

Participant: I sometimes ask myself whether birds are considered more valuable than mammals. There are many small mammal predators about which we know very little- we don't know how threatened they are, and we struggle to manage or protect them. In contrast, we know a great

deal about birds. It is as if our attention naturally gravitates toward them. Another issue is that it is often easier to obtain permission to shoot mammals outside the hunting season than it is to shoot birds, even when the bird is a predator of rare or endangered species. I don't know if this applies everywhere, but that is certainly the case in Denmark.

Participant: I think it is important to distinguish between value-driven decisions influenced by public sentiment and the professional, scientific perspective. From a societal point of view, some species are clearly valued more highly than others. I have attended many conferences on wolves, but never one on slugs. This reflects societal priorities, not biological importance. As biologists, we should accept that societal values differ, while trying to keep our scientific discussions as rigorous and objective as possible focusing on mechanisms, ecological relationships, and how best to inform society, whatever its priorities may be.

Participant: I am a molecular scientist that works with very large datasets covering organisms from microscopic life to megafauna. When I think about the sheer number of species that make up biodiversity, I sometimes question whether our current practices truly reflect that diversity. Protecting a small number of visible species may be understandable, but it risks neglecting over 90% of biodiversity species we rarely see and often overlook.

Moderator: Thank you. This perspective highlights how deeply cultural these issues are. In Denmark, mammals are relatively rare and difficult to observe. Birds, by contrast, are everywhere people enjoy seeing and hearing them, and they pose no threat. In regions like Africa, people have strong cultural and economic connections to large mammals. In Denmark, we have lacked large mammals for so long that we have largely lost the culture of living with them. Appreciating them now requires learning and adaptation, and different species pose different challenges.

Participant: I am a biologist and a manager. I have to make decisions based on the tools available. The Red List provides an important guideline, giving authorities a mandate to act. We prioritize critically threatened species to prevent extinction, even though others may be declining without our awareness. In Denmark, species such as stone marten and fox are declining, which adds complexity to management decisions. When societal values shift quickly, it becomes very difficult to manage nature consistently.

Moderator: Managers need stable guidelines, especially during paradigm shifts in values and public opinion particularly regarding lethal control of mesopredators.

Participant: However, legislation has not kept pace with changing public values. For example, despite foxes being near-threatened in Denmark, there are still extensive legal possibilities for controlling them. There is little evidence that practices such as hunting fox cubs have positive conservation effects, yet the laws persist. In that sense, legislation lags behind public opinion. These shifts seem especially pronounced among younger and urban inhabitants. And you do not see that reflected in the legislation and management. There's no documented conservation effects of, for example, regulation on fox cubs.

Moderator: So, legislation is behind the opinions of the public and the values are not represented in the government.

Participant: I am a philosopher and come from agricultural contexts, and I teach medical and animal science students. A recurring challenge is that scientists often study what society or funders want answers to. In agriculture, research questions are defined by agricultural interests. But science on slugs is just as valuable as science on cattle or wolves. As scientists, we should stand up for the intrinsic value of knowledge. I once knew an astrophysicist studying distances between stars—work with no immediate practical use, but still deeply valuable. When we are not constrained by funding priorities, we should insist on doing science for its own sake.

Participant: We can only work with the tools and data we have, and we must start with what we understand. However, studying one species often provides indirect knowledge about many others—interactions, food webs, and trophic levels. It is important that we document these connections as thoroughly as possible.

Participant: Until very recently, the Americas hosted a remarkable diversity of large mammals, including giant sloths weighing over 1,000 kilograms. Evidence suggests they had a profound impact on ecosystems. Their disappearance is extremely recent in evolutionary terms, and this context matters when we discuss so-called “alien” species today, such as feral pigs or horses in South America. Given this history, I am skeptical of claims that these species are inherently harmful. Ecosystems evolved with large herbivores and browsers until very recently.

Moderator: Any further reflections?

Participant: I’m curious whether similar changes in values and management approaches are happening in the UK, Germany, or Slovenia.

Participant: In the UK, there is increasing debate about why some species can be controlled while others are protected. Foxes and frogs, for example, can be managed, whereas birds of prey like buzzards are protected despite being predators. This has sparked discussion about why certain species are valued more than others.

Moderator: There are also ongoing debates about reintroducing species, with varying degrees of openness.

Participant: There have been discussions about reintroducing certain species in UK. People are not always very open-minded about the idea, but some initiatives are much further along than others. It is expected that reintroducing certain species will happen in some cases. However, other cases are less likely for example, it is not believed that wolves will be reintroduced within one’s lifetime. Overall, however, the field is expected to continue developing over time.

Participant: I work for Animal Protection Denmark. I think it is a valid ethical question whether it is ever acceptable to kill a female mammal when she has dependent young who will suffer as a result. This happens in the name of the “greater good,” but is it truly acceptable?

Moderator: Changing values play a major role here.

Participant: Strict legislation in Denmark has sometimes had the opposite of the intended effect. We now kill tens of thousands of raccoon dogs annually, and it is not always clear that killing pregnant females is ethically defensible. The same for foxes, if a fox remains on an island hosting a major breeding colony of rare birds, the choice may be between one fox and tens of thousands of birds. Often, that decision seems unavoidable.

Participant: The underlying problem is that we have not set aside sufficient land to support large bird populations in the first place. We need to reverse that logic. Animal Protection Denmark is not opposed to hunting or killing animals per se we even have volunteer hunters who humanely euthanize injured deer after traffic accidents. However, we draw a clear ethical line at killing animals with dependent young. It is more efficient to shoot it because when you shoot it, you kill the pups too, but it's not ethical. Efficiency alone cannot justify unethical practices.

Participant: We must first do everything we can to restore habitats and natural processes. Only then can we responsibly move toward larger-scale, more natural management approaches. We may finally be approaching a turning point where this becomes possible.

Moderator: Talking about how we perceive nature, and how some animals are treated as more equal than others, my view of the world has changed over time. I have heard that there are two schools of thought when it comes to raccoon dogs. I remember that six or seven years ago, when

I was teaching biology students at Aarhus University, some of them said there was no problem with the raccoon dog and asked why we were making such efforts to eradicate it. At the time, I thought they were wrong, because we had been brainwashed by the media to believe that the raccoon dog was extremely dangerous to nature in general. Today, I ask myself whether we have repeated something so often that it has become accepted as truth, even without sufficient evidence. That is the question. It seems to be reflected across different schools of thought, all showing interest in the issue. But have we institutionalized our efforts to eliminate raccoon dogs? You cannot blame the hunters; they are simply doing what the authorities instruct them to do. This has unsettled me. I am unsure what to believe. After this conference, perhaps you can tell me. I will return it to you shortly. There is almost too much to reflect on.

Participant: Management is very much about immediate problems, for example new species moving into new habitats. But have we lost sight of the bigger picture as well? What is the end goal? Once we have all been reshuffled on this small planet—our children as inhabitants, and our grandchildren—what will Europe, or the world, look like in 500 years? And very much as we talk about openness, there is always change and shifting. Should we try to keep things managed in fixed states, or should we let the world continue to evolve and do what it has always done?

Moderator: I still think that with the latter option, human beings must be addressed. We are still part of the system, part of the game. Simply letting go would, I would argue, be impossible. We must find a balance.

Participant: The Earth's systems have already changed. CO2 climate change is almost on a runaway impact, or those systems are much beyond not going in this era where the Anthropocene exists. We probably now passengers as part of that trajectory, as are many of the people who started. So, I know there's no perfect answer, but we ought to focus on the here and now. What is coming ahead of us, it's going to be shaped by what we're doing today.

Participant: I want to respond to the question about attitudes toward regulation in other countries, because I live and work in Northern Sweden and have done so for nine years, but I come from the Netherlands and still work there. I see two almost opposite approaches to wildlife management and hunting. In the Netherlands, almost everything is protected unless there is a strong reason not to protect it. Foxes and stone martens may be hunted, although hunting is officially not allowed during short breeding periods, and certainly not outside of specific regulations. You are not allowed to kill or capture an animal even if it causes damage to your own property. It is totally different in Sweden. There is cultural difference between the countries, I'm 100 percent sure that, if I would have grown up in Northern Sweden, I would have been a hunter and looked at nature in a completely different way than in the Netherlands,

Participant: I think you were right. There seem to be different cultures. It was actually a sort of response to the discussion that was going on before with the breeding on islands. And I thought about the talk earlier given from RSBP view, where there's focus on different ways to control predators. So first you have habitat management, then you try to manage the prey base, and you have exclusion of predators, and then you have lethal control. And I think that's very different than what we are doing in Denmark, at least. There are, for example a lot of different methods that you can keep foxes out of areas also with the ground nesting birds, for example, on islands where you have these floating protections around islands. So, a fox can swim out there, but can't get on the island. I think we just it would be really good if we in Denmark could then try and use some of these non-lethal methods more on a species that is actually in decline.

Participant: Foxes and raccoon dogs are a paradox. We can have lengthy discussions whether or not they belong in Denmark, which is ok. The problem is that we are losing species because of them or maybe we are not. The concern is the species that are disappearing. It's not actually foxes or raccoon dogs. So, there should be a focus, from my opinion, on innovation to protect the endangered species, as opposed to try Stone Age tools and kill what may be the problem.

We can all agree that Denmark is a really fragmented country, and we really need the cohesive nature to be able to sustain large populations. That's one part of it. But for black terns, southern Denmark. It works with breeding islands. We should focus on innovation. We're in 2026 and not in the stone age. Technology can help us in the future. There should be innovations, not just going the same loop and talking about, killing it in the winter or kill it in the spring.

It's just a supporting comment. This is simply just to try to keep in the technical box and keep the values outside. I think it's a common trap when you do pest management, that you shift your focus from what should be the objective of solving the problem of species protection to healing the guilty. I think it's basically a lack of professionalism of those that are steering these processes on a technical basis, but also politically. What we have seen in Denmark for the last year, for example, where there was a political focus, where there was a need or wish simply to give releases to all permits to shoot some individuals where technically there wasn't really any good arguments for that kind of thing. And I think we see this, for example, also with Red Fox and generally all carnivores, where we have these extended possibilities to kill them for really no good reasons. find out what are there any reasons, what can you achieve with it, or, and, and are there better alternative solutions? It is intellectual laziness. We should have should have evidence-based policy. When we get flawed data from management. They are interpreted as scientific, which they are not. The wolf is a very good example of that because it's so extreme, not because it's a wolf,

Moderator: So again, we have some paradoxes, we have some contradictions.

Participant: I'm very skeptical about that as a starting point, mainly because of the idea of rejecting the whole premise. From what we know about raccoon dogs, their history and classification suggest that they do belong to this broader biogeographical region. They may not originate from the same area, but they are still closely related. What I'm referring to is that, if we look at species from the late glacial or post-glacial era, independently of raccoon dogs themselves, the genus they belong to was actually quite similar to species we had here not so long ago, and there was even some overlap. So, in that sense, the distinction isn't very clear-cut.

That's why it becomes somewhat uncertain or unclear. It can still be a useful perspective, but it's something that needs to be examined more closely—especially to see whether there are specific biological factors linked to raccoon dogs in Europe.

Moderator: So again, we have some paradoxes, we have some contradictions, and I think that, to the extent you agree, that it would be something to get back to tomorrow

Participant: I'm quite skeptical about that as a starting point, mainly because of the idea of rejecting it outright. The association and history of raccoon dogs do, in a sense, belong to our broader biogeographic region. They are not originally from our side of it, but still, when we talk about species in this region, we are dealing with long historical and taxonomic connections. It's not exactly the same species line, but it relates at least at the genus level. In fact, raccoon dogs were present relatively recently in nearby regions, with some degree of overlap, so the distinction is not entirely clear-cut. That's a useful perspective—it's something we can investigate further and try to understand better.

