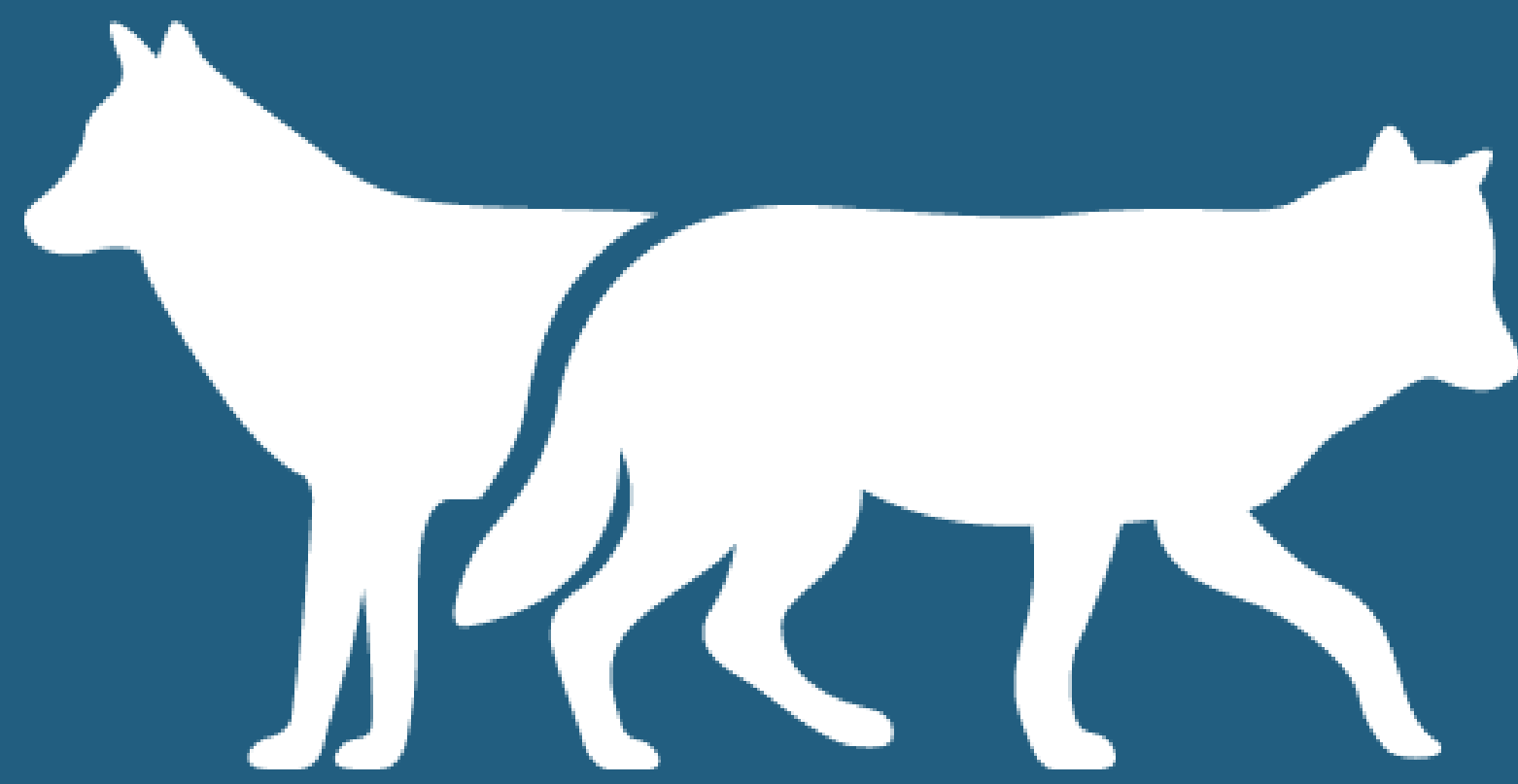


Wolves Across Borders

International Conference on Wolf Ecology & Management



WOLVES ACROSS BORDERS



Hotel De Werelt

June 2nd - 6th 2025 | Lunteren, The Netherlands

www.wolvesacrossborders.com

Table of Contents

Click on the items to be taken directly to the corresponding section in the booklet.

<u>Important information</u>	3
<u>Venue map and Outside location</u>	5
<u>Sponsors</u>	7
<u>Wildlife Biology Special Issue</u>	14
<u>Interactive Events</u>	15
<u>Program Overview</u>	17
<u>Detailed Program</u>	18
<u>Meet the Keynote Speaker</u>	28
<u>Meet the Plenary Speakers</u>	29
<u>Abstracts of the Plenary Presentations</u>	35
<u>Abstracts of the Parallel Presentations</u>	51
• <u>Monday</u>	• 52
• <u>Tuesday</u>	• 81
• <u>Wednesday</u>	• 131
• <u>Thursday</u>	• 171
<u>Abstracts of the Parallel Sessions</u>	191
<u>Abstracts of the Workshops</u>	197
<u>Posters</u>	215
<u>Movies</u>	219
<u>Public Transport Information</u>	221
<u>Walking Routes between Hotels and Conference Center</u>	222
<u>Your hosts</u>	223

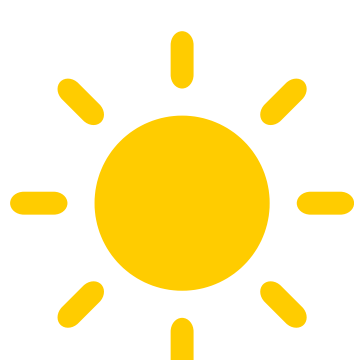
Icon Legend



This presentation will be live streamed for our virtual visitors



This presentation will be a pre-recorded video from the presenter.
We will try to have a live Q&A with the presenter after the video.



This workshop will be held outside, please refer to the Venue Maps
for the exact location

Important information

Arrival

We will be welcoming most of you on Monday morning.

We are offering a luggage shuttle between Lunteren train station and the hotels on Sunday, June 1st and Monday, June 2nd.

Sunday June 1st: Operating between 10:00-18:00 - going to De Werelt, Bosgoed and 50/50 Belmont. Optionally also to Hugo de Vries

Monday June 2nd: Operating between 9:00-11:45 - going only to De Werelt

Please register your interest for this shuttle in Invajo before Wednesday, May 28th.

If you are arriving on Monday, your luggage will be brought to Hotel and Conference Center De Werelt, regardless of which hotel you are staying at.

At the end of the day, you can collect your luggage and proceed to your hotel to check in.

There is no need to go to your hotel before attending the conference on Monday.

Conference check-in

Conference check-in opens Monday June 2nd at 10:00 at Hotel and Conference center De Werelt. If you are arriving with your luggage, please bring this to the hotel reception **first**, then check in at the conference by collecting your namebadge and goodiebag at our registration tables.

During the conference, photos and videos will be taken, which will be used by the organisation to share the event online and in post-conference communication. By purchasing a ticket you agree that you may be recorded on camera during the event. If you wish not to be recognizable on photos, you can ask for a white keychain with the conference team.

Please always visibly wear namebadge throughout the conference program.

Catering and Allergies

The catering throughout the conference will be fully vegetarian. This is the policy of the main organiser. Allergies and dietary wishes that have been provided by the participants have been passed on to the catering staff. Please share your name with the catering staff to check which foods are available for you and/or whether they have a specific meal provided for you. There will be a specific buffet table for people with dietary wishes. Please be aware that cross-contamination unfortunately cannot be avoided in this setting. The catering may contain traces of allergens. If you have a severe allergy, it is your responsibility to take the necessary precautions.

Important information

Included Food and Drinks

- Breakfast: If you have an all-inclusive ticket (including accommodation), breakfast is provided at your designated hotel.
- Lunch: For all in-person ticket holders lunch is provided, including drinks.
- Dinner: If you have an all-inclusive ticket, general admission, or day ticket including dinner, dinner is provided. Drinks are included for dinner at the restaurant and during the time frame shown in the program. After these times, drinks are at the participant's own expense.
- Coffee, tea, snacks: For all in-person ticket holders coffee, tea and snacks are available during breaks.
- Poster 'borrel': The first round of drinks is on us! After that drinks are at the participants' own expense.
- After-party: Drinks are at the participants' own expense.

Payment Options

At conference center De Werelt you are only able to pay by card. The conference center does not accept cash. American Express is not accepted.

WiFi

Conference center De Werelt has an open WiFi network which can be accessed without a password.

Silent/Working Area

We have a designated silent area where you can take your time to do some work or take some time for yourself. A silent/working area (Room 5) is available for you as well, it is located above the entrance hall. While you are there, please be mindful of others. For phone calls, please go outside.

Smoking

Smoking is not allowed indoors of the conference center and hotel. There are smoking areas outside and please dispose your cigarette bud in the standing ashtrays. Let's keep the environment clean.

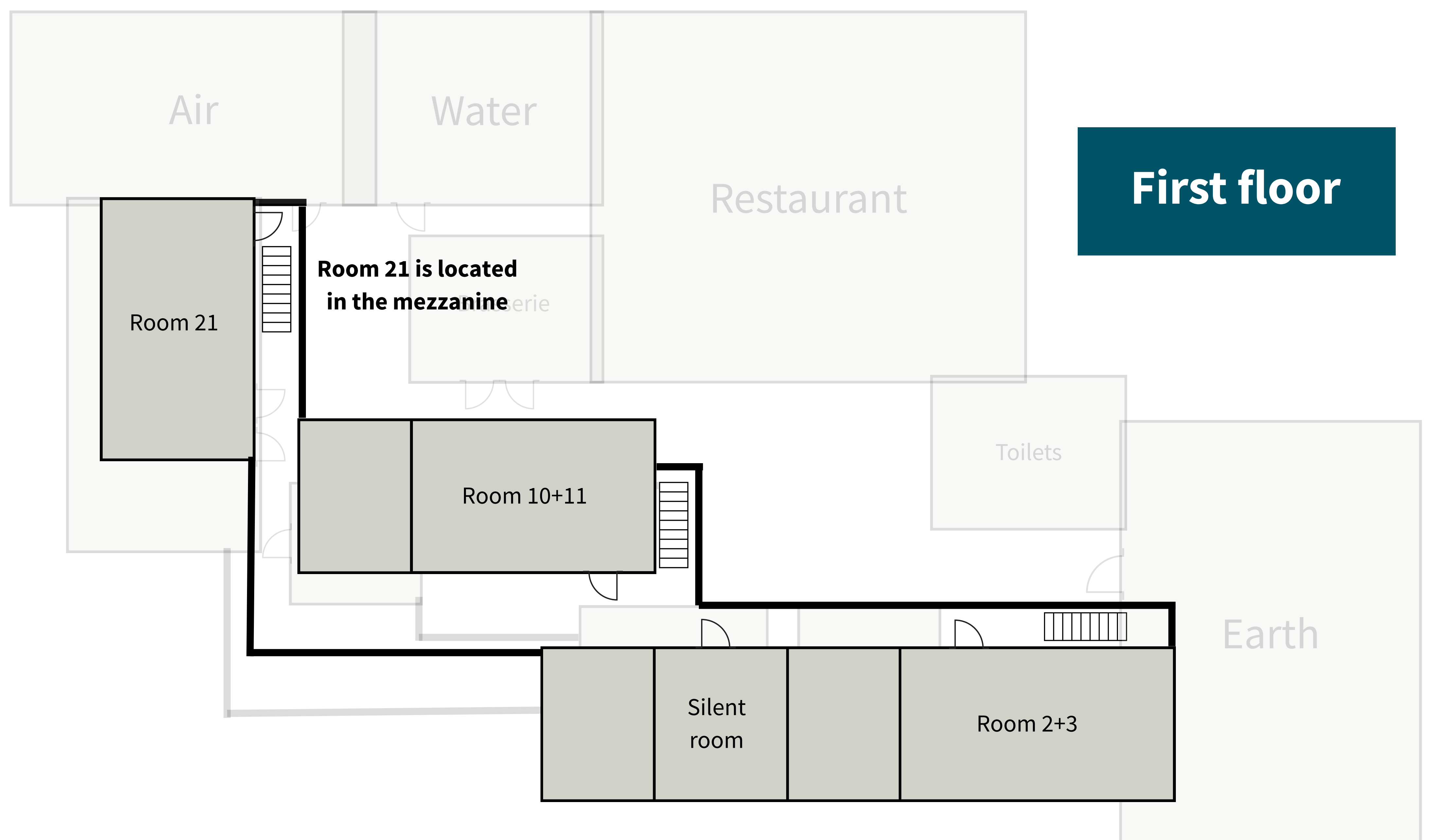
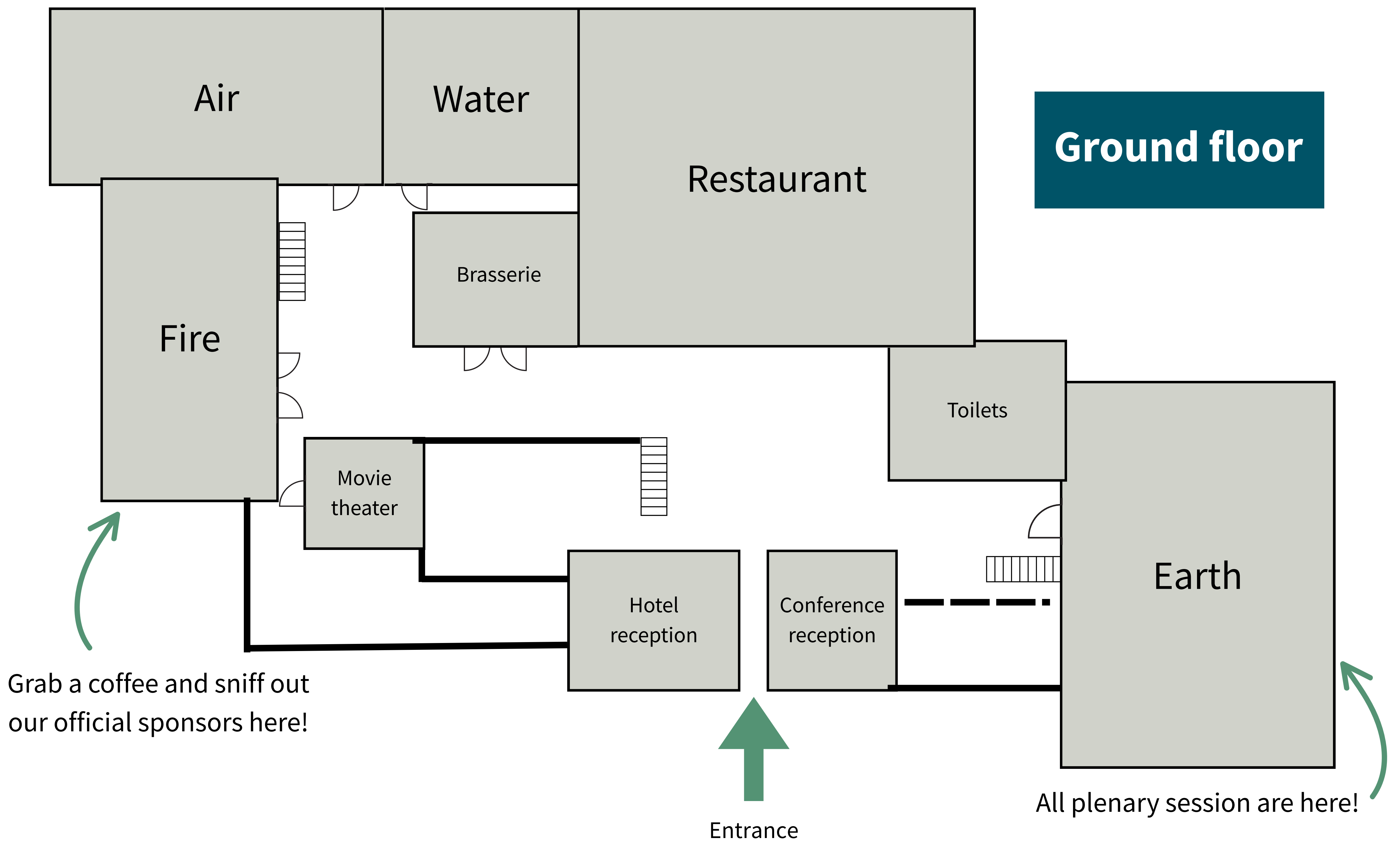
Conference Team

The Wolves Across Borders Team is visible by their **orange lanyards**. Don't hesitate to ask them questions you may have about the conference.

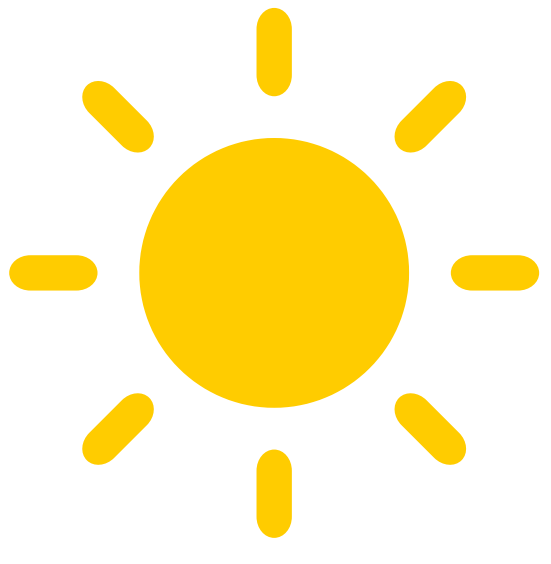
Terms and conditions

Please find the terms and conditions and the code of conduct for the conference [here](#).

Venue Map

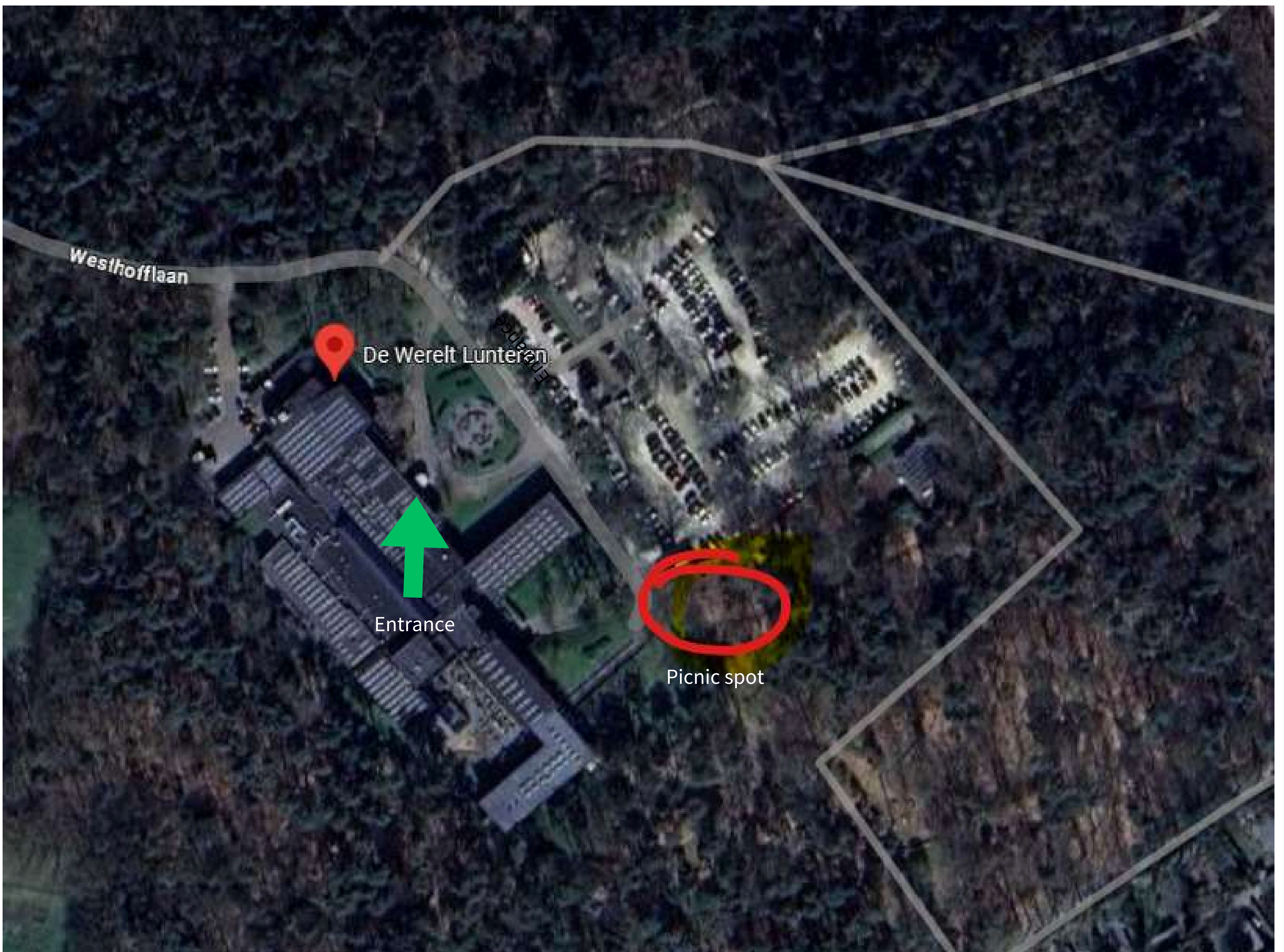


Venue Map - outside location



The workshops with the sun-icon will be held outside at the picnic spot. The location is shown in the picture below.

For the off-site sessions, please meet at the main entrance of Conference Center De Werelt.

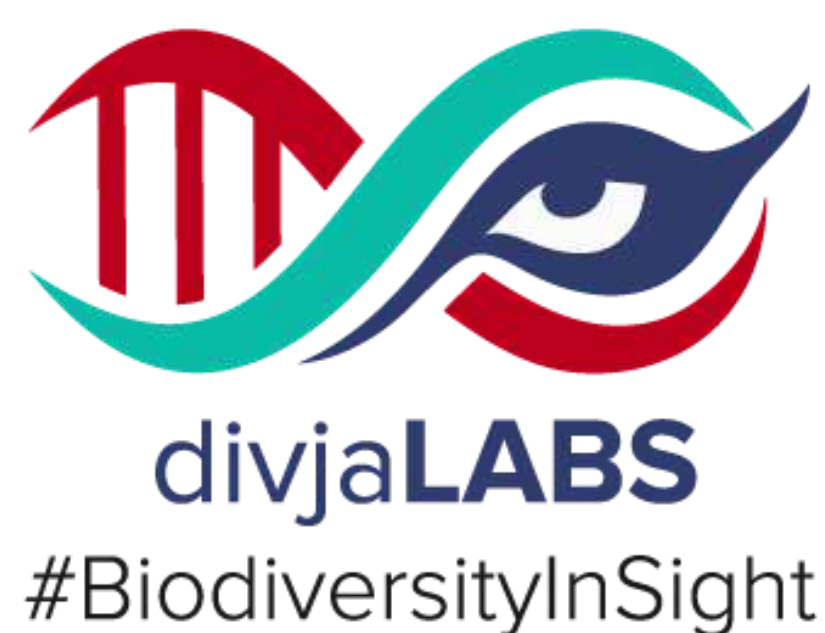


Sponsors

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Sponsors

Rewilding Europe

Rewilding Europe is driving the recovery of European nature at scale. By rewilding large landscapes across the continent, we support the return of key species like wolves. We foster coexistence through creating safe corridors and community engagement. Our mission is to make Europe a wilder place with healthy nature benefiting both nature and people.

DivjaLabs

DivjaLabs is an innovative company specializing in advanced molecular and computational tools for biodiversity conservation. Founded by experienced scientists as a University of Ljubljana spin-out, it delivers cutting-edge solutions for genetic monitoring and molecular-based research, supporting effective wildlife management and conservation efforts.

Ecotone

Ecotone produces various kinds of mist nets and offers equipment for ornithological and bat research. Then Ecotone Telemetry produces GPS-GSM loggers for tracking wildlife, allowing scientists to obtain unique and accurate data on animal behaviour and migration. Custom designed for each project to meet researchers' needs.

Wildlife Acoustics

Wildlife Acoustics is a passionate and innovative group of technologists, operational experts, wildlife enthusiasts and conservationists, we have a zeal for helping our customers succeed in their research—understanding their needs and creating wildlife audio recording and analysis tools specially designed to help them conduct research across the globe.

Sponsors

Agentschap Natuur en Bos

Agentschap Natuur en Bos (Agency for Nature and Forests) cherishes, protects and develops over 70,000 hectares of nature reserves, forests and parks in Flanders and wants as many people as possible to enjoy them. Together with partners, it is happy to support valuable nature projects. Nature and Forests also outlines clear legislation and nature policy to restore and strengthen Flemish nature. www.natuurenbos.be

Smart Parks & Faunabeheer Midden-Nederland

Smart Parks and Faunabeheer Midden Nederland are joining forces to promote coexistence with the wolf in the Netherlands by developing and applying innovative services. Our key offerings include:

Identification

- An AI-driven wildlife camera network that automatically detects, classifies and geo-tags wolf activity in real-time.

Capture

- Soft-catch traps engineered for the safe, stress-free handling and release of wolves when intervention is required.

Monitoring

- GPS tracking collars that deliver continuous location and behaviour data, enabling detailed studies of movement patterns and habitat use.

WWF the Netherlands

A global approach to manage human-wildlife conflict

Together with local communities, WWF works worldwide to find solutions for wildlife and humans to coexist. WWF's global Conflict to Coexistence (C2C) framework offers a structured, adaptable approach to human-wildlife conflict. It provides step-by-step guidance for planning, implementing, and monitoring solutions. Balancing short-term actions with long-term strategies, C2C supports integrated, scalable conflict management tailored to diverse ecological and regional contexts worldwide.

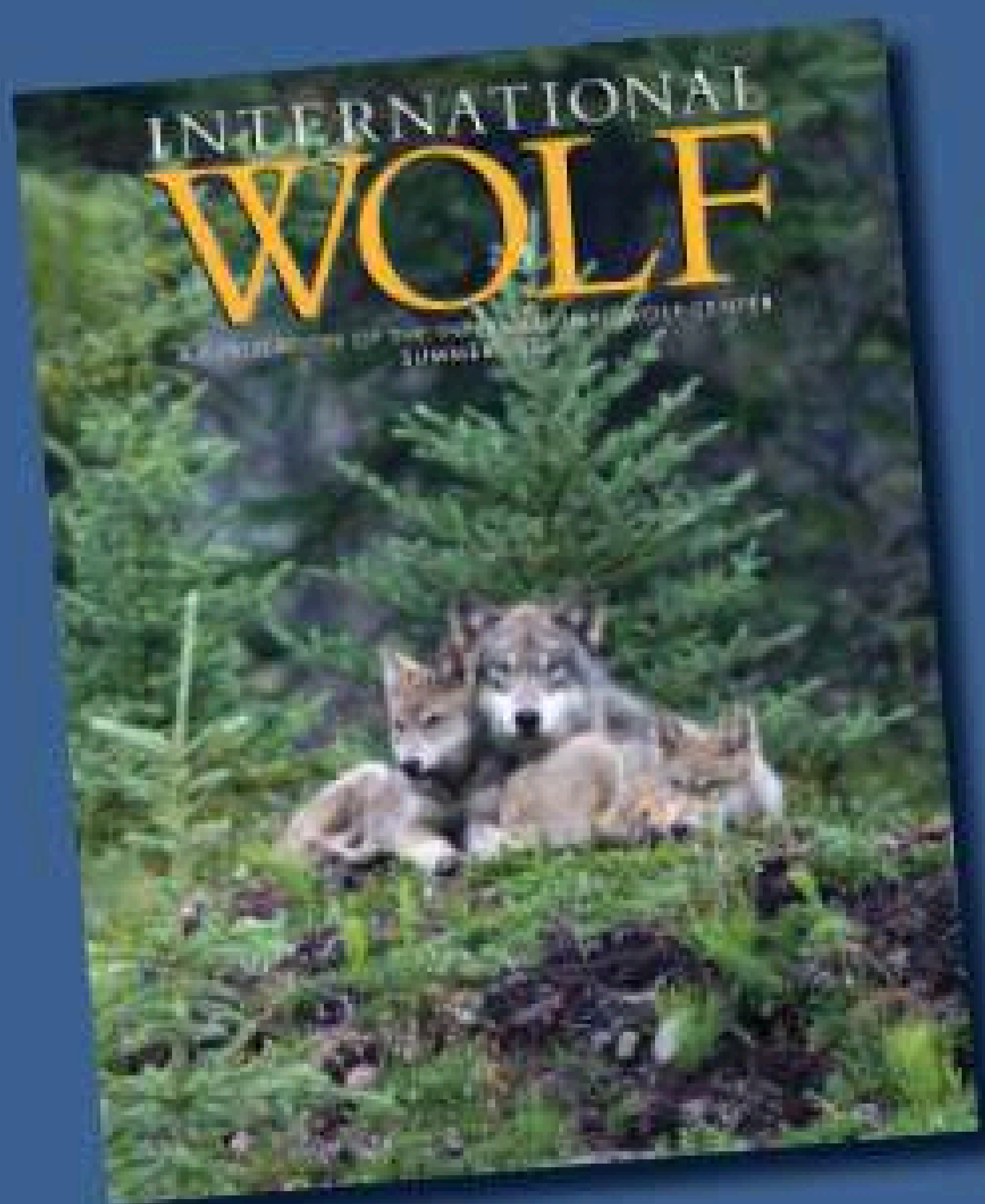
Sponsors

Vectronic Aerospace

Vectronic Aerospace is the global leader in wildlife GPS collars and telemetry technology. Combining a multinational team of wildlife and satellite communications experts, Vectronic supports researchers in the study of a wide range of mammal species. Customize your communication and sensor options to deploy the highest-grade and most rugged GPS collars.

International Wolf Center

The international Wolf Symposium, held every four years, unites researchers, wildlife managers, educators, and enthusiasts to share scientific findings and conservation efforts regarding wolves. The event includes presentations, workshops, and panel discussions aiming to enhance understanding, inform policy, reduce conflict, and appreciate the role of wolves in their ecosystems.



**Download a complimentary copy of
INTERNATIONAL WOLF MAGAZINE:**



Scan me!



SAVE
THE
DATE!



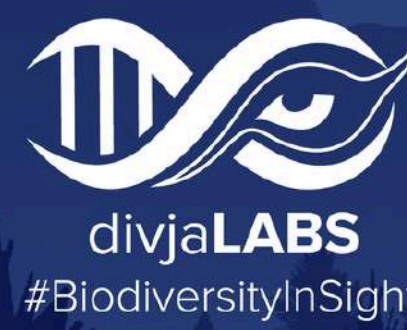
International Wolf Symposium: *WOLVES IN A CHANGING WORLD*

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Smart Parks and Faunabeheer Midden Nederland are joining forces to promote coexistence with the wolf in the Netherlands by developing and applying innovative services.

Identification with AI
cameras

Capture with Soft-
catch traps

Monitor with GPS
tracking collars



Song Meter Mini 2

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Wilk (Canis lupus), foto: Cezary Korkosz



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A future for people and wolves

Wildlife comeback isn't just about nature—it's about people too. As wolves return, nature recovers, biodiversity flourishes, and local communities can thrive. Through rewilding, we enable co-prosperity, where people and nature flourish together. By supporting safe corridors, livestock protection, and nature-based economies, we ensure a wilder, more resilient future for all.

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Wildlife Biology - Special Issue



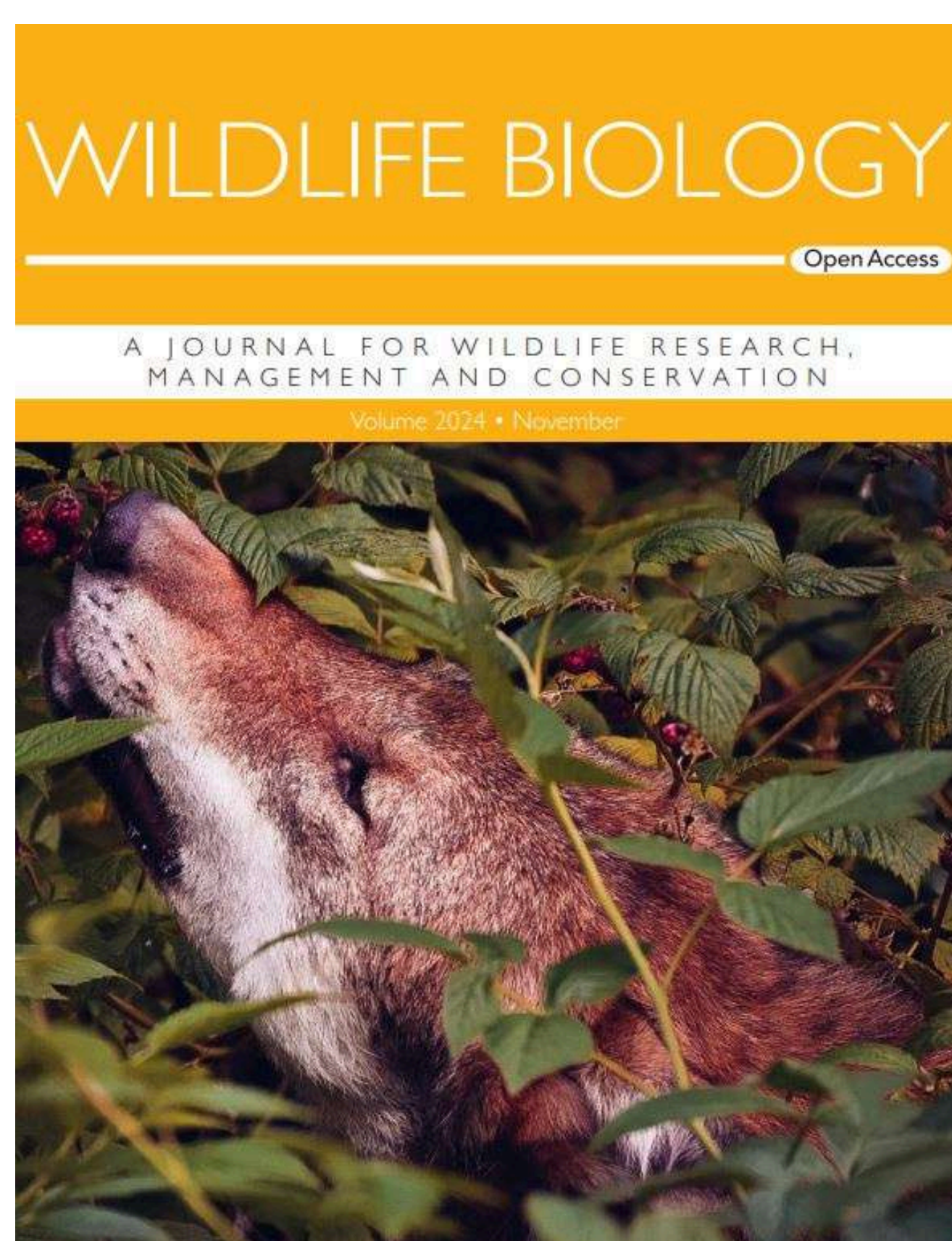
A JOURNAL FOR WILDLIFE RESEARCH,
MANAGEMENT AND CONSERVATION

Wildlife Biology is proud to be the official outlet of
Wolves Across Borders 2025!

The first Wolves Across Borders took place in Stockholm in May 2023. It was the first time ever a wolf ecology conference was held with an attempt to be a global conference. Most geographical areas were covered and delegates came from different 32 countries! The outcome of the conference was published in November 2024 special issue ([check it out here](#)). It was the largest single issue published in Wildlife Biology's history!

**We invite you to submit to the next
“Wolves Across Borders” special issue.**

Questions? Email: me@wildlifebiology.org
www.wildlifebiology.org



Interactive Events

Rendezvous Site

We understand that large conferences might be overwhelming, particularly for early-career researchers. Therefore, we have organized an ice-breaker event to facilitate networking among fellow early-career researchers and Wolves Across Borders first-timers before the opening ceremony.

Where: Room 2+3

When: Monday June 2nd, from 11:00-11:45

Who: Early-career researchers and WAB first-timers.

We recommend you get your conference badge before this session to facilitate attendance in the opening ceremony.

Wolf Howling Contest

On this first evening of the conference, we invite you all to howl your heart away! Right after dinner and just outside of the conference hotel we will host a very informal competition to identify the best wolf howler at this conference. What a better way to make yourself known and get a chance to win a prize from Wildlife Acoustics (official WAB sponsor)? We hope to hear you soon!

Where: Picnic spot, right of the parking area

When: Monday June 2nd, from 21:00-21:30

Poster 'borrel' and Competition

Join us at our poster session for posters and exhibitors, in the Dutch 'borrel' style. The Dutch love their 'borrels', which both means a small drink and an informal meet-up with drinks and snacks. So with a drink and snack in hand you can come check out the posters and exhibitors.

All posters will join in a poster contest, sponsored by Wildlife Biology - Journal for Wildlife Research, Management and Conservation. You will be able to vote for a public poster prize as well! By scanning a QR code with your phone, you can choose the poster you think is the best. The winners will be announced on Thursday morning and their posters will be displayed during the day.

Best Overall Poster: 1st, 2nd, and 3rd place - determined by Wildlife Biology

People's Choice Award: one winner - determined by the participants

Interactive Events

Collect the pack - Sticker contest

Get ready to hunt, gather, and connect! Each attendee receives a sheet of stickers—your mission is to collect two of every colour by trading with others throughout the conference. It's a fun, low-pressure way to meet new people, spark conversations, and build your wolf pack.

Complete your sheet and return it to the registration desk by Wednesday at 18:00 to enter our prize drawing! Let the collecting and connecting begin!

Meet the pack - Speed dating

A fun and interactive way of connecting participants from senior researchers and students to policymakers and other stakeholders. About 50 people (selected at random) will join for each session. Participants will have 2 minutes to chat with the person across from them until the bell rings. Once the bell rings, people switch positions and do it again. We encourage all participants to attend.

Where: De Brasserie, left of the restaurant

When: During the breaks! See your session number for the day and time. Just show up and grab a coffee.

Are you here for just a day or two? Just join one of the session when you are here!

Free walks

Wolves Across Borders 2025 takes place in Conference center De Werelt, which is situated near the largest natural area of the Netherlands, called the Veluwe. From the conference center we will be organising two different (free) walks.

Walk 1 will be walking to the nearby sand drift and viewing point together with local wolf monitoring volunteers. Walk 2 will first go by car to Radio Kootwijk, in the centre of the Veluwe. This will be guided by Jaap van Leeuwen (wolf consultant) and walk through beautiful heather and forest area.