For example, we can ask whether any of the biological characteristics of raccoon dogs in Europe are linked to their introduction by humans roughly 150 years ago.

I might have taken a more relaxed view on this, but now I question how we should understand raccoon dogs today. I am skeptical about simply classifying them entirely as non-native.

We need to understand the problem more deeply and in a more nuanced way. If we decide that raccoon dogs are a highly dangerous invasive species that are inherently problematic in Europe, then a continent-wide eradication effort could be considered as a solution. However, that would be a very radical approach, and it would require strong and consistent evidence pointing in that direction.

Moderator: So, we should from time to time test our own wording because narratives are strong. Narratives are powerful.

Participant: We excluded wolves from this conference, because it has been so covered in many public settings. People are very upset about the wolves. But I think wolves also will help us to see what we are doing. Wolves appeal to people because they look like dogs. People ask me: *Aren't you upset about the shooting of the wolf the other day?* And yes, I am, but I'm more upset about the 30,000 foxes that are shot. Some of on islands necessarily, but most foxes are shot just because we want some more hares, some more partridges or other creatures. I have nothing against hunting. I have many friends that are hunters. and I respect them very much. But the thought that we own some species so much that we can just eradicate or control them in a way that we can gain more of another species is not ok in my opinion. I think that wolves bring that ownership to light and how we prioritize our own interests. I hope this is will, put light on all the other species that we just treat as if we own them as well.

Moderator: So, it's a kind of magnifier. Well, our time is running out. I have two on the list now.

Participant: Both in Denmark and the UK, the biggest topic has been the return/reintroduction of predators. In the UK, there have been restrictions on hunting, which of course brings new conflicts. I think there is a role for conservation technology as well, but it should be done in the least harmful way.

I mean, in the ocean, the space issue is not there because we can goow everywhere. I mean, there's also a lot of impact of course, but in terrestrial habitat it is really about spaces, that are fragmented and lost? If you include agriculture or forest, then there's more space. And a lot of the problems that we discussed today could potentially be solved if we used qualified acknowledge.

Moderator: I was just wondering how many of you are students What are your reflections on these things we are talking about? You are the future. Come on.

Participant: All of this conversation about the species and 'natural systems' becomes a paradox and the more we think about it, the more we don't know. We don't have a baseline or observations going long enough back in time.

Moderator: Baseline is shifting all the time. It also has to do with values. I think that is one of the core elements dilemmas. We have to deal with that uncertainty all the time, and we cannot throw the responsibility away. It's our responsibility to define what we think is right. But if we can do it together, I think we have better off.

Participant: Throughout today, we have had a long discussion on the protection of the bird species, from foxes and the raccoon dogs. But I've have thought a lot about why is the focus so much on to the birds and not as much on to protecting the foxes or the raccoon dogs. I do realize that the raccoon dogs have migrated here and so have the wolves. But I think it's a cultural thing as it has been said Foxes go into hen houses and our agricultural landscapes and we see them as pests. I would say we have forgotten to see how it was before we came and species just roamed around. And I think we were focused on protecting the things we had, we like to look at and appreciate in that sense.

Moderator: That also has to do with power, Jes and I, we had a talk, and I was, thinking about the 90s when we in this country (Denmark) had a quite strong debate on cultural practices in relation to foxes. There was a heated debate in the Wildlife Council on how we treated foxes. Then a study was from the Copenhagen areas was revealed saying that the foxes were actually destroying a lot of nests in a nature reserve near Copenhagen. The way I recall Danish bird watching turned 190 degrees. So, the whole discussion changed and the discussion about our

practices on foxes were suddenly, no longer a hot topic on the agenda. I had the same feeling when it came to raccoon dog. If you can convince bird watchers that a species is bad for the birds, then there are almost an open door.

Participant: I have a point to that because then actually right now there's a lot of organisations in this green network who are looking at our hunting regulations on mammals. They want to shift the focus and are also bringing some media attentions to the topic. it. Some of the same organizations that couldn't agree then in the Wildlife Council, they have brought in a new focus on our practices. So there's a group there working on that now, so there's still hope.

Moderator: That's a nice way to close this discussion. There's still hope. thank you very much for the discussion. You will continue tomorrow, and the discussion tomorrow will be moderated by Jes Harfeld.

Thank you very much.

DISKUSSION 8. APRIL (1 TIME)

INTRODUKTION OG RAMMESÆTNING FOR DISKUSSIONEN

Ved Hans Peter Hansen

Før vi begynder diskussionen, vil jeg gerne gøre opmærksom på, at denne session bliver optaget – eller vi vil i hvert fald gøre vores bedste for at optage den. Der står en computer i lokalet, og diskussionen vil blive dokumenteret og forhåbentlig også transskriberet ved hjælp af et automatiseret system i Copilot. Formålet er at dokumentere så meget som muligt af det, vi taler om i dag.

Derfor er det meget vigtigt, at I taler klart og tydeligt, når I tager ordet. Ellers risikerer vi, at dokumentationen bliver mangelfuld.

Inden vi går i gang, vil jeg gerne fastlægge tre grundregler for diskussionen, som jeg håber, I vil respektere:

- **For det første:** Afbryd ikke hinanden. Jeg fungerer som moderator og vil være den eneste, der må afbryde, hvis det bliver nødvendigt.
- **For det andet:** Ingen personlige angreb. Vi skal fokusere på problemstillinger og argumenter – ikke på personer.
- **For det tredje:** Jeg opfordrer jer til at dele jeres tanker i korte og præcise indlæg, så så mange som muligt får mulighed for at deltage.

Efter at have lyttet til dagens oplæg og diskussioner vil jeg gerne dele nogle refleksioner, som kan danne rammen for vores samtale.

Et centralt spørgsmål handler om vores rolle som forskere og videnskabsfolk: Er vi egentlig objektive? Eller er der – trods vores bedste intentioner – altid et normativt element i vores arbejde? Denne spænding dukker igen og igen op i både forskning og praksis.

Tæt knyttet til dette er spørgsmålet om lighed og værdi: Er alle dyr lige, *"eller er nogle dyr "mere lige end andre"*? Dette tema har været tydeligt – om end indirekte – i flere af dagens oplæg og diskussioner.

Vi har også været inde på forvaltningsprincipper, som måske virker velkendte, men som i stigende grad er under pres. Viden og "sandheder" er ikke statiske: Det, vi mente var korrekt i går, gælder måske ikke i dag, og det, vi tror på i dag, kan blive udfordret i morgen. Forandring er konstant.

Disse spørgsmål går også igen i diskussioner om risikovurderinger af invasive arter, om invasive versus ikke-invasive arter, hjemmehørende versus ikke-hjemmehørende arter og om begrebet autenticitet. Idéer, der tidligere virkede faste – som for eksempel en generel præference for hjemmehørende arter – bliver nu udfordret og nogle gange direkte afvist.

Derudover har vi drøftet lovgivning og regulering, som bliver udfordret af hensyn til dyrevelfærd. Samtidig ser vi et skifte i forvaltningstænkningen: væk fra detaljeret mikrostyring og forestillingen om, at alt kan og bør kontrolleres, og hen imod mere helhedsorienterede syn på forholdet mellem menneske og natur.

På den baggrund foreslår jeg, at vores diskussion den næste time fokuserer på de paradokser, vi møder i sociale praksisser inden for miljø- og vildtforvaltning. Oplever vi et skifte i værdier og styringsformer? Hvordan påvirker skala – lokalt, nationalt, internationalt – vores beslutninger? Og hvordan spiller magtforhold ind i forhold til, hvem der definerer sandhed, autoritet og "korrekt" praksis?

Endelig er der et mere grundlæggende spørgsmål, som jeg ofte vender tilbage til: Hvilken rolle spiller mennesket i alt dette? Hvis vi accepterer, at mennesker er en del af naturen, bliver den traditionelle opdeling mellem kultur og natur mere og mere kunstig. Hvordan forstår og begrunder vi så vores indgreb i den øvrige natur? Og så er der også en bevægelse væk fra mikroforvaltning og idéen om, at vi kan kontrollere alting ned i detaljerne, hen imod et mere holistisk perspektiv på forvaltning.

Det er nogle af de centrale temaer, som kan guide vores diskussion. Jeg inviterer jer til at dele jeres tanker og refleksioner over det, I har fundet særligt interessant eller udfordrende i dagens program.

I er meget velkomne til at begynde.

KONFERENCE DISKUSSIONS SUMMARY

Deltager:

Jeg er biolog, og jeg er ikke i tvivl om, at vi er biologiske væsener. Vi er en del af biosfæren og underlagt biologiske lovmæssigheder; på den måde er vi en del af naturen. Men jeg mener også, at det er nyttigt at bevare en skelnen mellem natur og kultur – netop fordi mennesker har så stor magt. Vi ændrer og manipulerer biologiske systemer i et omfang, man aldrig har set før. Vi har videnskab, men vi har også et ansvar over for samfundet for at handle, reflektere og tage ansvar. Derfor er det vigtigt både at anerkende, at vi er en del af naturen, og samtidig skelne mellem natur og kultur. Vi er nødt til at arbejde på begge niveauer samtidig.

Moderator:

Er der andre refleksioner?

Deltager:

Når jeg har lyttet til dagens oplæg, er jeg især blevet opmærksom på, hvor vigtig skala er. Vi får enorme fordele ved overvågning på tværs af landegrænser og ved at dele data. Hvis vi kun ser nationalt, går vi glip af vigtige mønstre. Når vi overvåger arter, ser vi ændringer i deres udbredelse, som kun kan forstås i et større geografisk perspektiv. Det er svært at tænke så bredt, men det er nødvendigt.

Deltager:

Jeg spørger nogle gange mig selv, om fugle bliver opfattet som mere værdifulde end pattedyr. Der findes mange små rovpattedyr, som vi ved meget lidt om – vi ved ikke, hvor truede de er, og det er svært at forvalte eller beskytte dem. Omvendt ved vi rigtig meget om fugle. Det er som om, vores opmærksomhed automatisk retter sig mod dem. Et andet problem er, at det ofte er lettere at få tilladelse til at skyde pattedyr uden for jagtsæsonen, end det er at skyde fugle – selv når fuglene er rovdyr, der truer sjældne eller truede arter. Jeg ved ikke, om det gælder alle steder, men det er i hvert fald tilfældet i Danmark.

Deltager:

Jeg synes, det er vigtigt at skelne mellem beslutninger, der er styret af værdier og offentlighedens følelser, og det faglige, videnskabelige perspektiv. Set fra samfundets side bliver nogle arter tydeligt vurderet højere end andre. Jeg har været til mange konferencer om ulve, men aldrig til én om snegle. Det siger noget om samfundets prioriteringer – ikke om biologisk betydning. Som biologer må vi acceptere, at samfundets værdier er forskellige, men samtidig forsøge at holde vores faglige drøftelser så grundige og objektive som muligt med fokus på mekanismer, økologiske sammenhænge og på, hvordan vi bedst kan informere samfundet – uanset hvilke prioriteter det måtte have.

Deltager: Jeg er molekylærbiolog og arbejder med meget store datasæt, der dækker organismer fra mikroskopisk liv til megafauna. Når jeg tænker på det enorme antal arter, der udgør biodiversiteten, stiller jeg nogle gange spørgsmålstejn ved, om vores nuværende praksisser reelt afspejler denne mangfoldighed. At beskytte et lille antal synlige arter kan være forståeligt, men det risikerer at overse over 90 % af biodiversitetens arter, som vi sjældent ser og ofte overser.

Moderator: Tak. Dette perspektiv understreger, hvor dybt kulturelle disse problemstillinger er. I Danmark er pattedyr relativt sjældne og svære at observere. Fugle derimod er overalt – folk nyder at se og høre dem, og de udgør ingen trussel. I regioner som Afrika har mennesker stærke kulturelle og økonomiske relationer til store pattedyr. I Danmark har vi manglet store pattedyr i så lang tid, at vi i vid udstrækning har mistet kulturen for at leve sammen med dem. At værdsætte dem nu kræver læring og tilpasning, og forskellige arter medfører forskellige udfordringer.

Deltager: Jeg er biolog og leder. Jeg er nødt til at træffe beslutninger ud fra de redskaber, der er til rådighed. Rødlisten udgør en vigtig rettesnor og giver myndighederne et mandat til at handle. Vi prioriterer kritisk truede arter for at forhindre udryddelse, selvom andre arter kan være i tilbagegang uden, at vi er opmærksomme på det. I Danmark er arter som husmår og ræv i tilbagegang, hvilket gør forvaltningsbeslutninger mere komplekse. Når samfundets værdier ændrer sig hurtigt, bliver det meget vanskeligt at forvalte naturen konsekvent.

Moderator: Forvaltere har brug for stabile retningslinjer, især under paradigmeskift i værdier og offentlig opinion – særligt når det gælder regulering gennem aflivning af mellemstore rovdyr.

Deltager: Lovgivningen har dog ikke fulgt med de ændrede samfundsværdier. For eksempel er der stadig omfattende lovlige muligheder for at regulere ræve, selvom de i Danmark er tæt på truede. Der er kun begrænset evidens for, at praksisser som regulering af rævehvalpe har positive effekter for naturbevaring, men lovgivningen består alligevel. På den måde halter lovgivningen efter den offentlige mening. Disse ændringer synes især markante blandt yngre og byboere. Og det afspejles ikke i lovgivningen og forvaltningen. Der findes ikke dokumenterede bevaringseffekter af for eksempel regulering af rævehvalpe.

Moderator: Så lovgivningen er bagefter den offentlige mening, og værdierne er ikke repræsenteret i styringen.

Deltager: Jeg er filosof, har baggrund i landbrug og underviser studerende inden for medicin og dyreverdenskab. En tilbagevendende udfordring er, at forskere ofte undersøger det, som samfundet eller bevillingsgivere ønsker svar på. I landbruget bliver forskningsspørgsmål defineret af landbrugets interesser. Men forskning i snegle er lige så værdifuld som forskning i kvæg eller ulve. Som forskere bør vi stå fast på videns egen værdi. Jeg kendte engang en astrofysiker, der studerede afstande mellem stjerner – arbejde uden umiddelbar praktisk anvendelse, men stadig dybt værdifuldt. Når vi ikke er bundet af finansieringsprioriteter, bør vi insistere på at lave forskning for forskningens egen skyld.

Deltager: Vi kan kun arbejde med de redskaber og data, vi har, og vi må begynde med det, vi forstår. Men studiet af én art giver ofte indirekte viden om mange andre – interaktioner, fødenet og trofiske niveauer. Det er vigtigt, at vi dokumenterer disse forbindelser så grundigt som muligt.

Deltager: Indtil for ganske nylig havde Amerika en bemærkelsesværdig mangfoldighed af store pattedyr, herunder kæmpedovendyr, der vejede over 1.000 kilogram. Der er evidens for, at de havde en dybtgående indvirkning på økosystemerne. Deres forsvinden er evolutionært set meget

nylig, og denne kontekst er vigtig, når vi i dag taler om såkaldte "fremmede" arter, såsom forvildede grise eller heste i Sydamerika. Set i det lys er jeg skeptisk over for påstande om, at disse arter i sig selv er skadelige. Økosystemerne har indtil for nylig udviklet sig sammen med store planteædere og browsere.

Moderator: Andre refleksioner?

Deltager: Jeg er nysgerrig efter, om lignende ændringer i værdier og forvaltningspraksis finder sted i Storbritannien, Tyskland eller Slovenien.

Deltager: I Storbritannien er der en stigende debat om, hvorfor nogle arter må reguleres, mens andre beskyttes. For eksempel kan ræve og frøer reguleres, mens rovfugle som musvåger er beskyttede, selvom de også er rovdyr. Det har sat gang i diskussioner om, hvorfor visse arter tillægges større værdi end andre.

Moderator: Der er også løbende diskussioner om genindførsel af arter, med varierende grad af åbenhed.

Deltager: Der har været drøftelser om genindførsel af visse arter i Storbritannien. Folk er ikke altid særlig åbne over for ideen, men nogle initiativer er langt mere fremskredne end andre. Det forventes, at genindførsel vil ske i nogle tilfælde. I andre tilfælde er det mindre sandsynligt—for eksempel mener man ikke, at ulve vil blive genindført inden for ens levetid. Overordnet forventes området dog at udvikle sig over tid.

Deltager: Jeg arbejder for Dyrenes Beskyttelse. Jeg mener, det er et legitimt etisk spørgsmål, om det nogensinde er acceptabelt at dræbe et hunpattedyr, når det har afhængige unger, som vil lide som følge. Det sker i "det fælles godes" navn, men er det virkelig acceptabelt?

Moderator: Ændrede værdier spiller en stor rolle her.

Deltager: Stram lovgivning i Danmark har nogle gange haft den modsatte effekt af det tilsigtede. Vi afliver nu titusindvis af mårhunde hvert år, og det er ikke altid klart, at det er etisk forsvarligt at dræbe drægtige hunner. Det samme gælder ræve: hvis en ræv opholder sig på en ø med en stor ynglekoloni af sjældne fugle, kan valget stå mellem én ræv og titusindvis af fugle. Ofte virker den beslutning uundgåelig.

Deltager: Det underliggende problem er, at vi ikke fra starten har afsat tilstrækkeligt med areal til at understøtte store fuglebestande. Den logik er vi nødt til at vende om på. Dyrenes Beskyttelse er ikke imod jagt eller aflivning af dyr i sig selv — vi har endda frivillige jægere, som afliver tilskadekomne hjorte på en human måde efter trafikulykker. Men vi trækker en klar etisk grænse ved at dræbe dyr med afhængige unger. Det er mere effektivt at skyde, fordi man så også dræber ungerne, men det er ikke etisk. Effektivitet alene kan ikke retfærdiggøre uetiske handlinger.

Deltager: Vi må først gøre alt, hvad vi kan, for at genoprette levesteder og naturlige processer. Først derefter kan vi ansvarligt bevæge os mod mere storskala, naturlige forvaltningsformer. Vi nærmer os måske endelig et vendepunkt, hvor det bliver muligt.

Moderator: Når vi taler om, hvordan vi opfatter naturen, og hvordan nogle dyr behandles som mere lige end andre, så har mit syn på verden ændret sig over tid. Jeg har hørt, at der findes to tankeskoler, når det gælder mårhunde. Jeg husker, at for seks eller syv år siden, da jeg underviste biologistuderende på Aarhus Universitet, sagde nogle af dem, at der ikke var noget problem med mårhunden og spurgte, hvorfor vi gjorde så meget for at udrydde den. Dengang mente jeg, de tog fejl, fordi vi var blevet påvirket af medierne til at tro, at mårhunden var ekstremt farlig for naturen generelt. I dag spørger jeg mig selv, om vi har gentaget noget så mange gange, at det er blevet accepteret som sandt, selv uden tilstrækkelig evidens. Det er spørgsmålet. Det ser ud til at afspejle sig på tværs af forskellige tankeskoler, som alle interesserer sig for emnet. Men har vi institutionaliseret vores indsats for at udrydde mårhunde? Man kan ikke bebrejde jægerne; de gør blot, hvad myndighederne beder dem om. Det har gjort mig usikker. Jeg ved ikke, hvad jeg skal tro. Efter denne konference kan I måske fortælle mig det. Jeg giver ordet tilbage om et øjeblik. Der er næsten for meget at reflektere over.

Deltager: Forvaltning handler i høj grad om umiddelbare problemer, for eksempel nye arter, der bevæger sig ind i nye levesteder. Men har vi også mistet blikket for det større perspektiv? Hvad er det endelige mål? Når vi alle er blevet "blandet rundt" på denne lille planet – vores børn som beboere, og vores børnebørn – hvordan vil Europa, eller verden, se ud om 500 år? Og samtidig med at vi taler om åbenhed, er der hele tiden forandring og forskydninger. Skal vi forsøge at holde tingene fast i bestemte tilstande, eller skal vi lade verden fortsætte med at udvikle sig og gøre det, den altid har gjort?

Moderator: Jeg mener stadig, at man i det sidste scenarie er nødt til at forholde sig til mennesker. Vi er stadig en del af systemet, en del af spillet. Bare at slippe kontrollen helt ville, efter min mening, være umuligt. Vi må finde en balance.

Deltager: Jordens systemer har allerede ændret sig. Klimaforandringerne drevet af CO₂ er tæt på at udvikle sig ukontrolleret, og systemerne er allerede presset langt ud over det, der tidligere blev anset for muligt i den tid, vi kalder Antropocæn – menneskets tidsalder. Vi er formentlig allerede blevet passagerer på denne udvikling, ligesom mange af dem, der satte den i gang. Der findes ikke noget enkelt perfekt svar, men vi bør fokusere på det, vi kan gøre her og nu. Den fremtid, vi bevæger os ind i, vil i høj grad blive formet af de handlinger, vi foretager i dag.

Deltager: Jeg vil gerne svare på spørgsmålet om holdninger til regulering i andre lande, fordi jeg bor og arbejder i det nordlige Sverige og har gjort det i ni år, men jeg kommer fra Holland og arbejder stadig der. Jeg ser to næsten modsatrettede tilgange til vildtforvaltning og jagt. I Holland er næsten alt beskyttet, medmindre der er en stærk grund til ikke at beskytte det. Ræve og husmår kan jages, selv om jagt officielt ikke er tilladt i korte yngleperioder, og slet ikke uden for specifikke regler. Man må ikke dræbe eller fange et dyr, selv hvis det forvolder skade på ens egen ejendom.

Det er helt anderledes i Sverige. Der er kulturelle forskelle mellem landene. Jeg er 100 % sikker på, at hvis jeg var vokset op i det nordlige Sverige, ville jeg have været jæger og haft et helt anderledes syn på naturen end i Holland.

Deltager: Jeg synes, du har ret. Det virker som om, der er forskellige kulturer. Det var egentlig en reaktion på den tidligere diskussion om ynglekolonier på øer. Jeg kom til at tænke på oplægget tidligere fra RSPB, hvor der var fokus på forskellige måder at kontrollere rovdyr på. Først har man habitatforvaltning, derefter forsøger man at forvalte byttedyrsgrundlaget, så arbejder man med at udelukke rovdyr, og til sidst har man dødelig regulering.

Det er, efter min opfattelse, meget anderledes end det, vi gør i Danmark. Der findes for eksempel mange metoder til at holde ræve væk fra områder med jordrugende fugle, for eksempel på øer, hvor man kan lave flydende barrierer rundt om øerne. En ræv kan svømme derud, men ikke komme op på øen. Jeg tror, det ville være rigtig godt, hvis vi i Danmark begyndte at bruge flere af de ikke-dødelige metoder – især for en art, der faktisk er i tilbagegang.

Deltager: Ræve og mårhunde er et paradoks. Vi kan have lange diskussioner om, hvorvidt de hører hjemme i Danmark, og det er helt fint. Problemet er, at vi mister arter på grund af dem... eller måske gør vi ikke. Bekymringen handler egentlig om de arter, der forsvinder – ikke om rævene eller mårhundene i sig selv.

Efter min mening bør fokus være på innovation for at beskytte truede arter i stedet for at bruge "stenalderværktøjer" og dræbe det, der måske er problemet.