Where: Gather at the entrance of De Werelt

When: June 6th, at 9:00. Return around 12:00

Limited space available. Please register via Invajo.

Program Week Overview

Monday Wolves Across Borders

- 10:00 - 12:00 Conference Check-in
- 12:00 - 12:50 Welcome to WAB
- 12:50 - 13:15 Plenary Presentations
- 13:20 - 13:50 Break
- 13:50 - 15:30 Plenary Presentations
- 15:30 - 16:00 Break
- 16:00 - 18:00 Parallel Presentations
- 18:00 - 19:00 Break
- 19:00 - 21:00 Opening Dinner

Tuesday Ecology & Society

- 08:30 - 10:30 Plenary Presentations
- 10:30 - 11:00 Break
- 11:00 - 12:20 Various Parallel Sessions
- 12:20 - 13:30 Lunch
- 13:30 - 15:50 Various Parallel Sessions
- 15:50 - 16:15 Break
- 16:15 - 18:15 Parallel Workshops
- 18:15 - 19:00 Break
- 19:00 - 21:00 Dinner

Wednesday Policy & Practice

- 08:30 - 10:00 Plenary Presentations
- 10:00 - 10:30 Break
- 10:30 - 12:00 Various Parallel Sessions
- 12:00 - 13:00 Lunch
- 13:00 - 15:00 Various Parallel Sessions
- 15:00 - 15:30 Break
- 15:30 - 17:30 Parallel Workshops
- 17:30 - 19:30 Poster Borrel
- 19:30 - 21:30 Dinner

Thursday Monitoring & Management

- 08:30 - 10:30 Plenary Presentations
- 10:30 - 11:00 Break
- 11:00 - 12:20 Panel Discussion
- 12:20 - 13:20 Lunch
- 13:20 - 15:00 Various Parallel Sessions
- 15:00 - 15:30 Break
- 15:30 - 17:30 Parallel Workshops
- 17:30 - 18:00 Closing Ceremony
- 18:00 - 19:30 Break with live music
- 19:30 - 21:00 Dinner
- 21:00 - 21:00 Evening Social

Friday - Optional

Optional Walk

Monday

10:00 - 12:00 Conference Check-in
11:00 - 12:00 Rendezvous Site: Icebreaker Session

Room: Earth
12:00 - 12:20 Opening: Welcome to WAB
12:20 - 12:50 Keynote Speaker: David Mech
Plenary Presentations
12:50 - 13:20 Adrian Wydeven - North America
13:20 - 13:50 Break (Room Fire)
13:50 - 14:20 Claudio Sillero - Africa
14:20 - 14:50 Geraldine Werhahn - Asia
14:50 - 15:20 Luigi Boitani - Europe
15:20 - 15:30 Conference Announcement
15:30 - 16:00 Break (Room Fire)

16:00 - 18:00 Parallel Presentations

Room	Earth	2 + 3	Air	Water	10 + 11
Theme	Behavioural Dynamics	Wolves & Genetics	Species Interactions	Spatial Ecology	Survival & Mortality
16:00 - 16:20	Cecilia Di Bernardi Can experience explain inter-territorial variation in wolf dietary response to ungulates abundance?	Arkadiusz Dziech Identification of single nucleotide polymorphisms in 270 wolf genomes.	Veronika Braunisch Interactions between recolonizing wolves and mammal communities based on long-term camera-trapping data.	Jesse Lewis Wolf recolonization, ecology, and coexistence: comparison within and between North America and Europe.	Carmela Musto Anthropogenic and natural factors causing wolf mortality in Italy.
16:20 - 16:40	Joseph Bump Voyageurs Wolf Project: insights from a decade of research in northern Minnesota, USA.	Maciej Szewczyk High diversity of grey wolf (Canis lupus) paternal lineages in central and eastern Europe.	Kerrian Chauvière Influence of wolves on relative abundance and activity patterns of wild ungulates in human-influenced forested ecosystems.	Adrian Wydeven Recovery of Gray Wolves in Wisconsin USA: from extirpation to coexistence.	Sabina Nowak Road mortality of wolves in human-dominated landscapes in Poland.
16:40 - 17:00	Adwait Mahesh Deshpande Linking individual and collective behaviours: Insights from wild Indian wolves.	Francesca Rolle Who are the wolves that make the difference?: Genetic reconstruction of wolf recolonization history in the Italian Alps.	Antonio Sampredo Garrido Comparing activity patterns of the Himalayan wolf with Himalayan marmots and kiangs in a high-altitude landscape.	Anna Treydt How to connect? Possible movement corridors for wolf packs in a human-impacted Swedish landscape.	Peter Rebholz o.b.o. D.Ausband Breeder turnover and its cascading effects on wolf pack structure.
17:00 - 17:20	Jorgelina Marino Wolves in the clouds: Climate and breeding phenology in Ethiopian wolves	Barbora Černá Bolfíková Genetic admixture between Central European and Alpine wolf populations.	Pauline Arends Badgers and wolves: close encounters on the set.	Gonçalo Costa The use of spatial capture-recapture to improve environmental impact assessments on wolves.	Peter Sunde Apparent survival of mated wolves across West-central Europe.

Monday

Room	Earth	2 + 3	Air	Water	10 + 11
Themes	Behavioural Dynamics	Wolves & Genetics	Species Interactions	Spatial Ecology	Survival & Mortality
17:20 - 17:40	Thomas Gable How the temporal dynamics of wolf predation during summer are shaped by resource pulses, prey availability, and pup-rearing demands.	Sarah R. Hoy How can changes in the genetic health of wolf populations cascade to influence boreal forests?	Melis Töke Niche differentiation within a sympatric population of Wolves and Golden Jackals in the Eastern Marmara Region of Türkiye	Peter Rebholz Linking age and social status of wolves to vulnerability throughout the harvest season.	Ana Morales-González & Héctor Ruíz-Villar* Patterns and determinants of mortality in grey wolves (Canis lupus).
17:40 - 18:00	<i>*Please note that Thomas Gable's presentation takes up two time slots</i>	Øystein Flagstad The origin and spread of coat color anomalies in a highly inbred wolf population.	Dário Hipólito Wolf and jackal interaction patterns in Croatia.	Ane Eriksen Uncovering the triggers of wolf fatigue: From sports science to wolf energetics.	Camilla Wikenros Impact of wolf predation as well as environmental and anthropogenic factors on moose harvest in Scandinavia.
* Indicates a prerecorded presentation. We aim to have a live Q&A.					

18:00 - 19:00

19:00 - 21:00

21:00 - 21:30

Break

Opening Dinner

Wolf Howling Competition (outside)



Tuesday

Room: Earth

- 08:30 - 09:00

Noëlle Aarts - Arguing along fault-lines: How rhetorical practices polarize debates on wolf comeback in the Netherlands and Flanders
- 09:00 - 09:30

Martin Drenthen - The challenge of making sense of wolves in cultural landscapes
- 09:30 - 10:30

Kevin Crooks & Mireille Gonzalez - Social-ecological insights in wolf restoration in Colorado, USA
- 10:30 - 11:00

Break (Room Fire)

11:00 - 12:20 Parallel Presentations & Sessions

Room	Earth	Air	2 + 3	10 + 11	Water
	Attitudes	Co-existence	Farmers	Wolves in Landscapes	Panel Session
11:00 - 11:20	Carolyn Schaltegger Navigating Socio-Ecological Dynamics: Changes in Human Attitudes and Wolf Management in Switzerland.	Ronja Kraus Voices from the Mountains: Using in-person interviews to understand livestock farmers' attitudes on wolves and wolf management in the Italian Alps.	Robert Myslajek Wolves as sentinels of farmers' compliance with sanitary regulations in Poland.		Citizen initiatives for co-existence with wolves Participants: Wolf Fencing Team Belgium Pasturs (Italy) Entre chien et loup (France) Herdenschutz Niedersachsen (Germany)
11:20 - 11:40	Davide Ravaglia Media Attitudes Toward Wolves: The Role of Recolonization Phases, Pasture Seasons, and Proximity to Elections in the Italian Alpine Regions.	Nima Badelu Insights of coexistence between humans and wolves: a case study from Tandoure National Park in Iran.	Julia Stauder Fences and Shepherds Are Just the Start: Navigating the Complex Challenges of Implementing Livestock Protection Measures.	Dries Kuijper Wolves recolonize novel ecosystems in Europe leading to novel interactions.	
11:40 - 12:00	Svenja Capitain Exploring the role of implicit and explicit attitudes in human-wolf coexistence	Naresh Kusi Perspectives of traditional Himalayan communities on fostering coexistence with Himalayan wolf and snow leopard.	Stefano Filacorda Living labs - a shared management tool for wolf, livestock and hunting coexistence: The case study of the 4Pethabeco project (Ipa-Adrion Interreg Project) in the areas of the Dinaric Alps and the North Eastern Alps.	Tariku Mekonnen Gutema* Home range, habitat use, and activity patterns of African wolves (Canis lupaster) in the Ethiopian highlands	
12:00 - 12:20	Cassiopeia Camara Age-Defying Conservation: Cogeneration from Boomers to Zoomers	Jérémie Moulin It takes a village: thanks to inclusive conservation, an NGO implemented a successful livestock protection program in Switzerland	Malaika Mathew Chawla The relationships between wolves and pastoralists in the context of shrinking grasslands in Surendranagar district, Gujarat, India.	Francesca Marucco Transboundary Monitoring of the Wolf Alpine Population over 7 countries and 24 years.	

Tuesday

12:20 - 13:30 *Lunch*

13:30 - 15:50 Parallel Presentations, Sessions & Movies

Room	Earth	10 + 11	21	2 + 3	Air	Water
Themes	Wolves & Society	Wolf Habitat & Wolf-dog	Genetics & Health	Feeding & Predation	Challenges of Co-existence	Panel Session
13:30 - 13:50	Emu-Felicitas Ostermann-Miyashita 25 years since the return of wolves in Germany – is the public as polarised as we think?	Roman Gula Habitat protection is crucial for the future well-being of Poland's wolf population.	Isabel Salado Echoes of survival: hidden genetic challenges in the Iberian wolf.	Kevin Groen Feeding Ecology of Wolves in the Netherlands.	Meta Rijks Dilemmas in nature management since the return of wolves.	Living with Wolves: Addressing Emotions Participants: <i>Maarten Jacobs</i> <i>Herman uit de Bosch</i> <i>Annet Muller-Ter Veen</i> <i>René Grotens</i> <i>Glenn Lelieveld</i>
13:50 - 14:10	Hugh Jansman Wolves, Science & Society	Jennifer Hatlauf Modeling habitat- and conflict potential for wolves in Austria to inform management.	Aimilia Ioakeimidou From wilderness to urban edge: genetic insights into a newly established wolf population in Parnitha National Park - Central Greece.	Dani Freund Video wolf predating beaver: how wolves influence beaver foraging.	Hans Peter Hansen On wolves and commons: Institutionalizing local deliberation and social learning in Danish wolf management.	
14:10 - 14:30	Iina Ala-Kurikka Taming the Wolf Debate: Lessons from the LIFE BOREALWOLF Project Communication.	Iga Kwiatkowska Comparison of the diet of free-living wolf-dog hybrids and wolves	Caroline Sophie Birkenhain Pedigree-based analysis of livestock depredation behaviour in German wolves.	Elke Wenting The Influence of Wolves and Wild Boars on European Facultative Scavengers.	Clémence Méheust The natural resettlement of the Grey wolf in Normandy, France.	
14:30 - 14:50	Austin T. Homkes Ending the cycle of endless conflict: four years of keeping wolves off a cattle ranch in Minnesota, USA	Sandra Lai (Re)Connecting the dots: assessing connectivity loss and landscape demogenetics of Ethiopian wolf populations.	Gwendolyn Wirobski Seasonal and Health-Related Variations in Wolf Hair Cortisol: A Method Validation from Captive and Field Samples.	Joost de Jong Kill patterns of recolonizing Eurasian wolves.	Anne Kessels Polarising discursive practices in the debate on the comeback of the wolf.	
14:50 - 15:10	Floor Lormans Coexisting with wolves: Managing conservation and public concerns on the Utrechtse Heuvelrug	Martina Lazzaroni A novel approach to investigating the impact of urbanization on wolf-dog interactions in Central Italy.	Terrance Vincent O'Halloran The Wildity Scale as a communication tool on reintroduced wolves.	Bart Beekers Wolves as a scavenger and supplier of carrion in the Veluwe, the Netherlands.	Esther van der Meer Wolves in the Netherlands : past, present and future.	

Tuesday

Room	Earth	10 + 11	21	2 + 3	Air	Water
Themes	Wolves & Society	Wolf Habitat & Wolf-dog	Genetics & Health	Feeding & Predation	Challenges of co-existence	Panel Session continued
15:10 - 15:30	Rob Lenders 'Uuluesheued!' A long term historical perspective on wolf-human relationships.	Helena Johansson Wolves across species' borders: genetic determination of wolf-dog hybrids kept as pets in Finland.	Kees van Frankenhuyzen Wolves in Southern Algoma (Ontario, Canada): A Private-Public Partnership Project.	Charlotte vanderLocht How fast do native ungulates respond to the return of the wolf in anthropogenic landscapes?	Jasja Dekker Projecting wolf population dynamics in Europe, the need for regional parameters, and how to use population modelling in wolf policy and management	Living with Wolves: addressing emotions
15:30 - 15:50		Astrid Vik Stronen Wolf-dog hybridization and introgression in and around Dalmatia, Croatia.	Mari Lyly Volatility in volunteer work: developing large carnivore observation network in Finland.	Thomas Gable Beavers - not ungulates - are the primary pray of many wolves during summer in a southern boreal ecosystem.	Inès Moreno Swiss Wolf Monitoring and Management: Integrating Science, Policy, and Conservation.	
15:50 - 16:15	Break (Room Fire)					* Indicates a prerecorded presentation. We aim to have a live Q&A.

16:15 - 18:15	Parallel Workshops					
Room	Earth	Air	Water	2 + 3	10 + 11	21
	Mireille Gonzalez Designing Diverse Social Conflict Resolution Approaches to Manage Human-Carnivore Conflicts	Femke Hilderink & Sybille Klenzendorf Conflict to Coexistence- an integrated and participatory approach to HWC management	Diemer Vercayie & Pepijn t'Hooft Citizen Initiatives for Coexistence: Towards a Collaborative Manual	Thorsten Gieser Understanding emotions in human-wolf conflicts	Cassiopeia Camara Howl You Say It? From Boomers to Zoomers	Maria Falkevik & Joseph Harrington A crash course in wolf conflict cooking

18:15 - 19:00	Break
19:00 - 21:00	Dinner



Wednesday

Room: Earth

08:30 - 09:00	Nicole Wanders Wengler & Marco Cipriani - EU wolf policy: current status and future outlook
09:00 - 09:30	Ilka Reinhardt - What is the wolf doing in politics? The political vs. the biological wolf
09:30 - 10:00	Arie Trouwborst - The shifting legal landscape for wolf conservation in Europe
10:00 - 10:30	Break (Room Fire)

10:30 - 12:00 Parallel Presentations & Sessions

Room	Earth	10 + 11	2 + 3	Water	Air
Themes	The path to Co-existence	Lessons from Monitoring	Wolf Management	Innovations	Panel Session
10:30 - 10:50	Maria Granados Towards Coexistence: Mapping costs and benefits associated with living with wolves in Spain.	Carmela Musto “The Italian wolf network”: presenting a model for a multidisciplinary operational network for the systematic processing of wolf samples.	Robert Ekblom Probably the best wolf monitoring in the world.	Giorgia Ausilio Effects of helicopter captures on wolf movements and behaviour.	The wolf debate within dynamic politics, misinformation and social media Participants: Maria Falkevik Cassiopeia Camara Claudio Sillero Fridolin Zimmermann Pepijn T'Hooft Arie Trouwborst
10:50 - 11:10	Katharina Steyer Establishing favourable reference values under the Habitats Directive for the wolf in Germany.	Marco Apollonio Wolves in Italy: insights for a European scenario.	Daniel Mallwitz How to (legally) kill a wolf in Sweden.	Jeremy Sunder Raj* Factors impacting collar malfunction and collar chewing behavior in gray wolves, Yellowstone National Park.	
11:10 - 11:30	Sarah Marshall The (Italian) Urban Wolf Project: a multidisciplinary approach exploring the effect of the anthropogenic environment on wolves' behavioral, hormonal, health-related and genetic profile.	Tomaž Skrbinšek Towards transboundary genetic monitoring of wolves: an online platform for harmonization and sharing of wolf genetic monitoring data across countries and laboratories.	Juan Pablo Ramirez The effect of legal status on wolf population dynamics.	Thomas Gable TBC	
11:30 - 11:50	Niels Gilissen Wolves: the uninvited guests - A nature conservation NGO facing the return of a large predator.	Josip Kusak Chasing tail: years of wolf management in Croatia.	Rudy Brogi Reporting of wolf sightings: a window into the spatiotemporal distribution of people's concerns?	Loredana McCurdy Drones as a Potential Hazing Tool to Reduce Livestock Depredation by Wolves.	

12:00 - 13:00 Lunch

* Indicates a prerecorded presentation. We aim to have a live Q&A.

Wednesday

13:00 - 15:00 Parallel Presentations & Movies

Room	Earth	10 + 11	Water	Air	
Themes	Co-existence in Communities	Bold Wolves	Wolf Politics	Conflict Management	Simultaneous Sessions
13:00 - 13:20	Jenny Glikman Seeing Coexistence: Environmental Rangers as Informants of Human-Wolf Interactions	Julia Kamp The lethal removal of two bold wolves in Saxony-Anhalt, Germany, as part of management guidelines.	Koen Driesen Wolf policy in a densely populated region of Flanders.	Stefano Filacorda Predation of wolves on domestic pet dogs: a new frontier of the humans and wolves relationship in North-East Italy.	1. Katrina Marsden EU Large Carnivore Platform: Youth workshop, Understanding viewpoints <i>Room 2 + 3</i> 2. Excursion Wolvencommissie Gelderland <i>Offsite - registration required</i>
13:20 - 13:40	Mari Tikkunen LIFE BOREALWOLF project mitigates farmers' concerns about wolves.	Johanna Fritz Coming (too) close? The behaviour of one individual wolf requires carefully considered action.	Femmie Smit The history and current status of the Dutch interprovincial wolves policy plan	Benjamin Kostner Shepherds at the Crossroads: Integrating Herd Protection and Landscape Management in South Tyrol.	
13:40 - 14:00	Carlos Javier Durá Alemañ Land of wolves, school of shepherds: the importance of pastoral knowledge on coexistence with the wolf in Spain and Italy.	Ariana Cerreta Is harvest creating a new wolf? Wolf behavior, sociality, and genomics.	Robin Rigg Evaluating 50 years of wolf protection in Slovakia.	Miroslav Kutal Testing a conservation compromise: Has public wolf hunting in Slovakia reduced livestock losses?	
14:00 - 14:20	Charlotte Lorand Close encounters with wolves: who's tiptoeing around whom?	Daniel Mallwitz The Swedish wolf hunt – Who, why, when and how?	Maria Falkevik Transboundary cooperation on carnivore management and wildlife crime in Fennoscandia and southern Africa – challenges and opportunities.	Oksana Grente Spatio-temporal dynamics of attacks around deaths of wolves: A statistical assessment of lethal control efficiency in France.	
14:20 - 14:40	Fabien Quétier Wildlife-smart communities as novel local governance models for coexistence with carnivores in Europe.	Glenn Lelieveld The subjectiveness of facts and feelings. Perceptions on how non-lethal management of bold wolves was stopped in court	Temple Stoellinger Challenges and Opportunities in Delisting Carnivores: A Comparative Study of Gray Wolves in the US and EU.	Wojciech Śmietana The Impact of Parental Loss on the Fate of Wolf Family Groups – Implications for Species Conservation and Population Management.	
14:40 - 15:00	Martin Janovsky First steps on the long road to find out if and how sheep farming on Tyrolean mountain pastures in Austria could adapt to the increasing presence of wolves.	Mari Tikkunen Wolves perceive hunting dogs in their territory as rivals.	Eric Odell* Voter Directed Wolf Restoration to Colorado, USA: A synopsis of the process to restore wolves and the status of gray wolves in Colorado.		

15:00 - 15:30 Break (Room Fire)

* Indicates prerecorded presentation. We aim to have a live Q&A.

Wednesday

15:30 - 17:30 Parallel Workshops

Room	21	Water	Outside	Earth	2 + 3	10 + 11
	Ross Hinter & Hans van Eijden How to catch wolves	Astrid Vik Stronen, Paolo Ciucci and Carsten Nowak Wolf-dog hybridization in Europe: definition and assessment.	Peter Schütte Construction, electrification & grounding of permanent wolf-deterrent wire fencing for sheep, cattle and horses. (Registration required)	Katrina Marsden & Valeria Salvatori EU and regional large carnivore platforms: what we've learned so far and future application.	Erik den Boer How to vlog while doing research	Aimee Tallian Future of Wolves Across Borders

17:30 - 19:30 Poster “Borrel” & Competition (*Room Fire*)

19:30 - 21:30 *Dinner*



Thursday

Room: Earth

08:30 - 09:00	Paolo Ciucci - Not only population abundance: reflections on the quality of wolf conservation
09:00 - 09:30	Valeria Salvatori - Bold wolves & Co. How to deal with wolves in the European XXIst century
09:30 - 10:00	Glenn Lelieveld - Challenges in living with wolves in Europe's most densely populated country
10:00 - 10:30	Hugh Jansman - Of wolves and men: The bold and the beautiful
10:30 - 11:00	Break (Room Fire)
11:00 - 12:20	Panel Discussion - Is the concept of problematic behaviour of wolves an ecological or cultural debate?
12:20 - 13:20	Lunch

13:20 - 15:00 Parallel Presentations & Sessions

Room	Earth	Water	Air	2 + 3
Themes	Population Management	Preventative Measures	Wolves in Cultural Landscapes	Genetics & Feeding Ecology
13:20 - 13:40	Joachim Mergeay The effective size of European wolf populations and its implications for policy and management.	Barbara Zimmermann Carnivore exclosures to protect sheep in the boreal forest affect the area use of moose.	Catherine Frizat FERUS' Pastoraloup program: supporting appeased wolf coexistence.	Gregor Simčič Visualisation an exploration of complex multi-generational pedigrees.
13:40 - 14:00	Cyril Milleret Wolf population size estimation: Challenges and Insights from Scandinavia and France.	Annika Held Effectiveness of strobe light as a potential deterrent stimulus for wolves.	Erik Versluijs Living with wolves: A new framework to enhance coexistence with wolves by studying livestock behaviours.	Lilian Heinzl Does Genetic Admixture Affect Ghost Wolf Ecology?
14:00 - 14:20	Florian Kunz Using a stage-based life cycle implementation to model population viability of European wolves.	Chris Smit Free-ranging cattle and the return of the wolf; implications for conservation management.	Katharina Kasper Of wolves navigating a human landscape of fear.	Jack W. Rabe Prey size mediates interference competition and predation dynamics in a large carnivore community.
14:20 - 14:40	Kathleen Petersen Wolves on the Move: Investigating Dispersal and Human-Caused Mortality in a Social Carnivore.	Nathan Martens Wolf-Deterrent Fencing in the Lowlands: Technical Design, Farmer Engagement, and Practical Rollout	Daniel Mallwitz 'SAY CHEESE.... AND PEE' - How with the right spices and a seasoned beaver, you can make a wolf pee him self	Katarzyna Bojarska Short-term responses of red deer to wolf presence are related to predation risk.

Thursday

Room	Earth	Water	Air	2 + 3
Themes	Population Management	Preventative Measures	Wolves in Cultural Landscapes	Genetics & Feeding Ecology
14:40 - 15:00	Inès Moreno Current Situation in Switzerland and declaration of intent	Philippine Surer Evaluating the non-lethal effects of wolves on cattle herds in the Swiss Jura mountains.	Hadrien Raggenbass Anticipating wolf comeback to Western France.	Florin Kunz Unveiling the Feeding Patterns & Preferences of Wolves in Switzerland
15:00 - 15:30	Break (Room Fire)			* Indicates a prerecorded presentation. We aim to have a live Q&A.

15:30 - 17:30	Parallel Workshops					
Room	2 + 3	10+11	Earth + Outside	Air	Water	21
	Wildlife Acoustics Turning Sound into Discovery - Using Sound to Study Wolves	Theodoros Kominos The use of UAV (Unmanned Aerial Vehicle) and handheld thermal cameras in research	Josip Kusak The craft and art of trapping wolves.	Aldin Selimovic Trapping and collaring wolves under different conditions across Europe.	Valeria Salvatori How to manage close encounters with wolves in human dominated landscapes.	Mathilde Klaasse & Glenn Lelieveld How to talk with press

17:30 - 18:00	Closing Ceremony (Room Earth)
18:00 - 18:30	Break
18:30 - 19:30	Music Performance (Room Fire)
19:30 - 21:00	Dinner
21:00 - 23:00	After Party - Live DJ (Room Fire)



Meet the Keynote Speaker



David Mech

L. David Mech ("Dave") is a Senior Research Scientist, US Geological Survey and Adjunct Professor, University of Minnesota. Degrees = B.S., Cornell University and Ph.D. and Honorary Doctorate, Purdue University. Published some 500 articles and 13 books. Dave studied wolves and their prey on Isle Royale, Michigan, in Minnesota, Yellowstone National Park, Denali National Park and during summers of 1986-2010, Ellesmere Island, Canada. He chaired the IUCN Wolf Specialist Group, 1978 to 2013, and is advisor on wolves to the chair of the Canid SG. He founded the International Wolf Center (www.wolf.org). Awards include the Wildlife Society's Aldo Leopold Award. Also see www.davemech.org.



Meet the Plenary Speakers



Adrian Wydeven

Retired Wildlife Biologist and Chair of the Timber Wolf Alliance in Ashland, Wisconsin

Adrian was born in the Netherlands, but his family immigrated to the USA in 1959, and he is very excited to be able to welcome wolves back to his former homeland. He obtained a BS from University of Wisconsin Stevens Point (1976), and MS from Iowa State University (1979). He has worked as a wildlife biologist for the Wisconsin Department of Natural Resources (WDNR) and Missouri Department of Conservation. From 1990 through 2013 he managed the Wisconsin wolf recovery and management program. He retired from the WDNR in 2015, and since has worked part time on various advisory and contracts on wolf conservation issues. He has advised on wolf conservation for several US states and Canadian provinces, as well Isle Royale, Voyageurs, and Yellowstone National Parks. He has authored and co-authored numerous articles on wolf ecology and conservation. In 2022 he was granted the “Voice for Wolves” Award by the International Wolf Center.

Claudio Sillero-Zubiri

IUCN SSC Canid Specialist Group & Wildlife Conservation Research Unit (WildCRU). Department of Biology, University of Oxford, UK

Claudio Sillero is a professor of conservation biology at the University of Oxford, where he directs the Postgraduate Diploma in International Wildlife Conservation Practice. He is based at WildCRU (the Wildlife Conservation Research Unit), institution that has hosted the IUCN SSC Canid Specialist Group since its inception. WildCRU’s reputation has drawn many carnivore biologists, contributing to a significant body of canid research, including studies on all African wild canids. Claudio has dedicated several decades to studying Ethiopian wolves, spearheading a long-term programme aimed at protecting the remaining populations of these rare wolves and preserving their Afroalpine habitats.



Geraldine Werhahn

IUCN SSC Canid Specialist Group; Himalayan Wolves Project

Geraldine is a wildlife biologist and conservationist with a passion for canids. Her research centres on wolves and sympatric species inhabiting the high-altitude ecosystems of the Himalayas and the Tibetan Plateau. She has conducted extensive fieldwork to advance the scientific understanding of the Himalayan wolf and to identify threats to its conservation. Employing a multidisciplinary approach, Geraldine integrates ecological research with local cultural knowledge, public outreach, and policy advocacy. Her work is driven by the appreciation that conserving viable carnivore populations is essential to maintaining the ecological integrity of the ecosystems they inhabit.



Meet the Plenary Speakers

Luigi Boitani

Luigi Boitani, University of Rome and Large Carnivore Initiative for Europe

Luigi BOITANI is Honorary (Emeritus) Professor of Animal Ecology and Conservation Biology at the University of Rome, Dept. of Biology and Biotechnologies. Chair of the Department for 10 years (2000-10) and President of the Society for Conservation Biology (2009-11). Affiliated Professor at the Department of Natural Resources, Idaho University, Moscow, 2000-2011. His main scientific interests are on a) the social ecology of large carnivores; b) patterns and models of species distributions based on GIS tools; and c) planning and conservation of protected areas. He has contributed to the master plans of more than 30 national parks in Africa and Europe. Member of the IUCN/SSC Steering Committee since 1994. Chair of the IUCN Large Carnivore Initiative for Europe and of the IUCN Red List Committee; CEO of Fondation Segré in Geneva; founder/president of the Institute of Applied Ecology in Rome. He received the WWF Conservation Award and the IUCN Peter Scott Award for Conservation Merit in 2012. Author of more than 400 scientific papers and 10 books.



Noëlle Aarts

Institute for Science in Society (ISiS) at the Radboud University In Nijmegen

Noelle Aarts is em. professor of socio-ecological interactions at Radboud University in Nijmegen. She performs research on the impact of everyday conversations in complex change processes around nature, human-animal relations, agriculture and multifunctional land use. She is specialised in the analysis of frames that people consciously but mostly unconsciously construct in conversations with a focus on achieving particular goals. Using a complexity approach, she investigates how everyday conversations are related to the maintenance or subversion of dominant systems and institutions in society. Through her academic work and beyond, Noelle is committed to a caring, nature-inclusive society. To this end, she gives lectures, workshops and trainings across the country on the art of dialogical conversations with dissenters.



Martin Drenthen

Institute for Science in Society (ISiS) at the Radboud University in Nijmegen

Martin Drenthen is Associate Professor of Environmental Philosophy at the Institute for Science in Society (ISiS) at Radboud University in Nijmegen (Netherlands). His research topics include the ethics of environmental restoration and rewilding, human-wildlife coexistence, ethics of place, philosophy of landscape and environmental hermeneutics. Currently, his research focuses on ethical issues related to cohabitation with wildlife in anthropogenic landscapes, notably wolf resurgence in Western Europe. He is currently one of the Principal Investigators of WildlifeNL (wildlifenl.nl), a large transdisciplinary research project aimed at improving human-wildlife coexistence in the Netherlands. He published extensively on environmental philosophy in both English and Dutch. He co-edited several academic volumes, e.g. Interpreting Nature (2013), Environmental Aesthetics (2014), and Old World and New World World Perspectives in Environmental Philosophy (2014). In his book Natuur in mensenland ('Nature in the land of humans', 2018, in Dutch), he explored the moral significance of rewilding in cultural landscapes. His latest book Hek ('Fence', 2020, in Dutch) examines the ethics of the border between agricultural land and nature areas, and the challenge of coexistence with wolves.



Meet the Plenary Speakers



Mireille Gonzalez

Department of Human Dimensions of Natural Resources at The Center for Human-Carnivore Coexistence at Colorado State University

Dr. Mireille Gonzalez is Co-Director of the Center for Human-Carnivore Coexistence and Affiliate Faculty in the Department of Human Dimensions of Natural Resources at Colorado State University. She received her B.A. in Anthropology from the University of California, Berkeley; her M.Sc. in Primate Behavior and Ecology from Central Washington University; and her Ph.D. in Human Dimensions of Natural Resources at Colorado State University. Her research and practice focus on human-wildlife conflict and coexistence, conflict resolution and peacebuilding, and the application of behavioral science to conservation. She is also a trained facilitator, working at the intersection of science, dialogue, and social change.

Kevin Crooks

Department of Fish, Wildlife, and Conservation Biology at the Center for Human-Carnivore Coexistence at Colorado State University

Dr. Kevin Crooks is Director of the Center for Human-Carnivore Coexistence and a Monfort Professor in the Department of Fish, Wildlife, and Conservation Biology at Colorado State University. He received his B.S. in Zoology at CSU; his M.S. in Ecology at U.C. Davis; his Ph.D. in Biology at U.C. Santa Cruz, and completed postdoctoral research at U.C. San Diego. Before arriving at CSU in 2003, he was an Assistant Professor in the Department of Wildlife Ecology at the University of Wisconsin Madison. His research, education, and outreach efforts focus on reducing conflict and facilitating coexistence between humans and carnivores.



Arie Trouwborst

Tilburg University, the Netherlands

Arie Trouwborst is professor of nature conservation law at Tilburg University, the Netherlands, and extraordinary professor of law at North-West University, South Africa. He received an LLM (2001) and PhD (2006) from Utrecht University. He is interested in understanding and improving the contribution of international, European, and national law to the conservation, restoration, and sustainable use of biodiversity. Present research topics include ecosystem restoration and human-wildlife coexistence. Trouwborst frequently conducts advisory work for international entities, national governments, and NGOs. His current thinking on the role of wildlife law, and its interplay with ecology and ethics, is expressed in this 2024 paper: 'The Serengeti Rules and the untold value of fellow Earthlings: wildlife law in an era of ecological emergency, eye-opening science, and maturing morality' (27 Journal of International Wildlife Law & Policy).



Meet the Plenary Speakers

Ilka Reinhardt

Senior Researcher / chair at LUPUS German Institute of Wolf monitoring and research

Ilka Reinhardt is a biologist that founded together with her colleague Gesa Kluth the LUPUS institute for wolf monitoring and research in Germany. The two women accompanied the return of wolves to Germany from the very beginning with scientific studies and established scientific wolf monitoring in Germany. The LUPUS Institute is today part of the scientific consortium of the Federal Documentation and Advisory Center on the Wolf (DBBW; <https://www.dbb-wolf.de>). The DBBW advises federal and state nature conservation authorities on all wolf-related topics upon request. Ilka is since 2005 a member of the Large Carnivore Initiative for Europe (www.lcie.org), an IUCN / SSC specialist group.



Nicole Wanders-Wengler

Unit D3 «Nature Conservation», DG Environment, European Commission

Nicole Wanders Wengler serves as the policy officer responsible for implementing the Birds and Habitats Directives in the Netherlands since January 2023. She is also part of the team at the European Commission's Directorate-General for Environment (DG Environment) in charge of the large carnivore species protected under EU legislation. Nicole joined DG Environment in 2004 and has held various roles, including policy desk officer for the EU's 'clean water' directives (Urban Waste Water, Drinking Water and Bathing Water Directives) and where she also worked on the marine litter portfolio under the Marine Strategy Framework Directive. She has also served as programme manager for the Green City Awards and as the coordinator of DG Environment's Briefing Cell, which oversees the preparation and coordination of executive briefings. Prior to her work at the European Commission, Nicole held positions at E.ON, one of Europe's leading multinational electric utility companies, and at the Stability Pact for South Eastern Europe, which later transitioned into the Regional Cooperation Council in 2008. Nicole holds a legal background, is married, and is the mother of four sons.



Marco Cipriani

Nature Conservation Unit, DG Environment, European Commission

Marco Cipriani is policy officer in the Nature Conservation Unit of the European Commission and has been dealing, since 2008, with the implementation of the Habitats and the Birds Directives. He has been coordinating the Unit's work on large carnivores, namely the initiatives to promote coexistence. He joined the European Commission in 1997 and worked in DG Agriculture, on the Rural Development policy, before moving to DG Environment.



Meet the Plenary Speakers

Paolo Ciucci

Department of Biology and Biotechnologies, University of Rome La Sapienza

Paolo Ciucci is Associate Professor at the University of Rome La Sapienza, specializing in the ecology of large carnivores. He teaches Zoology, Wildlife Ecology, and Conservation and holds a Master's degree in Wildlife Ecology from the University of Minnesota (1990) and a PhD in Animal Ecology from the University of Rome (1994). With extensive field research experience on wolves and brown bears, his work includes studying their feeding habits, spatial and habitat use patterns, resource selection, population monitoring and assessment by means of VHF/GPS telemetry, non-invasive methods, genetic and genomic approaches, and GIS modelling. He has led numerous field projects across Italy to support conservation planning and conflict management and has authored over 130 academic articles and book chapters. Currently he is coordinator of a 3-yr Biodiversa+ project focused on preserving the genetic integrity of wolves in Europe by addressing the risk of hybridization with dogs.



Valeria Salvatori

Institute of Applied Ecology Rome; Project manager LIFE WILD WOLF project

Wildlife conservation, research and management are the main interests of VALERIA SALVATORI, general secretary of the Institute of Applied Ecology from Rome, and project manager of the LIFE WILD WOLF project. She has worked in international environments collaborating with foreign research institutes since 1992, gathering working experience in South America, Africa, Central and Western Europe. Spatial analyses of environmental processes, mainly wildlife management, policies and conflicts over wildlife within local communities are the subjects of her latest working activities. She has a good knowledge of technical issues involving field-data collection and spatial analyses as well as conservation and management of carnivores. She is a member of the Large Carnivore Initiative for Europe IUCN Task Force for over 20 years. She has a good record of LIFE project coordination and management, most of them targeting large carnivore conservation, tackling themes spanning from habitat suitability, to impacts on livestock, hybridisation with domestic dogs and more recently wolf management in urban areas.



Glenn Lelieveld

Averti Ecologie

Glenn Lelieveld works on the wolf topic since 2011, starting with modelling where wolves would find the best places to live in the Netherlands and giving talks to the public. In the periode 2017-2024 he worked at the Dutch Mammal Society (Zoogdiervereniging) where he is one of the founders of the monitoring program and the six-day wolf course. Currently he is working as an independant consultant and remains involved in the wolf monitoring, but also regularly works on problematic situations with wolves. He is also regularly in contact with politicians, public servants and the press.