Vi kan alle blive enige om, at Danmark er et meget fragmenteret land, og vi har virkelig brug for sammenhængende natur for at kunne opretholde store bestande. Men for eksempel for sortterne i det sydlige Danmark fungerer det med yngleøer. Vi bør fokusere på innovation. Vi er i 2026, ikke i stenalderen. Teknologi kan hjælpe os fremadrettet. Der bør tænkes i nye løsninger i stedet for bare at gentage den samme diskussion om at skyde om vinteren eller om foråret.

Deltager: Det er bare en supplerende kommentar. Det handler om at holde os i den tekniske ramme og holde værdierne udenfor. Jeg tror, det er en almindelig fælde i skadedyrsforvaltning, at man flytter fokus fra det egentlige mål – at løse problemet med at beskytte arter – til at "straffe den skyldige".

Jeg mener, det i bund og grund er mangel på faglighed hos dem, der styrer disse processer, både teknisk og politisk. Det vi har set i Danmark det sidste år, for eksempel, er et politisk fokus, hvor der var et ønske om at give tilladelser til at skyde visse individer, uden at der egentlig var gode faglige argumenter for det.

Det ser vi også med ræv og generelt rovdyr, hvor der er meget brede muligheder for at regulere dem uden rigtig gode grunde. Man bør undersøge: Hvad er begrundelsen? Hvad opnår man? Og findes der bedre alternativer? Det er intellektuel dovenskab. Vi burde have evidensbaseret politik.

Når vi får mangelfulde data fra forvaltning, bliver de tolket som videnskabelige, hvilket de ikke er. Ulven er et godt eksempel på det, fordi debatten er så ekstrem – ikke fordi det er en ulv.

Moderator: Så igen ser vi paradokser og modsætninger.

Deltager: Jeg er ret skeptisk over for det som udgangspunkt, især på grund af idéen om at afvise det kategorisk. Mårhundens tilknytning og historie hører i en vis forstand til vores bredere biogeografiske region. Den stammer ikke oprindeligt fra vores del af regionen, men når vi taler om arter her, arbejder vi med lange historiske og taksonomiske forbindelser. Det er ikke præcis den samme artslinje, men det relaterer sig i det mindste på slægtsniveau.

Faktisk fandtes mårhunde relativt for nylig i nærliggende områder, med en vis grad af overlap, så skellet er ikke helt skarpt. Det er et nyttigt perspektiv—noget vi kan undersøge nærmere og forsøge at forstå bedre.

For eksempel kan vi spørge, om nogle af de biologiske karakteristika hos mårhunde i Europa hænger sammen med, at de blev introduceret af mennesker for omkring 150 år siden.

Jeg kunne tidligere have haft en mere afslappet holdning til det, men nu stiller jeg spørgsmålstegn ved, hvordan vi skal forstå mårhunde i dag. Jeg er skeptisk over for bare at klassificere dem entydigt som ikke-hjemmehørende.

Vi er nødt til at forstå problemet dybere og mere nuanceret. Hvis vi beslutter, at mårhunde er en meget farlig invasiv art, som i sig selv er problematisk i Europa, kunne en udryddelsesindsats på tværs af hele kontinentet overvejes som løsning. Men det ville være en meget radikal tilgang, og det ville kræve stærk og konsistent evidens, der peger i den retning.

Moderator: Så vi bør af og til teste vores eget sprogbrug, fordi fortællinger er stærke. Fortællinger er magtfulde.

Deltager: Vi udelod ulve fra denne konference, fordi emnet allerede har været så meget behandlet offentligt. Folk er meget følelsesladede omkring ulve. Men jeg tror også, at ulve kan hjælpe os med at se, hvad vi gør. Ulve appellerer til folk, fordi de ligner hunde.

Folk spørger mig: Blev du ikke oprørt over, at ulven blev skudt forleden? Og jo, det blev jeg, men jeg er mere oprørt over de 30.000 ræve, der bliver skudt. Nogle af dem nødvendigvis på øer, men de fleste ræve bliver skudt, bare fordi vi ønsker flere harer, flere agerhøns eller andre arter.

Jeg har intet imod jagt. Jeg har mange venner, der er jægere, og jeg har stor respekt for dem. Men tanken om, at vi "ejer" nogle arter så meget, at vi bare kan udrydde eller kontrollere dem for at få flere af en anden art, er efter min mening ikke i orden. Jeg tror, ulve synliggør den form for ejerskab og vores prioritering af egne interesser, og forhåbentlig kan det også få os til at reflektere over, hvordan vi behandler andre arter.

Moderator: Så det fungerer som en slags forstørrelsesglas. Vores tid er ved at løbe ud. Jeg har faktisk to mere på listen nu.

Deltager: Både i Danmark og Storbritannien har det største emne været tilbagevenden eller genindførsel af rovdyr. I Storbritannien har der været restriktioner på jagt, hvilket naturligvis

skaber nye konflikter. Jeg mener også, at der er en rolle for naturforvaltningsteknologi, men det bør gøres på en måde, der er mindst skadelig i forhold til påvirkninger af miljøet og arterne.

Altså, i havet er plads ikke det samme problem, fordi vi kan bevæge os overalt—selv om der selvfølgelig også er mange påvirkninger dér. På land handler det derimod i høj grad om plads, som er fragmenteret og tabt. Hvis man medregner landbrug og skov, er der mere plads, og mange af de problemer, vi har diskuteret i dag, kunne potentielt løses, hvis vi anvendte kvalificeret viden.

Moderator: Jeg er bare nysgerrig efter, hvor mange af jer der er studerende. Hvad er jeres refleksioner over det, vi taler om? I er fremtiden—kom nu.

Deltager: Hele denne samtale om arter og “naturlige systemer” bliver et paradoks, og jo mere vi tænker over det, jo mindre ved vi egentlig. Vi har ikke en baseline eller observationer, der går langt nok tilbage i tiden.

Moderator: Baseline flytter sig hele tiden. Det handler også om værdier. Jeg tror, det er et af de helt centrale dilemmaer. Vi er nødt til konstant at håndtere den usikkerhed, og vi kan ikke fraskrive os ansvaret. Det er vores ansvar at definere, hvad vi mener er rigtigt. Men hvis vi kan gøre det sammen, står vi stærkere.

Deltager: I løbet af dagen har vi haft en lang diskussion om beskyttelsen af fuglearter mod ræve og mårhunde. Men jeg har tænkt meget over, hvorfor fokus er så stærkt på fuglene og ikke i samme grad på at beskytte rævene eller mårhundene.

Jeg er godt klar over, at mårhunde er indvandret, og det samme gælder ulve. Men jeg tror, det i høj grad er et kulturelt spørgsmål. Ræve går ind i hønsehuse og vores landbrugslandskaber, og vi ser dem som skadedyr. Jeg vil sige, at vi har glemt, hvordan det var, før vi kom til, hvor arter bare bevægede sig frit. Vi fokuserer på at beskytte det, vi allerede har, og det vi godt kan lide at se og værdsætte.

Moderator: Det handler også om magt. Jes og jeg talte om det, og jeg kom til at tænke på 1990'erne, hvor vi i Danmark havde en ret intens debat om kulturelle praksisser i forhold til ræve. Der var en ophedet diskussion i Vildtforvaltningsrådet om, hvordan vi behandlede ræve.

Så kom der en undersøgelse fra Københavnsområdet, som viste, at ræve faktisk ødelagde mange reder i et naturreservat nær København. Så vidt jeg husker, ændrede danske fugleinteresserede holdning sig fuldstændig. Hele diskussionen ændrede sig, og spørgsmålet om vores praksis omkring ræve forsvandt pludselig fra dagsordenen.

Jeg fik den samme fornemmelse med mårhunden. Hvis man kan overbevise fuglefolk om, at en art er dårlig for fuglene, så står døren næsten helt åben.

Deltager: Jeg vil gerne knytte en kommentar til det, for lige nu er der faktisk flere organisationer i det grønne netværk, som ser på vores jagtregulering af pattedyr. De ønsker at ændre fokus og har også fået en vis medieopmærksomhed omkring emnet.

Nogle af de samme organisationer, som tidligere ikke kunne blive enige i Vildtforvaltningsrådet, har nu sat fokus på vores praksis på en ny måde. Der er altså en gruppe, der arbejder med det nu, så der er stadig håb.

Moderator: Det er en fin måde at afslutte diskussionen på—der er stadig håb. Mange tak for diskussionen. Vi fortsætter i morgen, og diskussionen i morgen vil blive ledet af Jes Harfeld.

Tusind tak!

DISCUSSION APRIL 9 (38 MINUTES).



Moderator Jes Lynning Harfeld

Jes Lynning Harfeld is Associate Professor in Applied Ethics at the Center for Applied Philosophy at Aalborg University in Denmark. His research interests include animal ethics, environmental philosophy and human-animal relations. With the "Filo-Sofa", a literal conversational vehicle for philosophical discussion and outreach, Jes brings topics such as animal ethics and the human perception of nature to the attention in non-academic settings.

INTRODUCTION AND FRAMING FOR DISCUSSION BY JES LYNNING HARFELD

For the next half hour -the final half hour of today -we'll try to open the floor for a discussion about some of the things we talked about both yesterday and today.

I can't really summarize everything from today, but there were several things that I found particularly interesting. One of them was the broader context in which we do science -namely nature and the Anthropocene. There is a background to what we are doing, and part of the reason science matters lies precisely in these broader conditions. I think this is something we should address more explicitly when, in a moment, I ask the question: What should we do now? Where should we go in the future with biology and with research on small carnivores?

Another major theme was how we do science. Today involved a lot of methodological discussion, with people trying many different approaches and combinations of methods. At one point I found myself wanting an entire paper just on different types of bait- for example, ranking peanut butter with grapes against foul-smelling urine or similar attractants. That alone could be a fascinating methodological question. So more generally: How do we actually do science?

Before we begin, I want to set the same rules that Hans did: please don't interrupt each other, no personal attacks, and try to share your reflections even as scientists in short, clear statements. These are the same rules as yesterday, and you followed them very well, so I'm confident that will continue.

I wrote down a few questions that occurred to me during today's talks. You shouldn't feel constrained by them, but I'd like to offer them as starting points for the discussion.

First, I'm very interested. I'm also an outsider. As you may have noticed, I'm not a biologist. Very clearly not. But I'm deeply interested in biology, in biologists, and in biology as a way of engaging with and understanding the world. So, I'd like to ask: what is it that I and others will be studying for the next many years? Where is this thing called biology heading, and why?

I'd really like to hear your thoughts on that and please answers like: "More AI" don't count. I'm interested in what you know and care about.

Second: what does good science look like when we study small and medium-sized carnivores? How do we do this well? My own hint if I have one is that there are probably many different pathways to good science.

Third, consider new technologies: what will change in science, and will technology end up driving the agenda? And related to that, what is the future of fieldwork? One of his final references was to an article by someone saying something like, "I never get out into the field anymore," and he's deeply frustrated by that as a biologist. Not just because he enjoys fieldwork personally, but because he thinks something is being lost scientifically. So the final question is simply: what about fieldwork?

Lets go!

Participant: I think all of us - including myself are wondering whether technology is, in one way or another, starting to take over fieldwork. Let me begin with an example from a discussion I had with a colleague who studies golden eagles in the Swiss Alps and in Sweden. In both places, golden eagles are protected. They have nesting sites, but in the Swiss Alps these nests are extremely difficult to locate because the birds are very shy. In Sweden, on the other hand, the eagles almost seem to advertise their nests, with debris and very visible signs. Interestingly, it is not difficult for the birds themselves to move between Switzerland and Sweden and back again.

I have also worked extensively on leopards, and over time I've built a very large dataset. What I've noticed is that every system does things slightly differently. Yet our scientific training is fundamentally reductionistic, we try to reduce everything to the lowest common denominator. We often do this because we want to influence management practices and improve our general understanding of quality. But using the lowest common denominator may not always be the right approach. Anyone who has studied evolution knows that no two animals behave in exactly the same way. If every animal, plant, and organism behaved in exactly the same way, evolution simply wouldn't work.

Moderator: Can I stop you there and ask for some reactions? From my perspective, I completely understand what you mean, and I see this happening all the time: people remove more and more parameters to obtain a clean scientific result. But then the question becomes: what about all the other parameters that actually make up the real world? Does anyone want to comment on that?

Participant: I have a thought on this. I like that perspective, and in classical biology the focus on individual-level or trait-specific variability has been very prominent over the last decade or two. There is a lot of truth in it, and it's very interesting work. But to offer a counterpoint: I've always found it fascinating when Stephen Hubbell proposed the neutral theory of ecology. His argument was that much of what we try to explain through all these fine-scale details may not matter very much at larger scales it may largely be driven by stochasticity. The theory is more nuanced than that, of course, but the core idea is that while we, as biologists, love to focus on details we consider essential, they may not be crucial for understanding the bigger picture. I think there is some truth in that as well. I'm somewhat in favour of both approaches. I'm not saying that we shouldn't study detail and variation, but we also shouldn't forget the power of a big-picture perspective.

Moderator: Whether we focus on large-scale, medium-scale, or small-scale patterns may depend on the question.

Participant: If we take a deep-time perspective—looking at the long evolutionary timescales over which biodiversity has changed—we see enormous flux. What we label as species today—many non-hybrid tree species, for example—are several million years old and have persisted through major environmental change. We combine all these different probabilities, and somehow that is how the system works. I find that fascinating.

I also think there is a general move toward using big data. Take genomics, for example: we are increasingly expected to include whole-genome data or large genomic datasets in order to publish. From a publishing perspective, this expectation is only growing. If you show up with a

small dataset—even if it is conceptually strong and important—you may be asked: where is the big dataset?

Moderator: Is that a good thing or a bad thing?

Participant: In conservation genomics discussions, we've talked about how researchers with fewer resources—or less access to whole-genome sequencing—are at a disadvantage. Publishing a study based on 14 genetic markers, even if it has major conservation implications, has become much harder. In some cases, collecting large datasets is simply very difficult or nearly impossible.

Moderator: So this could skew science—or at least published science—toward those with access to big data, much like we've seen historically with positive versus negative results.

Participant: I have another comment related to big data. I think it's also necessary, because we live in a world where the number of published studies is growing exponentially. For example, with the explosion of camera-trap data and incremental study designs, we see many classic single-site studies. These often produce different results, and each paper includes a long discussion explaining why their findings represent the global pattern. And then there's another study with a slightly different setup in another part of, and they're coming to a completely different pattern, and arriving a long discussion-wise that way. So, I think, for example, having standardized studies, standardized setups across multiple study areas, across multiple politics, which will have this. Large pictures are necessary, because otherwise we are washed to the sea.

In many papers based on these micro-sites, we see studies pointing in all kinds of directions. We don't always see the patterns, even though patterns do exist across study areas.

Moderator: We lose some of the question-driven work—cases where we've seen or observed something and thought, "This might be worth asking about." Not a lot, maybe, but enough to raise questions.

Participant: And that leads to my next point. I think it's essential that we also have broad, overarching publications often involving multiple study areas and multiple authorities simply to make these overall patterns visible. Otherwise, we never get the big picture. That said, this also relates to the lack of fieldwork. What I really miss in many newer papers is that they're so condensed and so pattern-oriented that we lose the processes and the narratives. If you look at older papers, from the 1960s or 1970s and earlier, they're much longer, but they contain rich descriptions and observations. There's a lot to learn from them, including the narratives. I think we need to be careful not to lose that.

This also connects to the need for extensive fieldwork, which I see as an educational issue. Fieldwork should be an integral part of training students—even if it doesn't immediately result in a concrete output. There should be periods focused purely on learning through field experience. Take snow tracking, for example—it's my favourite. If you really want to understand how a species behaves, snow tracking is invaluable, because you can reconstruct every movement from the footprints. That's just one example, but the point is that this is a training issue. We have to be very careful not to lose these skills.

I've even been an opponent in PhD defences where the candidate describes patterns well, but key foundational references are missing. When I asked about them, the student simply didn't know those works existed. In one concrete case, in a PhD dissertation in Sweden, one of the most fundamental works from 1966, which described in detail winter ecology based on snow tracking across 2,000 square kilometers—was not cited. The student was unaware of it. That represents a real loss of knowledge.

Moderator: You've moved on to fieldwork now, which I think is my area. I'm going to stop you there and move on to one of the other bullet points.

Participant: I completely agree that we need the big picture, but at the same time there's growing pressure to use the newest available technology. That pressure keeps increasing. So, for example, you may have a clear research question and a method that was novel ten years ago—very cheap, very simple, and accessible to everyone. Yet papers can be rejected simply because technology is considered old-fashioned. There's an expectation that you use methods that cost 100, or even 1,000 times more, because that's what is considered modern and acceptable today.

Moderator: And that contributes to the overall problem. A lot of research data ends up being lost. It also creates a huge barrier for researchers from universities that don't have the same level of funding that many of us do.

Participant: I actually want to continue that point—it was also discussed earlier today. I fully agree with you that part of the problem lies in teaching, but I also think it's about our own practices and how we work. All of us tend to adopt the newest methodology as soon as it appears. This came up earlier today as well—for example, why would you use a generalized additive mixed model, which is already very complex and didn't even exist twenty years ago, instead of a simpler co-occurrence or continuous-time occupancy model?

From my perspective, we should use the simplest model that can answer the question we're asking—and we should clearly define the question before we start analyzing the data. I think many of us have been guilty of doing the opposite: we look at the data first, then formulate hypotheses afterward, and then interpret the statistics as if they were testing independent, predefined hypotheses. That's a major issue for reproducibility, and it's closely tied to how we teach research methods. And this problem only gets worse as datasets become larger and we're no longer involved in collecting the data ourselves.

Moderator: That also connects to hypotheses and what we sometimes call “field philosophy.” You don't need to know the term, but it basically means going out into the field to discover questions you weren't originally looking for. That's the short version. Fieldwork is like that too. Of course, we go into the field to set things up and collect specific data, but being there also generates questions we didn't even know we had until we were in the field. So, the field shouldn't be seen only as a place where we gather data points, it's also a place where new hypotheses emerge. That way of thinking is extremely important. And given the complexity of landscapes, I think this perspective is both relevant and necessary.

Participant: Even though this is also about ethics and related issues, I want to question the term “*good science*.” I'm not entirely sure what that actually means, and I struggle with it myself. Rather than “good science,” I think we should talk about *the right science for the right question*. Reflecting on my own experience, I feel very fortunate because I work on many different projects with people outside traditional biology. In animal psychology, for example, groups often work with very large collaborations. They develop standardized protocols to address specific questions and then use hundreds of labs around the world to test those protocols using the same methods. There has been some resistance to this approach in wildlife biology, but it's something I think we could learn from—conducting studies across multiple locations using shared standard protocols.

On the other hand, I also work with a mathematician, and that has been eye-opening in a different way. What I consider important often doesn't matter to them. They reduce problems down to their most basic, reductionist form. This has completely changed how I think about interpreting patterns—stripping away many of the complexities and site-specific nuances to reach what might be considered the purest form of science. It's difficult, but sometimes we really do need to reduce things to see the bigger patterns. There are many scientific approaches out there, and we need to draw on them to do the *right science*—not just “good” science.

Moderator: What I hear there touches on one of my own major concerns: multi-perspective science. There are different ways of approaching a problem or a question. They can look very different, but they can all be equally valid and interesting.

Participant: Yes—and I'd like to add a short comment about fieldwork. I'm a molecular scientist, and my personal experience with fieldwork is very limited. I'm a certified lab rat—my habitat is a class 1 laboratory. But for me, fieldwork has never been more important than it is now, and I believe it will become even more important in the future.

The more we move toward remote sensing and distance-based data collection—things I also work with, such as environmental DNA—the more we depend on people who have strong field skills and a real understanding of what's happening on the ground. I can generate millions of sequence reads and perform massive analyses, but I can't make sense of that information without people who have been out in the field, who understand and have seen what's actually going on.

Moderator: And could we also widen that definition of “fieldwork” to include other people? Absolutely. We often talk about fieldwork in terms of landscapes and animals, but there are many others involved people working with Indigenous communities, hunters, land managers, or in agricultural settings. All of that is very much part of biology.

It's interesting, because they're human beings, so one might think this belongs to cultural studies but in practice, it becomes an essential part of biological research.

Participant: I just want to say that I completely share that philosophy around fieldwork. Unfortunately, we're losing it. I think we need to push back especially with funders to reinforce its critical importance. I've personally had grants where the funding for fieldwork was questioned, sometimes almost as a reason to reject the proposal.

Moderator: “Is that really necessary?” (*ironically*)

Participant: Exactly. That was almost word for word a reviewer comment—hopefully no one in this room wrote it. “*Is it really necessary?*” And yes, it is. But it's often difficult to justify. As a community, we may need to speak more strongly and more collectively. Some of us are sometimes the very people asking whether it's necessary. And maybe we need to stop doing that, in a sense, shooting ourselves in the foot.

Participant: I completely agree, and that was also what I was going to say. Some of it has already been mentioned, and it probably connects to the last question as well. We talked about this earlier today, but we are losing fieldwork. Part of the reason is that it has become difficult to get funding for projects that rely only on fieldwork. There is an expectation that you use modern methods.

Another reason is how we collect data. For example, using students: at least in Denmark, the time allocated for bachelor's and master's theses has been drastically reduced compared to when I studied. When I did my degree, I used fieldwork to capture seasonal variation. Today, students have to finish quickly and just submit a document. Nobody does that kind of long-term fieldwork anymore. And I agree that we should push back somehow, so that we can get funding for doing simpler, fundamental work first, and then maybe combine the results with modern technology afterward—instead of starting with modern technology, collecting data that way, and then analyzing it without really thinking things through in the field.

Moderator: We'll be finished very, very soon—two minutes. Before we wrap up, I want to ask this table a question. You are the future. We're not going to be around forever. One day we're gone, and you will be taking over the ship.

Participant: I totally agree with everything that's been said. As we move forward, the amount of data will just keep increasing, especially with more fieldwork supported by new technologies. And although we said we shouldn't mention AI, I'll say machine learning—because I think it's actually a good way forward.

I still believe we should do fieldwork, but for example through camera trapping. That allows us to cover much larger areas. At the same time, it generates far too much data for one person to go through. What might take a person two or three weeks could instead be done by a computer—or even an iPhone—with the push of a button.

Moderator: And I've seen PhD students sit for hours and hours watching footage, so I definitely don't disagree that AI can play a beneficial role there.

Participant: Sometimes, though, I worry that we become a bit cynical about big data. I did my master's thesis on big data as well, and I think there's a certain distance that comes with it. I became a biologist because I truly love the species—being outside, meeting the animals, the little individuals.

Sometimes I'm afraid we're drifting too far away from that. Of course, these approaches can coexist, but there is a risk that we don't even look at the animals anymore—we just let AI analyze their behavior. I think it's important to hold on to that connection, because after all, that's why we're doing this. It's the love of life.

Moderator: That's exactly why we're all doing this. I think that's a perfect note to end on. Thank you all so much for participating in the discussions throughout the day.

DISKUSSION 9. APRIL (38 MINUTTER).