Meet the Plenary Speakers

Hugh Jansman

Wageningen Environmental Research

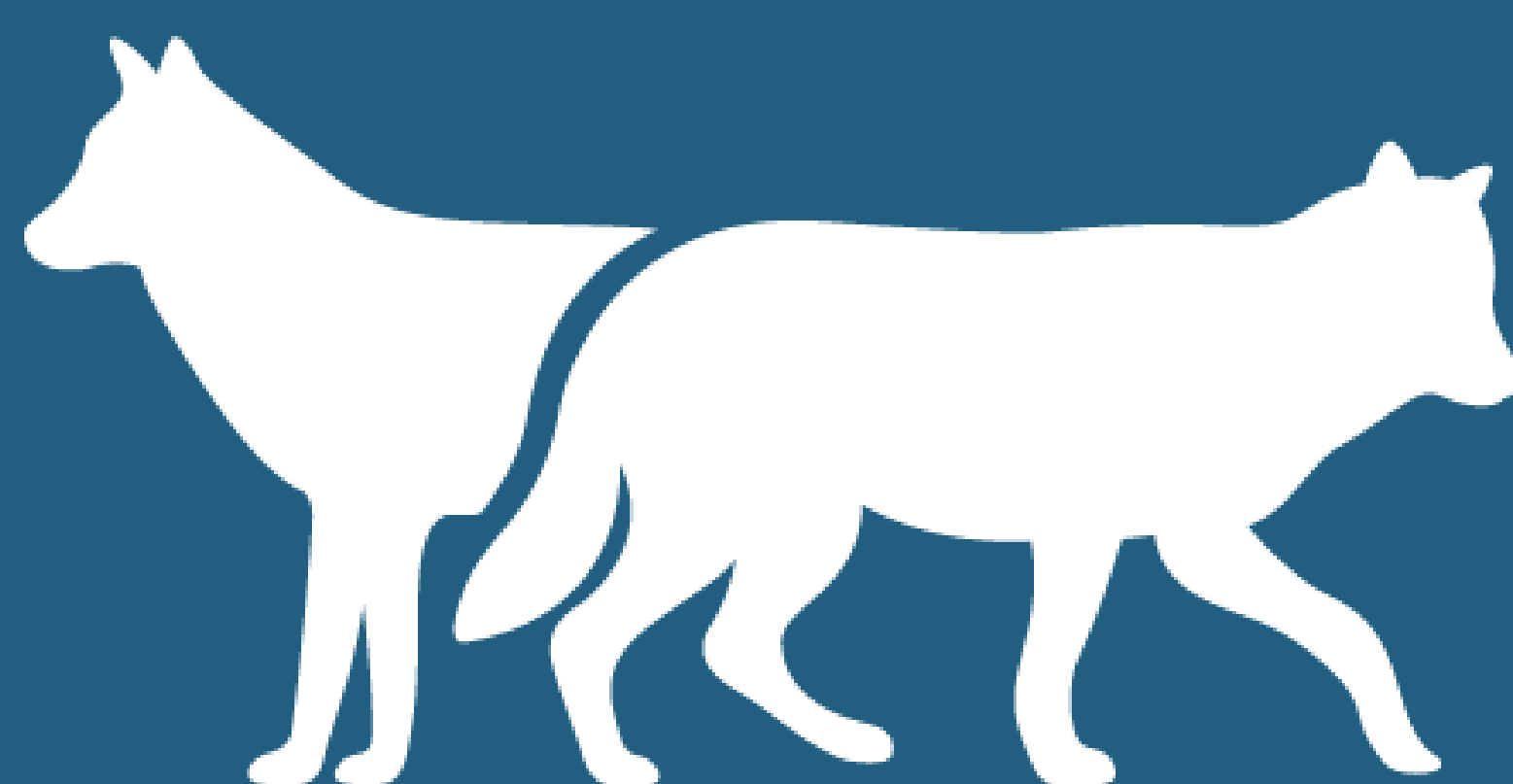


Since 1999 I'm an wildlife ecologist at Wageningen Environmental Research (WENR). I'm a member of Team Animal Ecology, and we focus on healthy populations and ecosystems. Species I have worked on are otter (reintroduction), black grouse, geese, meadow birds, hamster, raptors, ungulates, fox, martens. I am project leader 'Wolf' and for the Dutch authorities we write policy advising reports, perform post mortems of dead wolves and do the genetical monitoring of wolves in the Netherlands. www.wageningenur.nl/wolven. Our DNA lab is part of the CEwolf consortium and I'm member of the Large Carnivore Initiative Europe (LCIE). I consider wildlife management to be 90% management of people and 10% biology. Emotions, attitudes and conflict mediation are increasingly important in the conservation of nature and us humans as well. Therefore expertise on Human Wildlife Conflict and Coexistence (HWCC) has my special interest.



Plenary Presentations

Our plenary sessions feature distinguished speakers from around the world who will share inspiring research, global perspectives, and innovative approaches to wolf ecology and human-wildlife coexistence. These keynote presentations are designed to inspire, inform, and set the tone for each day of the conference, bringing all attendees together for shared learning and dialogue.



WOLVES ACROSS BORDERS

Monday 12:30 - 12:45



Wolves on the Hunt: The Basics

David Mech

United States Geological Survey; University of Minnesota; International Wolf Center

I will tap my 65 years of experience studying wolf predation to synthesize the basics of this subject. Wolves epitomize the popular image of the predator, especially because of their social nature to travel in packs. Their constant challenge is to find, catch, and kill their food while minimizing injury to themselves. Most of the wolf's usual prey species are well equipped with keen senses, defensive weapons, and behavior that help them survive wolf predation. Wolves respond to this challenge by travelling far and wide, assessing all encountered prey, and generally succeeding in procuring those with various vulnerabilities. Wolves target old, very young, and debilitated prey, and under the right conditions, even a single wolf can kill an individual of any species, including moose (*Alces alces*) and bison (*Bison bison*). This culling process feeds wolves while allowing prey populations to survive, but below densities they would have achieved without wolves.

Status of Wolves in North America

Adrian Wydeven

Retired Wildlife Biologist and Chair of the Timber Wolf Alliance in Ashland, Wisconsin

Three species of wolves are generally recognized as living in North America, including gray wolves (*Canis lupus*), red wolves (*C. rufus*), and eastern wolves (*C. lycaon*). Wolf populations probably reached lowest levels between 1930-1960. Early research in the 1940s-1960s in Denali and Isle Royale National Parks, and the environmental movement of 1960s-1970s, created more positive images of wolves that allowed recovery to begin. The 1973 US Endangered Species Act (ESA) was especially important to recovering wolves south of Canada. Gray wolf populations have always been relatively secure in Alaska (USA) with 7,000-11,000 wolves recently, and across 80% of Canada with 52,000 to 57,000 wolves. Only 400-700 gray wolves existed in Minnesota and Isle Royale in the Lower 48 US states in 1960. Currently that population has grown to about 7,800 wolves spread across 12 states. Wolves are still rare in Mexico with only about 45 Mexican gray wolves (*C. l. baileyi*). Eastern wolves in Canada may have increased some with protection under the Species of Risk Act (SARA 2002) in Canada, but includes <1000 wolves and are restricted to portions of eastern Ontario and western Quebec. Red wolves continue to be highly endangered with only 16-20 wolves left in the wild in northeastern North Carolina. Portions of gray wolf distribution in Montana, Idaho, Wyoming and adjacent states have been delisted since 2011 and 2017 (WY), and hold regular annual hunting seasons. Michigan, Wisconsin and Minnesota have been delisted 4 times, but each have been reversed due to court action and only limited hunting seasons have occurred. The federal government will likely attempt to delist gray wolves across the remainder of their range in the Lower 48 US states in the near future, though Mexican gray wolves and red wolves will likely remain endangered well into the future.



Wolves in Africa – Diverse ecological strategies navigating common threats

Claudio Sillero-Zubiri

IUCN SSC Canid Specialist Group & Wildlife Conservation Research Unit (WildCRU). Department of Biology, University of Oxford, UK

While grey wolves are found in Egypt, an African country, their range does not extend into the rest of Africa, where instead three canids with 'wolf' credentials exhibit different ecological strategies and distribution patterns, yet face comparable threats. Firstly, African wolves (*Canis lupaster*), a cryptic species recently recognised as distinct from the Eurasian golden jackal (*C. aureus*). Their extensive distribution and versatility starkly contrast with the rare Ethiopian wolves (*C. simensis*), endemic to an archipelago of Afroalpine islands in Ethiopia. Additionally, no discussion of Africa's 'wolf-like' canids would be complete without mentioning the African wild dog or painted wolf (*Lycaon pictus*), which serves as a grey wolf by proxy (as a pack-living, pack-hunting, cooperative-breeding canid). I will review the latest distribution and conservation status of these three canids, and delve into the primary threats they face, including but not limited to rangeland livestock herding, hard agriculture borders, human persecution, disease and competition with domestic dogs. The future of Africa's wolves is conservation-dependent, hinging on improved habitat protection, fostering coexistence, disease management, and strategic conservation translocations to restore populations in areas where these species have become extinct.

Plenary Presentations

Monday 14:15 - 14:45



Wolves of Asia

Geraldine Werhahn

IUCN SSC Canid Specialist Group; Himalayan Wolves Project

Asian wolves are evolutionarily diverse, yet they remain relatively understudied and inadequately protected. This presentation provides an overview of the current status of wolves in Asia, including the various wolf lineages found across the continent. It will conclude with key conservation considerations and recommendations for advancing research and improving the conservation outlook for Asian wolves.

Wolves in Europe: Status and Challenges

Luigi Boitani

University of Rome and Large Carnivore Initiative for Europe

During the last 3-4 decades, many European wolf populations have been increasing in number and range size. Several causes have concurred to determine these positive trends, including the abandonment of mountain agriculture, increasing prey populations and changing human attitudes. I will report on the most recent continent-wide estimate of population size and distribution, highlighting the strengths and weaknesses of the available estimates. Quality and quantity of data on wolf number vary greatly across the continent, as well as the methods to monitor populations making comparisons a difficult task. Now that extinction is no longer an immediate threat, a considerable debate is emerging concerning the appropriate recovery targets and management regimes. Questions like “how many carnivores are enough?” and “how should they be managed?” are hotly debated. Coexistence of wolves and humans (inside and outside protected areas) is already fairly common and it is encouraged through the implementation of effective means to prevent and mitigate the conflicts. However, coexistence with human activities also implies acceptance that wolves may not be allowed to express the full range of their ecological roles, as human intervention may be necessary to control the natural ecological patterns toward socially and economically acceptable compromises. This last management option is fiercely opposed by animal right groups. The recent downlisting in the Bern Convention has open the door to the downlisting by the Habitat Directive and soon also by national legislations. Culling is widely seen as the easiest method to reduce predation on livestock, downplaying the potential role of the many techniques of damage prevention and mitigation. The downlisting will allow easier approaches to wolf culling but EU countries will remain bound by the Habitat Directive to maintain their wolf populations in “Favourable Conservation Status”: this concept has never been defined in numerical terms and it is interpreted (or ignored) in a variety of approaches by the European countries. I will report on a recent effort to design a new approach to this concept in the attempt of making it more useful for effective management of wolf populations at national and transboundary scales.

Tuesday 8:30 - 9:00



Arguing along fault-lines – How rhetorical practices polarize debates on wolf comeback in the Netherlands and Flanders

Noëlle Aarts

Institute for Science in Society (ISiS) at Radboud University, Nijmegen

Across Europe, wolves are making surprising comebacks. The returnees have, however, soon become subject of commotion and conflict all over the place, including the Netherlands. My presentation concerns the role of rhetoric in the continuation and exacerbation of public divides. Public discussions will be analysed surrounding the returns of the Wolf in various media and forums. I will show how debates evolve along a few main fault lines, most notably belonging/not belonging, opportunity/threat, control by intervention/nature controls itself. A number of dynamics are identified, including the convergence and alignment of arguments (in particular, dichotomisation), the linking and scaling up of issues and the stigmatisation of outgroups. In the end, the discussants' efforts to provide conclusive arguments have the unplanned result of even greater tensions and distances between groups in society. A number of useful clues are discussed for transforming the dynamics perpetuating the conflict to dynamics that allow for more constructive relations between the parties involved.

Tuesday 9:00 - 9:30



The challenge of making sense of wolves in cultural landscapes

Martin Drenthen

Institute for Science in Society, Radboud University, Nijmegen.

The re-appearance of wolves in anthropogenic landscapes can challenge the cultural categories people use to make sense of their world and define their identity. In my talk, I will discuss 4 different approaches. The first sees wolves as examples of 'wilderness' threatening the order of cultural landscapes. By ignoring the border between nature area and culture landscape, a distinction that is so important in this view of self and world, roaming wolves pose a challenge to this very worldview. Those who welcome wolves as a visitors from the 'pristine wilderness' that can inspire humans to transcend the anthropocentrism of contemporary culture, are being challenged by the fact that wolf predation on livestock does not always align with ideas about the goodness of nature. Thirdly, wolf management rejects nature-culture dualisms and aims at co-adaptation and assimilation of wolves and humans, yet its underlying focus on control (of wildlife as well as of ourselves) risks undermining the very basis of people's ability to deal with the 'wildness' of wolves. Finally, others argue we need to accept the limitations of human control over nature, and increase human resilience vis-à-vis the wild; however, such an acknowledgement raises serious existential questions. Successful coexistence requires that we seek ways for wolves and humans to co-adapt, but also scrutinize our understanding of the world and our place in it.



Social-ecological insights into wolf restoration in Colorado, USA

Kevin Crooks¹ & Mireille Gonzalez²

1: Department of Fish, Wildlife, and Conservation Biology, 2: Department of Human Dimensions of Natural Resources at the Center for Human-Carnivore Coexistence at Colorado State University

Social-ecological science can provide valuable insight into efforts to reduce conflict and facilitate coexistence between people and predators, including wolves. Such is the case with the ongoing efforts to restore wolves to Colorado, USA, initiated by a statewide ballot initiative in Fall 2020. Social-ecological research at the Center for Human-Carnivore Coexistence at Colorado State University is aimed at enhancing our understanding of this complex and controversial issue. Public surveys examining why the 2020 vote was so close, despite prior studies finding high levels of support for wolf reintroduction in Colorado, highlight the dynamic and polarized nature of public opinion on wolf restoration. Research on the social-ecological drivers of the voting patterns of Coloradans found a close correlation between the presidential vote and support for wolf restoration, exemplifying the politicization of wolf conservation. Public surveys also provided insights on the economic costs and benefits of wolf reintroduction to the state. In addition, integration of spatially explicit social and ecological data have informed statewide models of habitat suitability, conflict hotspots, and landscape connectivity for wolves in Colorado. Ongoing research also is investigating the factors that fuel social conflict in order to identify pathways to reduce it. This research integrates conflict and peace-building theories on reconciliation to analyze the conflict narratives of stakeholders engaged in conflict about wolf restoration and examines various reconciliation interventions that may assist researchers and practitioners in managing public tensions around wolves. Overall, understanding social and ecological factors associated with wolf management and conservation are important for developing successful policies and management actions to mitigate conflict and foster coexistence with wolves.



The shifting legal landscape for wolf conservation in Europe

Arie Trouwborst

Tilburg University, the Netherlands

The legal obligations of European countries under the Council of Europe's Bern Convention and the European Union's Habitats Directive exercise a significant influence on national wolf conservation and management policies across Europe. Several recent developments are resulting in changes to this international legal landscape. An important one is the European Commission's initiative to 'downlist' wolves under the Convention and the Directive. Under the Bern Convention, this already resulted in the wolf being transferred from the regime of 'special protection' under Appendix II to the more flexible 'protection' regime of Appendix III. A procedure to achieve a similar downlisting of wolves under the Habitats Directive, from Annex IV to V, was initiated by the European Commission in March 2025 (and was still pending at the time of writing this abstract). Other changes in the legal landscape concern new interpretations of obligations under the Habitats Directive by the EU Court of Justice. In different cases on wolf management, the Court provided clarifications concerning, inter alia, the level(s) at which conservation status ought to be assessed, and the conditions under which the hunting of wolves can be allowed under the flexible protection regime of Annex V. This talk addresses the various developments and their consequences for wolf conservation and management.

What is the wolf doing in politics? The political vs. the biological wolf

Ilka Reinhardt

Senior Researcher / chair at LUPUS German Institute of Wolf monitoring and research

The wolf has become increasingly a political issue in recent years and dominates the political debate in national and European parliaments like hardly any other topic. The wolf debate seems to be so pressing to the European Commission that specialist committees were bypassed and urgency procedures used to downlist the wolf from Annex IV (strictly protected) of the Habitats Directive to Annex V (protected). This downlisting was not applied on a case-by-case assessment for single wolf populations or member states, but for all wolves living within the boundaries of the European Union. The legal way this was done, is by itself interesting, so is the reasoning behind it: “The concentration of wolf packs in some European regions has become a real danger for livestock and potentially also for humans. [...]” EU president von der Leyen said in a European Commission Press Release on 4 September 2023. Making a fact check and comparing data on wolf depredation with other causes of livestock mortality raises the question if more flexibility in wolf culling is really the appropriate tool for decreasing livestock losses. Could it be that the political image of the wolf is shaped more by attitudes and values than by data and scientific evidence? But what about us, the biologists? What image of wolves do we portray to the public if we focus mainly on wolf management and wolf conflict mitigation? If we want to raise interest in the wolf as a species, we should not only collect data for monitoring and management, but also present the interesting part of our work to the public. There are so many scientific facts that add up to exciting stories. Over the last 25 years, the recolonization of Germany by wolves has been relatively undisturbed. The data collected during this time reflects the natural spread and lifestyle of the wolf. This period now seems to be over, and it may never be possible to collect such data in Europe again. Let us use this treasure to convey what wolves are really like. Let’s talk about the biological wolf.

European Commission, DG Environment - EU wolf policy: current status and future outlook

Nicole Wanders-Wengler & Marco Cipriani

European Commission, DG Environment

The Commission proposal to downlist the protection status of the wolf under the Habitats Directive (from 'strictly protected' to 'protected') aims to reflect the recent amendment of the Bern Convention into EU law, in order to allow Member States to use the additional flexibility permitted by the adaptation of the protection level of the wolf. The proposal also follows the successful recovery of the wolf after years of eradication from large parts of Europe.

From a legal perspective, following the Habitats Directive, the wolf remains protected under EU law and that includes the obligation for the EU Member States to achieve and maintain favourable conservation status, including coherent conservation and management measures of the species.

From a societal perspective, regardless of the wolf's legal protection status, it also implies we will continue to share our multi-functional European landscapes with this species. Identifying ways for coexistence between people and large carnivores is essential if we are to protect both biodiversity and rural livelihoods.

This session will look at the latest EU policy developments regarding the wolf, including obligations for Member States under the Habitats Directive or how the European Commission supports Member States and stakeholders in a process of moving forward together.



Not only population abundance: reflections on the quality of wolf conservation

Paolo Ciucci

Department of Biology and Biotechnologies, University of Rome La Sapienza

While one of the most widely recognized reasons for conserving wolves is to maintain their ecological role, traditional assessments of wolf conservation success have primarily focused on population abundance and dynamics. In Europe, this approach has influenced the recent political decision to downgrade the wolves' protection status under the Bern Convention, a change driven by the positive trends in the numbers and range of most European wolf populations over the past decade. The underlying assumption of this approach is that, where wolf numbers allow (i.e., when they have reached a favorable conservation status), regulating their numerical response would alleviate various sources of conflict with humans which, in turn, is expected to enhance coexistence. In this presentation, I contend that relying solely on population abundance and trends to inform our management decisions oversimplifies the inherent socio-ecological complexity of wolf-human systems, potentially leading to a biased evaluation of conservation outcomes. To this aim, it is essential to consider various aspects of wolf ecology that are often overlooked, such as pack composition and stability, cultural transmission, trophic ecology, and genetic status and identity. Additionally, management factors like law enforcement, threat mitigation, conflict resolution, and decision-making processes must also be taken into account. These elements are crucial when setting conservation goals, developing management and monitoring programs, and evaluating conservation outcomes. By thoroughly considering these additional aspects we should attempt to improve the quality of conservation, where 'quality' refers to a contextual set of ecological, social, and management conditions that enhance, to the best of our knowledge, coexistence with humans while also ensuring the ecological and evolutionary integrity of wolves.

Thursday 9:00 - 9:30



Bold wolves & Co. How to deal with wolves in the European XXlst century

Valeria Salvatori

Istituto di Ecologia Applicata; National Environmental Research Agency (ISPRA)

Increased wolf presence in anthropised European environments is posing growing concerns and making the focus of conservation efforts to shift from purely technical approaches, which in the past were meant to mitigate material impact on productive activities, to more articulated, multifaceted issues, such as the inherent value of a wildlife species nearby. Not a whatever species, but one that comes with a load of cultural, ethical and social burdens.

Having wolves in areas that are dominated by humans poses a challenge that needs to be tackled using an integrated approach. It needs to look at pre-conceived patterns we have in our minds, and the idea of wolves that our cultures have built in centuries. Are we prepared to do so?

What is exactly to be considered bold behaviour and are we willing to allow wildlife using the space we use to live our everyday life, as if they were a fundamental part of our environment? Such ethical questions are at the basis of any management approach and ought not to be overlooked when thinking of conservation. Through a critical analysis of definitions, management approaches and ethical concerns we can possibly think of a way ahead for wolves in the European XXlst century.

Thursday 9:30 - 10:00



Naive wolves as a result of an abundance of stimuli – implications for non-lethal wolf management

Glenn Lelieveld

Averti Ecologie

Wolves have come back to the Netherlands and were reproductive in 11 wolf packs last year. All these wolf packs are in multi-use landscapes where people live, work and recreate. Most of the territorial wolves and their young avoid people. However, we have had several cases in which wolves actively show themselves to people (and were recorded by mobile phone) and reported to the Zoogdiervereniging. In these footages, the wolves show behaviour that could be defined as bold behaviour (after Reinhardt et al 2020) as wolves clearly come closer than 30 meters to people (and their dogs).

Traditionally, cases of wolves actively approaching people have been attributed as a result of a form of positive conditioning, for example by the wolves being fed at some point in their lives. However, in these cases the explanation of positive experiences does not fit. During this talk, we will show some of these footages and present the available information we have so we can explore our hypothesis that, even in densely populated countries as the Netherlands, wolves can become completely naive to people because of the lack of negative experiences with people. If so, this can have serious implications for the management of wolves, as a naive wolf does not immediately constitute a public safety hazard.

Plenary Presentations

Thursday 10:00 - 10:30



“Of wolves and men – the bold and the beautiful”

Hugh Jansman

Wageningen Environmental Research

Imagine a ‘HAB’ conference room seating 300 wolves from over 150 different packs. Can you imagine the immense chaos? Humans are the only animals that can gather in large crowds of unfamiliar peers and cooperate fruitfully on complex goals. What binds us and makes such a gathering possible are shared stories. Whether these stories are based on facts or fiction. Speaking about fictions and creating common myths is therefore our most unique quality. Allowing us to do magical things resulting in domination of the planet. Historian Yuval Harari states that our imagined reality is now so powerful that the very survival of forest and wolves depend on the grace of imagined entities as the European Union and Google. So what kind of stories have we created about life? Do the attitudes towards wolves differ between different human ‘tribes’? And how did this change in time? Why are wolves leading actors in the narrative of a division in nature versus culture, wild versus domesticated, ‘us versus them’? It’s 2025. The boundaries of our planet are dangerously breached, resulting in a climate- and biodiversity crisis, threatening our own survival. All by our own doing. Based on our dominant fictional myths. Inflated by social media and attention strengthening algorithms. The science is convincing. Are we willing to create new stories? Stories based on facts. Narratives embracing sustainability for all life, now and future generations. Are we?

Thursday 11:00 - 12:20



Is the concept of problematic behaviour of wolves an ecological or cultural debate?

Panel session

Moderator: John Linnell¹

Participant: Ilka Reinhardt², Valeria Salvatori³, Dries Kuijper⁴, Josip Kusak⁵

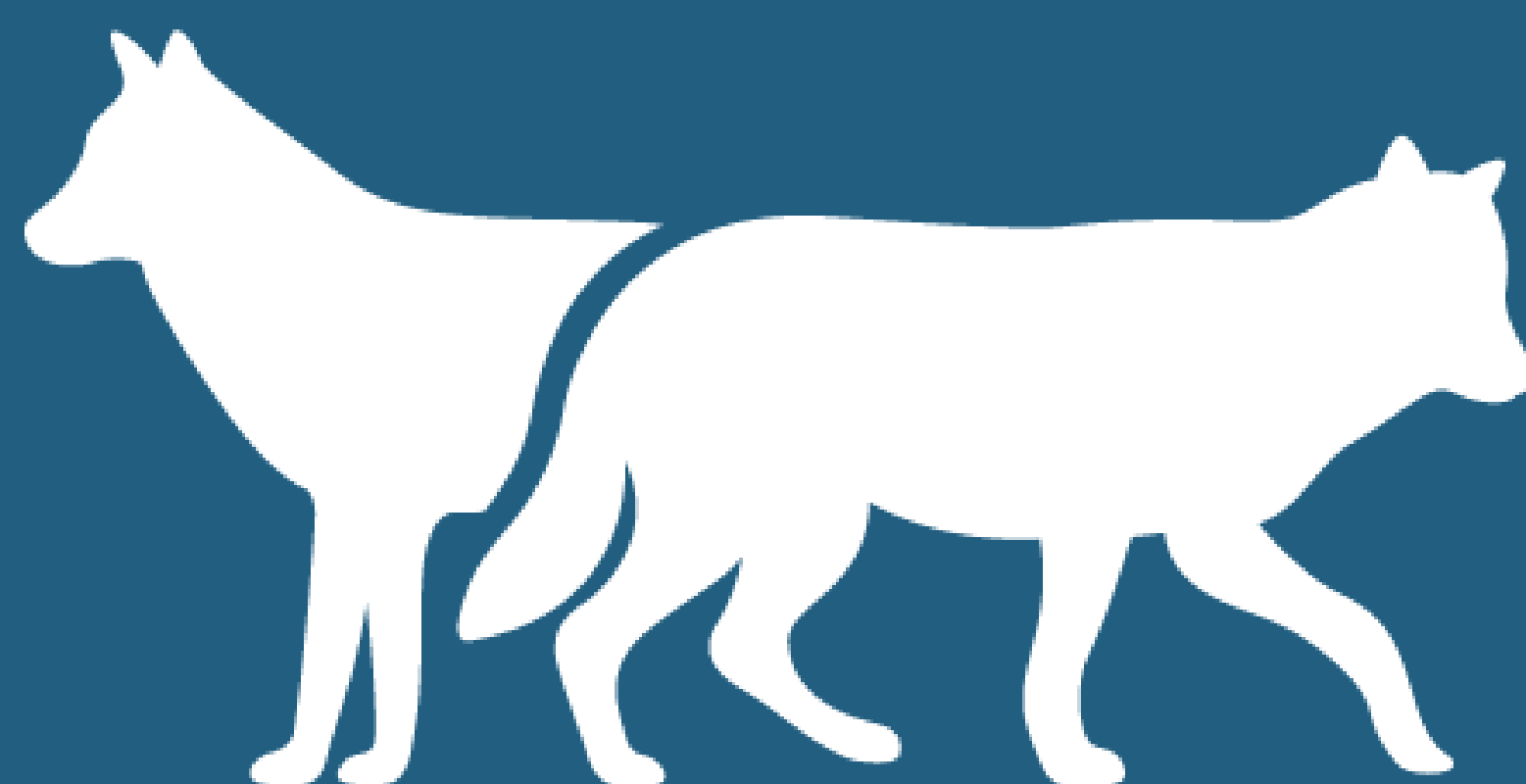
¹ University of Inland Norway; ² LUPUS German Institute of Wolf monitoring and research; ³ Institute of Applied Ecology Rome & LIFE WILD WOLF project; ⁴ Mammal Research Institute, Polish Academy of Sciences, Bialowieza; ⁵ Biology Unit, Veterinary faculty Zagreb

Traditionally the conflicts surrounding wolves have focused on their depredation on livestock and pets and the level of competition with hunters. However, in recent years there has been an increasing level of concern about wolves that appear to be “bold” or that do not display the expected level of shyness when in the vicinity of human habitation or in direct encounters with people. Many members of the public are understandably concerned that this behaviour may be an indication of increased risk to the safety of humans or their pets. There are many questions surrounding the definition of this behaviour, its causes and origins, its consequences for safety, and how it should be managed. Some of these questions are ecological or ethological in nature, many are social or cultural, and others are both. This panel debate will explore these four aspects of the phenomena through discussions with four European experts with many years of experience from across the continent as well as through taking questions from the audience. By the end of the session the audience should have a much better understanding of the issue, as well as an update on what we know, and what we still don’t know, about the topic.

Parallel Presentations

Parallel presentations are thematic sessions featuring oral presentations of research papers. Organized around specific topics, these sessions run concurrently and offer an opportunity for in-depth discussion, scholarly exchange, and peer feedback in a focused academic setting.

Presentation abstracts are organized per day and theme, each with a specific color.



WOLVES ACROSS BORDERS

Parallel Presentations

Theme: Behavioural dynamics

Monday 16:00 - 16:20



Can experience explain inter-territorial variation in wolf dietary response to ungulates abundance?

Cecilia Di Bernardi

Co-authors: Loan Selina Zumbach, Camilla Wikenros, Mikael Åkesson, Håkan Sand

Wolves (*Canis lupus*) are returning in vast parts of their former ranges in Europe and are expanding into landscapes highly managed by humans and characterized by diverse wild ungulate communities. In Scandinavia, the wolf population has recently expanded from south-central areas dominated by moose (*Alces alces*) and roe deer (*Capreolus capreolus*) to multi-ungulate prey systems in southern Sweden. Here, there are higher abundances of alternative wild ungulate prey such as wild boar (*Sus scrofa*), fallow deer (*Dama dama*), and red deer (*Cervus elaphus*). We investigated how the feeding behaviour of an expanding wolf population responds to spatial gradients of varying ungulate abundance and composition.

We analysed the prey composition of wolf scat samples ($n = 1564$) collected in Sweden during 2012-2022 within the genetic monitoring of the wolf population. The diet profiles obtained through diagnostic PCR with species-specific markers were associated with the genetically identified wolf individuals. This allowed us to link dietary information with detailed knowledge on wolf individuals and associated territories derived from the long-term wolf monitoring. We observed a positive dietary response of wolves to increasing abundances of the three alternative ungulate species. The use of red deer by wolves was proportional to its local abundance, while wild boar and fallow deer were overall under-consumed compared to their local abundance. Importantly, we observed a high inter-territorial variation in wolf dietary response that was only partially explained by the local abundance of prey. This result suggests that other factors such as learning and individual preferences of wolves may be important. Therefore, we are exploring the role of wolf intrinsic covariates such as their social status (member of pair or pack) and the time since territory establishment, which may both affect the wolf hunting experience and success on different prey species. We will also include a covariate representing the ungulate community in the natal territory of the territorial adults in order to test for the potential influence of early-life learning experience.

Parallel Presentations

Theme: Behavioural dynamics

Monday 16:20 - 16:40



Voyageurs Wolf Project: insights from a decade of research in northern Minnesota, USA

Joseph K. Bump

Co-authors: Thomas D. Gable, Austin T. Homkes

Since 2015 we have led a field-based research and outreach effort to better understand and share the summer ecology of wolves along the United States-Canadian border in north-central Minnesota, USA. This effort was coined the Voyageurs Wolf Project at the University of Minnesota to denote a sustained, collaborative study of the predation behavior, reproductive ecology, and functional role of wolves. This presentation will detail the key insights from this project to date, including wolf predation of beaver and fish, indirect effects of wolves on wetlands and forests, and how humans shape wolf predation. We will also share results from a collaboration with a cattle rancher on a 'wolf-proof' fencing effort and public commentary that informs the debate about the impact of wolves on deer. Lessons learned from our 'field-to-phone' social media presence will be detailed. Graphic art that profiles unique wolves studied by the project and artistic scientific posters will illustrate novel outreach and education efforts. Combined, these aspects address all conference themes and will demonstrate how we meet our goal of coupling cutting-edge, rigorous animal ecology research with highly effective broader impacts.

Parallel Presentations

Theme: Behavioural dynamics

Monday 16:40 - 17:00



Linking individual and collective behaviours: Insights from wild Indian wolves

Adwait Mahesh Deshapande

Co-authors: Mihir Godbole, Tristan Walter, Iain Couzin

Social carnivores, including wolves, have captivated the attention of behavioural biologists as they live in complex societies and exhibit remarkable collective behaviours, such as coordinated hunting. However, quantitative scientific understanding of collective processes in social carnivores is significantly lacking, mainly due to the unavailability of fine-scale movement data. The data deficiency arises from the limitations in tracking, bio-logging and observing social carnivores. We aimed to bridge this gap in our knowledge by capitalising on a rare opportunity to study collective behaviours in a unique population of Indian wolves (*Canis lupus pallipes*). We collected drone-based videos of entire packs during group travels. Then, high-resolution geo-referenced trajectories of each individual from the videos were extracted using computer vision algorithms. We also attempted to automatically (using computer vision) identify individuals based on their fur patterns. Based on our trajectory data, we show how different individuals influence the collective movements of the pack during the daily group travels. Our quantitative results shed light on how individual social interactions influence the collective movement of the group across contexts in complex societies. Finally, our novel methods pave the way for non-invasive monitoring, tracking and study of social carnivores.

Parallel Presentations

Theme: Behavioural dynamics

Monday 17:00 - 17:20



Wolves in the clouds: Climate and breeding phenology in Ethiopian wolves

Jorgelina Marino

*Wildlife Conservation Research Unit (WildCRU). Department of Biology, University of Oxford, UK,
The Ethiopian Wolf Conservation Programme*

Co-authors: Karl Reiman, Elizabeth Preston, Alo Hussein, Claudio Sillero-Zubiri

Understanding the impact of climate on wild carnivores is crucial for anticipating their responses to rapid environmental changes. Carnivores living in extreme environments such as arid zones, high latitudes or high mountains, often exhibit specialised ecological traits and life histories shaped by climate. However, discerning the demographic consequences of climate change remains challenging, particularly where rapid changes in human land use may confound climatic effects. We explore this dynamic using a highly specialised Afroalpine predator as a case study. Drawing from three decades of long-term monitoring Ethiopian wolves (*Canis simensis*) in the Bale Mountains, we analyse breeding phenology and its climatic drivers. We found that earlier breeding was associated with increased rainfall and vegetation productivity during the wet season preceding the mating period, likely mediated by prey availability. Conversely, litter size remained largely uncorrelated to climatic variation. We examine whether these patterns indicate adaptive flexibility or early signs of climate change, and highlight the role of long-term studies in disentangling the multi-level impacts of climate in wild carnivore conservation.

Parallel Presentations

Theme: Behavioural dynamics

Monday 17:20 - 18:00



How the temporal patterns of wolf predation during summer drive wolf population dynamics

Thomas D. Gable

Voyageurs Wolf Project/University of Minnesota

Co-authors: Sean M. Johnson-Bice, Austin T. Homkes, and Joseph K. Bump

In many southern boreal ecosystems across North America, wolves rely on white-tailed deer and beavers during summer (April to October), yet relatively little is known about wolf predation behavior, or what drives changes in their predation behavior during this period. During 2015-2024, we studied the summer predation behavior of more than 50 wolves by searching >43,000 clusters of GPS-locations and identifying >1,900 kills. We used this dataset to estimate monthly kill rates and biomass acquisition rates of beavers and deer (both fawns and adults), and monthly ambushing rates on beavers to understand how these metrics of predation change from April to October. Our work demonstrates how the temporal dynamics of wolf predation in a southern boreal ecosystem are driven by prey availability, resource pulses, wolf cohesion, and the energetic demands of growing wolf pups—factors that coalesce not only to influence kill rates of wolves but also the ambushing behavior of wolves, particularly during periods of reduced deer availability. We also demonstrate striking individual variation in the predation behavior of wolves, both in terms of kill rates and ambushing rates, with breeding wolves generally be more adept hunters than subordinate wolves. By estimating kill rates, biomass acquisition rates, and the energetic requirements of wolves and their pups, we show how wolf predation behavior ultimately drives wolf population dynamics by driving population parameters such as pup survival, territory size, and population density.

Monday 16:00 - 16:20

Identification of single nucleotide polymorphisms in 270 wolf genomes

Arkadiusz Dziech

Co-authors: Magda Mielczarek, Heliodor Wierzbicki

In recent years, with the development and cost reduction of next-generation sequencing, the possibilities to study whole genomes of many species have increased significantly. A similar situation has been observed for the wolf (*Canis lupus*). The implementation of genome-wide molecular markers, such as single nucleotide polymorphisms (SNPs), is also becoming increasingly common for this species, and their use allows for in-depth and detailed studies of the species at multiple levels of its biology (e.g. study of individual genes, hybridisation with other canids, population genetics, etc.).

This presentation outlines the methodology and results of my PhD project, which examined over 270 wolf genomes from Europe, North America and Asia. The main objective was to identify SNPs present in wolf genomes. To achieve such a goal, all genomes were screened for possible wolf-dog hybridisation to exclude individuals with recent mixed ancestry from further analysis. This approach minimises the risk of including SNPs of canine origin in the final set. SNPs obtained from the remaining individuals were then filtered to find those common to the species in different parts of its range and those that are specific to particular areas or populations.

This study resulted in a set of SNPs of wolf origin that can be used for further research on this species. It can be applied directly to further analyses, to design smaller SNP sets with a specific purpose in mind, and as a reference set for a bioinformatic pipeline of newly acquired data. In addition, information for data extracted from publicly available databases (such as average depth of coverage and whether genomes have signs of recent hybridisation with dogs) is also provided. The project also provides raw next-generation sequencing data of 15 Polish wolves, which will be publicly available for further research.

Parallel Presentations

Theme: Wolves and Genetics

Monday 16:20 - 16:40

High diversity of grey wolf (*Canis lupus*) paternal lineages in central and eastern Europe

Maciej Szewczyk

Co-authors: Małgorzata Witek, Julia Sparzak, Gabriela Toka, Robert W. Mysłajek, Sabina Nowak, Sylwia Czarnomska et al.

The grey wolf (*Canis lupus*) is an iconic apex predator species that plays a key ecological role in many ecosystems and thus its ecology, behavior and genetics have been extensively studied. However, most genetic studies analyzed biparentally inherited autosomal markers or maternally inherited mtDNA. Analysis of paternally inherited Y chromosome markers should provide necessary complement to such studies, but previously these markers have been used mostly in local-scale research or wolf-dog hybridization studies. We aim to assess the diversity of wolf paternal lineages across Europe, with focus on populations that are currently dynamically expanding in human-dominated landscapes. We hypothesize that in continuous wolf range, this diversity is significantly higher than reported for isolated populations studied before. Moreover, as the results of some telemetric and genetic research on wolves suggest that dispersal in this species may be male biased, we hypothesize that wolf populations are less spatially structured on the level of paternally inherited markers compared to mtDNA and autosomal DNA, and that in recently recolonized areas, the number of founder individuals is higher for males than females.

Our preliminary results seem to support these hypotheses. In ca. 600 analyzed samples we have found nearly 30 Y-STR haplotypes, over 2.5 fold more than reported in previous studies restricted to smaller areas. Interestingly, in around 100 Polish samples analyzed, we detected 14 haplotypes, indicating that the diversity of paternal lineages significantly exceeds this of mtDNA lineages. Moreover, we found several haplotypes that are widespread over vast areas of central and eastern Europe, e.g. a haplotype shared between the Polish, northern Russian and Caucasus wolf populations, or another one present both in Balkan and Baltic populations. On the other hand, we have detected a peculiar group of closely related private haplotypes in Belarus, indicating presence of local genetic structure within the European Plain. To further explore this phenomenon, we developed a panel of Y-SNP markers that should provide better resolution and create a “phylogenetic backbone” allowing arrangement of Y-STR haplotypes into haplogroups. Our work should improve understanding of male-mediated gene flow in wolf populations and thus inform transboundary management.

Parallel Presentations

Theme: Wolves and Genetics

Monday 16:40 - 17:00

Who are the wolves that make the difference?: Genetic reconstruction of wolf recolonization history in the Italian Alps

Francesca Rolle

Co-authors: K. Pilgrim, M.K. Schwartz, and F. Marucco

Maintaining a diverse genetic pool is crucial for animal populations to adapt to changing environments. Factors such as small population sizes, isolation, and limited gene flow lead to a loss of genetic diversity, which in turn can lead to inbreeding and inbreeding depression, the decrement in a population's vital rate. Given the strong correlation between genetic diversity and population fitness, evaluating an individual's genetic contribution to future generations and overall population dynamics is vital. This is especially important for species of ecological and social significance, such as carnivores, which, due to their high public and stakeholder interest, require detailed data and analysis to inform effective conservation plans.

To address this challenge, we described the recolonization process of the Italian Alpine wolf population using microsatellite genotyping and sex identification from 3547 non-invasive samples collected between 1998 and 2023. Long-term multigenerational pedigrees were reconstructed to track genetic diversity, spatial levels of heterozygosity, and inbreeding throughout the expansion process. We successfully genotyped 1766 individuals and observed an increasing trend in effective population size, reaching 168 (95% CI 137-210) in the west and 30 (95% CI 19-50) in the east of Italy in the last generation. Pedigree-based calculations of genetic contributions to future generations were used as estimates of reproductive values, where each wolf's contribution was determined by assessing relatedness with its descendants. This allowed individuals with the highest contribution and overall fitness to be identified. Additionally, we gained insights into the genetic population structure, including the genetic identification of immigrants and allelic differences. While inbreeding with close relatives was recorded in the Eastern Italian Alps, most reproductive wolves were unrelated, and, overall, the population was not considered inbred. Genetic diversity was maintained through social behavior, dispersal among packs, and immigration.

Our findings reveal genetic dynamics in an expanding wolf population within a densely human-populated European environment. Moreover, by tracking genetic contributions over time and gaining both individual and population-level genetic insights, we provide valuable ecological understanding and help inform effective conservation strategies.

Monday 17:00 - 17:20

Genetic admixture between Central European and Alpine wolf populations

Barbora Černá Bolfíková

Co-authors: Pavel Hulva, Sebastian Collet, Lucie Baránková, Kamila Valentová, Jana Šrutová, Harald Bauer et al.

The recovery and expansion of formerly isolated wolf populations in Europe raise questions about the nature of their interactions and future consequences for population viability and conservation. Will fragmented populations fuse or maintain a certain level of isolation with migration? Central Europe is suitable for obtaining empirical data in this field as it represents a 'crossroad' with the potential for contact among several phylogeographic lineages. In this study, non-invasive genetic samples obtained during population monitoring in the Bohemian and Bavarian Forest (BBF) mountain ranges in the Czech Republic and Germany (Bohemian Massif) were analysed at different neutral markers including mitochondrial sequence, nuclear autosomal microsatellites and gonosomal sex markers. Resultant genetic profiles were compared with reference data to study population ancestry. Both cluster analyses of microsatellite genotypes and syntopic occurrence of haplotypes HW01 and HW22 showed genetic admixture between Central European and Alpine populations. This represents secondary contact and interbreeding of formerly allopatric populations with different phylogeographic histories and distant expansion centres in different biomes in the Baltic region versus the Apennine peninsula and Alps. Moreover, the study describes the founding event and genealogy of this admixed deme, inhabiting intermediate environmental conditions compared to parental forms, and emphasises the role of protected areas as stepping stones in the range recolonization process in endangered large mammals.

Parallel Presentations

Theme: Wolves and Genetics

Monday 17:20 - 17:40

How can changes in the genetic health of wolf populations cascade to influence boreal forests?

Sarah R. Hoy

Co-authors: Rolf O. Peterson, John A. Vucetich

Increasing evidence suggests that large predators can trigger trophic cascades which impact species across multiple trophic levels. Our goal was to advance our understanding of trophic cascades in two main ways. First, to understand how trophic cascades are shaped by changes in the genetic health of predator populations. Second, to better understand how predator-induced changes in herbivore populations and browsing pressure affect the growth, survival and chemical properties of plants (carbon and nitrogen content). We used long-term data collected from the wolf and moose populations in Isle Royale National Park (USA) to assess how changes in the genetic health of the wolf population (associated with inbreeding) can cascade to impact the abundance and foraging behavior of their main prey, moose, and the trees that moose browse on.

We found evidence suggesting that:

- 1) Declines in the genetic health of the wolf population reduced the rate that wolves preyed on moose (predation rate).
- 2) As predation rate declined, moose abundance increased and moose browsed more on coniferous trees, especially balsam fir.
- 3) As moose browsing pressure increased, we observed declines in the annual growth and survival of balsam fir saplings - which are likely to have important impacts on forest succession and the total biomass and species composition of this boreal forest ecosystem.
- 4) As moose browsing pressure increased, we observed that fir foliage contained more nitrogen and less carbon. Preliminary data suggest these changes in nitrogen and carbon content may be due to fir saplings chemically defending themselves to deter further browsing, by producing alkaloids which can be acutely toxic to herbivores.

The broader significance of these results is indicated by recognizing that changes in the growth, survival and chemical properties of a common boreal forest species are likely to influence carbon and nitrogen cycling, and the amount of carbon stored within the ecosystem. Therefore, our work highlights how genetically-mediated-trophic-cascades involving wolves may affect large-scale ecosystem processes and highlights the importance of conserving wolf populations at densities high enough to preserve their genetic health.

Parallel Presentations

Theme: Wolves and Genetics

Monday 17:40 - 18:00

The origin and spread of coat color anomalies in a highly inbred wolf population

Øystein Flagstad

Co-authors: Ylva Johanne Tabel Brovold, Georigia Ausilio, Petter Wabakken

The Scandinavian wolf population was re-established in the 1980s and -90s by three founders from the neighboring population in Finland and Russia. An additional four founders have over the last 15 years contributed to the gene pool. However, the population is still highly inbred and inbreeding depression has been documented. A peculiar character among Scandinavian wolves is pigmentation anomalies, often in the form of white tail tips, but sometimes also white legs or the lack of pigmentation on larger parts of the coat. In this study, we track the origin and spread of these coat color anomalies. We demonstrate that the anomalies are due to a recessive mutation in a coat color gene, spread into the population by one of the early founders. Possible fitness consequences are addressed and implications for conservation management are discussed. Our study is an illustrative showcase demonstrating how founders and immigrants carry a certain amount of rare recessive alleles with potentially negative fitness consequences. The associated characters, such as the lack of pigmentation in our case, are virtually never expressed in large source populations. In small and inbred recipient populations, however, deleterious recessive alleles can spread rapidly by successful immigrants and their offspring, inevitably leading to the expression of their associated characters.

Parallel Presentations

Theme: Species Interactions

Monday 16:00 - 16:20

Interactions between recolonizing wolves and mammal communities based on long-term camera-trapping data

Veronika Braunisch

Co-authors: Valentin Debons, Valeria Benz, Stefanie Roder, Maude Vernet, Hannes Vomsattel, Raphael Arlettaz

The return of large carnivores to the densely populated landscape of Central Europe leads to considerable conflicts with land users. To predict conflicts and develop evidence-based management strategies it is necessary to identify the main factors influencing recolonization dynamics in space and time and to quantify interactions with the existing mammal communities.

We collected camera trap data of large carnivores, their ungulate prey, as well as mesopredator species at 102 locations systematically distributed across the Canton of Valais, Switzerland. The time series starting in winter 2011-2012 covers the period of wolf reestablishment in this region. Cameras were set up during the winter season (November – March) and complemented with snow-tracking surveys of ungulates along 1km transects during the first four winters. Based on the camera trap data, daily trapping rates were calculated per species. In addition, ungulate abundance estimates per transect, corrected for species-specific detection probabilities, were used to model area-wide relative prey density and biomass. Based on these data, we analyzed interspecific relationships at two scales, the landscape (study region) and the local (camera-site) scale.

Across the study region the steep increase in wolf trapping rates over the years was paralleled by a decrease roe deer (*Capreolus capreolus*) and chamois (*Rupicapra rupicapra*) trapping rates, while those of red deer (*Cervus elaphus*) remained constant. Red deer density, followed by roe deer, was the main driver of wolf occurrence at the landscape scale, yet this pattern was no longer apparent at the camera-site scale. Also the landscape-scale trapping frequency of all mesopredator species decreased over time, which at first glance seems to confirm the mesopredator release theory. However, locally, only badger (*Meles meles*) occurrence was negatively related to wolf presence, while a positive relationship with red fox (*Vulpes vulpes*) suggests facilitation, probably due to an increased availability of carrion in the vicinity of wolves.

While these first results already indicate complex, scale-dependent interactions between wolves and other mammal species, we now aim to link these interactions and test for causal relationships in order to contribute to knowledge-based wildlife management and to an objectification of the associated social and political debate.

Parallel Presentations

Theme: Species Interactions

Monday 16:20 - 16:40

Influence of wolves on relative abundance and activity patterns of wild ungulates in human-influenced forested ecosystems

Kerrian Chauvière

Co-authors: Florin Kunz, Philippe Christe, Fridolin Zimmermann, and Nina Gerber

Predators influence the foraging behavior and population size of their prey through consumptive and non-consumptive effects. The strategies developed by prey in reaction to predation can indeed alter their fitness. However, in human-dominated ecosystems, these effects are challenging to observe. To assess the wolf's impact on ungulate populations in Switzerland, we aim to investigate how the predator's growing spatial distribution and its temporal activity affect the spatiotemporal distribution of ungulates. Additionally, we will include human presence data, as it can interfere with or even outweigh predators' effects on ecosystems.

Our study took place in the Swiss Jura Mountains and is based on eight years of camera-trap monitoring following the recolonization of the wolf in the area (2017-2024). Up to 72 sites per year were monitored across a 300 km² area overlapping with up to five pack territories.

We aim to investigate seasonal variations in relative abundances and diel activity patterns of four prey species (red deer *Cervus elaphus*, roe deer *Capreolus capreolus*, chamois *Rupicapra rupicapra*, and wild boar *Sus scrofa*) in relation to wolf (*Canis lupus*) and human presence. For analysis, we integrate temporal and spatial information in one comprehensive framework to simultaneously study the temporal and spatial overlap of different species. We use a Bayesian time-dependent observation model for camera trap data (Tomcat), as an innovative approach to analyze predator-prey interactions by simultaneously integrating both spatial and temporal information.

We expect that prey's relative abundance decreased while wolf population increased and that ungulates adjusted their activity pattern to minimize predation risks. Red deer, as the primary prey, are expected to undergo greater changes, because of the higher hunting pressure they face from wolves. We plan to compare predator effects between sites, but also at specific sites through the eight years of monitoring. With the latter, we expect to understand how ungulate populations progressively react toward the wolf's influence from the very beginning of its recolonization. Regarding human presence and activity, we expect it to also impact ungulates' spatiotemporal distribution, but unlike the wolf's influence, its effects should not increase over time, except for the COVID-19 period.

Parallel Presentations

Theme: Species Interactions

Monday 16:40 - 17:00

Comparing activity patterns of the Himalayan wolf with Himalayan marmots and kiangs in a high-altitude landscape

Antonio Sampedro Garrido

Co-authors: Geraldine Werhahn, Naresh Kusi

Himalayan wolves show unique adaptations to low oxygen levels at high altitudes. These wolves belong to a phylogenetically distinct clade whose main ecological characteristics should be analyzed separately from those of the Holarctic grey wolf. In this study, we utilized data collected from 48 camera trap stations covering an area of 336 km² between May 2022 and October 2023. Daily activity at each station was measured and standardized by adjusting the occurrence rates to 1000 functioning hours. We also applied an algorithm to distinguish between activity occurring during the day (between sunrise and sunset) and at night (between sunset and sunrise).

Our preliminary results reveal the annual activity patterns of the Himalayan wolf and Kiangs and Himalayan marmots, the primary prey of the wolves in the study area. Notably, certain wolf activity patterns during the warm seasons may be influenced by marmot activity (Spearman's $\rho = 0.89$, $p\text{-value} = 0.033$). During the late rearing season and early winter, the correlation between the activity of wolves and kiangs was also significant (Spearman's $\rho = 0.79$, $p\text{-value} = 0.033$), in contrast to the total lack of correlation during the other months of the year.

Our data suggest that the Himalayan wolf in the study area is predominantly diurnal, with no significant variation in activity across seasons. The harsh winter climate likely contributes to this consistent diurnal activity. However, during the warmer months, the preference for daylight activity may be influenced by prey availability, which aligns with the biological cycles of the wolf's primary prey. We observed seasonal variations in the wolf's daily activity, and these variations were compared with the activity patterns of its main prey species in the area, Himalayan marmots and kiangs.

Parallel Presentations

Theme: Species Interactions

Monday 17:00 - 17:20

Badgers and wolves: close encounters on the set

Pauline Arends

Co-authors: Geraldine Werhahn, Naresh Kusi

I have camera trap images of interactions between wolves and badgers on badger setts. The images show how the wolves approach the badgers and the badgers' reaction. The wolves belong to the pack Midden-Drenthe. In the BE Hart van Drenthe, we monitor the badgers. On different sets, I have cameras 24 hours/day working over the last few years. So also from before the wolves came along. It might be interesting to see how the badgers react so far to the arrival of the wolf.

Parallel Presentations

Theme: Species Interactions

Monday 17:20 - 17:40

Niche differentiation within a sympatric population of Wolves and Golden Jackals in the Eastern Marmara Region of Türkiye

Melis Töke

Co-authors: Fatih Dikmen, David Blount, Josip Kusak

Habitat loss and fragmentation caused by human activities in natural landscapes significantly impact ecosystems. Increased human presence may cause large mammals to change their behavioral patterns. The first monitoring study was conducted in the northeastern part of the Samanlı Mountains in Sakarya to understand better the coexistence strategies of wolf and jackal populations and potential human-wildlife conflicts. The study area was chosen for its diverse wildlife and high level of human activity. Since fine-scale studies in Europe about wolf and jackal interactions are inadequate, this study provides important knowledge about their ecology. During the study, camera traps were used to monitor the area for 9 months, and 632 camera trap days were obtained. Twelve mammal species captured in camera traps along with wolves and jackals brown bears, red fox, roe and red deer, wild boar, wild cat, marten, badger, red squirrel, and wild hare were detected in the study area. Based on frequency data, it was determined that jackals were found to be the most dominant species and they avoid wolves, and wolves avoid humans. Since the detection rate of wolves and jackals was 0.04 and 0.6 respectively, jackals can be considered as a "weedy species". Roe deer and red deer, which are the main food sources of wolves, were observed very rarely. Kernel density estimations displayed a high temporal overlap between wolves and jackals and a low overlap between these two canid species and humans. Besides, wolves and jackals were mainly active during the night and humans showed diurnal activity in the region. Accordingly, the activity patterns of these two canid species are found to be negatively influenced by high human presence. We found that canids exhibit a trend of temporal avoidance by human presence. Sakarya, defined as a metropolitan city, is exposed to high human pressure due to logging, animal husbandry, and tourism activities and this high level of anthropogenic factors poses a threat to human-wildlife conflicts.

Parallel Presentations

Theme: Species Interactions

Monday 17:40 - 18:00

Wolf and jackal interaction patterns in Croatia

Dário Hipólito

Co-authors: Peter Haswell, Michael Schulte, Pavao Kusak, Josip Kusak

There are numerous examples of how the disappearance of apex predators has led to a simplification of food webs and an increase in mesopredators, which in turn has had a cascading effect on the entire ecosystem. On a continental scale, jackals and wolves are spreading into the interior of Europe and seem to coexist in the same areas. The jackal can be seen as the ecological equivalent of the coyote, sharing its range with the wolf but being subject to interspecific interference competition by the wolf, and, potentially, direct killing. The enemy constraint hypothesis would suggest that the jackal would be excluded from core wolf territories, yet it appears to be colonizing and surviving inside wolf territory. In North America, the coyote may sometimes coexist with wolves and adapt to wolf recolonization via behavioral changes, spatial and temporal partitioning. The ability of coyotes or jackals to co-occur with wolves may fluctuate with the intensity of wolf pressure. We tested the hypothesis that jackals use the same strategy when dispersing into wolf territory in Europe, and that the intensity of wolf presence (seasonality and disturbance) would affect jackal presence, behavioral adaptations, and density.

We studied activity pattern overlap of wolves and jackals alongside spatio-temporal variation in jackal abundance using camera traps in a wolf area in Croatia recently colonized by jackals. The cameras were active year-round in the Alpine and Mediterranean regions between April 2021 and March 2022 and recorded 563 and 857 independent events of wolves and jackals, respectively. The activity patterns of the species were compared and the selection of different times of day was analyzed. For jackal abundance, we examined three environmental variables and the intensity of wolf presence.

The overlap in the activity of wolves and jackals showed seasonal differences between denning and non-denning seasons, and between regions. In the Mediterranean region of Croatia with low wolf presence, the overlap of activity was higher than in the Alpine region.

The detectability of jackals was significantly higher in higher forests, further away from settlements and with a higher number of wolf events during the non-reproduction season. The detectability of jackals was significantly lower in higher forest cover, closer to settlements, and with a higher number of wolf events during the reproduction season.

The hypothesis that jackal abundance increases with increasing proximity to humans was not supported, however jackal abundance decreased with increasing wolf activity in the reproductive season. This suggests that wolf intensity may limit jackals but that settlements may not offer human shielding for jackals in Croatia. Further studies are needed that consider the presence of humans in wilder areas, the factors limiting wolf intensity, alongside fine scale spatio-temporal interactions between these predators. It will also be important to tease out the mechanisms driving the interaction patterns of wolves and jackals.

Parallel Presentations

Theme: Spatial Ecology

Monday 16:00 - 16:20

Wolf recolonization, ecology, and coexistence: comparison within and between North America and Europe

Jesse S. Lewis

Co-authors: Stewart Breck, Niccolò Fattorini, Andrés Ordiz Fernández, Francesco Ferretti, Oliver Keuling, Stephanie Kramer-Schadt et al.

Wolves are one of the most widely distributed large mammals in the northern hemisphere, whose populations continue to expand across North America and Europe due to conservation actions, natural recolonization, and societal values. Range expansion into regions of their historic range, which has been unoccupied for several decades to centuries, has led to predictable and unpredictable outcomes to ecosystems and people. Wolf recovery and its effects has exhibited similarities and differences between North America and Europe, which provides a learning opportunity to effectively conserve wolf populations across systems. In this study, we compared wolves between North America and Europe, as well as across countries and states, where we evaluated: 1. the distribution of wolves in relation to human activities, 2. the ecology of wolves and their effects on ecosystems, and 3. the challenges and future of wolf conservation and management given expanding wolf populations and increasing human-wolf interactions. Over the last three decades, wolves have increased their range in North America and Europe, including into landscapes altered by humans. Across continents, countries, and states, we summarize the areas that allow wolf hunting, the effects of wolves on livestock and native ungulates, and how conflicts are managed. For example, wolves can exert strong top-down forces on competitors, as well as prey. However, these top down effects can vary within and between continents due to myriad human factors. In particular, the absence/presence of livestock, prey availability, other carnivores, and varying management activities can either promote or hinder the potential for trophic cascades to occur in ecosystems. Other challenges, such as hybridization, also vary across systems. Ultimately, although expanding wolf populations is considered a conservation success story by many segments of the public, other groups of people are less supportive due to direct or indirect conflict with wolves. In order to promote wolf conservation and maximize public support, it is critical to address people's concerns with expanding wolf populations. There are outstanding opportunities for managers across systems in North America and Europe to share new technologies and create opportunities for cross cultural exchange of knowledge to best manage recovering carnivores globally.

Parallel Presentations

Theme: Spatial Ecology

Monday 16:20 - 16:40

Recovery of Gray Wolves in Wisconsin USA: from extirpation to coexistence

Adrian P. Wydeven

Retired Wildlife Biologist and Chair of the Timber Wolf Alliance in Ashland, Wisconsin

Gray wolves were killed off in Wisconsin in the late 1950s, at about the time my family immigrated from the Netherlands to Wisconsin. While I was in university in the 1970s, wolves began to slowly spread back into the state from a source population in Minnesota to the northwest. With protection of federal, state and tribal endangered species policies, as well as improved attitudes, wolves were able to return to a state that many thought was no longer wild enough to support such a large predator. In recent years the wolf population has grown to about 1,000 wolves. While risk of future extinction is low, wolves continue to provide challenges to wildlife conservation, including whether they need to continue to be listed as federal endangered species, or can be managed with more flexible state or tribal management. I will examine the growth of the Wisconsin wolf population and the conservation challenges they continue to face.

Parallel Presentations

Theme: Spatial Ecology

Monday 16:40 - 17:00

How to connect? Possible movement corridors for wolf packs in a human-impacted Swedish landscape

Anna C. Treydte

Co-authors: Johan Eriksson Myhrberg, Ronja Kraus

Globally, human-carnivore coexistence has been challenged by an ever-increasing land demand for human settlements, infrastructure, agriculture and industrial development. Particularly carnivore populations with often large home range requirements are strongly affected by a consecutive habitat decline and fragmentation. This habitat deterioration challenges interactions between sub-populations and threatens genetic diversity of the affected carnivore population. Yet, little is known on whether the Swedish wolf (*Canis lupus*) population can uphold regular exchanges between packs to maintain their genetic pool. Further, understanding habitat suitability and connectivity for wolf packs is essential for appropriate human-wolf conflict management in Sweden.

We wanted to quantify the impact of human presence on the connectivity of wolf home ranges and the landscape permeability for wolves in mid-Sweden, a highly human-dominated area. We used environmental information provided by the Swedish national land cover data including road networks, deforestation activities, pasture and open water locations. We added location data of wolf packs collected through the population monitoring project SKANDULV in Scandinavia. In addition, GPS locations of nine individual wolves were used for home range size and distribution estimates. We analysed this information using connectivity, least-cost paths, and corridor analyses in GIS.

Our preliminary data showed that about 56% of the study area was potentially suitable habitat for wolves, being rather evenly distributed throughout the landscape. The most suitable areas were located in the northwest, i.e., Dalarna and Värmland. Wolves preferred a rather shallow terrain with slopes between 2 and 9 degrees. Home range sizes varied on average between 260 km² and 1200 km². Inside estimated home ranges, forest was the dominant land cover type (47% - 62%), while the second most dominating land cover was exploited land (17% - 34%), highlighting potential areas of conflict. Our connectivity analysis showed 46 corridors through the landscape for wolf packs. We conclude that wolf packs were likely still able to interact and use the human-dominated landscape, although with sub-optimal connections. Home range composition of wolves agreed with our habitat suitability analyses. The connectivity analyses highlighted areas that should be monitored for conflicts and where mitigation / prevention measures should be focused on.

Parallel Presentations

Theme: Spatial Ecology

Monday 17:00 - 17:20

The use of spatial capture-recapture to improve environmental impact assessments on wolves

Gonçalo Ferrão da Costa

Co-authors: Miguel Mascarenhas, Carlos Fonseca, Chris Sutherland

Wolves are elusive species, with vast home ranges and occurring at low densities, making challenging to study them and derive robust estimates of their ecological parameters. Wolf monitoring programs under environmental impact assessment (EIA) procedures should seek to derive objective and quantitative estimates of those parameters before the development of some infrastructure (the reference situation), monitor all the construction phase, and follow, at least, the first years of operation, to make inferences about cause-consequence relationships. This procedure, correctly done, will feed decision-making through an adaptative management process and help the development of preventive avoidance/mitigation measures at pre-construction and construction phases, corrective actions at operational phase and/or compensation measures to ensure species populational resilience.

However, most of the current wolf monitoring programs during EIA, despite the vast field effort often undertaken, rely mainly on naïve statistics like relative abundance indexes or absolute survey numbers to make direct assumptions about biological relevant parameters, disregarding the bias from the imperfect observational process. This can lead to incorrect evaluations, dispersion of resources and inconsequent conservation measures.

Here, we present a way to overcome present shortcomings by taking advantage of the spatial capture-recapture (SCR) framework, using wolf as a model species and an example of a three-year monitoring program. We show that, apart from the need of consistent genetic data to create individual information from geolocated scats collected on the field, there is little to change from the current wolf survey designs, rather than adjusting the analytical framework. Results include unbiased estimates for density, total abundance and space use, which are critical for a good impact assessment. Additionally, the direct inclusion of spatial covariates within the models, including the infrastructure under study, allow inferences about its effect on the species estimates.

Wolf monitoring programs are costly, involve a lot of human and material effort, and many times achieve little data. Making the most from the (few) data collected in the field is a responsibility for everyone involved, so that robust conclusions can be drawn to really help the overall EIA process and safeguard the target species.

Parallel Presentations

Theme: Spatial Ecology

Monday 17:20 - 17:40

Linking age and social status of wolves to vulnerability throughout the harvest season

Peter F. Rebholz

Co-authors: Lisette P. Waits, David E. Ausband

In cooperative breeding carnivores, the composition (i.e., the number of different sex and age classes) and size of a group are important influential factors in recruitment and group survival. Monitoring these parameters in remote populations through traditional approaches, such as radio-telemetry and direct observation has proven to be difficult and costly due to geographical obstacles, large home ranges, and less sampling opportunities for cryptic and elusive species. Understanding how mortality can affect groups of cooperative breeders like gray wolves (*Canis lupus*) is useful for informing management and conservation. Genetic monitoring can be an effective approach for acquiring such information when traditional methods are too costly or ineffective. We demonstrate a novel approach for using genetic data opportunistically collected from harvested wolves to genotype and estimate a minimum count of breeders harvested annually in Idaho, USA. We compared genotypes from tissue samples of harvested wolves to create an effective and replicative approach for identifying breeders and when they are likely to be harvested.

Parallel Presentations

Theme: Spatial Ecology

Monday 17:40 - 18:00

Uncovering the triggers of wolf fatigue: From sports science to wolf energetics

Ane Eriksen

Co-authors: Pablo Rozier-Delgado, Charlotte Lorand, Olivier Devineau, Anne Loison, Kristoffer Nordli, Baptiste Morel

Understanding the trade-offs faced by wildlife in human-dominated landscapes has been limited by the difficulty of estimating energetic costs and environmental and physiological constraints to movement. We demonstrate a novel approach to studying energetics and fatigue in wild wolves by applying methods from sports science to data from wolves equipped with GPS and accelerometer sensors within the Scandinavian Wolf Research Project.

Striated muscle tissues are shared throughout the animal kingdom, and so are fundamental muscle and locomotion properties. For instance, a hyperbolic relationship between the speed an individual can maintain and the duration of the effort has been observed in a large number of species. The asymptote of this relationship, namely the critical speed, represents an intensity threshold beyond which fatigue accumulates drastically. Critical speed shows a considerable inter-individual variability, driven physiological and biomechanical determinants. While critical speed is widely used in human sports performance models, it has unexploited potential for improving our understanding of costs and constraints in wildlife movement.

We present proof of concept and multiple applications for the use of accelerometry to study critical intensity and energetic expenditure in wild wolves. Variation in critical intensity both within and between individuals can serve as an indicator of physical condition, and can be related to factors such as age, health, and potentially even inbreeding level. Furthermore, by estimating individual-level critical speed from accelerometer data, we can identify when, where in the landscape, and under what circumstances wolves exceed sustainable activity levels (i.e. fatiguing efforts). Aided by field observations and acceleration-based behavioural classification algorithms we will investigate wolf activities that are likely associated with high intensity and energetic cost, such as the chasing and killing of prey and responding to direct human disturbance. By applying this tool on a highly active wildlife species such as the wolf, we can gain a new understanding of the energetic trade-offs and the physiological and environmental constraints impacting wolf movement in complex environments.

Parallel Presentations

Theme: Survival and Mortality

Monday 16:00 - 16:20

Anthropogenic and natural factors causing wolf mortality in Italy

Carmela Musto

Department of Veterinary Medical Sciences, University of Bologna, Italy

Co-authors: Sarah Marshall-Pescini, Duccio Berzi, Francesca Ciuti, Alessandro Bianchi, Giuseppe Merialdi et al.

Over the past 40 years, the grey wolf (*Canis lupus*) has recolonized much of its historical range in Italy. This study aims to highlight the causes of mortality within an Italian wolf population over an extensive temporal period and with a large sample size. It comprehensively addresses various scenarios, including anthropogenic mortality, natural mortality and human-wolf conflicts. Between 2005 and 2024, 913 wolf carcasses were collected and subjected to necropsy. From this dataset, a subset of 747 individuals was selected, as the data collection of these samples it was homogeneous. The causes of death were classified as anthropogenic (83.27%, 622 individuals), natural (12.71%, 95 individuals), and not assessable (4.02%, 30 individuals). Among the anthropogenic causes, vehicle collisions were the most frequent, accounting for 61.41% (n = 382/622), followed by illegal killings (38.59%, n = 240/622). The proportion of wolves exhibiting signs consistent with illegal killing remained stable over time, with most events occurring between October and April, peaking significantly in January and February — a period that coincides with the hunting season and the beginning of juvenile dispersal. Traditional predictors of wolf mortality, such as human population density, livestock presence and hunting areas, did not correlate with instances of illegal killing. However, spatial clustering of these events was observed, suggesting that persecution may stem from a variety of human-wolf conflicts beyond livestock depredation. The most significant cause of natural mortality was intraspecific aggression, which represented 57.89% (55/95) of deaths from natural causes. Another important cause was starvation, which affected 20.02% (n = 19/95) of the wolves. The expansion of the species into new territories is exposing wolves to new prey species and novel pathogens, some of which can be lethal, e.g. *Dirofilaria immitis*, with 7.36% of individuals testing positive. In this study, six wolves (6.31%) died from Pseudorabies virus (Aujeszky's disease) infection. The remaining eight wolves (8.42%) died from natural causes such as pneumonia, septicemia, neoplasms, and interstitial nephritis. Additionally, 21.3% of wolves tested positive for sarcoptic mange, confirming itself as the most common contributing factor to natural mortality in the study population. Nonetheless, our results indicate that human activity remains the main driver of wolf mortality, highlighting that the road to coexistence is still far from being achieved. Standardized methods are crucial for tracking wolf mortality over time and guiding strategies for coexistence in human-dominated landscapes.

Monday 16:20 - 16:40

Road mortality of wolves in human-dominated landscapes in Poland

Sabina Nowak

Co-authors: Maciej Szewczyk, Radosław Sroga, Magdalena Bartoszewicz, Katarzyna Lesner, Michał Figura, Robert W. Mysłajek

The recovery of wolf population across human-dominated landscapes of central Europe coincides with an increasing mortality of wolves on roads, the level of which remains unknown. In Poland, where the species has been strictly protected since 1998, and its current range covers forests and mosaics of natural and human-modified areas, we opportunistically collected data on wolves hit by vehicles from 2002 to 2023, revealing their distribution, seasonal variation, sex and age structure, social status and road category at the kill site. We also conducted GIS analyses of habitats along the road and their impact on the risk of collision. Datasets from 20 wolves collared in 2014-2023 were used to assess the number of crosses per wolf per day, time of crosses and traffic on the road section, differences in road crossings between wolf age categories, and risk of being killed on the road. Within 20 years, we recorded 447 wolves struck by vehicles on roads, most of them in 2018-2023. Among road casualties with defined age classes, there were more adults (> 1 year, 69%) than juveniles (< 1 year). Adults were killed mainly in late autumn (41% of adults' mortality) and then in late winter (23%). Juveniles died on roads mostly in autumn, with 61% of pups' mortality. Mainly young (1-3 years) adult wolves were killed on roads (70%), much less (20%) wolves over 3 years old, and only 10% older than five years. The youngest road-killed pup was seven weeks old, but the most frequent were those of six and seven months old, making 36 % of all pups' deaths. Wolves mainly died on national (47%) and regional roads (29%). Most roadkills (78%) were found on road sections crossing forested areas, at least on one roadside (78%), where traffic was below 9.000 vehicles/per day. Wolves with GPS-GSM collars crossed roads on average 2.6 times per day (range 0.7 – 7.8), mainly during the night (88%) between 8 pm and 8 am. Our study results can help create solutions to reduce wildlife collisions and assess the impact of traffic on wolf populations.

Parallel Presentations

Theme: Survival and Mortality

Monday 16:40 - 17:00

Breeder turnover and its cascading effects on wolf pack structure

Peter Rebholz

Co-authors: David E. Ausband

Gray wolves (*Canis lupus*) in Idaho, USA, typically live in family groups comprising a breeding pair and several generations of offspring. Breeders can be particularly influential in such groups, dictating behaviors such as when and where to hunt, and monopolizing breeding opportunities. Studies have shown that breeder turnover can affect groups of wolves in profound ways, even leading to group disbandment. I show that most breeding pairs are together just a short time (2 years) but have increased pup survival in their groups when together for longer periods. Additionally, wolves who lose a mate quickly re-pair and can have as many as 5 mates in their lifetime. Harvest negatively influences pup survival and this is further exacerbated by the loss of breeding females in groups. Finally, breeder turnover affects dispersal decisions by mature, nonbreeders in groups. Most notably, their decisions are affected not only by their sex but by the sex of the breeder that was lost. Breeder turnover is a powerful force helping to drive wolf pack size and composition gray wolves.

Monday 17:00 - 17:20

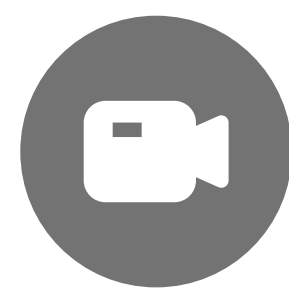
Apparent survival of mated wolves across West-central Europe

Peter Sunde

Co-authors: Olivier Devineau, Martin Mayer, Barbora Cerna Bolfikova, Pavel Hulva, Hugh Jansman, Felix Knauer et al.

Survival rates of paired adults are of paramount importance for wolf population dynamics and ultimately whether local populations can be self-sustaining or even persist. Since 2000, breeding pairs of wolves have established over large parts of Central Europe, increasingly colonizing human-dominated landscapes. As wolves appear to adapt well to cultivated landscapes, regional and habitat specific survival rates of reproductively active individuals may become a key determinant for the final number of wolves in Central Europe and where they can live. Using a capture-mark-recapture analysis we analyzed apparent survival of more than 750 wolves, identified as mated territory owners based on genetic markers from six neighboring countries (Germany, Czech Republic, Austria, Belgium, The Netherlands, and Denmark). Predictors were regional divisions as well as landscape variables representing habitat availability (forest cover), human impact (road density, human footprint index), conflict potential (sheep density), sex and wolf population density. We present the results of this analysis and derive the extent to which different regions and landscapes can be considered as populations sources or sinks.

Monday 17:20 - 17:40



Patterns and determinants of mortality in grey wolves (*Canis lupus*)

Ana Morales-González & Héctor Ruíz-Villar

Co-authors: Maria Paniw, Eloy Revilla

Mortality is one of the main drivers of population dynamics, being particularly remarkable for large carnivores in scenarios with widespread human pressure. This is the case of the grey wolf (*Canis lupus*). The design and implementation of successful management and conservation strategies requires to understand the magnitude and variability of the different sources of mortality. Here, we review the patterns and determinants of mortality documented in the scientific literature (174 studies) for the species across its distribution range. Despite we found similar rates for North America and Europe (0.32 ± 0.17), the proportion wolves dying by the different human and natural causes significantly varied across these regions. For instance, the proportion of mortalities by illegal means and vehicle collisions, and by intraspecific strife and diseases were higher for Europe and North America, respectively. Although some differences may be partially explained by variations in methodological approaches, we showed that several individual, social and environmental (human and natural) factors determined mortality. For instance, human related factors (e.g. direct persecution and agricultural habitats) increased mortality, and group level factors (e.g. litter size and age of breeders) greatly determined pup mortality. Our study provides a critical appraisal of all information on wolf mortality to date, providing the baseline framework to advance in the conservation and management of arguably the most controversial species in the northern hemisphere.

Monday 17:40 - 18:00

Impact of wolf predation as well as environmental and anthropogenic factors on moose harvest in Scandinavia

Camilla Wikenros

Co-authors: Håkan Sand, Ane Eriksen, Petter Wabakken, Johan Månsson, Cecilia Di Bernardi, and Barbara Zimmermann

Management of ungulate populations to the desired density and/or demographic composition is challenging due to conflicting interests among stakeholders. We examined long-term moose (*Alces alces*) harvest data in two countries in northern Europe (Sweden and Norway) that share populations of wolves (*Canis lupus*) and moose. We tested how time since wolf establishment and variation in wolf territory density affected moose harvest density and age and sex composition of the harvested animals. We also tested how the presence of an additional large carnivore species (brown bear (*Ursus arctos*)), habitat composition, latitude, and infrastructure correlated with harvest density to further improve our understanding of the important factors for moose harvest yield. Hunters in Sweden reduced almost instantly their harvest of moose as a response to the establishment of wolves. Moose harvest density was reduced with up to 51% in areas with average wolf territory density compared to areas without wolves. Management actions were taken to reduce the total moose mortality as well as to maximize productivity in the population in response to increased wolf territory density. During the later years, however, harvest became decoupled from wolf territory density in several areas in an attempt to reduce local moose densities and with that moose browsing damage in young forest stands. Total moose harvest and the proportion of calves in the harvest were both positively correlated with the proportion of young forest in the area. Increased proportion of agricultural land was also linked to both increased total harvest and proportion of calves, likely because increased roe deer (*Capreolus capreolus*) densities re-directed wolf predation from moose towards roe deer. The total harvest was negatively related to increased brown bear density. Also, the location and characteristics of wind power establishments impacted on moose harvest. The ability to adjust to new conditions is key in wildlife management where conflicting societal objectives such as forestry and carnivore conservation should be balanced. Improved monitoring for individual hunting areas over time will be important for the understanding of how different ungulate populations are affected by various factors and for the desired management of wildlife populations shared across borders.