Moderator Jes Lynning Harfeld

INTRODUKTION OG RAMESÆTNING FOR DISKUSSIONEN

I den næste halve time - altså den sidste halve time i dag, vil vi prøve at åbne op for en diskussion om nogle af de ting, der er sagt både i går og i dag. Jeg kan ikke opsummere hele dagen, men der var en række ting, som jeg fandt virkelig interessante. En af dem var den baggrund, som den verden, vi laver videnskab i, udgør – nemlig naturen og Antropocæn. Der er en kontekst for det, vi gør. Og der er grunde til, at videnskaben er vigtig, som netop hænger sammen med disse baggrundsforhold. Jeg synes, at det i hvert fald er noget af det, vi i højere grad bør forholde os til, når jeg om lidt stiller spørgsmålet: Hvad skal vi gøre nu? Hvor skal vi hen i fremtiden med biologi og små rovdyr?

En anden ting handlede om, hvordan vi laver videnskab. Der var i dag rigtig meget om metode. Folk prøvede mange forskellige tilgange, kombinationer af metoder. Jeg kunne ønske mig en hel artikel bare om forskellige typer lokkemad – som at rangere peanutbutter med druer i forhold til ildelugtende urin eller lignende. Det kunne i sig selv være et interessant metodisk emne at undersøge, ikke? Altså: Hvordan laver vi egentlig videnskab?

Inden vi går i gang, gælder præcis de samme regler som dem Hans nævnte i går: Lad være med at afbryde hinanden, ingen personlige angreb, og prøv at dele jeres refleksioner – selvom I er forskere i korte, klare sætninger. Altså- de samme regler som i går, og det klarede I rigtig fint, så jeg er sikker på, det også vil fungere nu.

Jeg skrev nogle spørgsmål ned, som opstod for mig under dagens oplæg. I skal ikke føle jer bundet af dem, men jeg vil gerne lægge dem ud som nogle af de første. For det første er jeg – også som outsider – meget interesseret. Som I nok har lagt mærke til, er jeg ikke biolog. Meget tydeligt ikke biolog. Men jeg er meget interesseret i biologi, i biologer og i biologi som en måde at forstå verden på. Derfor vil jeg gerne høre: Hvad er det, jeg kommer til at studere i de næste mange år? Hvor er det, vi er på vej hen med det, der hedder biologi – og hvorfor?

Jeg vil virkelig gerne høre nogle bud på det. Og svaret må meget gerne være andet end "mere AI", hvis I forstår, hvad jeg mener.

Dernæst: Hvad er god videnskab, når det gælder små og mellemstore rovdyr? Hvordan gør vi det på en god måde? Jeg har måske allerede antydnet, at der findes mange veje til god videnskab. I lyset af ny teknologi: Hvad vil ændre sig i videnskaben? Ender teknologien med at bestemme retningen? Og i den sammenhæng: Hvad er fremtiden for feltarbejde? Det spørgsmål kommer især af noget.

I en af foredragene blev en forsker nævnt, som siger noget i retning af: "*Jeg kommer aldrig rigtig ud i felten længere.*" Han er meget frustreret over det som biolog. Og det er ikke bare en følelsesmæssig frustration – han mener, at der er noget, der er galt videnskabeligt set. Så: Hvad med feltarbejdet?

Lad os komme i gang!

KONFERENCE DISKUSSIONS SUMMARY

Deltager: Jeg tror, at vi alle – også mig selv på den ene eller anden måde går og spekulerer over, om teknologien er ved at tage over for feltarbejdet. Lad mig starte med et eksempel fra en samtale, jeg havde med en kollega, der studerer kongeørne i de schweiziske Alper og i Sverige. I begge områder er kongeørne beskyttet. De har redepladser, men i de schweiziske Alper er rederne ekstremt svære at finde, fordi fuglene er meget sky. I Sverige derimod ser det næsten ud, som om ørnene reklamerer for deres reder med affald og tydelige spor. Interessant nok er det ikke noget problem for fuglene selv at bevæge sig mellem Schweiz og Sverige og tilbage igen.

Jeg har også arbejdet meget med leoparder, og over tid har jeg samlet et meget stort datasæt. Det, jeg har lagt mærke til, er, at hvert system gør tingene en smule forskelligt. Alligevel er vores videnskabelige uddannelse grundlæggende reduktionistisk - vi forsøger at reducere alting til den lavest fællesnævner.

Det gør vi ofte, fordi vi gerne vil påvirke forvaltningspraksis og forbedre vores generelle forståelse af kvalitet. Men at bruge den lavest fællesnævner er måske ikke altid den rigtige tilgang. Enhver, der har studeret evolution, ved, at ingen dyr opfører sig helt ens. Hvis alle dyr, planter og organismer gjorde alting på præcis samme måde, ville evolutionen ganske enkelt gå i stå.

Moderator: Må jeg stoppe dig her og bede om nogle reaktioner? Fra mit perspektiv forstår jeg fuldstændigt, hvad du mener, og jeg ser det ske hele tiden: Folk fjerner flere og flere parametre for at få et "rent" videnskabeligt resultat. Men så kan man spørge: Hvad med alle de andre parametre, der faktisk udgør den virkelige verden? Er der nogen, der vil kommentere på dette?

Deltager: Jeg har en tanke om det. Jeg kan faktisk godt lide dette perspektiv, og at vi i klassisk biologi har fokus på individuel variation eller variation i specifikke træk har været meget fremtrædende de sidste ti til tyve år. Der er meget sandhed i det, og det er ekstremt interessant arbejde. Men for at give et modargument: Jeg har altid fundet det fascinerende, da Stephen Hubbell fremsatte den neutrale teori i økologien. Hans pointe var, at meget af det, vi forsøger at forklare gennem alle disse detaljer på fin skala, i virkeligheden ikke betyder så meget på det overordnede niveau – det kan i høj grad være drevet af tilfældighed. Teorien er selvfølgelig mere nuanceret end det, men grundideen er, at selvom vi biologer elsker at fokusere på alle de detaljer, vi mener er afgørende, så har de måske ikke den store betydning for det store billede. Jeg mener, at der også er noget sandhed i det.

Så jeg er egentlig tilhænger af begge tilgange. Jeg siger ikke, at vi ikke skal studere detaljer og variation – men vi bør heller ikke glemme styrken i et overordnet helhedsperspektiv.

Moderator: Om vi vælger at fokusere på mønstre i stor, mellem eller lille skala, afhænger nok af spørgsmålet.

Deltager: Hvis vi anlægger et dybt tidsperspektiv og ser på de lange evolutionære tidsrammer, hvor biodiversiteten har ændret sig, ser vi en enorm dynamik. Det, vi i dag kalder arter – for eksempel mange af vores ikke-hybridiserende træarter er flere millioner år gamle og har

overlevet store miljømæssige forandringer. Vi lægger alle disse forskellige sandsynligheder ind, og sådan fungerer det på en eller anden måde. Jeg synes, det er fascinerende.

Deltager: Jeg mener også, at der er en generel bevægelse mod brug af big data. Tag for eksempel genomer: Vi forventes i stigende grad at inkludere hele genomer eller meget store genom-datasæt for overhovedet at kunne publicere. Set fra et publikationsperspektiv vil det krav kun blive stærkere. Hvis man dukker op med et lille datasæt, som man selv synes er virkelig interessant, så får man ofte spørgsmålet: Hvor er det store datasæt?

Moderator: Er det en god ting eller en dårlig ting?

Deltager: I diskussioner om bevaringsgenomik har vi talt om, hvordan forskere med færre ressourcer – eller uden adgang til helgenomsekventering – er stillet dårligere. Det er blevet meget sværere at få publiceret et studie baseret på 14 genetiske markører, selv hvis det har stor betydning for naturbeskyttelse. I nogle tilfælde er det ganske enkelt meget vanskeligt, eller næsten umuligt, at indsamle store datasæt.

Moderator: Så det kan skævvride videnskaben – eller i hvert fald den publicerede videnskab – til fordel for dem, der har adgang til big data, ligesom vi tidligere har set med positive versus negative resultater.

Deltager: Jeg har en anden kommentar, der også relaterer sig til big data. Jeg mener faktisk, at det også er nødvendigt, fordi vi lever i en verden, hvor antallet af videnskabelige publikationer vokser eksponentielt. For eksempel med eksploderende mængder kamerafældedata og ser vi mange klassiske enkeltlokalitetsstudier. De giver ofte forskellige resultater, og hvert studie har en lang diskussion om, hvorfor netop deres resultat repræsenterer det globale mønster. Og så kommer der et andet studie med et lidt anderledes setup et andet sted og når frem til et helt andet mønster – igen med en lang diskussion.

Derfor mener jeg, at standardiserede studier, med standardiserede opsætninger på tværs af mange studieområder og politiske kontekster, er nødvendige. De store overblik er vigtige – ellers bliver vi skyllet væk. I mange af disse mikrostudie-baserede artikler peger resultaterne i alle mulige retninger. Vi ser ikke altid mønstrene, selvom de faktisk findes på tværs af studieområder.

Moderator: Vi mister noget af det spørgsmålstyret arbejde – de tilfælde, hvor man har observeret noget og tænkt: "Det her er værd at undersøge nærmere." Måske ikke meget, men nok til at give anledning til bekymring.

Deltager: Jeg mener, det er afgørende, at vi også har brede, overordnede publikationer – ofte med mange studieområder og mange myndigheder involveret – netop for at synliggøre de overordnede mønstre. Ellers får vi aldrig det store billede.

Når det er sagt, hænger det også sammen med manglen på feltarbejde. Noget af det, jeg virkelig savner i mange nyere artikler, er, at de er så kondenseret og så mønsterfokuseret, at vi mister processerne og fortællingerne. Ser man på ældre artikler fra 1960'erne og 1970'erne og før, er de langt længere, men de indeholder rige beskrivelser og observationer. Der er meget at lære af dem – også narrativt. Det skal vi passe på ikke at miste.

Det hænger også sammen med behovet for omfattende feltarbejde, som jeg ser som et uddannelsesspørgsmål. Feltarbejde bør være en integreret del af studerendes uddannelse – også selvom det ikke umiddelbart fører til et konkret output. Der bør være perioder, hvor fokus udelukkende er læring gennem feltoplevelse.

Tag for eksempel sporing i sne – det er min favorit. Hvis man virkelig vil forstå, hvordan en art opfører sig, er snesporing uvurderlig, fordi man kan rekonstruere hvert eneste bevægelsesmønster ud fra sporene. Det er bare ét eksempel, men pointen er, at det handler om uddannelse. Vi skal være meget opmærksomme på ikke at miste disse kompetencer.

Jeg har endda været opponert ved ph.d.-forsvar, hvor kandidaten beskriver mønstre, men hvor helt grundlæggende referencer mangler. Når jeg spurgte ind til dem, kendte den studerende dem

simpelthen ikke. I et konkret tilfælde i en svensk ph.d.-afhandling blev et af de mest fundamentale værk fra 1966, der i detaljer beskrev vinterøkologi baseret på snesporing over 2.000 kvadratkilometer – ikke citeret. Den studerende kendte ikke arbejdet. Det er et reelt tab af viden.

Moderator: Du er nu kommet over på feltarbejde, som jeg ser som mit område. Jeg stopper dig der og går videre til et andet punkt på listen.

Deltager: Jeg er helt enig i, at vi har brug for det store overblik, men samtidig er der et stigende pres for at bruge den nyeste tilgængelige teknologi. Det pres bliver bare større og større. For eksempel kan man have et klart forskningsspørgsmål og en metode, som for ti år siden var nyskabende – billig, enkel og tilgængelig for alle – men alligevel få afvist en artikel, fordi teknologien anses for at være gentaget eller forældet. Der er en forventning om, at man bruger metoder, der koster 100 eller endda 1.000 gange så meget, fordi det er dét, der anses for moderne og acceptabelt i dag.

Moderator: Og det bidrager til det overordnede problem. Meget forskningsdata går tabt, og det skaber også en enorm barriere for forskere fra universiteter, der ikke har den samme finansiering som mange af os.