Tuesday 11:00 - 11:20



Navigating Socio-Ecological Dynamics: Changes in Human Attitudes and Wolf Management in Switzerland

Carolyn Schaltegger

Co-authors: Nina Gerber, Laura Andres, Vera Lucia Alessandrello, Manuela von Arx, Gabriele Cozzi, Arpat Ozgul, Dominik Behr

The recolonisation of human-dominated landscapes by wolves is fuelling ongoing public debates with diverging human attitudes at their centre. In December 2023, Switzerland legalised the proactive shooting of wolf packs, marking a significant policy shift with potential impacts on the wolf distribution in the Alps. Our study integrates data from nationwide surveys conducted in 2015 and 2023 to analyse changes in human attitudes and spatial distribution of wolves. Despite the wolves' range expansion and increasing damages to livestock in Switzerland, human attitude towards the species has generally improved between 2015 and 2023. Using Structural Equation Modelling (SEM), we identified that positive attitude towards wolves was influenced by perceived benefits of their presence, while negative attitude was associated with indirect experiences of livestock loss and fear, particularly in households with young children. Acceptance of wolves correlated with support for livestock protection measures and reliance on experts/science information, whereas negative attitude was linked to support for lethal management and reliance on social circles for information.

Further, with a spatial modelling approach we showed that socio-economic disparities between lowland and mountain areas were stronger predictors of human attitudes than proximity to wolves, depredation incidents, or livestock abundance. Additionally, we predicted potential human-wolf conflict areas by comparing habitat suitability for the wolf, human attitude, actual wolf occurrence, livestock abundance, depredation intensity, and existing livestock protection measures. This analysis identified current and future hotspots of human-wolf conflict and provided recommendations for adaptive management strategies. Our findings emphasise the need for a nuanced approach to wolf management that integrates public perception, personal experience, and effective communication strategies to address the complex socio-ecological dynamics of human-wolf interactions in Switzerland.



Media Attitudes Toward Wolves: The Role of Recolonization Phases, Pasture Seasons, and Proximity to Elections in the Italian Alpine Regions

Davide Ravaglia

University of Turin, Department of Life Sciences and Systems Biology

Co-authors: Guillaume Chapron, and Francesca Marucco

In the context of global biodiversity decline, certain species, such as the wolf (*Canis lupus*), are paradoxically reclaiming some of their historical habitats after being eradicated by humans. This is the case in Europe, where wolves are repopulating the human-exploited Alps. However, this conservation success is reigniting old human-wildlife conflicts. The successful conservation of controversial species somewhat depends on public acceptance, which can be challenging to assess but is reflected in - and influenced by - media coverage.

In this study, we conducted a longitudinal analysis (2014-2023) of provincial and national online news attitudes toward wolf conservation in the Italian Alpine regions. Northern Italy presents various stages of wolf recolonization, making it a perfect case study to explore the local dynamics of media attitudes. The attitudes of news articles were manually classified by 100 independent readers using a 5-point Likert scale, ranging from strongly negative to strongly positive. We then leveraged these classifications to train a neural network that filled in the gaps in the dataset, obtaining a total of over 4000 classified news. At last, we employed Bayesian hierarchical models to analyze factors influencing media attitude.

The analysis revealed shifts in media attitudes depending on the phase of wolf repopulation: while national news proved to be the most positive, at a local scale, areas with little-to-none wolf presence were the most positive, while regions with long-term wolf presence exhibited slightly negative attitudes and areas with recent recolonization were the most negative. Overall, positive attitudes toward wolf conservation declined over the study period. A novel finding of this study was the negative influence of the proximity of political elections, which we assessed while also considering the negative effect of the grazing season. These results enrich our understanding of the challenges this species faces in one of the most densely wolf-populated human-inhabited areas, highlighting the importance of monitoring the human dimension to ensure effective conservation. Additionally, the automated classification method developed could be employed in other countries with minimal or no need for fine-tuning, as its performance remained reliable when translating news into English.

Tuesday 11:40 - 12:00



Exploring the role of implicit and explicit attitudes in human-wolf coexistence

Svenja Capitain

Co-authors: Magdalena Boch, Gwendolyn Wirobski, Sarah Marshall-Pescini, Claus Lamm, Giulia Pedretti, Valeria Bevilacqua & Friederike Range

Understanding human attitudes towards wolves is essential for managing coexistence during wolves' recent recolonization in many European countries. While possible factors for the polarization around wolves have been identified, prior research relied almost entirely on self-report measures, which predominantly reflect explicit attitudes. Implicit attitudes, however, have been largely neglected. They influence behaviour outside awareness and have been central in the study of human ingroup-outgroup behaviour, stereotypes, and prejudice formation. Given the stereotypes and symbolisms attached to wolves in our culture and the possible behavioural predispositions we may have retained toward apex predators, we believe that understanding these implicit processes, their mechanisms, and origins is crucial for understanding and navigating the polarized dynamics. In this talk, we will present four studies on explicit and implicit attitude measures during the interaction with real and pictured wolves that may help to better understand our attitudes and behaviour towards wolves. Implicit attitudes were assessed via (psycho-)physiological (neural activity, heart rate, cortisol) and behavioural measures (body language, facial expressions, implicit attitude test), respectively. Dog stimuli were used as a comparison to assess effect specificity. In the first experiment, we used neuroimaging to compare participants' amygdala activation (as a proxy for an affective threat response) when viewing wolf or dog pictures to their explicit ratings of the pictures' threat levels. The findings revealed a divergence between explicit ratings and implicit neural responses: while wolves were explicitly rated as more threatening than dogs, the brain responses did not match this difference and suggested only minimal differences between species. In the second to fourth experiment, humans physically interacted with wolves and dogs, hand-raised and kept in similar ways. This allowed us to explore the relationship between direct experience and implicit attitudes, behaviour, and physiological reactions. First preliminary results indicate that implicit reactions to dogs and wolves differed even after years of positive daily experience with both species, with experience only mediating the ratio of positive and negative facial expressions towards the species. These first insights show that investigating implicit alongside explicit attitudes holds great promise in helping us better understand the human dimension and polarisation around wolves.

Parallel Presentations

Theme: Attitudes

Tuesday 12:00 - 12:20



Age-Defying Conservation: Cogeneration from Boomers to Zoomers

Cassiopeia Camara

Ready to shake things up in wolf conservation? Let's dive into how cogeneration—an exciting strategy that brings together different generations—can transform the way we protect wolves and the environment.

Cogeneration offers a fantastic opportunity to tackle the polarization and debates often seen in wolf conservation. Imagine blending the wisdom of seasoned pros with the fresh ideas of younger advocates! By understanding and addressing what matters to each generation, we can smooth out conflicts and boost communication. This approach lets us harness the best of both worlds to create a stronger, united front for wolf protection.

The friction around wolves usually boils down to misunderstandings and clashing values. But by bridging these generational divides through cogeneration, we can improve how we talk about wolves, reduce disagreements, and get more people involved. This strategy not only brings us together but also amps up our efforts in conservation. So, what's cogeneration all about? Join me to discover more.

Tuesday 11:00 - 11:20

Voices from the Mountains: Using in-person interviews to understand livestock farmers' attitudes on wolves and wolf management in the Italian Alps

Ronja Kraus

Co-authors: Farina Sooth, Erica von Essen, Anna Sustersic, Anna Treydte

Media coverage and political discussions have highlighted concerns among the local human population regarding the return of wolves (*Canis lupus*) to the central Alps. As the Alps are a highly diverse and, in parts, intensively used region, various interests of agriculture, forestry, conservation, and tourism converge and often collide. The presence of such interests and the resulting region- and stakeholder-specific conflicts make it difficult to find solutions for a sustainable human-wolf coexistence. Reaching these on-the-ground actors is important in locating the lived realities of conflict. However, research often relies on online surveys or snowball sampling methods, that are unable to target a specific land user group, e.g., livestock breeders, and at the same time allow for a quantitative assessment based on a randomly selected sample of respondents.

In this study, we aimed to identify the challenges livestock farmers face regarding wolf management in their respective regions and set those into relation to spatio-temporal conflict occurrence. We conducted personal interviews with 70 livestock farmers in Trentino and Lombardy, northern Italy, in and close to Stelvio National Park, between June 2023 and June 2024. We developed a semi-structured questionnaire to explore topics related to farming practices, experiences with wolves and compensation processes after attacks, people's attitudes toward wolves, wolf management, and livestock protection measures.

In a unique contribution to spatio-temporalize wolf conflict, we further applied participatory mapping of pasture use to contextualize our survey results within the spatial landscape. This involved overlaying the abovementioned data on other landscape characteristics such as terrain, vegetation structure, anthropogenic landscape features, and livestock depredation events.

In the first part of our presentation, we will highlight preliminary findings from our quantitative analysis that underline the necessity of locally specific wolf management concepts. The second part will focus on discussing the challenges and opportunities we, as female researchers from abroad and not part of the local farming community, encountered during data collection on the wolf topic, followed by some recommendations based on our experiences.

Tuesday 11:20 - 11:40

Insights of coexistence between humans and wolves: a case study from Tandoureh National Park in Iran

Nima Badelu

Co-authors: Kaveh Hobeali, Modaser Teymori, Mohammad Sadegh Farhadinia

Tandoureh National Park, located in the northeast of Iran within the Kopet Dag mountain range, is one of the country's most critical conservation areas, home to large carnivores such as the Persian leopard (*Panthera pardus tulliana*) and the gray wolf (*Canis lupus*). The high density of leopards inside the park has led to the near absence of wolves in the park's core, pushing wolf activities to the park's borders, where they come into greater conflict with human settlements and livestock. This predator competition, combined with concentrated wildlife populations inside the park, has resulted in a significant disparity in livestock depredation events between wolves and leopards. Our survey documented 183 livestock losses during 70 wolf attacks across 23 villages, compared to only 29 attacks attributed to leopards. This demonstrates that wolves are responsible for 6.3 times more successful depredation events than leopards, underlining their predominant role in livestock losses. Out of 57 respondents, more than 80% expressed negative attitudes toward wolves, with 29 people (50.88%) reporting a strong dislike for the species. Notably, 14.04% indicated they would kill wolves immediately following an attack, and 19.30% said they would kill a wolf if attacks became frequent. The increasing human-wildlife conflict at the edges of Tandoureh National Park highlights the need to extend conservation efforts beyond protected area borders. Fragmentation of protected areas reduces focus on wildlife conservation in surrounding regions, intensifying conflicts. To improve wolf conservation and mitigate conflicts, it is essential to expand protective measures outside the park, implement continuous community education programs, and establish comprehensive livestock insurance schemes. Additionally, having committed herders and well-trained guard dogs can significantly reduce livestock losses. Timely and widespread vaccination of livestock not only helps prevent disease transmission but also boosts wildlife populations by keeping them healthy. This reduction in disease and livestock losses eases the financial burden on herders and lessens their resentment towards wolves, as the economic impact of predation becomes less significant.

Tuesday 11:40 - 12:00

Perspectives of traditional Himalayan communities on fostering coexistence with Himalayan wolf and snow leopard

Naresh Kusi

Co-authors: Claudio Sillero-Zubiri, David W. Macdonald, Paul J. Johnson, and Geraldine Werhahn

The Himalayan wolf (*Canis lupus chanco*) and snow leopard (*Panthera uncia*) are found in the Nepalese Himalayas where conservation efforts target the latter but not the former. We conducted semi-structured questionnaire surveys of 71 residents in Upper Humla, Upper Dolpa, and Kanchenjunga Conservation Area (KCA) during 2014–2016 to understand people's knowledge, perceptions, attitudes and interactions with these two carnivores. We fitted a cumulative link mixed model to predict Likert scale ordinal responses from a series of Generalized Linear Mixed Models. Overall, attitudes were more positive toward snow leopards than wolves. Livestock depredation was the main predictor of the general negative attitude toward wolves (Estimate = -1.30873 ; $p = .029866$) but there was no evidence for an effect for snow leopards (Estimate = -0.3640 ; $p = .631446$). Agro-pastoralists had more negative attitudes than respondents with other occupations toward both carnivores and men had more positive attitudes than women. Among our study areas, respondents in the community-owned KCA had the most positive attitudes. Our findings illustrate the need to reduce human–carnivore conflict through a combined approach of education, mitigation, and economic cost-sharing with respectful engagement of local communities. Specifically, to encourage more villagers to participate in livestock insurance schemes, they should be improved by including all large carnivores and adjusting compensation to the market value of a young replacement of the depredated livestock type. Carnivore conservation interventions should target the whole predator guild to achieve long-term success and to protect the Himalayan ecosystem at large.

Parallel Presentations

Theme: Co-existence

Tuesday 12:00 - 12:20

It takes a village: thanks to inclusive conservation, an NGO implemented a successful livestock protection program in Switzerland

Jérémie Moulin

Organisation Pour la Protection des Alpes (OPPAL), Val de Bagnes, Switzerland

Co-authors: Elise Say-Sallaz

Wolf attacks have a significant impact on pastoral communities, disrupting income and raising herd management costs, while also causing psychological and emotional stress for farmers and shepherds. This situation exacerbates socio-political tensions and impedes the development of sustainable coexistence strategies.

Since 2021, the Swiss association OPPAL has been addressing these challenges by mobilizing hundreds of people annually to support shepherds and increase human presence on mountain pastures. OPPAL's unique approach involves building an "inclusive conservation" model, focusing on collective intelligence among all stakeholders involved (NGOs, authorities, society, farmers, shepherds, etc.).

The organization recruits volunteers and young civilists completing their national service, who receive specialized training to prepare them for their missions. When farmers experiencing wolf attacks request assistance, these trained volunteers and civilists are deployed in pairs at night to monitor vulnerable herds using advanced surveillance and deterrent equipment, such as thermal vision binoculars. OPPAL supports various types of livestock, including sheep, goats, and young cattle.

The organization operates on a cooperative model, where farmers or government herd protection officers reach out to OPPAL, ensuring that support is provided in a collaborative and mutually agreed manner. The organization often requires farmers to adapt their working methods; this fieldwork is carried out in collaboration with the authorities, and enables them to monitor and support these changes. Furthermore, OPPAL also partners with NGOs like WWF to create a comprehensive protection model.

Since its inception, OPPAL has grown significantly, with volunteer numbers increasing from 186 in 2021 to over 450 volunteers and 25 civilists in 2024. This expansion has led to over 22,000 hours of herd monitoring in 2024 alone. The organization has built strong partnerships with authorities and received an increasing number of support requests from farmers. Despite the emotional strain on farmers and the generally supportive stance of volunteers towards wolves, monthly and annual reviews show high satisfaction among all parties. OPPAL's model brings together individuals from diverse socio-professional backgrounds, fostering a rich exchange of perspectives. Remarkably, over 50,000 hours of surveillance over four years have resulted in zero successful wolf attacks during OPPAL missions, demonstrating the effectiveness of its approach.

Tuesday 11:00 - 11:20

Wolves as sentinels of farmers' compliance with sanitary regulations in Poland

Robert W. Mysłajek

Co-authors: Weronika Baranowska, Michał Figura, Maciej Szewczyk, Sabina Nowak

Carcasses of farm animals, if not properly utilized, may be a source of viral, bacterial, and parasitological diseases harming humans, as well as wild and domestic animals. Furthermore, carcass deposition near human settlements may attract wildlife and escalate conflicts. Therefore, monitoring farmers' compliance with sanitary laws is instrumental in sustaining long-term human-wildlife coexistence. We illustrate the sentinel potential of wolves, analyzing their scats' content and using GPS tracking to assess farmers' compliance with EU sanitary regulations regarding the utilization of carcasses of livestock and poultry. We performed a systematic review of all papers focused on the wolf diet based on scat analysis in forests and additionally collected and analyzed the content of wolf scats from human-dominated landscapes (23 study areas, >5700 scats) to reveal the share of domestic animals in the wolf diet across habitat gradient in Poland. Furthermore, we followed 23 wolves equipped with GPS-GSM collars to reveal the species, locations, and sources of domestic animals they consumed. We also installed camera traps near two poultry farms to obtain detailed data on the wolf's presence in dumps where carcasses were deposited. We revealed that in Poland, domestic animals comprised, on average 3.3% of consumed biomass (range 0-14.2%). The amount of domestic animals in the wolf's diet is not, however, correlated with the area of farmlands within study areas. We revealed that collared wolves can find and forage on carcasses of livestock illegally dumped in forests and marshlands surrounding forests. Wolves were able to dig up farm animal carcasses buried in earthen pits. We also observed that wolves, especially young individuals, may regularly visit the vicinities of poultry farms, forage on the remains of illegally dumped birds, and rest on manure piles, which causes severe dermatosis and lowers their fitness. Our study shows the potential of GPS-tagged wolves as sentinels for monitoring farmers' compliance with sanitary laws.

Tuesday 11:20 - 11:40

Fences and Shepherds Are Just the Start: Navigating the Complex Challenges of Implementing Livestock Protection Measures

Julia Stauder

Co-authors: Weronika Baranowska, Michał Figura, Maciej Szewczyk, Sabina Nowak

The resurgence of wolves in the Alps has triggered multifaceted conflicts and introduced significant challenges that necessitate intervention on political, social, administrative, and technical fronts. Effective stakeholder engagement is essential to mitigate these conflicts. Over the past five years, the European LIFEstockProtect project has engaged in comprehensive collaboration with livestock farmers and shepherds in the German-speaking Alps, specifically South Tyrol, Austria, and Bavaria, at various levels—from actors on the ground to high-level decision-makers and stakeholder representatives. In these regions, the rejection of protection measures is prevalent, with increasing demands for wolf-free zones. Face to face interactions with farmers and shepherds have yielded valuable insights into their social dynamics, internal conflicts, needs, and barriers to adopting livestock protection measures. For example, despite intensive communication efforts by the project, associated institutions, and local administrations, many livestock farmers and shepherds continue to adhere to the misconception that shooting wolves and the lowering of its protection status will completely resolve predation issues. This belief substantially hinders the adoption of protection measures and is perpetuated through local media and stakeholders' associations. In the limited instances where protective measures have been implemented, the project has observed the emergence of new challenges associated with this adaptation. For instance, restructuring high-altitude summer pasture management to integrate herd protection encompasses not only the technical implementation and funding of new measures but also engenders new intra-community conflicts among farmers regarding the methods, legitimacy, and communication of these changes. It is not rare, that farmers or shepherds who implement protection measures often face social pressure, being stigmatized as traitors or wolf-supporters within their own groups. These and other complexities will be examined in greater detail, with proposed solutions to address these challenges in future policy decisions and projects focused on herd protection measures and conflict management.

Tuesday 11:40 - 12:00

Living labs - a shared management tool for wolf, livestock and hunting coexistence: The case study of the 4Pethabeco project (Ipa-Adrion Interreg Project) in the areas of the Dinaric Alps and the North Eastern Alps

Stefano Filacorda

Co-authors: Rebecca Missaglia, Andrea Madinelli, Antonella Stravisi, Sara Vezaro, Lorenzo Bernicchi, Lorenzo Frangini

Living labs (open innovation ecosystems in real-life environments) are born from an idea of MIT researchers, and were first introduced in the design of innovative information and communications technology; these have subsequently been used in participatory planning and design across various sectors in the fields of sustainability, environmental management, conservation. In the context of management and conservation of large carnivores, in particular of Wolf and Bear, this approach is being applied in the context of the Dinaric Alps and the North Eastern Alps within the framework of the Interreg IPA-Adrion 4Pethabeco project. The project aims to identify, in a shared way with farmers and hunters, administrative and research bodies, the solutions and strategies to reduce the impact of wolves on livestock activities and to improve coexistence with other human activities; also by identifying experimental research measures applied to livestock management and damage prevention and hunting management. This approach seeks to identify research strategies, coexistence and management visions, based on real needs, experience and perception of farmers (and other stakeholder) in combination with the knowledge and technology held by research organisations. The approach and first results are presented

Parallel Presentations

Theme: Farmers

Tuesday 12:00 - 12:20

The relationships between wolves and pastoralists in the context of shrinking grasslands in Surendranagar district, Gujarat, India

Malaika Mathew Chawla

Co-authors: Rebecca Missaglia, Andrea Madinelli, Antonella Stravisi, Sara Vezzaro, Lorenzo Bernicchi, Lorenzo Frangini

The conservation of the endangered Indian grey wolf (*Canis lupus pallipes*) in India's grasslands has received little government support compared to the efforts focused on forest-dwelling large carnivores. Indian wolves primarily occupy grasslands, thorn forests and agro-pastoral landscapes that are integral to the livelihoods of livestock-keeping communities. In the state of Gujarat in India, wolves have become extinct across most of their former range, with the state's Forest Department attributing this decline to retaliatory killings by pastoralists. In our study, we seek to capture pastoralist's perspectives of wolves and the larger context in which these perspectives are embedded in. We individually interview sheep and goat pastoralists across the Surendranagar district in Gujarat, in areas where wolves are both absent and present in current times. We also undertake ethnographic field work in Gugaliyana village where wolves are present. In Gugaliyana, pastoralists graze their livestock in remnant patches of grassland, some of which overlap with the village's Reserved Forest, owned and controlled by the state's Forest Department. Outside the Reserved Forest, the grasslands are used for industrial activities like sandstone extraction, stone crushing, coal mining and as a dumping ground for ceramic waste. Residents of the village are dependent on the Reserved Forest for grazing or for fuelwood. However, they are stopped and confronted by the Forest Department who prevents them from grazing. The India wolf continues to survive in Gugaliyana and neighbouring villages despite it being largely extinct in many parts of Gujarat. The wolf's presence here is thought to coincide with the movement of sheep and goat pastoralists. Pastoralists generally know the whereabouts of the wolves and shut potential breeding dens with thorny branches to prevent wolves from residing in the area, as a means of protecting their livestock. Compensation for livestock losses due to wildlife by the Forest Department is either not provided or significantly delayed. The Forest Department's management strategies for wildlife conservation are largely focused on tree-based afforestation and regulating people's entry and use of the forest rather than efforts to decrease industrial pressures at the boundaries or providing timely compensation to pastoralists. The relationship between the sheep and goat pastoralists and the wolf is embedded in a larger context of shrinking grasslands that affect both pastoral livelihoods and wildlife survival. Our study aims to bring out this larger context and ask two primary questions. First, how do pastoralists think of the wolf in areas where they are present versus where they are absent? Second, how do broader economic and political structures in the landscape shape the way pastoralists perceive and interact with wolves in Gugaliyana? This study is a work in progress.

Parallel Presentations

Theme: Wolves in Landscapes

Tuesday 11:00 - 11:20

TBC

Parallel Presentations

Tuesday 11:20 - 11:40

Wolves recolonize novel ecosystems in Europe leading to novel interactions

Dries Kuijper

Co-authors: T.A. Diserens, E. Say-Sallaz, K. Kasper, P.A. Szafrńska, M. Szewczyk, K.M. Stępnia, and M. Churski

The wolf (*Canis lupus*) is highly successful at recolonizing its now human-dominated former ranges in Europe and N-America. Over the centuries while the wolf was absent, humans have transformed ecosystems to a large extent. This includes changes to (meso)carnivore communities, wolves themselves (genetics, behavior), woody plant communities and the playing field for predator-prey interactions (landscape structure). We argue that the recognition of the novelty of human-modified ecosystems logically leads to novel pathways of how wolves can influence ecosystem functioning. Thus far, the ecological impacts of wolves have largely been predicted based on the documented effects they have in well-preserved systems with low human impact. However, wolves in human-modified ecosystems will engage in an array of novel interactions and potential novel trophic cascades that do not occur in more natural ecosystems with lower human impact. A promising direction for future studies is exploring what novel interactions establish and under what conditions wolves can exert their ecosystem impacts in the human-modified ecosystems. This knowledge could guide us to act to improve conditions to enable wolves to exert their ecosystem impacts again. These novel interactions may be the true ecological and societal value of having wolves returning to human-modified landscapes.

Tuesday 11:40 - 12:00



Home range, habitat use, and activity patterns of African wolves (*Canis lupaster*) in the Ethiopian highlands

Tariku Mekonnen Gutema

Co-authors: Anagaw Atickem, Diress Tsegaye, Dessalegn Chala, Afework Bekele, Claudio Sillero-Zubiri, Jorgelina Marino et al.

African wolves (*Canis lupaster*) and Ethiopian wolves (*C. simensis*) occur often sympatrically across habitats in the Ethiopian Highlands, with recent studies finding evidence for interspecific competition. However, unlike the well-studied Ethiopian wolf, comparatively little is known about the ecology of the African wolf in the Ethiopian Highlands. To address this empirical gap, We collected data on home range size, habitat use, and activity patterns of radio-collared African wolves at the Guassa Menz Community Conservation Area (GCCA) and Borena Saynt Worehimenu National Park (BSNP). We followed the African wolves (5 in GCCA, 6 in BSNP) for 16 months and had 659 ± 83 encounters with each individual. The mean 95% kernel density estimate home range size of African wolves was higher in BSNP ($4.5 \pm 1.5 \text{ km}^2$) than at GCCA ($2.2 \pm 0.7 \text{ km}^2$). In 55% ($n = 3934$) of the encounters the wolves were found to be solitary, whereas in other encounters we found them in groups of two to seven. At both sites, the African wolves were more often found in areas close to human settlements than in more intact habitat, and they were mainly active at dawn and dusk. These results show flexibility in African wolf ion and anthropogenic disturbance. We recommend further studies on major causes of spatial and temporal niche partitioning of Ethiopian wolves and African wolves in the Ethiopian Highlands.

Tuesday 12:00 - 12:20

Transboundary Monitoring of the Wolf Alpine Population over 7 countries and 24 years

Francesca Marucco

Co-authors: Ilka Reinhardt, Elisa Avanzinelli, Fridolin Zimmermann, Hubert Potočník, Theresa Walter, Felix Knauer et al.

Wolf expansion in Europe is occurring over administrative boundaries and the majority of the wolf populations are shared between countries, hence the need to develop monitoring programs at the population level. Wolves in the Alps are defined as a functional population and management unit. The range of this wolf alpine population now covers 7 countries: Italy, France, Austria, Switzerland, Slovenia, Liechtenstein and Germany, making the development of a joint and coordinated monitoring program particularly challenging. To ensure strong coordination among wildlife experts of the different countries, we founded in 2001 a technical working group, the Wolf Alpine Group (WAG). Under the umbrella of the WAG, researchers developed uniform criteria for the assessment and interpretation of field data collected in the frame of different national monitoring programs. This standardization allowed for data comparability across borders and the joint evaluation of distribution and trends of abundance at the population level. We documented the increase in the number of wolf reproductive units (packs and pairs) over 21 years, from 1 in 1993-1994 up to 243 units in 2020-2021, and examined the pattern of distribution and expansion over the Alps up to 2023-2024. This long-term and large-scale approach is a successful example of transboundary monitoring of a large carnivore population that, despite administrative fragmentation, provides robust indexes of population size and distribution that are of relevance for wolf conservation and management at the transnational alpine scale.

Parallel Presentations

Theme: Wolves and Society

Tuesday 13:30 - 13:50



25 years since the return of wolves in Germany – is the public as polarised as we think?

Emu-Felicitas Ostermann-Miyashita

Co-authors: Sophia Hibler, and Darragh Hare

In 2000, wolves reproduced in Germany for the first time since their eradication in the mid-19th century. As wolf populations have grown, their return to contemporary German landscapes has been received with mixed reactions. While some celebrate wolves' return as a major conservation success, others express concern for the safety of livestock and humans. Strong polarisation is evident in how organised advocacy groups interact publicly, but to what extent is that polarisation reflected in broader public opinion?

In this presentation, we share findings from a questionnaire study explicitly measuring how members of the general public in Germany think about wolves. Our findings are based on responses from a sample of 1,500 adults living in Germany, stratified to approximate the German population in terms of gender and age, and designed specifically to examine potential rural-urban differences. We co-produced our questionnaire in close collaboration with a diverse range of stakeholders, including representatives of hunting associations, government authorities, shepherding, forestry, environmental NGOs, animal welfare organisations, tourism and conservation science. Two workshops were held: the first to identify knowledge gaps on public perceptions, and the second to refine the questionnaire based on those inputs.

This co-creation and co-production approach allowed us to capture a wide spectrum of perspectives and delve into subjects such as: “effective implementation of livestock protection measures leading to new conservation conflicts with local fauna” and “public understanding and support for restrictions on daily life resulting from livestock protection measures”. We use quantitative analyses to identify key factors that explain differences in an individual's perceptions of coexistence with and management of wolves. These include respondents' age, gender, rural or urban location, ecological knowledge about wolves, awareness of management and livestock protection strategies, preferred media sources and trust in wildlife management by local and national governments. Additionally, we compare public perception on lynx and bears, to test whether differences in body size, iconic image, and historical relationships shape public attitudes towards these species. Understanding public perceptions is crucial for achieving long-term coexistence with wolves in Germany, especially now under the possibility of less strict legal protection.

Tuesday 13:50 - 14:10



Wolves, Science & Society

Hugh Jansman

Co-authors: D. Lammertsma, M. Laar, F. Ottburg & A. De Groot

With an increasing wolf density of currently 11 packs (2024-2025), 9% of the country protected as Natura 2000 (but in relatively poor quality), over 500 humans / km², substantial influence of humans on wild ungulate distribution and density (management) and the highest livestock density in the world, The Netherlands is not your average wolf country. This does not go unnoticed with frequent media reports and political interest addressing wolves in relation to livestock casualties, cases of bold wolves, and unfortunately even bite incidents between wolves and humans. Since 2012, WENR performs policy advising research and participates in the monitoring of wolves for the Dutch authorities. This resulted in factfinding reports regarding the return of wolves to the Netherlands (2012 and 2021), a proposition for a Dutch Wolf management plan (2013), a habitat suitability study (2024) and the determination of the Favourable Reference Value for wolves in the Netherlands (2025). Besides that WENR conducts the ecological post mortem examinations on dead wolves and runs the genetical monitoring (information: www.wageningenur.nl/wolven). Al together, the Dutch wolf population is one of the best studied in the world. Governments acted timely by addressing the return of wolves with stakeholders years before the first wolves settled in the Netherlands in 2018. Subsidies for preventive measures and compensation for livestock losses have been organised. Despite this, support for wolves is moderate. Given the fact that almost all attacked livestock had no reliable protection and swift acting in case of potential bold wolves is not thoroughly organised, resulting in an increase of the conflict potential, this is probably not a surprise. Therefore we recommend to not only address the ecological science, but other disciplines as well, as social science, juridical knowledge, communication expertise and mediation. And next to consider the challenges related to coexisting with wolves in a broader framework of for instance the climate- and biodiversity crisis. In the presentation the results of the science will be addressed and the societal perception discussed, in particular in relation to the close encounters between wolves and humans in The Netherlands.

Tuesday 14:10 - 14:30



Taming the Wolf Debate: Lessons from the LIFE BOREALWOLF Project Communication

Iina Ala-Kurikka

Co-authors: Mirja Rantala, Aku Ahlholm, Harri-Pekka Pohjolainen, Jani Pellikka, Mari Lyly

Human-wolf conflicts are strongly shaped by social and cultural perceptions of wolves. Effective communication is essential for managing environmental conflicts. Well-designed strategies can influence public perceptions, promote informed decision-making, and help resolve conflicts.

The LIFE BOREALWOLF project (2019-2025) aimed to improve public acceptance of wolves, reduce wolf-related damage to dogs and livestock, and develop tools for managing the wolf population while reducing illegal killings. A key part of the project was a comprehensive communication strategy designed to foster public dialogue and disseminate information.

Over the five-year period, the project appeared in the news on average 2.5 times per week. One notable outcome is that 25% of Finns living south of the reindeer herding area have heard of the LIFE BOREALWOLF project. Furthermore, one in five people have seen media coverage or heard about the project's core themes, such as wolf DNA sampling and the joint patrol of police and game warden. Nearly half of respondents are aware of the available measures to protect livestock from wolves.

This presentation will reflect on the initial goals and results of the communication strategy. Additionally, key lessons will be shared, along with considerations of what could have been done differently with the benefit of hindsight.

Tuesday 14:30 - 14:50



Ending the cycle of endless conflict: four years of keeping wolves off a cattle ranch in Minnesota, USA

Austin T. Homkes

Co-authors: Thomas D. Gable, Dakota Bird, John Hart, Jack Morawczynski, Eric M. Gese, Wesley Johnson

Raising livestock amidst wolves has led to wolf-human conflict for millennia. A 1500-acre cattle ranch in Northern Minnesota, USA has been no exception, losing livestock annually to wolf depredations for nearly two decades. From 2020 to 2023, we constructed a fence designed to keep wolves off the ranch and end longstanding wolf-livestock conflict. Additionally, we fit wolves in wolf packs around the ranch with GPS collars to understand wolf movements in relation to the fence as well as identify if and how wolves got past the fence. The calving season of 2024 was the first in nearly two decades where not a single cow was lost due to depredations and the second season not a single wolf was lethally removed from this ranch. However, this success was hard won, with many lessons learned through multiple years of troubleshooting. We describe lessons learned from failing and then succeeding in keeping GPS collared wolves off the cattle ranch and how other ranching operations might implement a similar solution to minimize, if not end, similar wolf-livestock conflict.

Tuesday 14:50 - 15:10



Coexisting with wolves: Managing conservation and public concerns on the Utrechtse Heuvelrug

Floor Lormans

The Utrechtse Heuvelrug became official wolf territory in May 2023 after the reentry of the species in the Netherlands in 2018. In 2024 a wolf pack successfully established itself in the smallest and one of the most densely populated provinces of the Netherlands, the province of Utrecht. This development has not gone unnoticed. The presence of wolves in the Province of Utrecht has raised concerns among residents, keepers of ungulates, nature managers and policymakers, especially after various incidents occurred. As the provincial government, we are legally responsible for species protection. Our tasks and instruments include monitoring, providing subsidies for livestock preventative measures as well as providing compensation for agricultural damage. However, responsibilities regarding public order and human safety lie elsewhere, creating a complex governance situation when faced with human-wolves interaction. This presentation explores our experiences with incidents, available policy instruments and the complexity of balancing species conservation with public concerns. By sharing our experiences and dilemmas, we aim to provide insights into the possibilities to facilitate coexistence with wolves in a densely populated area.

Parallel Presentations

Theme: Wolves and Society

Tuesday 15:10 - 15:30



'Uuluesheued!' A long term historical perspective on wolf-human relationships

Rob Lenders

The human-wolf relationship has not always been nearly as negative as we are led to believe. Although the evidence is fragmentary, it strongly suggests that at least from the Iron Age until the early Middle Ages, in large parts of Europe, there was a (mutual?) respect between wolf and man. The wolf even served as an example to humans. With the rise of power structures such as the Roman Empire and the Christian church, admiration turned to fear and hatred. My contribution examines the historical evidence for this development, following the wolf-human relationship from Iron Age to Early Modern times.

Tuesday 13:30 - 13:50

Habitat protection is crucial for the future well-being of Poland's wolf population

Roman Gula

Co-authors: Katarzyna Bojarska, Dominik Kaim, Jacek Kozak, Mahsa Shahbandeh, and Joanna Toczydłowska

Wolves in Poland have been legally protected since 1998, but the enforcement of the protection laws is weak. Frequent cases of wolf killing attract public attention, however in a longer perspective ongoing rapid alteration of wolf habitats seems to be a more important conservation challenge. The forest has been the main habitat for the recovery of the wolf population over the last 50 years. Our telemetry data collected in 4 regions of Poland shows that wolves establish their territories in forested areas, breed there, and prefer them over open areas. 30% of Poland is covered by forests, of which 77% is state-owned. The recovery of the wolf population has paralleled the spontaneous reforestation of arable lands, primarily due to changes in the agriculture industry that accelerated in the mid-1970s. Reforestation of private farmland has increased the forest cover in some areas by almost 100%, reducing the isolation of existing state-owned forests. Although this was not the sole cause of wolf recovery, it benefited wolves by allowing wolf packs to establish and control territories previously divided by arable lands and facilitated the recolonization of new areas. Recently, a growing part of reforested agricultural land has been converted into new residential areas accompanied by infrastructure. That process hurts the renaturalized regions by increasing the wildlife-urban interface and creating potential for wolf-human conflicts. Rapid road infrastructure expansion and improvement and the dramatic increase in traffic (20% over only the last 5 years) pose another challenge to forest habitats. Boundaries of existing wolf territories are often already established along public roads.

Tuesday 13:50 - 14:10

Modeling habitat- and conflict potential for wolves in Austria to inform management

Jennifer Hatlauf

Co-authors: Florian Kunz, Fabian Knufinke, Luca Fuchs, Matthias Amon, Klaus Hackländer

Since the first re-establishment of Grey wolves (*Canis lupus*) in Austria, in the year 2016, their occurrence has increased steadily, with six packs confirmed in 2023. Questions arise regarding the monitoring and management of this species in diverse habitats. Although models from other countries exist, Austria's unique environment (human-dominated alpine regions) requires special consideration. This study presents comprehensive analyses of both, habitat- and conflict potential for wolves in Austria. First, a habitat model identified key areas that may provide optimal ecological conditions for wolf packs. The model was developed using current Austrian data and provides an up-to-date representation of potential regions, where packs are likely to occur, regardless of their current distribution. Secondly, the conflict potential model evaluated socio-economic factors, including depredation, livestock production, herd protection, and besides several others, proximity to human settlements. Unlike models based on surveys, this model leveraged data to produce a detailed and actionable map of conflict-high areas. We used correlative statistical modeling and mechanistic approaches to build models for habitat potential, predation risk and human-wildlife conflict potential. All spatial models were built at fine spatial scales, using moving window approaches. Conflict potential was assessed using an adapted Potential of Conflict Index (PCI), which involved experts in weighing factors. Emphasis was placed on generating appropriate input data, including stakeholder-specific variables such as occurrence of game species (hunting), the presence of protective forests (forestry) or the predisposition of livestock to wolf predation (agriculture). Stakeholder involvement played an important role in this study: At least one representative from each of the provincial governments and one from the federal ministry were involved through meetings, workshops and their expertise in evaluating the models. The results were merged and priority areas for management were identified, particularly where high habitat- and high conflict potential overlap.

Overall, the resulting maps are presented on a sectoral basis - agriculture, forestry, and tourism - and provide a necessary tool for discussion and management of growing wolf populations. By combining ecological requirements with socio-economic concerns, this study can provide a basis for sustainable wolf management and support wider conservation coexistence objectives.

Tuesday 14:10 - 14:30

The natural resettlement of the Grey wolf in Normandy, France

Clémence Méheust

Co-authors: Philippe Madeline, Olivier Cantat, Farid Benhammou, François Leboulenger

After an absence of over a century, the return of the wolf to Normandy took place on lands of Pays de Bray (Seine-Maritime) from November 2019 to February 2021, then in Pays d'Ouche (Eure) in the spring and summer of 2021. The specimen that stayed in the area was a wolf of Italian-Alpine lineage, looking for territories that remain unoccupied and a female mate. During the summer of 2023, the presence of another wolf has once again been confirmed in Normandy, in the department of Manche. In January 2024, a wolf of German lineage was found dead in Seine-Maritime. Between these lupine episodes, observations and signs of wolves presence is generating doubts in all five departments in the Normandy region. The predation of wildlife and domestic stock have been found, creating an unprecedented situation for stakeholders of the land, including professional breeders and owners of sheep, judicial authorities amongst others.

Our geography research sought to understand the predator's arrival in Normandy where we met with different stakeholders in order to identify issues and address questions following the return of the wolf. Our exploratory proposal culminated in a thesis which highlighted the apprehensive difficulties associated with the presence of the wolf in the territorial plain. Indeed, the legal framework and mechanisms to protection domestic stock are adapted for mountain areas and their agricultural contexts. In Normandy, sheep and goat farming are extensive and predation is primarily an issue concerning hobby breeders (who keep small ruminants for leisure, yard maintenance or personal consumption) and few professional breeders who often breeds sheep or goat as a secondary activity.

Our research work is based on semi-structured interviews with breeders, hunters, environmental protection associations, administrations, etc. We also conducted a survey based on a quantitative analysis of a questionnaire sent to breeders throughout the Normandy region.

Tuesday 14:30 - 14:50

(Re)Connecting the dots: assessing connectivity loss and landscape demogenetics of Ethiopian wolf populations

Sandra Lai

Co-authors: Claudio Sillero-Zubiri and Jorgelina Marino

The Ethiopian wolf, endemic and highly specialised to the Afroalpine ecosystem, faces significant challenges in dispersal and recolonisation due to extensive habitat loss and fragmentation. Expanding subsistence agriculture in the Ethiopian Highlands has created hard borders that limit their ability to move between populations, further isolating them. We assessed the loss of landscape connectivity by comparing the current connectivity considering the remaining Afroalpine habitat with the potential connectivity based on a habitat suitability model. In addition, to evaluate the capacity of conservation translocations to counteract Ethiopian wolves's limited dispersal capacity, we simulated landscape demographic and genetic processes on the current landscape to predict the genetic diversity and population persistence in the future with or without this intervention. The remaining populations are expected to become increasingly isolated and shrink in size, highlighting the critical need for more proactive conservation efforts to prevent further decline of this endangered species.

Tuesday 14:50 - 15:10

A novel approach to investigating the impact of urbanization on wolf-dog interactions in Central Italy

Martina Lazzaroni

In Italy, the wolf population has been consistently increasing, recently estimated over 3,300 individuals. As a result, wolves are moving closer to human infrastructures and this increased proximity has led to a rise in wolf attacks on pet dogs, exacerbating wolf-human conflicts.

The current study aimed to investigate the potential difference in the behavioral reactions of wild wolves living along an urbanization gradient in the presence of a small 'fake' dog. Dummy conspecifics, have been used as proxies for live social partners across various species, including hyenas, bees, birds, and domestic dogs, and various studies have shown that the animal's initial reactions to such models are consistent with reactions to 'real' conspecifics (Reid et al, 2022). Thus, we exposed 30 packs of wild wolves to a fake dog (test condition) but also to a fake magpie (control condition). By comparing the wolves' initial reactions to the fake dog versus the fake magpie, we first assessed whether the fake dog elicited more social or even predatory behaviours in the wolves as compared to the magpie, which is a species largely ignored by wolves in Italy. We then analyzed the wolves' detailed social behaviors when interacting with the fake dog and explored potential differences across the urbanization gradient and in relation to encountering the fake dog alone or with other pack members. We will discuss the implications of these findings for understanding wolf behavior in urbanized environments and consider potential strategies for managing wolf-dog interactions to mitigate conflicts.

Tuesday 15:10 - 15:30

Wolf-dog hybridization and introgression in and around Dalmatia, Croatia

Astrid Vik Stronen

Co-authors: Barbara Boljte, Djuro Huber, Maja Jan, Marjeta Konec, Josip Kusak, Carsten Nowak et al.

Human-induced hybridization is a global threat to wild species, including plants, fish, birds, and mammals. Where related domestic species are abundant, this can result in hybridization and, over time, a hybrid swarm. In southeastern Europe, Croatia's Dalmatia region and parts of Bosnia & Herzegovina experienced armed conflict during the 1990s. This caused large-scale human movements and abandonment of domestic animals, including dogs (*Canis lupus familiaris*), which are known to hybridize with wolves (*C. lupus*). At the same time, wolves were recolonizing Dalmatia following extirpation some decades earlier. Individuals at population edges are particularly vulnerable to hybridization given the reduced number of potential mates, and this risk is further elevated where anthropogenic factors promote the presence of related domestic species. Previous research in this region reported wolf-dog admixture and documented numerous individuals with atypical phenotypes classified as wolves based on limited sets of microsatellite genetic markers. Recently, a panel of 96 single nucleotide polymorphism (SNP) markers was developed to detect wolf-dog hybridization and introgression in Europe, and tests in populations across the continent showed that backcrosses into wolves could be detected up to and including the second-generation backcross (BC2w). In 170 samples from Dalmatia and neighbouring parts of Bosnia & Herzegovina we found 31 individuals categorized as BC2w. In contrast, no first-generation hybrids were found, indicating that ongoing hybridization between domestic dogs and wolves is now rare or absent. Our results suggest that the initial wolf-dog hybridization event or events occurred over a decade ago, followed by introgression of domestic dog genes into the recolonizing and expanding wolf population. Analyses of samples collected in recent years indicate that introgression may be spatially restricted, despite its occurrence in a region with broadly similar ecological and environmental conditions. However, the SNP panel identifies introgression up to and including BC2w, and later-generation backcrosses may therefore exist undetected in the population. Whole-genome sequencing of regional canids, including individuals with atypical phenotypes, combined with ecological and behavioural research, are needed to evaluate introgression and its long-term influence on wolf genomes and phenotypes.

Tuesday 15:30 - 15:50

Wolves across species' borders - genetic determination of wolf-dog hybrids kept as pets in Finland

Helena Johansson

Co-authors: Katja Holmala, Mia Valtonen

Finland has seen some high profile cases of captive-bred or captive-held wolf hybrids in the past decades, and at least one even escaping into the wild. Wolf dog hybrids are illegal to keep as pets in Finland. A collaboration between the Finnish Centre for Economic Development, Transport and the Environment (ELY-keskus), the Finnish Police and the Finnish Natural Resources Institute (LUKE) was set up in 2023 to map the occurrence of captive hybrids in Finland. In this project samples taken from putative hybrids identified by, for example, practice veterinarians, during animal welfare inspection visits, or by police, would be screened with genetic tools by LUKE. To do this work, LUKE applies a genetic tool developed and used successfully in screening for wolf dog hybrids in the wild wolf population - a SNP panel comprising 93 diagnostic or near diagnostic genetic markers. After analyzing several cases of suspected hybrids we found that 1) captive hybrids are not always easy to diagnose 2) the genetic tool's power is limited to diagnosing F1 (wolf x dog) and F2 (hybrid x hybrid) crosses and 3) captive hybrids, for example F2s, do appear slightly genetically different from F2s found in the wild population. We discuss our results in light of limitations to the method, potential breeding practices and their genetic consequences, and the potential legal quagmire.

Tuesday 13:30 - 13:50

Echoes of survival: hidden genetic challenges in the Iberian wolf

Isabel Salado

Co-authors: Carles Vilà, Jennifer A. Leonard

Over the last century gray wolves faced dramatic declines across much of their range, primarily due to human persecution. However, unlike other regions in Europe, the gray wolf population in the Iberian Peninsula was not completely extirpated, though it did experience a severe bottleneck. In recent decades, while the species has expanded and recolonized parts of the northwest Iberian Peninsula, it has become locally extinct in the south and remains genetically isolated from other European wolf populations. Population bottlenecks and geographic isolation leave distinct signature on the genomes of wildlife, influencing long-term viability. To assess the impact of these factors on the Iberian wolf, we conducted genome-wide analyses of both contemporary and historical samples from across the species' range in Iberia. Our findings reveal a significant loss of genetic diversity despite apparent population recovery over the last five decades. Furthermore, we detected high variability in inbreeding levels and genetic similarity among wolves from neighboring areas in the northwest, suggesting a pattern of small-scale population fragmentation. These results underline the complex dynamics of the Iberian wolf population, revealing that while it may appear to have rebounded in size, it is still genetically vulnerable. Despite this genetic vulnerability, Iberian wolves currently very rarely hybridize with dogs, but this may be a risk if genetic problems become too severe. Conservation strategies should consider not only population numbers but also the genetic health of the population to ensure its long-term survival.

Tuesday 13:50 - 14:10

From wilderness to urban edge: genetic insights into a newly established wolf population in Parnitha National Park—Central Greece

Aimilia Ioakeimidou

Co-authors: Iliopoulos Yorgos, Kampouris Theodoros, Bartzokas Georgios, Antoniadi Eirini, Papandreou Maria, Akriotis Triantafyllos et al.

Over the last decades wolves have been significantly recovered in Greece as in other parts of Europe, thanks to conservation legislation and habitat natural restoration, following centuries of organized persecution and habitat loss. The conservation status of wolves in Greece is currently characterized as "inadequate but improving (U1+)". Their distribution has expanded considerably beyond protected areas, since they have colonised human dominated landscapes, such as rural and peri-urban areas. Inevitably, the proximity of wolves to human settlements raises major concerns about human safety, livestock and dog depredation as well as wolf-dog hybridisation. We evaluated the status of a recently established wolf population (since 2014) in Parnitha National Park—Central Greece after an absence of at least 60 years. Wolves inhabit a highly anthropogenic and constantly changing typical Mediterranean ecosystem, which has already been influenced by frequent and severe wildfires due to climate change. We applied non-invasive genetic sampling by collecting 124 wolf faecal samples from the wider area of Parnitha National Park from July 2022 to June 2023 in the framework of the pan-European LIFE WILD WOLF project. Samples were genotyped at 15 canine-specific autosomal microsatellite loci and sexed using DBX intron 6 and DBY intron 7, to accurately estimate the population size, sex ratio and assess levels of genetic diversity. We built a genetic database by analysing 50 wolf tissue samples collected across Greece and 50 tissue samples from stray dogs, sympatric to wolves in Parnitha, at 8 microsatellite loci to detect possible wolf-dog hybrids. Those tissue samples served as reference genetic profiles for comparison of allele frequencies at each locus enabling to correspond each faecal sample to wolf, dog, or hybrid. Our research represents the first systematic effort to examine levels of wolf-dog hybridisation in a highly urbanized area by implementing standard genetic methods, and underlines the need for targeted management strategies to ensure balanced long-term conservation of wolves in peri-urban areas.

Tuesday 14:10 - 14:30

Pedigree-based analysis of livestock depredation behaviour in German wolves

Caroline Sophie Birkenhain

Co-authors: Stephan Kurbin, Gregor Rolshausen, Carsten Nowak

Wolves are currently recolonizing parts of Europe from which they had been previously eradicated. This conservation success, however, results in human-wildlife conflict due to the predation of the wolf on sheep and other livestock. Since wolves are social animals strongly involved in parental care, it is assumed that young wolves may socially inherit hunting behaviour, including prey selection, from their parents. Currently, solid data is lacking regarding the extent to which a propensity towards livestock is passed on to subsequent generations via genetic predisposition or learning behaviour. To answer this question, we used thousands of genetically analysed livestock depredation cases as well as pedigree information from the German wolf monitoring to investigate the potential linkage between kinship and livestock depredation behaviour. Interestingly, we did not find any significant correlation between the livestock killing rates of parents and their offspring, questioning the assumption that wolf progeny is adapting their parents' propensity for predation on livestock. Our results instead suggest that the availability of unprotected livestock, as well as individuals' experiences with livestock protection measures, are the most important factors explaining the observed variation in livestock kills between wolf individuals and packs in Germany.

Tuesday 14:30 - 14:50

Seasonal and Health-Related Variations in Wolf Hair Cortisol: A Method Validation from Captive and Field Samples

Gwendolyn Wirobski

Co-authors: Carmela Musto, Martina Lazzaroni, Rudy Brogi, Friederike Range, Marco Apollonio, Rupert Palme, Sarah Marshall-Pescini

Conservation endocrinology has advanced considerably in understanding physiological responses as predictors of population health. One key approach is quantifying hormone concentrations, such as cortisol. Hair cortisol concentrations (HCC) reflect chronic stress and are ideal for monitoring populations under changing environments. Despite their potential, several unresolved issues impede the use of hair cortisol in wolf studies. To address these, we validated HCC by studying 4 captive-housed wolves at the Wolf Science Center (WSC) Austria, using a 'shave-re-shave' approach, to 1) identify annual hair growth patterns, 2) measure seasonal HCC fluctuations via enzyme immunoassay, 3) test for a correlation between faecal cortisol concentrations (FCC) and HCC, and 4) examine the effects of collection method and body area on HCC. Following method validation, we investigated the factors affecting HCC in a sample of 258 wild wolf carcasses from Italy. Results from the WSC showed rapid hair re-growth during summer (May-Oct) and slower re-growth during winter (Nov-April). HCC peaked in hair grown during winter (breeding season) and again in late summer ($\text{ChiSq}=11.42$, $\text{df}=3$, $p=0.009$) coinciding with the hair re-growth peak. There was a significant, positive association between HCC and FCC ($\text{ChiSq}=8.02$, $\text{df}=1$, $p=0.005$). The collection method did not affect HCC ($\text{ChiSq}=0.283$, $p=0.595$), but belly and shoulder hair contained higher HCC than back hair ($\text{ChiSq}=21.84$, $p=0.000$). Results from captivity confirm seasonal variation in hair growth and HCC. HCC collected from the shoulder reflect systemic cortisol levels, but HCC can vary by body region, necessitating consistent sampling. Results from the wild wolves showed no effect of sex, age, body mass, latitude, or urbanization on HCC, but a significant effect of health status and seasonality. Poor health was associated with higher HCC (beta coefficient= -0.61, $\text{df}=8.73$, $p\text{-value}=0.042$), and HCC was highest in wolves that died in autumn (beta coefficient= -0.29, $\text{df}=209.60$, $p\text{-value}=0.003$). Ultimately, HCC is a useful indicator of health status, and thus a valuable contribution to conservation and management efforts, however methodological aspects linked to the effect of hair growth seasonality and cortisol incorporation into hair need to be considered when interpreting data from wild samples.

Tuesday 14:50 - 15:10

The Wildity Scale as a communication tool on reintroduced wolves

Terrance Vincent O'Halloran

Grey wolves are recolonizing their native habitats in different regions around the world. This return has occurred through both natural processes and reintroduction programs. The case of the Mexican wolf is one of the most representative. Eradicated in the wild, a captive reproduction program began in 1977 with the last seven remaining specimens. Currently, there are over 300 specimens in captivity and more than 200 specimens in the wild across Mexico and the United States. In North America, a management model based on continuous monitoring and control of specimens has been implemented to recover endangered wolf populations. This model provides specific information about wild specimens, including subspecies, sex, birth, dispersion, habitat preferences, interactions in rural areas, and vaccination status against diseases. Here, the Wildity Scale is proposed as a tool for communicating the state of reintroduced specimens. The proposal results from a conceptual synthesis based on the management of the Mexican wolf.

Through controlled management, specimens can be categorized as wild-born, released from captivity, treated medically, or fitted with tracking devices. The knowledge about controlled characteristics and some potential scenarios have been synthesized in the conceptualization of wildity. The Wildity Scale has been developed to describe the wildity. The scale consists of 11 categories of specimens. The categories are integrated by specific criteria related to birth, health, location, genetic integrity, and habituation. Additionally, five types of wildity corresponding to the scale categories have been defined.

The lack of information about wolves in the wild can lead to controversy and heightened human-wolf conflicts. This tool aims to streamline universal access to information, addressing gaps in the integration and communication of knowledge about reintroduced wolves. It can support research on social acceptance and coexistence with wolves or similar species. Despite traditional views on wild specimens, controlled management, tracking, and conservation efforts are crucial for preventing extinction. Effective communication is essential to reduce misconceptions and promote understanding of the rewilding process.

Parallel Presentations

Theme: Genetics and Health / Public Engagement

Tuesday 15:10 - 15:30

Wolves in Southern Algoma (Ontario, Canada): A Private-Public Partnership Project

Kees van Frankenhuyzen

Algoma Highlands Conservancy, Sault Ste. Marie

Co-authors: Dean Thompson, Paul McBay, Joe Meating, Aaron Jones, Phil Wiebe, Derek Goertz et al.

The Algoma Highlands Conservancy is a private land trust that was established to protect a 1315-ha property near Sault Ste. Marie in Algoma District, Northeastern Ontario. Frequent observations of wolf activity over the years motivated Conservancy volunteers to deploy trail cameras to monitor resident wolves (*Canis lupus x lycaon*). Monitoring results lead to a 3-year (2021-2024) curiosity-driven project to study canids throughout southern Algoma District. Expertise, infrastructure, and funding needed to execute the project were secured by cultivating collaborations with provincial and federal natural resource management agencies, universities, utility companies, and other landowners, notably the Garden River First Nation of the Ojibwe Anishinaabe people. Core funding was provided by Hydro One, Ontario's largest electricity transmission and distribution service provider. To study the occurrence of predominant canid genotypes and their interactions with other wildlife across a range of habitats, 5 areas of ~400 km² each were selected along a ~4000-km² corridor that stretches from Lake Superior's eastern shore to Lake Huron's northern shore and that is thought to link western, northern and eastern canid populations in the Great Lakes region. Arrays of trail cameras were deployed in each area in randomly selected sites (on powerlines, recreational trails, and in undisturbed forest) to elucidate how anthropogenic linear features and associated human activities affect presence and activity of canids and their primary prey species. The ~2 million images collected are being analyzed using an automated image recognition system that was developed by collaborators at the University of Guelph using deep learning computer vision approaches. Satellite telemetry of 3 wolves revealed their home ranges, movement patterns and locations of denning sites. One collared wolf undertook an unusual unidirectional long-distance (~1000 km) dispersal. DNA was extracted from scats collected during winter months and proportional ancestry was determined at Trent University using autosomal microsatellite markers. Most samples were highly assigned as eastern coyote (*C. latrans*) and Great Lakes wolf (*C. lupus x lycaon*). Samples indicating a high degree of admixture with eastern wolf (*C. lycaon*), which is threatened and restricted to a small Central Ontario region East of our research corridor, require further corroboration.

Tuesday 15:30 - 15:50

Volatility in volunteer work: developing large carnivore observation network in Finland

Mari Lyly

Co-authors: Mirja Rantala, Harri Norberg, Olli Kursula

In Finland, the population monitoring of large carnivores relies profoundly on citizen observations, which are assessed and reported by trained volunteers. These volunteers form a network of large carnivore observers (LCOs) that has existed for over 40 years, gradually growing to 2 400 participants. Currently, the network reports tens of thousands of observations annually. They are a valuable resource to research, but also provide vital information to management and people living or visiting rural areas. At best, LCOs help to mitigate the human-wolf conflict, which has arisen after the long-term increase of the wolf population.

Typically, LCOs are hunters who have the interest, time resources and the know-how to monitor large carnivores locally and check observations made by others. All LCOs receive a brief, compulsory basic training when taking on the volunteer task. Key elements include species identification and guidelines of reporting observations to the online database. New LCOs are trained, appointed and supervised by the Finnish Wildlife Agency.

Among other themes, the LIFE BOREALWOLF project (2019–2025) focuses on developing stakeholder cooperation. To support the LCO network, the project has updated training materials into a web course and a field guidebook, thus facilitating easy access, extensive dissemination and honing of fieldwork skills. The course materials include modules on species ecology, track identification, quality requirements for observations, and communicating with the public and media. These materials aim to increase LCOs' expertise and help to secure sufficient quantity and quality of data, but also work towards motivating the volunteers. For similar purposes, administration organises annual regional events of feedback and training.

Building and managing a volunteer network is not free but requires effort. Recent changes in national policies have prompted some volunteers to refrain from reporting or even resign. This has raised concerns for the functionality of the LCO network and prompted the need for strategic planning to secure cooperation between LCOs, citizens and relevant authorities. The aim is to ensure that wolves are comprehensively monitored, people have access to reliable wolf information, and territory residents have opportunities to engage. All of these are crucial to successful management of wolves.

Tuesday 13:30 - 13:50

Feeding ecology of wolves in The Netherlands

Kevin Groen

Co-authors: T. van der Veken, D. Mikova, K. Trimbos, H. de longh, G. Lelieveld

After years of acting as a transit area for gray wolves (*Canis lupus*), the first wolf resettled in the Netherlands in 2018. This recolonization has led to increasing human-wolf conflicts, primarily through livestock attacks. Concerns have risen among farmers, hunters, and land managers regarding the feeding behavior and diets of wolves' in human-dominated landscapes and its impact on prey populations in natural habitats. Research on wolf diet and feeding patterns is therefore crucial for a better understanding of these dynamics. Gathering accurate, long-term data on the wolves' diet is thus important for supporting policy and informing public discourse in the Netherlands.

To understand the feeding behavior and diets of wolves, we conducted a complementary diet analysis using DNA-based methods (eDNA) and microscopic analysis of hair and macroscopic analysis of bone fragments and other prey remains found in wolf scat. This analysis aimed to assess spatial and seasonal (winter, spring, summer, and autumn) variations in the wolf diet based on frequency of occurrence (%FO) and biomass consumed (%BM).

In 2023, a total of 735 scat samples were collected and analyzed, with 624 scats used for dietary composition based on %FO via eDNA analysis and 427 scats used for dietary composition based on %BM via microscopic analysis. The wolf's diet in the Netherlands mainly consists of wild ungulates, with roe deer (59% FO, 35% BM), wild boar (37% FO, 29% BM), and red deer (18% FO, 8% BM) as key prey. Livestock accounts for a smaller portion of their diet, consisting of mainly cattle (24% FO, 19% BM) and sheep (8% FO, 3% BM). Birds, hares, and small mammals make up the remainder of the diet.

Spatial variation is evident, with more cattle (37% BM) in the diet of wolves in Drenthe (more human dominated landscape) compared to the diet of wolves in the more natural habitat of the Veluwe (<1% BM), where the diet mostly consisted of wild ungulates (96% BM). Seasonal shifts were observed, particularly during the wolf breeding season (March to June), where contribution of adult ungulates in the diet decreased, while the contribution of young wild boar and juvenile deer increased. This research underscores the wolf's opportunistic diet and adaptability, providing valuable insights for improving management and reducing misinformation concerning the feeding ecology of wolves in The Netherlands.

Tuesday 13:50 - 14:10

Video of a wolf predating a foraging beaver: insight into how wolves influence beaver foraging

Dani R. Freund

Co-authors: Thomas D. Gable, Austin T. Homkes, Olivia Jensen, Sage D. Patchett, Joseph K. Bump

Knowledge of wolf (*Canis lupus*)-beaver (*Castor canadensis*) interactions has largely been derived from indirect observations due to the cryptic nature of wolves and the densely forested areas where they regularly kill beavers. In September 2023, we opportunistically recorded a video on a remote camera of a wolf killing an adult beaver, providing direct evidence of how wolves kill beavers. The camera also recorded beaver foraging activity before and after the predation event, providing a unique opportunity to observe changes in foraging behavior of the surviving beavers at the pond in response to predation.

Specifically, beaver foraging on the trail declined by 97% immediately following predation. Consumptive effects may have decreased use of the trail, however, we recorded at least three beavers regularly foraging prior to predation. This suggests that non-consumptive effects may have prevented the surviving group-members from foraging on the trail post-predation as an anti-predator strategy. Furthermore, we recorded vegetation along active feeding trails to understand the influence that forage may have on where the wolf killed the beaver. The trail the attack occurred on was the longest at the pond, and had a significantly higher proportion of *Populus* spp. (a preferred tree species by beavers) than other trails on average. Preference for aspen may therefore have driven beavers to forage farther from the water and thus increased their risk of predation at this trail. Although we present just a single observation, to our knowledge, there is only one other documented observation in the literature of a wolf catching and killing a beaver. Our data therefore provide unique insight to difficult-to-observe predatory behavior.

Tuesday 14:10 - 14:30

The Influence of Wolves and Wild Boars on European Facultative Scavengers

Elke Wenting

Co-authors: Jasper A.J. Eikelboom, Henk Siepel, Femke Broekhuis, Frank van Langevelde

The re-establishment of wolves might change the source of carrion supply and availability for facultative scavengers. The wild boar is one of the most prominent facultative scavengers in European ecosystems but also an important prey species for wolves. It remains unclear how the re-establishment of wolves influences the population dynamics of facultative scavengers, including wild boar, and how that in turn is influenced by different human hunting strategies. We simulated the biomass densities of a trophic web including European scavengers, wild boars and wolves, under different human hunting strategies. We found that the presence of wolves generally led to a positive trend in scavenger biomass. However, other resources rather than carrion were more important for overall scavenger dynamics, irrespective of the origin of the carrion (i.e. human hunting or predation by wolves). Like human hunters, wolves can maintain prey population levels but cause more natural fluctuations in both wolf and prey populations over the years. Therefore, our results show the importance of adapting human hunting strategies in accordance with the re-establishment of wolves.

Tuesday 14:30 - 14:50

Kill patterns of recolonizing Eurasian wolves

Joost de Jong

Co-authors: Jakob Leidekker, Leontien Krul, Laurens R. Dijkhuis & Patrick A. Jansen

As large carnivores like wolves recolonize parts of North America and Europe, an important question arises: how do these predators adapt to new landscapes and learn to hunt successfully? When wolves enter unfamiliar terrain, how do they learn to navigate, identify prey, and develop hunting skills? Theory suggests that newly settled carnivores start by targeting easy or non-dangerous prey and gradually expand their hunting grounds and prey scope. Positive encounters with prey may shape their future hunting strategies through learning and memory.

In this presentation, we will explain how we investigated these questions by studying the early recolonization of Eurasian grey wolves in National Park De Hoge Veluwe, The Netherlands. Across a period of 2.5 years, we tracked the spatiotemporal patterns of wolf kills, analyzing the types of prey targeted and where these hunts took place over time. By mapping these kills, we aimed to understand how wolves familiarize themselves with their environment and develop their hunting techniques.

The results represent a process in which wolves settling into new territory progressively refine their behavior and expand their hunting repertoire. Our research sheds light on the learning process that unfolds as carnivores adapt to the challenges of new terrain.

Tuesday 14:50 - 15:10

Wolves as a scavenger and supplier of carrion in the Veluwe, the Netherlands

Bart Beekers

ARK Rewilding Netherlands

Co-authors: M. Pekel

Since 2018 wolves (*Canis lupus*) returned to the Veluwe, the largest protected Natura 2000 area on land in the Netherlands. During the years the wolf population growth steadily into 5 reproducing packs and 2 territoria in 2023.

With the return of wolves questions concerning nature restoration and game management of large ungulates appear:

- will scavenging become a part of their diet and under what kind of conditions?
- what are the effects of wolf prey on (vertebrate) scavenger communities and nutrient the cycle?

Monitoring scavenging behavior

For scavenging communities the Veluwe is an interesting area since approximately 30% of the yearly culled ungulates and road kills are left in nature to become biomass. This is part of a growing understanding under (game)managers and nature conservation to complete the circle of life. From the end of 2019 collaboration started with wildlife managers to monitor scavenging behavior of wolves at so-called deposit sites. What are those sites telling us during the years of return?

Monitoring wolf prey and vertebrate scavengers

Wolf prey is rarely located by game managers in the Veluwe area. Raven (*Corvus corax*) however do so more easily. Together with the Dutch Raven working group, Sovon Dutch Centre for Field Ornithology and Wageningen University juvenile raven have been GPS collared. What are we learning so far from the “eyes and ears” from the forest?

Adaptive (game)management

With the return of wolves as a natural supplier of carcasses, carrion could become more available around the year – which could be interesting for vertebrate scavengers to profit. Can we expect rare species like kites, eagles and even vultures to adapt? Can adaptive (game)management open the way?

Tuesday 15:10 - 15:30

How fast do native ungulates respond to the return of the wolf in anthropogenic landscapes?

Charlotte Vanderlocht

Co-authors: Valerio Donini, Andrea Corradini, Elisa Iacona, Laura Limonciello, Lucrezia Lorenzetti, Matteo Nava et al.

As wolves naturally recolonise their historical range throughout Europe, ungulate populations are once again in the presence of this natural predator. Classical predator-prey theory predicts that the arrival of a large carnivore will induce adaptive behavioural changes in prey, which could in turn impact other trophic levels through cascading effects. Shifts in diel activity allocation can be an important, and potentially immediate, response for ungulates to mitigate risk exposure. It remains however unknown whether, how and how fast natural predators can provoke these behavioural modifications in highly anthropogenic landscapes, where the 'human super-predator' is a source of risk for both ungulates and wolves. In this study, we investigated the diel activity responses of three native ungulate species along the wolf recolonisation process, detecting the emergence of predator-prey interactions through behavioural plasticity of prey species. Taking advantage of the unique and timely opportunity of the ongoing natural wolf recolonisation in the Central-Eastern Alps, we designed a study placing camera traps throughout four study areas, creating a gradient in time since wolf establishment with alternating hunting contexts. We hypothesised that ungulates would decrease nocturnal activity as wolf presence increased and stabilised, but that the concurrent presence of (diurnal) human hunters and (nocturnal) wolves would force ungulates back to a marked crepuscular activity pattern. We found diel shifts towards diurnality as an immediate and direct response to the wolf recolonisation process in red deer and Alpine chamois, thereby increasing their activity overlap with humans. In red deer, this 'diel shield effect' disappeared in the additional presence of lethal risk from humans, potentially indicating a higher perceived hunter-related lethality during autumn. On the other hand, roe deer modified their diel activity in response to human hunting but not to the wolf, highlighting the lethality of humans or the presence of other risk-mitigating behaviours for this solitary, forest-dwelling species. Our study shows that the wolf recovery in Europe can induce immediate and lasting diel shifts in large herbivores, depending on the biology of the species, but that these diel shifts can disappear in the presence of human hunters.

Parallel Presentations

Theme: Feeding and Predation

Tuesday 15:30 - 15:50

Beavers - not ungulates - are the primary pray of many wolves during summer in a southern boreal ecosystem

Thomas D. Gable

Co-authors: Austin T. Homkes, and Joseph K. Bump

Wolves and beaver co-occur across vast expanses of North America and Eurasia, and as a result, beavers are an important secondary prey for wolves in many systems. However, the extent to which wolves can subsist on beavers is poorly understood. Most observations suggest beavers are an important secondary prey but there is little evidence to indicate beavers are the primary prey of wolves during extended periods. We studied the predation behavior of 47 wolves in the Greater Voyageurs Ecosystem (GVE), Minnesota, USA from April to October (the a 7 month period representing the biological summer for wolves) by searching clusters of GPS-locations and identifying predation events. In doing so, we documented >1,900 kills of white-tailed deer, beavers, and other prey, and then used this data to estimate biomass acquisition rates for wolves during this period. We demonstrate that beavers—not ungulates— are the primary prey of many wolves in the Greater Voyageurs Ecosystem during the summer with beavers constituting up to 86% of the biomass acquired by individual wolves during this 7 month period. The ability of wolves to subsist and thrive primarily on beavers during the summer allows wolves to partially decouple from the population dynamics of ungulate prey, which likely influences various aspects of wolf population dynamics. Our findings are almost certainly not unique to our system because the GVE is not a closed, isolated system. Rather, wolves in the GVE are part of an expansive, well-connected wolf population, and many wolves in this population occupy environments that are identical or very similar to the GVE with respect to habitat and the abundance of beavers. All of this evidence indicates that beavers must be considered important prey for wolves in many systems and that beavers are likely influencing, to some extent, larger patterns of wolf-prey dynamics in those systems.

Tuesday 13:30 - 13:50

Dilemma's in nature management since the return of wolves

Meta Rijks

Co-authors: Annelies van Ginkel

Staatsbosbeheer is an organization for forestry and the management of nature reserves owning 271.000 hectares in the Netherlands. As roe deer is the only larger wild herbivore present in most of the country, many of the nature reserves are grazed with domesticated animals like sheep, goats, cattle and horses to reach set habitat goals. However, the return of the wolf causes Staatsbosbeheer to rethink their grazing regime, as the domesticated grazers can be on the wolf's menu. When deciding what measures to take to protect the grazers against wolves, we also have to think about the impact of the measures on other fauna, recreational activities and the habitat goals. Moreover 40.000 hectares is leased to third parties for seasonal or year-round grazing. Therefore solutions like placing wolf-proof fences, shepherds with livestock guarding dogs or social herds of cattle or horses seem straightforward but are a challenge in practice. The best way to protect grazers against wolves doesn't always goes hand in hand with recreational activities. In this presentation I will talk you through the complexity of the challenges faced by nature management organizations like Staatsbosbeheer.

Tuesday 13:50 - 14:10

On wolves and commons: Institutionalizing local deliberation and social learning in Danish wolf management

Hans Peter Hansen

Co-authors: Cathrine Schrøder Dethlefsen and Annika Skarðsá Jeppesen

With an offset in a small-scale research project on local deliberation and social learning, the Danish Environmental Protection Agency (EPA) (Hansen et. al. 2022; Dethlefsen, C. S. & Hansen, in press), are in the process of institutionalizing local deliberation and social learning in Danish wolf management. The transition from a small-scale research project, designed and facilitated by researchers and enforced by a strong discourse ethic, within a single minor rural community, to large scale institutionalized public dialogue and social learning processes, uncover a number of logistic, institutional and sociopolitical challenges, far beyond the local. Being actively involved as advisors, facilitators and researchers in the governmental attempts to institutionalize local deliberation and social learning in Danish wolf management, we describe the various challenges. These includes the institutional barriers and the general conflicts between strategic interests seeking to politicize and flex their power, and the ambition to create a space for dialogue, deliberation and social learning. Seeing the attempts from the Danish EPA as an experiment in itself we pinpoint the most crucial challenges for institutionalizing local deliberation and social learning in Danish wolf management. Further we present and discuss the main lessons from the process and outline some key recommendations. Finally, we tie the lessons from Danish wolf management to some of the more overarching sociopolitical challenges of contemporary society.

Tuesday 14:10 - 14:30

Comparison of the diet of free-living wolf-dog hybrids and wolves

Iga Kwiatkowska

Iga Kwiatkowska , Sabina Nowak, Michał Figura, Jerzy Napierała and Robert W. Mysłajek

Hybridization between free-living gray wolves (*Canis lupus*) and domestic dogs (*C. lupus familiaris*) remains one of the most challenging threats to wolf protection. This is especially crucial in Europe, where wolf recovery is ongoing in human-dominated landscapes with abundant dog populations. The food habits of wolf-dog hybrids are poorly understood. Therefore, we investigated the diet of wolf-dog hybrids based on 156 scats collected in central Poland with confirmed and ongoing hybridization events. We then compared this with the results of analyses of the wolf diet in eight localities across the lowlands of Poland. The main food items in the hybrid diet were wild ungulates, roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*), fallow deer (*Dama dama*), and wild boars (*Sus scrofa*). They supplemented their diet with other wild mammal species, such as Eurasian beavers (*Castor fiber*), European hares (*Lepus europaeus*), and domestic animals (dogs and cats). Based on Ivlev's selectivity index, hybrids positively selected fallow deer and wild boar using moose according to its share in the ungulate community and avoiding roe and red deer. Using Pianka's index to compare food niche overlap, we found no differences in the diet of hybrids and wolves, indicating a large trophic overlap between both species. Additionally, we examined the copy number of the *AMY2B* gene, which encodes the pancreatic amylase enzyme in wolves and dogs. We have found number of amylase copies not higher than 9. We suggest that there was no implication in favor of feeding in close proximity to human settlements, and we conclude that diet similarities may likely lead to competition between wolves and wolf-dog hybrids.

Tuesday 14:30 - 14:50

Polarising discursive practices in the debate on the comeback of the wolf

Anne Kessels

Co-authors: Annette Klarenbeek, Petra Sneijder, and Elisabeth S. Bakker

It is widely recognised that social factors, in addition to ecological and economic factors, have a major influence on wildlife-related conflicts. Specifically the dynamics in the debate, that is how people communicate with each other, are to a large extent responsible for the intractability of these conflicts. Therefore, our aim was to gain understanding of the current state of knowledge with regard to discursive practices that are employed in the wildlife debate. Accordingly, we conducted a systematic review of discourse analytic literature that studied this debate. This review primarily yielded publications that analysed debates on wolves and other canids. These publications described a variety of discursive practices employed by interlocutors. For instance, interlocutors positioned others (e.g. authorities and NGOs) negatively by questioning their trustworthiness and competence, and legitimised the presence of wildlife by shifting the responsibility away from the animals to the complaining victims. Such discursive practices emphasise the differences between interlocutors and impede opportunities for reconciliation, which may contribute to social division and polarisation. This systematic review and its insights into the polarising effect of discursive practices in the debate on wolves and other canids can advance the understanding of the intractability of wildlife-related conflicts. This understanding is important in order to conserve and restore wildlife populations, and, in this case specifically, wolf populations. In this presentation, we present the insights of this systematic review accompanied by examples from our own analysis of the online debate about the wolf in the Netherlands.

Parallel Presentations

Theme: Navigating Challenges of Co-existence

Tuesday 14:50 - 15:10

The return of the wolf to the Netherlands and its sociopolitical impact: past, present & future

Esther van der Meer

Advisor Natuurinformatie BIJ12

Co-authors: Linda Smitskamp, Angela van den Broek, Désiré Karelse

Ten years ago we received the first validated sighting of a wolf in the Netherlands. Sightings became more frequent and in 2019 the first pack of wolves established itself and produced a litter. After an absence of 150 years this marked the return of the wolves to the Netherlands. Ever since that first sighting, the Dutch wolf population has increased to 11 packs with an estimated population size of ca. 104-124 wolves (2024-2025). This increase in range and numbers has had a marked impact on human-wolf conflict and the sociopolitical attitude towards wolves. In this presentation we give an overview of ten years of wolves in the Netherlands based on confirmed signs of wolves and livestock depredation. We discuss what impact the increase of the Dutch wolf population has had on the political debate and public support for wolves, and conclude with an overview of what the future may hold for this controversial large carnivore.

Tuesday 15:10 - 15:30

Projecting wolf population dynamics in Europe, the need for regional parameters, and how to use population modelling in wolf policy and management

Jasja Dekker

Co-authors: Bob van den Brink, and Esther van der Meer

To inform decision-making on wolf policy, we formulated a stage-population model. This model projects the population development of Dutch wolves. To develop the model, we reviewed the literature for available parameters, and prior models for population viability or population dynamics. We formulated several model variants to capture the uncertainty in estimates for some of the vital rates of wolves.