Deltager: Jeg vil egentlig gerne fortsætte ad den bane – det blev også diskuteret tidligere i dag. Jeg er helt enig i, at en del af problemet ligger i undervisningen, men jeg mener også, at det handler om vores egne arbejdsgange. Vi har alle en tendens til at tage de nyeste metoder i brug, så snart de dukker op.

Det blev også nævnt tidligere i dag: hvorfor bruge en generaliseret mixed model, som er ekstremt kompleks og slet ikke fandtes for 20 år siden, i stedet for en enklere samforekomst- eller kontinuerlig tids-occupancy-model?

Efter min mening bør vi bruge den simpleste model, der kan besvare det spørgsmål, vi stiller – og vi bør definere spørgsmålet klart, før vi begynder at analysere data. Mange af os har været skyldige i det modsatte: først kigger vi på data, så formulerer vi hypoteser bagefter og tolker statistikken, som om vi havde testet uafhængige, foruddefinerede hypoteser. Det er et stort problem for reproducerbarhed, og det hænger tæt sammen med den måde, vi underviser i metode på. Og problemet bliver kun værre, jo større datasæt bliver, og jo mere vi fjerner os fra selve dataindsamlingen.

Moderator: Det hænger også sammen med hypoteser og det, vi nogle gange kalder "feltfilosofi". Man behøver ikke kende begrebet – kort sagt handler det om at tage i felten for at opdage spørgsmål, man ikke vidste, man havde. Det er på samme måde med feltarbejde. Vi tager selvfølgelig ud for at opsætte udstyr og indsamle bestemte data, men selve tilstedeværelsen i felten genererer også nye spørgsmål, som vi ikke havde på forhånd.

Feltet bør derfor ikke kun ses som et sted, hvor vi samler datapunkter – det er også et sted, hvor nye hypoteser opstår. Den måde at tænke på er ekstremt vigtig, og med landskabers kompleksitet er den både relevant og nødvendig.

Deltager: Selvom det også berører etik og beslægtede emner, vil jeg gerne problematisere begrebet "god videnskab". Jeg er faktisk ikke sikker på, hvad det egentlig betyder, og jeg kæmper selv med det. I stedet for "god videnskab" burde vi måske tale om den rigtige videnskab til det rigtige spørgsmål.

Ser jeg på min egen erfaring, føler jeg mig meget privilegeret, fordi jeg arbejder på mange forskellige projekter med folk uden for den klassiske biologi. I dyrepsykologi arbejder man for eksempel ofte i meget store samarbejder, hvor man udvikler standardiserede protokoller til bestemte spørgsmål og derefter bruger hundredvis af laboratorier verden over til at teste dem med samme metoder. Der har været modstand mod den tilgang i vildtbiologi, men det er noget, jeg synes, vi kan lære af – studier på tværs af mange lokaliteter med fælles standarder.

Samtidig arbejder jeg også sammen med en matematiker, og det har åbnet mine øjne på en helt anden måde. Det, jeg ser som vigtigt, betyder ofte intet for dem. De reducerer problemer til deres mest basale, reduktionistiske form. Det har ændret mit syn på, hvordan man fortolker

mønstre – ved at fjerne kompleksitet og lokale nuancer for at nå frem til det, man kunne kalde den mest “rene” form for videnskab. Det er svært, men nogle gange er det nødvendigt at reducere for at se de store mønstre. Der findes mange videnskabelige tilgange, og vi skal trække på dem for at lave den rigtige videnskab – ikke bare “god” videnskab.

Moderator: Det rammer noget af det, jeg selv er meget optaget af: flerspektret videnskab. Der findes forskellige måder at tilgå et problem eller et spørgsmål på. De kan se meget forskellige ud, men stadig være lige valide og interessante.

Deltager: Ja – og jeg vil gerne tilføje en kort kommentar om feltarbejde. Jeg er molekylærbiolog, og min personlige erfaring med feltarbejde er meget begrænset. Jeg er en certificeret “laboratorierotte” – mit naturlige habitat er et klasse 1-laboratorium. Men for mig har feltarbejde aldrig været vigtigere, end det er nu, og jeg tror, det bliver endnu vigtigere i fremtiden.

Jo mere vi bevæger os mod fjernmåling og afstandsbaseret dataindsamling – som for eksempel miljø-DNA, som jeg også arbejder med – jo mere afhængige bliver vi af folk med stærke feltkompetencer og en reel forståelse af, hvad der foregår i landskabet. Jeg kan generere millioner af sekvenslæsninger og lave massive analyser, men jeg kan ikke give dem mening uden folk, der har været ude i marken, og som forstår og har set, hvad der faktisk sker.

Moderator: Og kunne vi ikke også udvide definitionen af “feltarbejde” til at omfatte andre grupper? Absolut. Vi taler ofte om feltarbejde i relation til landskaber og dyr, men der er mange andre involveret – folk, der arbejder med oprindelige samfund, jægere, forvaltere og landbrug. Alt det er i høj grad også en del af biologien.

Det er interessant, for det handler om mennesker, og man kunne tænke, at det hører hjemme i kulturstudier – men i praksis bliver det en helt central del af biologisk forskning.

Deltager: Jeg vil bare sige, at jeg deler denne feltarbejdsfilosofi fuldstændigt. Desværre er vi ved at miste den. Jeg mener, vi er nødt til at skubbe tilbage – især over for bevillingsgivere – for at understrege, hvor kritisk vigtigt feltarbejde er. Jeg har personligt haft bevillinger, hvor udgifter til feltarbejde blev problematiseret, næsten som en grund til at afvise ansøgningen.

Moderator: “Er det virkelig nødvendigt?” (ironisk)

Deltager: Præcis. Det var næsten ordret en reviewer-kommentar – forhåbentlig var der ingen i rummet, der skrev den. “Er det virkelig nødvendigt?” Og ja, det er det. Men det er ofte svært at retfærdiggøre. Som forskningsfællesskab er vi måske nødt til at tale tydeligere og mere samlet. Nogle gange er det os selv, der stiller spørgsmålet om nødvendighed. Og måske skal vi holde op med det, i overført betydning, at skyde os selv i foden.

Deltager: Jeg er fuldstændig enig, og det var også det, jeg havde tænkt mig at sige. Noget af det er allerede blevet nævnt, og det hænger nok også sammen med det sidste spørgsmål. Vi talte om det tidligere i dag, men vi mister feltarbejdet. En del af årsagen er, at det er blevet svært at få finansiering til projekter, der udelukkende bygger på feltarbejde. Der er en forventning om, at man bruger moderne metoder.

En anden årsag er måden, vi indsamler data på. For eksempel brugen af studerende: i hvert fald i Danmark er den tid, der er afsat til bachelor- og specialer, blevet drastisk reduceret sammenlignet med, da jeg selv studerede. Da jeg tog min uddannelse, brugte jeg feltarbejde til at indfange sæsonvariation. I dag skal de studerende blive færdige hurtigt og bare aflevere en opgave. Ingen laver den slags længerevarende feltarbejde længere.

Og jeg er enig i, at vi på en eller anden måde bør skubbe tilbage, så vi kan få finansiering til først at lave mere simple, grundlæggende undersøgelser, og derefter måske kombinere resultaterne med moderne teknologi — i stedet for at starte med moderne teknologi, indsamle data på den måde og så analysere dem uden rigtig at have gennemtænkt tingene ude i felten.

Moderator: Vi er færdige meget, meget snart—om to minutter. Inden vi runder af, vil jeg stille dette bord et spørgsmål. I er fremtiden. Alle os andre – vi vil ikke være her for evigt. En dag er vi væk, og det er jer, der tager over ved roret.

Deltager: Jeg er helt enig i alt det, der er blevet sagt. Fremadrettet vil mængden af data bare fortsætte med at vokse, især med mere feltarbejde understøttet af nye teknologier. Og selvom vi sagde, at vi ikke skulle nævne AI, så vil jeg sige maskinlæring—fordi jeg faktisk mener, det er en god vej frem.

Jeg mener stadig, at vi skal lave feltarbejde, men for eksempel gennem kamerafælder. Det gør det muligt at dække langt større områder. Samtidig genererer det alt for meget data til, at én person kan gennemgå det hele. Noget, der ville tage en person to eller tre uger, kan i stedet klares af en computer—eller endda en iPhone—med et tryk på en knap.

Moderator: Og jeg har set ph.d.-studerende sidde i timevis og gennemgå optagelser, så jeg er bestemt ikke uenig i, at AI kan spille en gavnlig rolle dér.

Deltager: Nogle gange er jeg dog bekymret for, at vi bliver lidt kyniske i forhold til big data. Jeg lavede også mit speciale om big data, og jeg synes, der følger en vis distance med. Jeg blev biolog, fordi jeg virkelig elsker arterne—at være ude, møde dyrene, de små individer.

Nogle gange er jeg bange for, at vi bevæger os for langt væk fra det. Selvfølgelig kan de her tilgange eksistere side om side, men der er en risiko for, at vi slet ikke ser på dyrene længere—vi lader bare AI analysere deres adfærd. Jeg synes, det er vigtigt at holde fast i den forbindelse, for det er jo i virkeligheden derfor, vi gør det her. Det er kærligheden til livet.

Moderator: Det er præcis derfor, vi alle gør det her. Jeg synes, det er en perfekt måde at slutte på.

Tusind tak til jer alle for at deltage i diskussionen.

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Photos from the conference



Photo: Jan Skriver

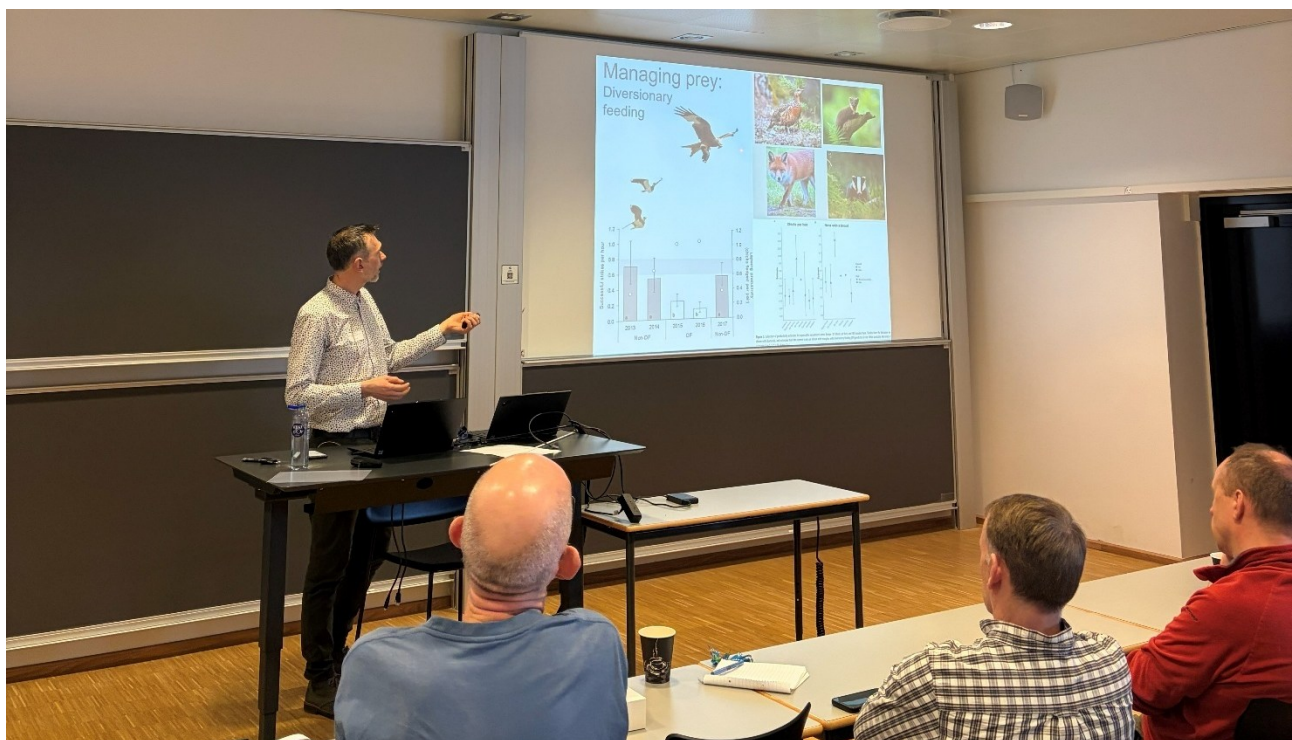


Welcome and introduction to the conference by Sussie Pagh and Katrine Møller-Lassen





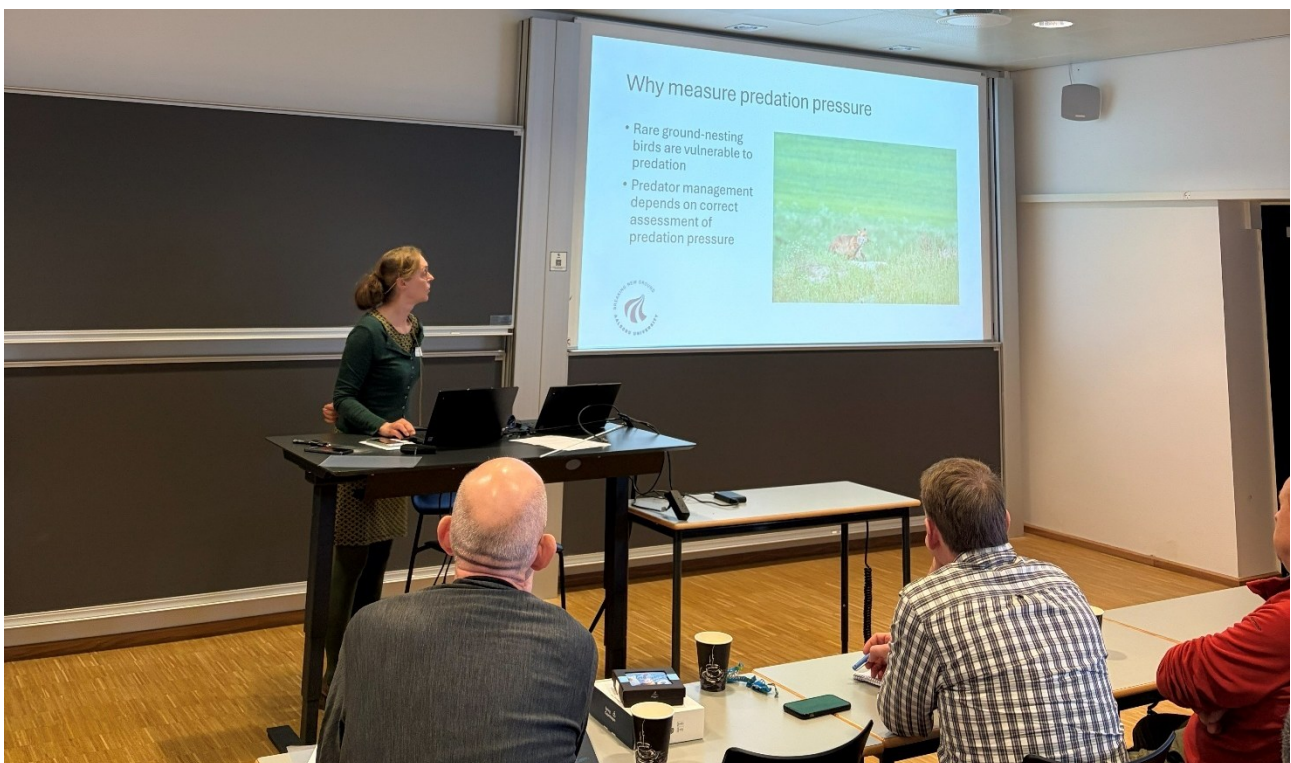
Kick-off keynote: Professor Jens-Christian Svenning, ECONOVO, Aarhus University – Trophic Rewilding in a Novel Biosphere: Restoring Resilient, Biodiverse Ecosystems



Keynote: Principal Conservation Scientist David Douglas, Royal Society for the Protection of Birds. Carnivores and bird conservation - an RSPB view as an evidence led UK conservation charit



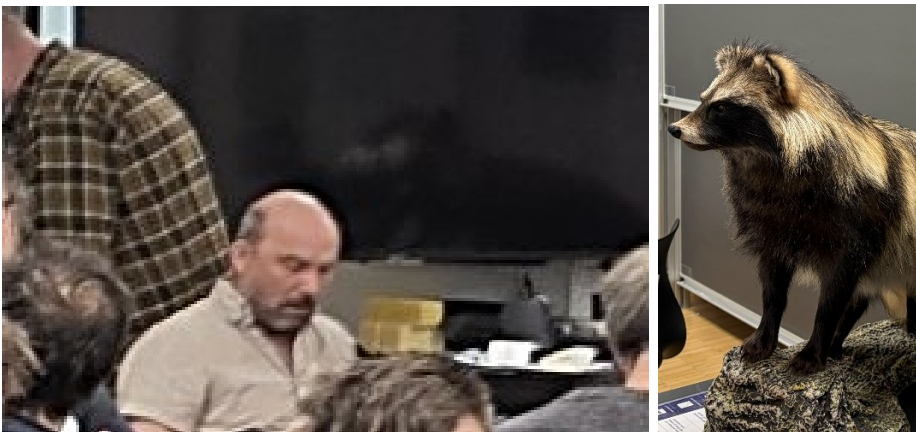
Professor Peter Sunde, Ecoscience, Aarhus University. What Do We Know About the Population Impacts of Small- and Medium-Sized Mammalian Carnivores on Their Prey?



Senior scientist Sussie Pagh, Environmental Biomonitoring, Aalborg University. Predation on Ground Nesting Birds: Methodological Biases in Risk Assessment



Keynote: Assistant professor Astrid Vik Stronen, University of Ljubljana. Jackal range expansion and population structure in southcentral Europe

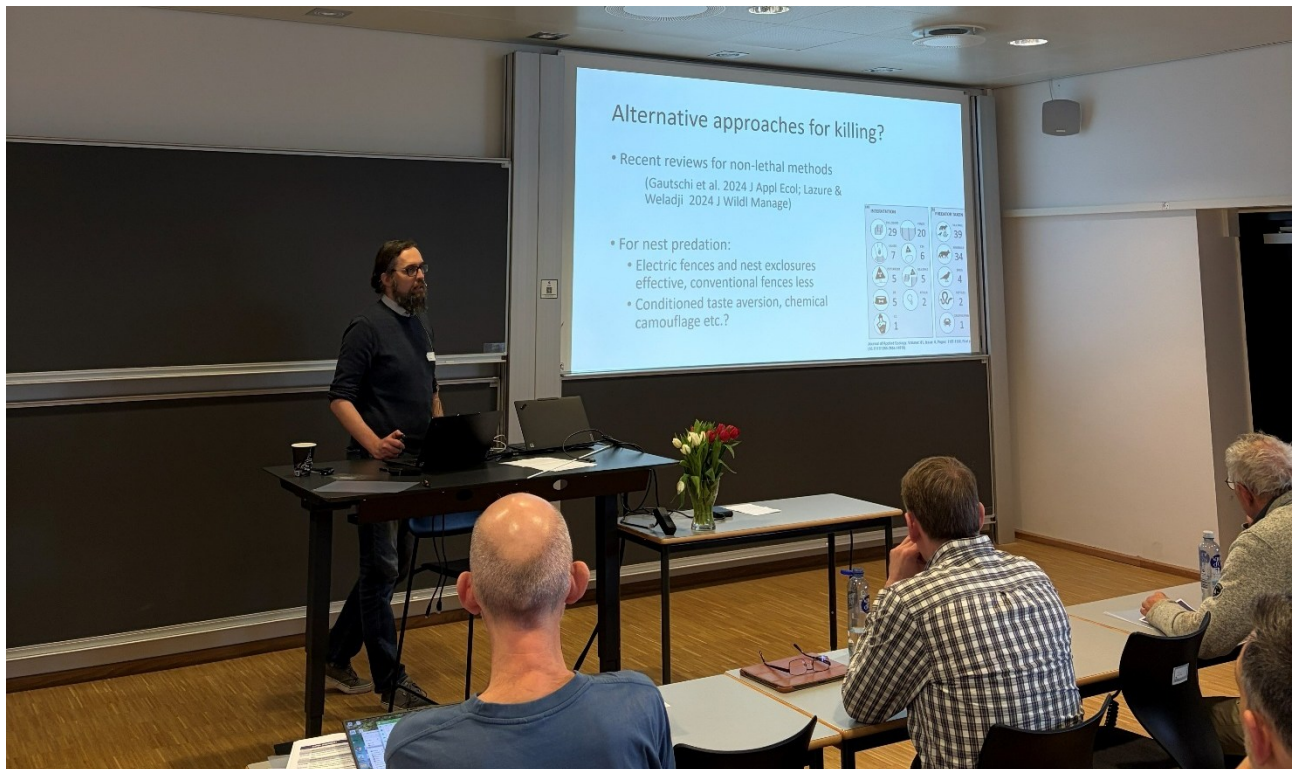


Researcher, Fredrik Dahl, Swedish University of Agricultural Sciences. How and when is culling efficient in IAS management – and is there any alternative?



POSTER SESSION AND COFFEE





Keynote: Senior research Vesa Selonen, University of Turku. Non-lethal predator management for bird conservation



Dr. Thomas Götz, University of St. Andrews. Non-lethal Management of Carnivore Depredation using the Targeted Acoustic Startle Technology (TAST): from the ocean onto land



Keynote: Professor Karol Zub, Mammal Research Institute, Polish Academy of Sciences. Insights into predator biology provided by modern monitoring



Nadieh de Jonge, Environmental Biomonitring, Aalborg University. Enhanced monitoring of land-living and semi-aquatic predators using synergistic conventional and next-generation approaches



Researcher, Rasmus Mohr Mortensen, Ecoscience, Aarhus University. Timescape selection: a powerful and straightforward method to model diel activity variation in carnivorous mammals from camera trap data as function of multiple predictors



Katrine Møller-Lassesens (Msc), Environmental Biomonitoring, Aalborg University. A novel drone- and AI-based approach to sampling mesopredator behaviour and habitat use



Rasmus Worsøe Havmøller, Senior researcher, University of Agder. Monitoring mustelids—stoat (*Mustela erminea*) and weasel (*M. nivalis*) reveal low captures



Keynote: Professor Carl Soulsbury, University of Lincoln. Mesocarnivores in the Anthropocene



Jillian Sullivan, Student, Barnard College of Columbia University Mesopredator Occupancy and Co-Occurrence in the Romanian Carpathians: Insights from Multispecies Camera Trap Modeling



Aksel Bo Madsen, Phd., Otter Consult. Successful recovery of otters in Denmark



Tim R. Hofmeester, Associate Professor and Researcher, Swedish University of Agricultural Sciences Latitudinal differences in reproductive timing of carnivores: management implications



Keynote: Associate professor Jes Lynning Harfeld, Culture and Communication, Aalborg University. Carnivores in the History of Philosophy





TRIP TO THE NATURE RESERVE LILLE VILDMOSE



Thomas Holst Christensen tells the story about the history and wildlife of Lille Vildmose











European SMCC 2026

Small and medium sized carnivore
conservation and management



Photos: Morten Hilmner and Jan Skriver



15. JUNI
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**1st INTERNATIONAL SMALL AND MEDIUM
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