The model variants all predict the presence of a sustainable population consisting of settled packs and a constant presence of roaming wolves. The predicted stable population size depends on settlement rate, survival and the carrying capacities as estimated by other researchers. Some of these however are from other parts of the world, are uncertain, or are expert estimations.

We therefore call upon participants to keep gathering and sharing data on reproduction, survival, migration, dispersal and settlement rates of the Central European wolves. Getting (more accurate) parameters for the Central European population will improve model predictions and increase their value for decision making.

We conclude our talk with a discussion of rules and caveats for the successful use of models in (carnivore) management.

Tuesday 15:30 - 15:50

Swiss Wolf Monitoring and Management: Integrating Science, Policy, and Conservation

Inès Moreno

Co-authors: Sven Buchmann, Saskia Mäder, Fridolin Zimmermann

The return of wolves (*Canis lupus*) to Switzerland since the nineties and the rapid population growth in recent years has raised social and political challenges, leading to a new management plan. This presentation provides an overview of wolf monitoring in Switzerland, the methods used, and the challenges in both monitoring and management.

Monitoring in Switzerland is conducted at the national level through a combination of methods, including genetic analyses, camera trapping, recovered dead wolves, damages to livestock and chance observations (tracks, killed wild prey, pictures). At the beginning of the recolonization phase, monitoring provided comprehensive data on most individuals in Switzerland. As the population grew, the focus shifted to tracking and discriminating packs and using population indices rather than estimating total abundance. Nevertheless, these data allowed us to closely monitor the recolonization from the first recorded individuals in the 1990s to the establishment of the first pack in 2012 and the subsequent expansion - while also providing insights into biological patterns. Recently, management actions shifted from a reactive framework, triggered by repeated damage to livestock, towards a more proactive approach, including the preventive removal of wolves and entire packs, with a legal minimum of 12 packs in Switzerland. This new approach has led to an increase in the number of wolves legally removed. These changes necessitate more precise demographic estimates and scenario-based assessments to evaluate the effectiveness of different management strategies and their long-term impact on wolf population viability, livestock damages and population acceptance. To support decision-making, we are developing an Integrated Population Model (IPM) to synthesize monitoring data and estimate key demographic parameters, such as survival, reproduction and dispersal. This will serve as the basis for an Individual-Based Model (IBM), which will simulate the effects of different management actions, including the removal of targeted individuals, pups, or entire packs. These models aim to improve the accuracy of population assessments and guide sustainable wolf management strategies under an adaptive management framework. By integrating long-term monitoring data with advanced modeling approaches, this research will provide science-based insights to inform adaptive conservation policies and assess the demographic consequences of different management interventions.

Wednesday 10:30 - 10:50



Towards Coexistence: Mapping costs and benefits associated with living with wolves in Spain

María Granados

Co-authors: María Martínez-Jauregui, Francisco Díaz-Ruiz, Fernando Garrido, Jenny A. Glikman, Ana Luz Márquez, Zebensui Morales-Reyes et al.

Large carnivore recovery in Europe is primarily attributed to conservation policies and passive land restoration. In Spain, the Iberian wolf has increased its range considerably since the 1970s. However, this conservation success is not without conflicts over how to manage wolves, as the species may cause damage to livestock, affecting local communities. Since such human-wildlife conflicts are harmful to both wildlife and human livelihoods, it is crucial to predict areas where conflict is likely to occur in the coming years. To address this, we conducted a nationwide survey of Spanish environmental rangers ($n > 1800$) to assess their perception of the costs and benefits associated with local communities coexisting with wildlife. Later, we developed an environmental favourability model using the current distribution of Iberian wolf, along with a number of socio-ecological predictors (e.g. climate, land uses, prey availability). We then used this model, along with survey data, to predict areas in Spain where the costs and benefits of coexisting with wolves might be felt, incorporating socio-economic factors such as average population age, income, or agricultural employment. According to preliminary results, 600 rangers reported the presence of wolves in their work area. Benefits associated with wolves were reported by less than 10% of surveyed rangers. In contrast, costs were perceived in most municipalities within wolf range with over 75% of rangers reporting damage). Furthermore, 50% of the rangers considered the costs to be very important for residents. Environmental favourability model suggested that more than the upper two-thirds of Spain would be appropriate for wolves ecological requirements. In addition, socio-ecological favourability model suggested that cost and benefit perceptions was mainly related to wolf presence, regardless of other social factors. This model allowed us to identify suitable areas for future wolf restoration, considering both environmental conditions and the balance of benefits and costs. Models also allowed to identify favourable regions for cost perception in areas close to current distribution, where recolonization is very likely to occur in the coming years. This might help environmental agencies to focus policy concentrating economic resources for preventive measures in these areas before the conflict occurs.

Wednesday 10:50 - 11:10



Establishing favourable reference values under the Habitats Directive for the wolf in Germany

Katharina Steyer

Co-authors: Götz Ellwanger, Sandra Balzer

Establishing favourable reference values under the Habitats Directive is a challenging task – especially for species with large home-ranges like the wolf. After eradication of the wolf in Germany in the 19th century, in 2000 the first reproduction of wild wolves was observed in Saxony for the first time since many decades. Since then, the wolf population has been growing and spreading in a densely human populated cultural landscape. The scientific-based approach used to establish reference values for the Favourable Reference Population (FRP) and the Favourable Reference Range (FRR) for the wolf in Germany will be described. A population viability study, a habitat suitability analysis study for wolves in Germany, a genetic study and the results of annual nationwide wolf monitoring since 2010 culminated in reference values. We will additionally illustrate obligations and pitfalls we identified for setting the reference values. We further highlight the complex coordination process between the scientific and political actors and conclude with lessons learned when it comes to outreach and communication of these findings.

Parallel Presentations

Theme: The Path to Co-existence

Wednesday 11:10 - 11:30



The (Italian) Urban Wolf Project: a multidisciplinary approach exploring the effect of the anthropogenic environment on wolves' behavioral, hormonal, health-related and genetic profile

Sarah Marshall-Pescini

Co-authors: Martina Lazzaroni, Rudy Brogi, Carmela Musto, Gwendolyn Wirobski, Rupert Palme, Massimo Scandura et al.

The expanding wolf population in the Italian peninsula has resulted in wolf packs carving out a livelihood ever closer to villages and towns. Many Canid species, from coyote to red foxes have shown their capacity to not only tolerate, but even exploit anthropogenic environments, altering their behavioural responses in more urbanized contexts. In the current project, we adopted a multidisciplinary approach to evaluate the potential effects of living closer to humans on wolves' behavioral, genetic, hormonal and health profile. Using field tests (including play-back stimuli, novel objects and risk-taking tests) we evaluated the behavioural profile of over 50 wolf packs tested in Tuscany along a wide urbanization gradient (with a Human Footprint Index -HFI ranging from 9 to 47; where the minimum could be 0 and maximum 50). Since both hybridization with dogs and the incidence of toxoplasmosis may affect wolves' behaviours, using scat samples analyses we assessed the incidence of dog-hybridization in the behavioural test areas and based on the collection of over 200 wolf carcasses across the peninsula we assessed whether the urbanization gradient affects the incidence of toxoplasmosis. Furthermore, the effect of HFI on chronic stress measures in hair cortisol was analyzed from carcasses. Preliminary results on a subset of the data show that wolves show bolder behaviours when encountering novel objects in a pack than alone ($N=15$, $z=4.077$, $P<0.001$) and show stronger fear responses towards human audio stimuli than natural controls ($N=22$, $z=4.030$, $P<0.001$). However, the effect of the urbanization gradient is yet to be analysed with the complete dataset. No effect of HFI was found on hair cortisol concentrations. The complete results of this 5-year multidisciplinary project will be presented at the conference, with the aim of seeking out collaborators to expand this approach across borders.

Wednesday 11:30 - 11:50



Wolves: the uninvited guests - A nature conservation NGO facing the return of a large predator

Niels Gilissen

Vereniging Natuurmonumenten is a Dutch nature conservation NGO owning and managing 112.000 hectares of nature reserves, supported by 900.000+ members and donors. Natuurmonumenten is not only a land owner and manager, but also, in the public and political debate, represents the voice of millions of Dutch citizens that support nature conservation in the Netherlands.

The Netherlands faces several challenges when it comes to the wolf, which is returning to the Netherlands after a long absence. Although in several European countries one has gained experience on how to shape coexistence with wolves, there is still much to learn. Moreover, applying these lessons learned to the situation in the Netherlands is not straightforward. This is due to the Netherlands hosting, from a European perspective, the highest densities of people, livestock, and infrastructure, combined with low availability of natural prey and natural areas. This also reflects the challenges that Natuurmonumenten is facing while striving for coexistence with wolves, while minimizing conflict. The presentation will focus on the ways Natuurmonumenten, as a nature conservation NGO, land owner and societal actor, is dealing with these challenges and dilemmas in the Dutch context. Major challenges dealt with comprise:

- Livestock management: Implementing the appropriate preventing measures for protecting livestock and natural grazing herds from attacks. How much loss of animals is acceptable ethically and juridically and how do we relate to our tenant farmers?
- Wildlife management: Adapting wildlife population management according to wolf presence. How to develop a feedback system for adaptive wildlife management?
- Political and public pressure and polarisation: Influencing the debate and decision making while avoiding further polarisation. When is lobby effective and when should we stay quiet?
- Public awareness and disinformation: Taking a role in communicating for public awareness and debunking disinformation. How to avoid making Natuurmonumenten owner of the 'wolf problem'?
- Internal organisation: Organising central coordination while delegating responsibilities. Developing action protocols for daily management and crisis management. How to ensure a safe working environment for employees considering the heated debate?

Wednesday 10:30 - 10:50

“The Italian wolf network”: presenting a model for a multidisciplinary operational network for the systematic processing of wolf samples

Carmela Musto

Co-authors: Marco Apollonio, Giuseppe Merialdi, Marco Gobbi, Lorella Barca, Jacopo Cerri, Mauro Delogu, Sarah Marshal-Pescini

In recent years, competitive research has been moving in a direction that aims to enhance multidisciplinary and the use of large datasets. Within the framework of the “Urban Wolves” project - a research grant funded by the WWTF [10.47379/ESR20009] - the “Italian wolf network” was established, based on an agreement between 7 Institutional Bodies, setting out 14 research questions, ranging from the fields of ecology, biology, zoology, behavior, epidemiology, physiology, anatomy, statistics and infectious diseases. The network unifies the methods used to collect samples from wolves found deceased and subjected to necropsy investigation. The shared necropsy procedures ensure that the entire data and sample collection chain - starting from reporting the location and contextual details of the carcass been found, up to the sampling of the target matrices - is consistent across labs. The network also collects samples from free-ranging animals that are studied both with non-invasive techniques and through telemetry. Through the agreement, researcher ‘earmarked’ selected research questions and hence receive the required samples or data from all other labs. This collaborative approach increases samples sizes, guarantees a unified high standard of methods thereby increasing validity of results. The network became active in December 2022 and the agreement will continue until the official end of “Urban Wolves” project (December 2025). As of September 2024, 323 wolf carcasses and hundreds of scats from free-ranging wolves have been collected spanning the length of the Italian peninsula. The contribution will outline a few results from the network and several particularly interesting ‘case studies’ showing how this approach can result in top level research but also allow an in depth understanding of the history of individual animals, including the phenotype, genetic profile, diet, hormonal profile, antimicrobial resistance, presence/absence of environmental contaminants as well as bacterial, viral and parasitic pathogens. We suggest that this approach could be adopted “across borders” allowing for a more systematic use of opportunistic sampling, obtaining valuable data from multiple perspectives and providing a holistic integration of multiple fields of study, as well as to unify and harmonise data at European level, through networking promoted and funded by EU programming.

Wednesday 10:50 - 11:10

Wolves in Italy: insights for a European scenario

Marco Apollonio

Co-authors: E. Bassi, D. Berzi, R. Brogi, C. Buelli, S. Cavazza, M. Del Frate et al.

Wolves in Italy have undergone one of the most remarkable recoveries in both distribution and demography across Europe, offering valuable insights into potential upcoming scenarios for the species on the continent. This summary consolidates over 30 years of research conducted in Central and Northern Italy, focusing on wolf diet, spatial behavior, and colonization patterns. Our findings are based on long-term dietary studies from multiple areas in the Apennines and Alps, data collected from 20 GPS-tracked wolves since 2018 across the Alps, Apennines, and Tyrrhenian coastal regions, as well as regional and provincial long-term population estimates. Italian wolves primarily feed on wild ungulates, with wild boar being the dominant prey in the Apennines and roe deer in the Alps. However, local variations in prey availability can lead to a prevalence of other species, such as fallow deer or mouflon. Domestic livestock can constitute a significant portion of the diet, especially during summer in newly recolonized areas. Data from GPS-tracked wolves indicate substantial variation in foraging strategies, with some packs and lone wolves relying heavily on scavenging or garbage, while others focus more on wild prey hunting. The recovery of the wolf population has progressively led to significant changes in their behavioral ecology, likely driven by increased intra-specific competition for space. First, wolf packs in Italy substantially reduced their home range size along the time since recolonization, with some packs occupying areas as small as 3,000 hectares in regions with a long recolonization history and/or high available prey biomass. Second, heightened competition for space has driven wolves, confined to mountainous regions in the 1970s, to expand into heavily human-populated flat lands and coastal areas, often living within a few kilometers of urban centers. This expansion has led to a steady rise in human-wildlife conflict and public concern, including predation on pets and rare, though concerning, direct attacks to humans, particularly in newly colonized areas. Unfortunately, Italy's management structures have been largely unprepared to address these challenges, because of a persistent tendency to underestimate the size and growth of the wolf population, as well as the potential shifts in their behavioral ecology.

Wednesday 11:10 - 11:30

Towards transboundary genetic monitoring of wolves: an online platform for harmonization and sharing of wolf genetic monitoring data across countries and laboratories.

Tomaž Skrbinšek

Co-authors: Luca Fumagalli, Heidi Christine Hauffe, Martin Janovsky, Elmira Mohandesan, Carsten Nowak, Tomaž Žagar, Gregor Simčič

While genetic monitoring is increasingly gaining importance in national wolf monitoring programs, its potential for transboundary population-level monitoring remains largely underutilized. There are two main obstacles that hinder such use: problems with compatibility and repeatability of genotype data produced by different laboratories, and lack of an online data-sharing platform suitable for sharing of such data for the purposes of transboundary wolf monitoring. The problem of data compatibility is being solved through adoption of new genetic markers, but participating laboratories need to use the same marker panels. A joint data sharing platform still remains elusive.

Through the ARGE ALP initiative we've developed such a platform for sharing wolf genetic monitoring data across the Alps, hand-in-hand with standardization of genotyping methods that we are coordinating across genetic laboratories involved in wolf monitoring in the area. All involved laboratories are transitioning to genotyping-by-sequencing of microsatellites using a standardized panel of markers to make the data immediately compatible. The data sharing platform was developed as a plugin for the online wildlife monitoring database MBase (<https://portal.mbase.org>), which has been developed through various LIFE projects. The platform is fully based on free open source software. All genotype data is stored at the level of DNA sequence, ensuring data compatibility between participating laboratories. The platform has tools for entry and import of sample field data, tracking of samples as they are analyzed, geographic visualizations on base maps, and export of genotype data. It allows transboundary tracking of animals detected in genetic samples and can be used to provide direct feedback to different stakeholders. It also tracks data ownership, permissions, and data usage licenses, allowing the producers of the data to retain control of how their data is being used. This facilitates faster adoption of the platform and ensures that the data is used fairly.

Extreme mobility and long-range dispersals of wolves require large-scale collaboration in their monitoring to understand how their populations are developing at the level of the European continent. Harmonized methodology and efficient, seamless data sharing are the key prerequisites for any such endeavor. This is what our platform aims to provide.

Wednesday 11:30 - 11:50

Chasing tail – 30 years of wolf management in Croatia

Josip Kusak

Co-authors: Jasna Jeremić, Marija Perković, Iris Mijatović

In 1994, during the Croatian War of Independence, the NGO “Croatian Wolf Group” was actively involved in changing the status of the wolf from a pest to a protected species. The saying “War is a brother of the wolf” has proven to be true. In 30 years (1995-2004), the government's willingness and ability to manage wolves has fluctuated constantly. In the first ten years (period 1/1995-2004) there was no management plan. In 2002, the State Institute for Nature Protection (SINP) was established, two regional offices and several experts worked on wolf conservation. Workshops were organized with stakeholders on the donation of livestock guarding dogs and to strengthen the expert network for damage and compensation. Basic monitoring was carried out in the form of research and carcass collection. Balanced management was introduced, and the legal hunting quota was set. Croatia was a candidate for EU accession and nature conservation was an important political issue. For the next 11 years (period 2/2005-2015) there was a wolf management plan that expired without being updated. The management plan brought a balance and compromise between the needs of nature conservation and stakeholders. Between 2005 and 2012, the legal and limited hunting quota was exercised by hunters who voluntarily participated in monitoring. After 3-4 years, the volunteers' enthusiasm for monitoring waned. The better days of wolf management lasted until 2015, when the SINP was integrated into the Ministry, losing its independence and majority of its staff. The donation program was discontinued and communication with stakeholders became less frequent. Another eight years (period 3/ 2016-2024) were characterized by simple conservation measures and an outdated management plan. The government's wolf conservation efforts were evaluated based on all measures and activities in three periods, scored and weighted on a scale of 1 to 5. In periods 1, 2 and 3, a total of 54, 122 and 55 management activities were carried out, scoring 121, 326 and 131 points respectively. The difference in management effort between periods 1 and 2 was significant ($\chi^2(1df)=4.2, p=0.04$). From the outset, the understaffed government enlisted the help of experts and volunteers to fill the capacity gaps. This reliance proved to be a “bear favor” for wolf conservation in Croatia. Volunteer involvement is unpredictable and institutional capacity was never sufficiently developed and was even reduced after Croatia's accession to the EU and the political shift to the right.

Wednesday 10:30 - 10:50

Probably the best wolf monitoring in the world

Robert Ekblom

Co-authors: Daniel Mallwitz, Linn Svensson, Øystein Flagstad, Petter Wabakken, Mikael Åkesson, Richard Bischof

The Scandinavian wolf monitoring is, arguably, one of the most complete and ambitious annual surveys of any wild population worldwide. Since the re-establishment of the Scandinavian wolf population in the early 1980ies, the population has been closely followed by yearly counts using a standardised methodology. The methods are similar in Sweden and Norway, and all data are collected in a joint database (Rovbase), which is also partly open for public viewing. On average 97% of all reproductive events are recorded each year using snow tracking and camera-trapping. In addition, some 3500 DNA-samples are collected (mainly using non-invasive technology) and analysed each year to verify species, sex, individual ID, inbreeding coefficient and genetic relatedness between individuals. Monitoring data is also utilised to produce precise population size estimates using a spatial capture-recapture modelling approach (RovQuant). This extensive field- and genetic data, enables the re-construction of an almost complete pedigree of the whole breeding population, from the establishment of the population 40 years ago until today. Finally, all encountered dead individuals (from legal hunting and natural causes) are examined at the state veterinary institute to investigate the incidence of injuries, disease, and morphological malformations. We will present the most recent results from this monitoring effort, and discuss the management implications of having access to such detailed biological data.

Wednesday 10:50 - 11:10

How to (legally) kill a wolf in Sweden

Daniel Mallwitz

Co-authors: Robert Ekblom, Mona HansErs, Andreas Ahlén

During the last decade between 20 and 80 wolves have been legally shot in Sweden each year, even though this species is strictly protected under the Habitats Directive (annex II and IV). The hunting is controversial and has raised questions about the legality of these management decisions, including an infringement case against Sweden from the EU commission, that has been open since 2011. During this session we will provide background on the Swedish legal framework, as well as practical considerations, for hunting of protected large carnivores. Culling of individual wolves can be performed after a management decision at the county board to avoid direct damage to domestic animals (protective culling), the police with regard to public safety or by an individual animal keeper or hunter in order to interrupt an ongoing attack. In addition, license hunting quotas can be issued by the regional county boards with the aim of controlling the general population density of the wolf population. Such decisions need to be based firmly on a very detailed yearly census of the entire wolf population and on scientific data on population growth parameters. With the aim of ensuring that the total hunting pressure will not lead to a population size that falls below the national reference value (thus leaving the population in an unfavourable conservation status), yearly harvest models are produced by leading researchers. After ensuring an appropriate level of hunting in relation to the reference value, derogations are made based on article 16 of the Habitats directive.

Wednesday 11:10 - 11:30

The effect of legal status on wolf population dynamics

Juan Pablo Ramírez Loza

Co-authors: José Vicente López-Bao, Yaffa Epstein, Guillaume Chapron

In December 2023, the European Commission presented a proposal to change the level of protection of gray wolves (*Canis lupus*) under the Bern Convention from strictly protected to protected species. In European Union (EU) legislation, this may be followed by moving wolves from Annex IV (strictly protected) to Annex V of the Habitats Directive, which would allow EU member states to permit their hunting as long as their "favourable conservation status" was maintained. The demographic consequences of these legal changes at EU level remain uncertain, as no change in the legal status of wolves under EU law has occurred before. We illustrate the potential consequences of these legal changes by looking at the dynamics of wolf populations across states with differing regimes of legal protection for wolves. We built hierarchical Bayesian state space models to assess how variation in the strictness of legal protection influences gray wolf population trends in different jurisdictions. From our results, we infer what consequences downlisting could bring for wolves in the EU and provide insights into the question of whether conservation achievements can be maintained if legal protection is relaxed or removed. We also comment on the differences between the legal and biological contexts of wolf recovery in the US and Europe.

Wednesday 11:30 - 11:50

Reporting of wolf sightings: a window into the spatiotemporal distribution of people's concerns?

Rudy Brogi

Co-authors: G. Neirotti, J. Cerri, M. Lazzaroni, S. Marshall-Pescini, L. Mattioli, & M. Apollonio

European wolf populations are increasingly expanding into human-dominated landscapes, leading to novel interactions and potential conflicts with common citizens which may potentially disrupt the current paradigms of large carnivore management and conservation. Citizen reports of wolf sightings provide valuable information about the location and timing of these interactions, as well as public attitudes towards wolves. The frequency of sightings and the associated public attitude may indeed be influenced by factors such as local wolf and human densities, the length of time since the area was recolonized by wolves, and the seasonal patterns of wolf movements. We analysed 772 wolf reports received by a dedicated phone line service operating in Tuscany, Italy, from 2021 to 2024. We modelled their spatiotemporal distribution as a function of the human footprint index, the time since the area was (re)occupied by wolves (1972, 1996, 2005, 2016, or later), and the period of the year. Then, we investigated the effect of the same factors and that of the nature of the sightings (i.e., involving or not a predation event) on the reporters' attitude towards wolves. Human-dominated areas accounted for most wolf sighting reports ($p < 0.001$), suggesting that human population density, rather than wolf density, was the primary predictor of wolf-human interactions. Wolf reports were significantly more common in recently recolonized areas ($p = 0.02$), indicating limited habituation of people to wolves, and showed a significant seasonal variation ($p < 0.001$) with a negative peak in summer and a positive peak in late winter, aligning with the wolves' breeding and dispersal periods. Negativity of the attitude towards wolves increased until intermediate values of human footprint and then remained stable ($p < 0.01$) but did not vary across areas recolonized in different times. However, the sighting of predation events significantly exacerbated negative attitudes in newer recolonized areas ($p < 0.01$). We depict a novel and complex landscape of wolf-human interactions in human-dominated areas, which may be only partially predictable through the lens of wolf biology and ecology. Our findings facilitate the identification of key regions where novel conflicts are more likely to occur and where ad-hoc socio-ecological management plans will be more needed in the upcoming future.

Wednesday 10:30 - 10:50

Effects of helicopter captures on wolf movements and behaviour

Giorgia Ausilio

Co-authors: A. Thiel, K. Nordli, H. Sand, C. Wikenros, P. Wabakken, B. Zimmermann

One of the most revolutionary advances in technology within the field of animal ecology is the use of Global Positioning System (GPS) collars, which allows biologists to obtain accurate locations to study animal behaviour and ecology. In order to deploy these sensors, animals need to be captured and, in most cases, immobilized using a combination of anesthetic drugs. The capture process can induce stress and physiological changes to the sedate animal, including elevated heart rate, body temperature, injuries and, in some cases, capture myopathy and death. Because the capturing and handling of wildlife is often crucial to obtain data on demography, behaviour, physiology of wild animals, it is therefore important to investigate the potential effects of capture and immobilization events on wildlife. In this study, we address the potential effects of helicopter captures on the movement pattern and possibly the kill rate of Scandinavian wolves. Movement patterns in this study are represented by speed between consecutive GPS positions. We used GPS data from 59 wolves captured between 2011 and 2023 in south-central Scandinavia to analyze the movement behaviour before and after a capture event in relation to several factors (e.g., age, sex, drug, body temperature). Our initial findings indicate that there is a notable decline in the movement of wolves for about 10 days following the capture event, after which their movement speeds return to pre-capture levels. We observed no significant differences related to the sex of the individuals. However, the weight of the wolves appears to influence their post-capture mobility; lighter wolves showed more variability in their movement patterns compared to heavier individuals. We are currently continuing our analysis, which includes examining how the drug combination, the body condition and the social status of a wolf influenced post-capture movements, as well as whether the capture event influences the kill rate of wolves.

Wednesday 10:50 - 11:10



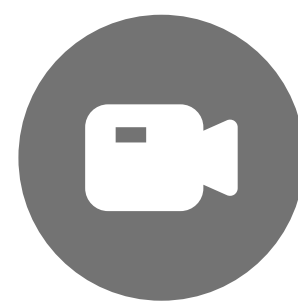
Factors impacting collar malfunction and collar chewing behavior in gray wolves in Yellowstone National Park

Jeremy Sunder Raj

Co-authors: Matthew C. Metz, Jack W. Rabe, Taylor L. Rabe, Kira A. Cassidy, Erin E. Stahler, and Daniel R. Stahler

Variation in behavior and habitat use can make monitoring and research difficult for a variety of wildlife species. Among these, carnivores are particularly difficult to study because of their cryptic nature, use of rugged habitat, and ability to move long distances. Radio collars are an effective method to monitor such species, gathering invaluable data essential for conservation. However, deploying collars on animals is logistically challenging, expensive, risky, and can cause short-term stress for both the animal and the humans involved in the capture process. While the overall collar performance and data quality justify their use, they sometimes malfunction. When collar performance is unreliable, it can compromise our ability to monitor individuals effectively. This malfunctioning seems to be more prevalent among some social carnivores. Gray wolves (*Canis Lupus*) are known for higher collar malfunction rates and for chewing off the radio collars on other individuals in their packs. We therefore sought to identify what factors affected whether collars were chewed, malfunctioned, or worked well. We compiled data from 203 radio collars placed on gray wolves in Yellowstone National Park between 1994 and 2023. For each collared wolf, we characterized collar type (VHF or GPS) and manufacturer. We also examined the presence of studs, pack affiliation, pack size, age, and the number of pups as these factors may influence the amount of damage the collar could potentially endure. Collars were then classified as a malfunction or neither for evaluation. We used generalized linear mixed models to evaluate the factors that affected malfunctions. We found that age was an important factor in malfunctions, with the predicted probability of malfunctions decreasing as wolves age. VHF collars are less prone to malfunction than GPS collars. We also found that some packs have affinities for chewing radio collars, indicating a learned behavior. One particular pack accounts for nearly one-third of all chewed collars in Yellowstone National Park. We recommend biologists use a mixture collar types in wolf packs to ensure data collection and contact with the pack. We also recommend targeting mature individuals when possible, especially in packs with a known history of chewing radio collars.

Wednesday 11:10 - 11:30



CANCELLED - A new perspective: The advantages and disadvantages of using GPS camera collars to study gray wolves

Maeve Rogers

Co-authors: Thomas D. Gable, Austin T. Homkes, Sean M. Johnson-Bice, John G. Bruggink, and Joseph K. Bump

How wolves hunt and kill prey during summer in boreal ecosystems is not well understood due to the challenges of observing predation in densely forested landscapes. However, novel approaches that use new technology offer potentially viable methods to study predation in ways not possible before. In 2020 and 2021, we deployed Vectronic Vertex Plus™ collars equipped with cameras on 4 wolves to test the feasibility of studying predation via camera collars. In 2020, camera collars (n=2) were set to record a 30-second video at the beginning of every daylight hour. The camera collars functioned for >6 weeks at these settings but we detected very few predation or scavenging events. In 2021, we set camera collars (n=2) to record a 20-second video every 5-minutes during daylight hours. Although these settings greatly reduced camera battery life (cameras functioned for 12 days), we detected far more predation and scavenging events than we did in 2020. We conclude that camera collars can be a viable tool to study predation behavior over short-time periods but current battery life limitations will limit the value of camera collars for studying predation in some circumstances.

Wednesday 11:30 - 11:50

Drones as a Potential Hazing Tool to Reduce Livestock Depredation by Wolves

Loredana McCurdy

Co-authors: Dr. Dustin H. Ranglack, Dr. Julie K. Young, Dr. Erica F. Stuber

Recovery and conservation of large carnivores has been challenging, as carnivores often conflict with producers as threats to their livestock. The gray wolf (*Canis lupus*) has recovered throughout much of its range in the northwestern USA, including Oregon. In southwestern Oregon, wolves remain listed under the Endangered Species Act, limiting livestock producers to using nonlethal tools to reduce depredation. Current nonlethal tools, such as livestock guarding animals, range riding, fladry/turbo-fladry, and less-than-lethal ammunition, can effectively reduce conflict, but wolves become habituated and render tools ineffective over time. Livestock producers and agencies tasked with mitigating conflicts are interested in applying modern technology, such as remotely piloted aircraft (i.e., drones). I am evaluating the effectiveness of drones as a potential hazing tool on wolves near livestock. I am experimentally evaluating differences in the response of wolves to hazing with drones that emit human voices, other sounds, lights, and a combination of lights and sounds, relative to control drones without an attached hazing apparatus, as these apparatuses are expected to have different habituation rates. I am also measuring wolf behavioral responses to the drone, how this varies across different habitats, and whether wolf responses vary across time (i.e., habituation). These findings will contribute to an improved understanding of whether drones are an effective hazing tool to reduce conflict and improve wolf-livestock coexistence.

Wednesday 13:00 - 13:20



Seeing Coexistence: Environmental Rangers as Informants of Human-Wolf Interactions

Jenny A. Glikman

Co-authors: M. Martínez-Jauregui, Z. Morales-Reyes, E. Descalzo, E., M. González-Granados, F. Garrido, R. Villafuerte, M. Delibes-Mateos

Environmental rangers have close contact with local residents. In addition, they primarily conduct their duties in the field and are therefore often well-acquainted with local wildlife. Among these species, the wolf (*Canis lupus*) stands out as a central figure in human-wildlife interactions across many parts of Spain. Given their frequent contact with both wildlife and local residents, rangers hold a unique perspective on the ecological and social dynamics surrounding wolves. Through a national-scale online survey of Spanish environmental rangers, we investigated their views on human-wolf interactions. Of approximately 2000 respondents, 638 reported having seen or knowing that wolves are present in their area of work. Their responses offered valuable data on wolf population trends, management interventions, and perceptions of wolves among local communities. Slightly more than half of the rangers who affirmed that the wolf was present in their working areas noted increasing wolf population trends in those areas, though these increases appeared unevenly distributed across the species' range. Most of these rangers believed that the cost associated with wolves were highly significant for local residents. They identified livestock breeders as the most affected group, noting that the damages incurred were generally perceived as only slightly acceptable or entirely unacceptable. Furthermore, 85% of rangers reported that residents considered the benefits of wolf presence to be either not important at all or of little importance in their working areas. Management strategies aimed at reducing wolf-related costs tended to focus on socio-economic measures. In contrast, strategies promoting wolf population recovery were divided between socio-economic interventions and the view that no additional action was conducted. As front-line conservation personnel, environmental rangers play a critical role not only in monitoring wolf populations and enforcing wildlife protection laws, but also in mediating human-wolf relationships. Understanding their perspectives is essential for identifying conservation priorities and fostering coexistence between people and wolves within Spain's socio-ecological landscapes.

Wednesday 13:20 - 13:40



LIFE BOREALWOLF project mitigates farmers' concerns about wolves

Mari Tikkenen

Co-authors: Mikko Jokinen, Jenni Pirinen, Mari Lyly

The LIFE BOREALWOLF project has co-operated with Finnish livestock farmers since 2020. According to the survey implemented before the project most of livestock farmers in wolf areas experienced the concern caused by large carnivores to be annual and all the year round.

One of the most important parts of the project has been the work of project planners, who have visited farms and shared information of livestock protection, delivered and assembled trail cameras, fladry and different deterrents on the pastures, and helped farmers to plan electric fences around pastures. During 2020–2024 project planners contacted over 150 farms and conducted some 260 visits to them. These are farms which have experienced increased risk of the wolf attack; either there have been attacks on livestock or the farms are situated on wolf territory.

Since the 2020 the number of wolves in Finland has increased from 230 to 300 wolves (March estimate). At the same time, the annual number of confirmed, compensated depredation cases has increased from 35 to ca. 80. This is mainly because of the increased number of wolves.

However, also other costs occur from wolf presence, such as worry and increased workload. An important measure of success for the project is to gauge, whether farmers have experienced that these concerns and workload have decreased due to project actions. Even if the measures provided by the project help to protect livestock more effectively, they may also increase the workload and accrued expenses of farmers. Farmers were presented with a questionnaire which focuses on the aforementioned issues. The results are shown in our presentation.

Before the project the use of deterrents on farms has been scarce. LIFE BOREALWOLF has introduced new tools for farmers to protect their livestock. However, the most important aspect has been the personal support and consultation given by project planners. This mitigates farmers concerns about predators, and plans are made to continue this work in the future, to promote better coexistence of farmers and wolves, as well as other large predators.

Wednesday 13:40 - 14:00



Land of wolves, school of shepherds: the importance of pastoral knowledge on coexistence with the wolf in Spain and Italy

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The wolf (*Canis lupus*) is recovering and recolonizing its historic range in Europe. In areas where wolves have long been absent, their recent recolonization has led to opposition from extensive livestock farmers. In contrast, in other areas where wolf presence has been continuously present during long time, conflicts associated with the wolf are less severe likely because the culture of traditional management has not disappeared. This has allowed coexistence with the species in a decisive way.

In order to compare two areas in Europe with uninterrupted presence of wolf, we conducted a total of 7 qualitative interviews in each one, with livestock farmers and shepherds: Spain (León Mountains) and Italy (Abruzzo and Molisse).

Our results primarily show that in these places, wolf attacks on livestock are either very low or non-existent. There is a high level of professionalization among livestock owners, as well as widespread maintenance of shepherding profession. For example, the use of guard dogs – such as Mastiff or Maremmano-Abruzzese sheepdogs-, and the practice of guarding of livestock at night are still common. This highlights the importance of indigenous and local knowledge (ILK) in reducing conflicts and enabling coexistence.

Wednesday 14:00 - 14:20



Close encounters with wolves: who's tiptoeing around whom?

Charlotte Lorand

Co-authors: Ane Eriksen, Olivier Devineau, Marianna Chimienti, Camilla Wikenros, Håkan Sand, Petter Wabakken, Barbara Zimmermann

Wolves are back in their former distribution range, where they establish themselves as neighbors to stay. From remote to highly anthropogenic areas, humans and wolves are now bound to live next to each other, and sometimes, unexpectedly meet. Such encounters might be perceived as dangerous and unpredictable – while on the other hand, hunting and poaching by humans remains a major factor of mortality to wolves themselves. In these crucial times, understanding wolf behavior towards humans could be the key to mitigate fear and facilitate human-wolf coexistence.

To this end, we use a standardized protocol to assess the responses of GPS-collared wolves to approaching humans. Taking advantage of the rise of biologging methods in wildlife monitoring, we developed complementary models able to detect specific behaviors and associated energy expenditure from on-board fine-scale accelerometers. These models were created with machine learning algorithms and based on acceleration data collected in captive wolves, as well as heart rates and daily energy expenditure estimated from a doubly labelled water technique.

With this biologging toolkit at hand, we are now able to analyze wolf flight responses from multiple angles, at an unprecedented level of detail. We present: (1) flight responses of free-ranging Scandinavian wolves during human approach trials, (2) a behavior analysis of wolf movement and posture before, during and after approach trials using 32-Hz triaxial acceleration data, and (3) an exploration of the energy invested by wolves in their response to approaching humans.

Results from these controlled experimental encounters can be compared to other situations involving wolves coming to close encounters with humans (such as capture for monitoring purposes, or events involving “bold” individuals), and this, at a variety of scales. By establishing a baseline distribution of wolf response patterns along gradients of anthropogenic impact and stressful situations, we intend to provide management responders with more accurate assessment tools, and overall, contribute to de-mystify the behavior of wild wolves towards humans in public perceptions.

Wednesday 14:20 - 14:40



Wildlife-smart communities as novel local governance models for coexistence with carnivores in Europe

Fabien Quétier

Co-authors: Annette Mertens, Sara Casado Aliácar, Wiebke Brenner, Mario Cipollone, Valerio Reale, Marta Viera, Corinna Winkler

The successful comeback of large carnivores such as wolves across Europe challenges human activities in rural areas where the species have been absent for prolonged periods. Finding ways for people to coexist with large carnivores is paramount to the persistence of these species in the landscape and their important role in restoring key ecological process, and must also address the psychological, social and economic burden that they bring to rural communities and livelihoods, particularly for pastoralism.

Inspired by approaches to coexistence with bears in North America and other wildlife in the global South, “wildlife-smart communities” are a local development concept for communities that fully embrace and take advantage of the coexistence with wildlife. This includes urban and land use planning (zoning), adaptations to farming, pastoral and forestry systems as well as recreational activities, including techniques for avoidance and mitigation of conflicts.

A key feature of this approach is the proactive development of novel governance arrangements through public – private – community partnerships, sometimes called "conservation agreements", that aim to build shared knowledge and understanding of human – wildlife interactions and establish clear roles and responsibilities for appropriate responses, but also grow business opportunities around wildlife comeback, and develop benefit sharing mechanisms where coexistence costs are shared equitably among community members. This departs from more widespread sectoral approaches that typically focus on public agencies providing financial and technical support to farmers once conflicts have become chronic.

Despite its demonstrated success to foster coexistence in diverse settings, this concept is still largely underemployed in Europe. Here we present how this approach can be adapted to the European context using lessons learned from three on-going case studies: the Central Apennines of Italy (bears and wolves), northern Portugal (wolves) and the border regions of NE Germany and NW Poland (wolves, lynx).

Wednesday 14:40 - 15:00



First steps on the long road to find out if and how sheep farming on Tyrolean mountain pastures in Austria could adapt to the increasing presence of wolves

Martin Janovsky

Co-authors: Josef Gitterle

In Austria, there has been evidence of recolonisation by wolves from various populations of origin since 2009. Despite the generally relatively favourable habitat characteristics for wolves in Austria, there are major challenges, particularly in the heavily used Alpine regions in the west of Austria.

Alpine pastures have a high value in several respects, and sheep play an important role as Alpine landscape managers that goes beyond the immediate financial value of the sheep.

Accordingly, predation on sheep represent the greatest conflict when wolves return. The structures of sheep farming are very small-scale. Sheep farming in the sense of guided pasture management is not established on alpine pastures. Methods for protecting sheep in alpine terrain from wolf attacks that have already proved successful in other countries have no tradition in Tyrol, and the very small structures and special alpine conditions pose particular challenges for changing existing traditions.

Tyrol, an Austrian province in the alpine western part is with a number of 2099 home to the majority of Austria's alpine farming businesses and 60% of all sheep on alpine pastures in Austria are herded on mountain pastures in the Tyrol. In this context, initial experience with the guided pasture management of a flock of sheep and the use of livestock guarding dogs was gained in Tyrol in 2024-2017. The complexity of the issues raised and the number of problems to be solved became apparent. In a new attempt, the office of the Tyrolean Provincial Government has been supporting and accompanying two mountain pastures since 2021 and one more since 2022 in order to gain further experience. As many relevant areas as possible are being considered and analysed. For example, the health management of the sheep, the development and provision of suitable shepherd accommodation, the working time situation of the shepherd staff, the different ways of the guided pasture management, the evaluation of botanical development and the calculation of additional economic costs are key areas. The sheep on the project pastures are protected by night pens. Two to three livestock guarding dogs have been in use on one mountain pasture since 2023. To date, no animals have been lost to wolves or other large predators on the project mountain pastures as far as herd protection has been implemented.

During the first years of the projects, a great deal of valuable experience was gained, which is reported on in detailed yearly interim reports (<http://www.tirol.gv.at/herdenschutzprojekte>). The measures required for the establishment of herd protection measures in alpine terrain represent a fundamental change to the previously established sheep herding, which can only take place over generations and requires considerable public support. The most important basic prerequisite for the implementation and establishment of herd protection measures beside the availability of skilled shepherds, a relevant amount of public money and others is the motivation of livestock farmers to face these challenges.

Wednesday 13:00 - 13:20

The lethal removal of two bold wolves in Saxony-Anhalt, Germany, as part of management guidelines

Julia Kamp

Co-authors: M. Unger, A. Weber

As part of the natural recolonization of wolves to Germany, the first wolf settled in the federate state Saxony-Anhalt in 2008. After the first documented reproduction in 2009, wolf numbers have increased up to 42 territories in the monitoring year 2022/2023. In Saxony-Anhalt the handling of the return of the wolf and its accompanying human-wolf-conflicts are summarized in a guideline. Within the frame of this guideline authorities lethally removed two bold wolves at the turn of the year 2023 and 2024.

In the beginning of December 2023 residents of the village 'Zschornewitz' reported repeated sightings of wolves within the village to authorities. Following investigations on site revealed, that the sighted wolves were suffering from mange and visited several feeding stations for feral cats, birds of prey and foxes, and a meat stall within the village regularly. The wolves, which were identified to be about seven to eight months old, displayed a concerning loss of shyness towards humans. After several attempts of non-lethal deterrence measures failed, authorities granted permission for the lethal removal of those wolves. Subsequently, the first wolf was shot on December, 19th in 2023 and the second wolf was shot on January, 27th in 2024. No more sightings of bold wolves within and around the village were reported afterwards.

This case is a successful implementation of wolf management guidelines. It underlines the high importance of a well-prepared authority and good communication and collaboration with stakeholders. Without the assistance and cooperation of local hunters, residents and politicians, the process would surely not have been as smoothly as it was.

Wednesday 13:20 - 13:40

Coming (too) close? The behaviour of one individual wolf requires carefully considered action

Johanna Fritz

Co-authors: Hannah Weber et al.

We present a case study showing the challenges occurring when a wolf acts on the border of tolerable behavior. The example of one wolf in the Black Forest illustrates the multi-causal connections, when preparing a management scenario in a highly frequented national park.

Wednesday 13:40 - 14:00

Is harvest creating a new wolf? Wolf behavior, sociality, and genomics

Ariana L. Cerreta

Co-authors: David E. Ausband

Humans have variably harvested gray wolves (*Canis lupus*) throughout their range, providing an opportunity to evaluate how harvest affects the genetic composition of candidate alleles that influence behavior and morphology. Historically, natural selection should have favored the survival of wolves that feared humans. Additionally, wolves with more aggressive phenotypes may have assumed breeding positions. Assuming these behaviors are genetically based, extant wolves presumably maintained behavioral variation in aggressive or fearful phenotypes in the wild. Thus, harvest by humans may affect the allele frequencies of these loci and thus the evolutionary trajectory of the species. In this study, we use a long-term genetic dataset on wolves in Idaho, USA, over differing levels of harvest through time to investigate how harvest and group social dynamics impact allele frequencies in loci putatively associated with aggression, fear, boldness, and exploratory behavior. We have developed and optimized a GT-seq panel of 267 loci targeting genes associated with behavioral and physical traits, herein referred to as the adaptive loci panel. We selected genes from peer-reviewed genomic studies on dogs and wild canids. The adaptive loci panel consists of genes associated with the physical traits of body size, coat, cognition, color, fecundity, immunity, and senses, as well as the behavioral traits of activity level, aggression, attention, boldness, social behavior, timidity, and vocalization. Preliminary analyses revealed extant variation in most loci evaluated (n=64 wolves), including some loci that were previously documented as being homozygous in wolves. By the conference, we will have sequenced 947 tissue samples from harvested wolves in Idaho and will have evaluated changes in allele frequencies among known breeders and dispersing wolves which will be reported in this presentation. This innovative tool will aid evaluating wolf populations and could be used to aid management of populations in other regions of the world.

Parallel Presentations

Theme: Bold Wolves

Wednesday 14:00 - 14:20

The Swedish wolf hunt – Who, why, when and how?

Daniel Mallwitz

During the last years Sweden has had a wolf hunt in January each year. The hunting is controversial and has raised questions about the legality of these management decisions. During this session we will explain the role of the management in the wolf hunt. How the quota is set through yearly harvest models that are produced by leading researchers. How the result of the harvest model is used the hunting decisions, in relation to Sweden's national reference value. We go through the process in which the territories are chosen and what the purpose of the hunt is. We explain who can participate in a wolf hunt and what is required to be a wolf hunter. We broadly explain the methods used by hunters when hunting wolves in Sweden. At last, we look into the effect of the hunt on the local wolf population and what can be expected to happen in an area after a wolf hunt.

Wednesday 14:20 - 14:40

The subjectiveness of facts and feelings. Perceptions on how non-lethal management of bold wolves was stopped in courts

Glenn Lelieveld

Wolves have come back to the Netherlands and were reproductive in 11 wolf packs last year. All these wolf packs are in multi-use landscapes where people live, work and recreate. Most of the territorial wolves and their young avoid people. However, we have had several cases in which wolves actively show themselves to people (and were recorded by mobile phone) and reported to the Zoogdiervereniging. In these footages, the wolves show behaviour that could be defined as bold behaviour (after Reinhardt et al 2020) as wolves clearly come closer than 30 meters to people (and their dogs).

In response to these cases and in line with Reinhardt et al 2020, we advised the regional authorities in these cases to catch and collar the wolves to increase the knowledge basis and as a first form of aversive conditioning. By use of alternative facts and victimizing the wolf, the mists of doubt were sufficiently raised to stop this measure in three different court cases by animal activists. In this talk, we will explore the data available, show some of the video footages and give insight into the different perceptions of relevant stakeholders in these cases.

Wednesday 14:40 - 15:00

Wolves perceive hunting dogs in their territory as rivals

Mari Tikkunen

Co-authors: Ilpo Kojola, Ville Hallikainen, Mari Tikkunen, Marko Kübarsepp, Peep Männil, Samuli Heikkinen, Vesa Nivala

Wolves recolonized Finland in the 1980', and there are now approximately 300 wolves in the country. The return of wolves has led to numerous conflicts between human and wolves, the most conflict enhancing being wolf attacks on dogs. Finland has traditionally valued hunting culture, and the most popular animal hunted is the moose, and this hunting is mostly dog-assisted. Hunters use solitary working dogs pursuing prey over large areas far from their owners, which places the dogs in danger when hunting in wolf areas.

Although the total number of attacks on dogs is not high (approximately 30-50 dogs yearly), every dog released to hunt in wolf areas is at risk. Even though the government provides compensation, dogs are perceived as beloved members of the family and loss of a dog can be traumatic to both the hunter and his family.

Wolves are highly territorial animals, which defend their resources against intruders through attacks, and this territorial defense is at its most intense during late autumn, which is also the primary hunting season in Finland.

In this study we wanted to examine whether dogs are considered by wolves to be more of a conspecific rival than prey. This is related to the fact that humans increase competition by introducing another canid species to the wolf territories; a species which also preys upon the wolves' primary prey.

We discovered that when prey is scarce, wolves are more prone to attack dogs. This indicates that when competition for prey is higher, the rate of attacks on rivals increases. It was also revealed that hunting dogs are killed more often in territory border areas than could be expected when compared to the time wolves spend there. Thus, it appears that wolves are aware of competitors coming to their territory and remove them as soon as possible.

The risk of attacks on hunting dogs could be decreased if hunters are made more aware of what motivates wolves to attack and are knowledgeable of risk areas on the territory. In regards to the management of ungulates, game managers should assess hunting quotas on prey species with the understanding that smaller quotas could serve to decrease the conflict between hunters and wolves.

Wednesday 13:00 - 13:20

Wolf policy in a densely populated region of Flanders

Koen Driesen

Co-authors: Ilpo Kojola, Ville Hallikainen, Mari Tikkinen, Marko Kübarsepp, Peep Männil, Samuli Heikkinen, Vesa Nivala

Flanders comprises the northern half of Belgium. It is a densely populated region with intensive, varied land use spread over (relatively) small areas. Wolf has been permanently present there since 2018 and has also successfully reproduced since 2020. Around the core areas of the pack, largely located on military grounds, there is mainly small-scale livestock farming, with a mixed professional and private character. After the first wolf arrived, a Flemish policy framework with regard to wolves was drawn up, the so-called 'wolf plan'. This framework includes all kinds of aspects, ranging from drawing up a protocol on problem wolves and developing a subsidy scheme for prevention to creating a list of frequently asked questions with accompanying substantiated answers, etc.

To develop the Flemish policy framework, the Flemish Government calls on all kinds of expertise present in various organisations, also abroad. In the preparation and interim revisions of this framework, a strong focus is also placed on involving and intensively collaborating with the various sectors that may come into contact with wolves (agriculture, nature, hunting, experience, private management, local and regional authorities). These stakeholders are closely involved in the 'wolf platform', a consultation structure within which relevant information about wolves is shared, and feedback and input are requested and which also serves as a sounding board. At local level, there are additional consultation moments for both mayors and municipal services in order to involve them as much as possible in the wolf policy and to support them in informing/raising awareness among citizens. This approach aims to ensure that everyone knows each other's positions and shows understanding for each other's situation and beliefs with regard to wolves, however diverse they may be. As a government, we then try to work out a supported solution for each problem or issue in an objective and transparent manner that meets all these positions as much as possible and in which the legal protection of wolves is of course taken into account. Our presentation will focus on the Flemish damage and prevention policy. In the context of this policy, a good collaboration has been developed with the Wolf Fencing Team Belgium, which has gained increasing trust from livestock farmers over the years and has thus contributed greatly to the support for wolves in Flanders.

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Wednesday 13:20 - 13:40

The history and current status of the Dutch inter-provincial wolves policy plan

Femmie Smit

Wolves re-established in the Netherlands in 2018, after being hunted to extinction around 1869. Their return was expected, and the Dutch national and provincial (12) governments anticipated on their return by investigating the consequences of their return (in 2012). The Dutch national government commissioned experts to make a draft plan for wolves management (2013). Since nature conservation tasks are delegated to provincial governments, this report was presented to them, and they set up a steering group (with governmental employees), which had the task to make an operational handbook for stage 1 (wandering wolf present). It appeared in 2016 and contained mainly information and protocols on how to monitor wolves and how to secure DNA samples. It discussed the risk for humans and their pet and livestock animals. Communication on and research into preventative measures to reduce damage were advised. In this early stage the recommendation was also that preventative measures should not be mandatory to apply for wolf damage compensation by the governments. The reason being that the presence of wolves was not predictable, and therefore the investment in prevention was judged as not yet reasonable. The advise was also that in order to receive damage compensation, proof that damage was done by a wolf or wolves, had to be delivered through DNA analyses. Governments started working on an actualisation en expansion of the first handbook, to include the expected wolves settlement. They used the experiences with monitoring wolves and damage that occurred in 2017 and 2018 and consulted NGO's whom had an interest in wolves management (administratively established in January 2019). The biggest changes with the first plan were: 1. Preventative measures could be subsidised by the governments, 2. After three years of establishment of wolves (single or packs), preventative measures should be in place in order to receive compensation for damage and 3. The intervention guidelines were expanded, in able to assess whether interventions to manage conflicts between people-wolves, dogs-wolves and life stock-wolves, should be undertaken. In 2023 an addendum appeared that updated certain subjects and in 2025 a revised version of the complete handbook is expected.

Wednesday 13:40 - 14:00

Evaluating 50 years of wolf protection in Slovakia

Robin Rigg

Co-authors: Ilpo Kojola, Ville Hallikainen, Mari Tikkinen, Marko Kübarsepp, Peep Männil, Samuli Heikkinen, Vesa Nivala

The Wolves Across Borders conference in 2025 coincides with the 50th anniversary of the first legal protection of wolves in Slovakia. Here, as elsewhere, the wolf was heavily persecuted as vermin. Although never eradicated, its numbers and range were substantially reduced. A turning point came in 1975, when the most destructive practices (trapping, poisoning, removing pups from dens) were banned and a closed season was introduced from spring to autumn. These measures, together with an increase in wild prey and expansion of forest cover, enabled wolf recovery. The challenge subsequently shifted from saving the wolf to learning to live with it.

Wolf recovery led to renewed concerns about attacks on livestock and competition for game. With successive changes of government policy, the pendulum has swung back and forth between traditionalism, protectionism and pragmatism, but the overall direction of travel is from persecution through co-occurrence to coexistence. Milestones along the way include ratification of the Bern Convention in 1994 (with a reservation allowing regulation of wolf numbers); accession to the EU in 2004 (with the wolf listed as 'protected' in Habitats Directive Annex V rather than 'strictly protected' in Annex IV); an infringement process in 2013; adoption of a national wolf management plan in 2016; and a ministerial decree adding the wolf to the national list of strictly protected species in 2021 despite opposition from farmers and hunters.

In the half century from 1975 to 2025, Slovakia has run the full gamut of wolf management policies from eradication to strict protection and almost everything in between. Many lessons can be learned, for example, it is possible to have wolf presence without high levels of damage where wild prey is abundant and prevention measures are used. Technical fixes such as LGDs and fencing, although they can reduce damage substantially, do not solve complex social conflicts. The management flexibility afforded by HD Annex V does not prevent conflicts and lethal control of wolves does not necessarily reduce damage.

Dialogue and negotiation can achieve progress, but compromises that would be acceptable to most people may be undone by politics, power dynamics and fundamentalist positions.

Wednesday 14:00 - 14:20

Transboundary cooperation on carnivore management and wildlife crime in Fennoscandia and southern Africa – challenges and opportunities

Maria Falkevik

Co-authors: Henrik Häggström

What kind of management system is needed when neither wildlife nor criminality cares about administrative borders? Wildlife crime in the Fennoscandia region is rising, threatening protected species like brown bears, lynx, wolves, and wolverines. The region also serves as a transit hub for organized wildlife crime, exacerbated by weak law enforcement and gaps in collaboration across borders. Despite existing legal frameworks at both the EU and national levels, law enforcement in the region faces significant challenges, including a lack of resources, legal loopholes, and strained relations between law enforcement and local communities. Wildlife crime often enjoys tacit support from local interest groups, complicating enforcement efforts.

This conflict is especially pronounced in managing large carnivores, where competing interests among stakeholders, combined with a lack of trust, hinder progress. Given these challenges, cross-border collaboration is essential to combat wildlife crime effectively in Fennoscandia. However, current enforcement efforts remain fragmented and lack the coordinated approaches needed to dismantle wildlife crime networks. Lessons from other countries and continents, e.g. Africa's Transfrontier Conservation Areas (TFCAs) provide valuable insights. In these African regions, cross-border cooperation has proven essential in managing shared ecosystems, coordinating antipoaching efforts, and ensuring sustainable wildlife conservation.

Drawing on these lessons, Nordic law enforcement agencies, and Conservation agencies could foster a similar level of collaboration in Fennoscandia, focusing on building robust cross-border partnerships between Norway, Sweden, and Finland and create lasting partnerships and build trust among law enforcement, conservation groups, and community leaders. There have been several initiatives in Sweden, Norway and Finland to strengthen national and regional law enforcement capacity, harmonize legal frameworks, and create a multi-agency approach to combat wildlife crime in close collaboration with local community groups. You will hear about some of them, what we have learned and what opportunities could be further explored.

Wednesday 14:20 - 14:40

Challenges and Opportunities in Delisting Carnivores: A Comparative Study of Gray Wolves in the US and EU

Temple Stoellinger

This presentation will examine the complex issues surrounding the delisting of carnivores, focusing on gray wolves in the United States under the Endangered Species Act and in Europe under the EU Habitats Directive. This comparative approach will provide insights into different legal frameworks and conservation strategies.

I plan to begin with an overview of carnivore conservation, highlighting the ecological importance of apex predators and the challenges they face in human-dominated landscapes. The gray wolf's history under both the ESA and the EU Habitats Directive will be outlined.

Key topics to be covered include:

1. Comparison of legal frameworks: ESA vs. EU Habitats Directive
 - Distinct population segment (DPS) policy in the US
 - Favorable conservation status concept in the EU
2. Controversies surrounding delisting approaches in both regions:
 - US: Reliance on core populations, interpretation of "significant portion of its range"
 - EU: Member state discretion, hunting as a management tool
3. Legal challenges to wolf delisting attempts in both jurisdictions
4. Alternative legal approaches to carnivore management:
 - Financial instruments to encourage tolerance
 - Use of 4(d) rules (US) and derogations (EU)
5. Comparative analysis of recovery planning:
 - Need for a national wolf recovery plan in the US
 - Pan-European management approaches

The presentation will highlight how both systems grapple with similar challenges:

- Defining recovery and favorable conservation status
- Managing human-wolf conflicts
- Balancing central authority with local/state management

By examining wolf conservation in both the US and EU, this presentation aims to identify best practices and potential areas for policy transfer between the two systems. It will conclude by proposing potential paths forward that draw on lessons from both sides of the Atlantic, emphasizing the need for adaptive management, stakeholder engagement, and science-based decision-making in carnivore conservation.

Parallel Presentations

Theme: Wolf Politics

Wednesday 14:40 - 15:00



Voter Directed Wolf Restoration to Colorado, USA.: A synopsis of the process to restore wolves and the status of gray wolves in Colorado

Eric Odell

Co-authors: Reid DeWalt, Brian Dreher, David Klute, Brenna Cassidy

In November 2020, voters of Colorado approved Proposition 114, which directed Colorado Parks and Wildlife to develop a plan to restore gray wolves to Western Colorado and to take the steps necessary to begin that restoration by December 31, 2023. This is the first time that voters have mandated the restoration of any wildlife species in the United States, and the first time that a state wildlife agency has conducted wolf restoration. The process to develop the plan involved substantial public participation and the development of a Stakeholder Advisory and a Technical Working Group to provide the best social, political and scientific principles upon which to base the plan.

The Colorado Wolf Restoration and Management Plan describes the process with which wolves will be restored to Colorado, the manner in which confirmed livestock depredation will be compensated, tools to minimize conflict and state recovery goals and other details pertinent to the management of the species. The Plan was presented to the Colorado Parks and Wildlife Commission in May 2023, and it was passed by a unanimous vote.

According to the Plan, wolves are to be restored to Colorado over a period of 3-5 year, translocating 10-15 wolves per year. Beginning in mid-December 2023, CPW worked to capture 10 wolves in eastern Oregon for transport to Colorado. All 10 animals were successfully reintroduced by the December 31 deadline. Wolves are monitored using GPS collars, trail cameras and other methods. In spring of 2024, the first documented litter of pups from reintroduced wolves was documented.

There has been documented wolf-livestock conflict, and this has proven to be a very challenging aspect of wolf management in the state. CPW worked with the US Fish and Wildlife Service to develop a rule to relax some of the management restrictions that would otherwise exist for a federally listed species. Wolves in Colorado will continue to be monitored, and plans are underway for the next capture and translocation season, which will occur Winter 2024-25. This presentation will provide an overview of the process to restore wolves to Colorado, and to provide an update on their status.

Wednesday 13:00 - 13:20

Predation of wolves on domestic pet dogs: a new frontier of the humans and wolves relationship in North-East Italy

Stefano Filacorda

Co-authors: Daniela Romanin, Aexandra Mareschi, Nicola Cesco, Leandro Dreon, Roberto Bullo, Enrico Bortolotto Andrea Vendramin et al.

The presence of wolves in urbanized and semi-natural areas and the predation of domestic animals, especially against pet dogs, are critical elements in the relationship between this species and humans. In Friuli Venezia Giulia, North East of Italy , on the border with Italy and Austria , from May 2023 to August 2024, more than 30 cases of predation by wolves on pet dogs have been reported and partly documented. The predations have involved pet dogs of mixed and pure breed, small and medium size , both at night and during the day , even in the presence of the owner, especially at scattered homes or during walks in agricultural and natural areas. The number of wolves observed during predation ranged from 1 to 2 . The area, 173 km² , affected by predation has had variations during the study period and the intensity of predation has varied according to the seasons: The areas involved foothills with the alternation of extensive agricultural components to natural and semi-natural areas and small countries and isolated house. Predation behaviour and the ecological context, both in terms of natural preys, co-presence with jackals and environmental characteristics, and social context, and perception of the problem, is discussed and the management plan presented

Wednesday 13:20 - 13:40

Shepherds at the Crossroads: Integrating Herd Protection and Landscape Management in South Tyrol

Benjamin Kostner

Shepherds are at the heart of herd protection, deeply embedded in the cultural heritage of many regions, including South Tyrol. However, despite their cultural significance and growing societal support, the economic and legal framework surrounding their profession remains inadequate. Beyond their pivotal role in herd protection, shepherds can offer immense ecological value when equipped with proper knowledge of local biodiversity, botany, and experience in managed grazing. This active shepherding can significantly enhance landscape maintenance and contribute to ecological goals such as preventing habitat loss due to overgrowth, invasive neophytes and shrub encroachment while providing effective herd protection.

In South Tyrol, the coexistence with wolves faces considerable challenges due to low acceptance and resistance among the local population. At the same time, the region is in danger of losing valuable and unique habitats if extensive grazing practices continue to decline. Together with policymakers and the administration the LIFEstockProtect project is working towards introducing a concept of contract-based nature conservation into South Tyrol, which could provide a pathway for the sustainable financing and professionalization of the shepherding profession. This system aims at a win-win scenario, benefiting both conservation efforts and agriculture by offering new sources of income for ecosystem services, which have so far gone unrewarded.

This presentation will explore practical case studies, challenges, and perspectives from the field, illustrating how reviving and professionalizing shepherding not only supports herd protection but also enhances ecosystem management. It will highlight how shepherds, if given the right tools and resources, can contribute to both biodiversity conservation and sustainable agriculture in wolf-inhabited areas. By fostering professional development within the shepherding sector, we can promote a more resilient coexistence between humans, livestock, and large carnivores like the wolf.

Wednesday 13:40 - 14:00

Testing a conservation compromise: Has public wolf hunting in Slovakia reduced livestock losses?

Miroslav Kutal

Co-authors: Martin Duľa, Alisa Royer Selivanova, José Vicente López-Bao

Variation in the legal status and management of wolves (*Canis lupus*) across EU Member States provides a good opportunity to test the effectiveness of different practices to reduce livestock losses. This opportunity for testing is particularly useful for lethal interventions, as they are among the most controversial actions within the large carnivore management toolbox and the European Commission suggested decreasing the wolf protection in the Bern Convention. We aimed to test a conservation compromise adopted in Slovakia, based on a public wolf-hunting scheme and annual hunting quotas between 2014 and 2019, and partially justified to reduce livestock losses. We assessed whether this hunting scheme influenced livestock depredation levels (at the district level). Wolves in the area fed mainly on wild ungulates (98.9% of consumed biomass). While domestic sheep comprised only 0.5% of the diet, they were dominant among the reported livestock killed by wolves (91.1%). Using two different approaches, we did not observe a relationship between the number of killed wolves and livestock losses. Alternatively, a negative relationship between wild prey biomass and livestock losses was found. Although the previous justification for this conservation compromise to reduce livestock losses is no longer valid, the populist Slovak government has renewed the hunting of wolves since 2025.

Wednesday 14:00 - 14:20

Spatio-temporal dynamics of attacks around deaths of wolves: A statistical assessment of lethal control efficiency in France

Oksana Grente

Co-authors: Thomas Opitz, Christophe Duchamp, Nolwenn Drouet-Hoguet, Simon Chamailé-Jammes and Olivier Gimenez

Evaluating the efficiency of lethal control of wolves to reduce their attacks on livestock is important given the controversy surrounding this measure. We used retrospective data over 10 years and an intra-site comparison approach to evaluate the effects of lethal control on the distribution of attack intensities in the French Alps. We analyzed 278 legal killings of wolves between 2011 and 2020 and the 6110 attacks that occurred during a period of ± 90 days and within 10 km around these lethal removals. This large number of attacks allowed us to perform an original framework that combined both continuous spatial and temporal scales through 3D kernel estimation. We also controlled the analysis for livestock presence, and explored different analysis subsets of removals in relation to their locations, dates and proximity to other removals. This statistical method provided an efficient visualization of attack intensity spatio-temporal distribution before and after removals. A decrease of the intensity of attacks was the most common result after the lethal removals of wolves. However, this outcome was not systematic for all subsets and depended on the scale of the analysis. Thus, for about half of the subsets, the greater the analysis scale, the lesser the decrease. In addition, attacks tended to persist after removals while showing frequent interruptions in time after but also before removals. We also observed localized positive trends of attack intensities at varying distances from removals after they occurred. To summarize, our results showed that considering the scale of the analysis is crucial and that effects should be analyzed separately for each local context. As a next step, we recommend to move forward from patterns to mechanisms by linking the effects of lethal control on wolves to their effects on attacks through analysis of fine-scaled data on wolves and livestock.

Wednesday 14:20 - 14:40

The Impact of Parental Loss on the Fate of Wolf Family Groups – Implications for Species Conservation and Population Management

Wojciech Śmietana

Understanding the effects of social structure disruptions in wolves, particularly due to mortality caused by humans, is crucial for effectively managing this species. Of particular importance is the impact of parental loss on the stability and fate of wolf family groups. My research, conducted in the Bieszczady Mountains (eastern Polish Carpathians) between 2004 and 2018, employed both telemetry and genetic analysis to track and study wolf population. Kinship analysis, based on non-invasive genetic sampling, provided insights into the spatial organization of the population and enabled a detailed understanding of the dynamics within several family groups. In the studied groups, the loss of at least one parental individual was observed. When the breeding male was lost, he was typically replaced by an unrelated outsider. However, the loss of both parents led to the eventual disintegration of the family group. This breakdown was not immediate; initially, the offspring remained on the family's territory, but this phase lasted only for a relatively short period. Family group that retained both parents had a high reproductive success - on average 5.1 pups surveyed until the beginning of winter. In one case, I observed a family group consisting of two breeding pairs, where the second pair was formed by the daughter of the first pair and an unrelated male. In another instance, within a group that had lost its parental pair, one individual became habituated to human presence and food, leading to its eventual elimination after it attacked children. These findings suggest that non-selective reducing wolf numbers in saturated populations, may not be the most relevant management strategy. The results call for alternative approaches to population management that account for the social dynamics, structure of wolf groups and conflicts with humans.

Wednesday 14:40 - 15:00

Wolves on the Scandinavian Peninsula: crossborder directional and long-range dispersals as the main depredation challenges

Petter Wabakken

Co-authors: A. Eriksen, Ø. Flagstad, O. Liberg, E. Maartmann, K. Nordli, H. Sand et al.

Since the reestablishment of the crossborder wolf population on the Scandinavia Peninsula (Sweden and Norway) during the early 1980s, wolf-human coexistence has been challenging, mostly caused by wolf depredation on livestock and domestic dogs, but also people's fear, and competition between hunters and wolves for moose, i.e. the main prey of Scandinavian wolves. To reduce conflicts, knowledge about wolf dispersal patterns and the potential of livestock depredation by wolves is essential for management policies. We have analyzed the dispersal patterns of Scandinavian wolves born in 1) fully Norwegian territories associated with today's wolf zone, 2) crossborder territories, and 3) Swedish territories, respectively. Based on the dispersal patterns, we also analyzed wolf occurrence and potential for livestock depredation in Norway, both on a national and regional levels. In Norway, the main wolf-livestock conflict was depredation on free-ranging domestic sheep. For the 38-year-period studied (1986-2023), we concluded that young, solitary, dispersing wolves posed the greatest potential risk and damage to free-ranging sheep in Norway. Moreover, confirm that the great majority of the wolves immigrating to potential conflict areas in Southern Norway were born in Sweden. This is particularly true for those immigrating into Southern Norway outside the Norwegian wolf zone region; among 66 wolves, 60 were Swedish-born, five were born in crossborder territories, and one were from the 77 wolf litters registered in fully Norwegian wolf territories associated with the wolf zone. Wolves from fully Norwegian territories dispersed east into neighboring countries, i.e. Sweden, Finland and Russia. Only four (6%) out of 65 wolves which during a 27-year period were culled in Norway in direct association with attacks on livestock during the grazing season had dispersed from a fully Norwegian wolf territory associated with the Norwegian wolf zone. We thereby conclude that the number of litters in fully Norwegian wolf territories seems to be of minimal importance for the extent of depredation on free-ranging sheep in Southern Norway as long as the reproductions happen in association with the wolf zone.

Thursday 13:20 - 13:40



The effective size of European wolf populations and its implications for policy and management

Joachim Mergeay

The effective population size is a pivotal statistic in conservation: it provides information on how populations behave genetically and how vulnerable they are to inbreeding, and on evolutionary potential. The convention on biological diversity has recently adopted the threshold value of $N_e=500$ to define sustainable populations, but what does this really mean for wolf populations in Europe, and how should this influence European wolf policy and management?

Few species have been studied genetically so intensively as the grey wolf in Europe: genetic data are available across two to sometimes four decades for several populations and across thousands of individuals, and increasingly such data are publicly available. This abundance of data allows us to calculate accurately the genetically effective size of these populations, compare this to other monitoring data and provide non-genetic shortcuts ("proxies") that can be easily used by management and policy to guide decision making. Here I provide an overview of effective sizes for European wolf populations, with results based on empirical data and proxies, and link this to the European Habitats Directive, showcasing implications for the favourable conservation status.



Wolf population size estimation: Challenges and insights from Scandinavia and France

Cyril Milleret

Co-authors: Christophe Duchamp, Pierre Dupont, Jean-Michel Vandel, Richard Bischof, Olivier Gimenez

Population size is a key metric for the management and conservation of large carnivores. Although population size estimation of elusive carnivores, such as the wolf, has benefited from the development of efficient monitoring and statistical methods, it often remains financially costly, as well as logistically and analytically challenging. Given the controversial status of the wolf, population size is also often at the core of acrimonious public and political debates. In that context, managers and researchers often have to navigate a complex and hostile environment while attempting to estimate, but also communicate, wolf population size estimates. After describing the wolf monitoring and population size estimation in both Scandinavia and France, we will summarize the progress and issues encountered, but also discuss possible paths forward.

Thursday 14:00 - 14:20



Using a stage-based life cycle implementation to model population viability of European wolves

Florian Kunz

Co-authors: Jennifer Hatlauf, Paul Griesberger, Frederik Sachser, Klaus Hackländer

Population viability analyses (PVA) are essential tools for informing management decisions, particularly for species with complex social structures such as the Grey Wolf (*Canis lupus*). PVA often rely on age-based models, yet stage-based approaches that account for an individual's social status can provide more accurate predictions for species with more complex social structures. In this study, we developed a stage-based life cycle model for European wolves (with the stages pups, yearlings, subdominants, dispersers and territorial breeding individuals) to be implemented in the Vortex software. We used the German part of the Central European wolf population as a case study, as the population is currently rapidly expanding from a recent bottleneck after the re-colonization of Germany. Hence, PVA are especially important to predict population trajectory, extinction risk and genetic integrity. We applied data from the monitoring program to model different population trajectories, extinction risks, and genetic diversity under various scenarios by including recent life history parameters and recorded genotypes.

Our findings highlight the impact of mortality rates at different life stages on overall population growth. High mortality among pups and dispersers led to negative growth and elevated extinction risk, while mortality among yearlings and subdominants slowed growth but did not result in similar population declines. As expected, high mortality among territorial (adult) individuals had the highest impact on population trajectory. Despite being a relatively young population with a recent bottleneck, we did not find any negative effects on genetic diversity as long as the population is not held at low population numbers. Hence, we conclude that the initial population in 2015 was sufficiently diverse

Within our study, we present a stage-based life cycle model for European wolves and describe how to adapt the Vortex software from age-based to stage-based. As such, we promote a flexible, easy-to-use framework that can be adapted for PVA in other wolf populations and similar social species. By integrating stage-based approaches, we demonstrate the importance of considering social structures in conservation models, thereby improving predictions of population dynamics and the effectiveness of management strategies.

Parallel Presentations

Theme: Population Management

Thursday 14:20 - 14:40



Wolves on the Move: Investigating Dispersal and Human-Caused Mortality in a Social Carnivore

Kathleen Petersen

Idaho Cooperative Fish and Wildlife Research Unit, Department of Fish and Wildlife Sciences, University of Idaho

Co-authors: David E. Ausband

Dispersal is a vital demographic process for populations to maintain genetic diversity and persist over time. In cooperative breeding species like the gray wolf (*Canis lupus*), individuals must decide whether to remain in their natal territory to assist kin or disperse far away in search of outside breeding opportunities. We are investigating how human-caused mortality (hunting and trapping) impacts wolf dispersal patterns in Idaho, USA. Idaho's wolves offer a unique opportunity to study dispersal dynamics in a cooperative breeder, as intense harvest pressures drive them to immigrate and fill vacancies created by harvest-related mortality. Our research seeks to address key questions regarding wolf dispersal: What drives their departure, where they disperse, and why they select specific destinations. We want to understand how human-caused mortality influences wolf immigration and investigate the ecological and demographic drivers that predict dispersal. Specifically, we want to evaluate how harvest intensity, sex, prey biomass, and wolf abundance influence dispersal patterns across two spatial scales. First, we developed a novel method to identify dispersers and calculate genetic metrics using DNA collected from wolves harvested between 2017 and 2022. We identified 75 dispersers out of 325 wolves, with a mean dispersal distance of 100 km. Second, we used scat samples collected from 2008 - 2024 to estimate dispersal dynamics within packs. We explored the relationship among familial pedigrees and assessed how intra-pack social dynamics, such as breeder turnover, influence dispersal decisions, and examined how pack size, relatedness, and harvest intensity affect these decisions. We successfully collected 966 samples over 16 years, and have identified 26 dispersers (10 females, 14 males, 2 unknown). Using both data streams, we will build a predictive dispersal model to understand how harvest impacts both landscape-scale movements and localized dispersal. This research aims to enhance our understanding of wolf population dynamics and help inform wolf management and conservation.

Thursday 14:40 - 15:00



Current Situation in Switzerland and declaration of intent.

Inès Moreno

Co-authors: Florin Kunz, Inès Moreno, Sven Buchmann & Fridolin Zimmermann

In countries like Switzerland, long-term coexistence with wolves can only be achieved with management aimed at mitigating the negative interactions between concerned interest groups and the wolf. To achieve this, various lethal and non-lethal management measures (e.g. herd protection, deterrence, communication) are applied. Since 1 December 2023, wolf packs can be regulated proactively in Switzerland with following envisaged aims: i) to prevent damage to livestock, ii) a danger to humans and iii) an excessive decline in the regional population of wild ungulates. Various measures are envisaged, such as the elimination of 1/2 or 2/3 of the pups, the elimination of a particularly harmful reproducer or the complete elimination of the pack if certain conditions are met. However, there are few studies examining the effectiveness of these management measures, whereas such evaluations are essential for evidence-based and adaptive management.

We now have the opportunity to monitor and analyse the effects of various management measures. Our aim is to study the effects of lethal wolf management on: i) damage to livestock, ii) wolf population trends and pack stability, and iii) social acceptance of the wolf. In 2025 we will present the current situation in Switzerland, the analyses from the first year, but obviously cannot present long term analyses. Our evaluation however, should pave the way towards an evidence management of the wolf in Switzerland and promote long-term coexistence between wolves and humans in a multi-use landscape.

Thursday 13:20 - 13:40

Carnivore exclosures to protect sheep in the boreal forest affect the area use of moose

Barbara Zimmermann

Affiliation

Co-authors: Alessandro Forti, Pierre Lissillour, Ane Eriksen, Petter Wabakken, Benoit Cerjak, Carla Campon, Sona Motlova

Fences fragment wildlife habitat and can hinder the movement of other than the target species only. We studied potential effects of fences built to protect sheep (*Ovis aries*) from depredation on the area use and behavior of wild cervids. In 2008, two carnivore exclosures encompassing 11 km² and 22 km² of boreal forest, respectively, were set up inside Norway's wolf (*Canis lupus*) management zone. The fences consisted of 6-10 powered steel wire strands with the top strand at 135 cm. While the strands of the smaller exclosure remained mounted year round, but unpowered during winter, the strands of the larger exclosure were demounted each year after grazing season. We used this semi-experimental setting to compare densities of moose (*Alces alces*) fecal pellet groups (FPG) inside and outside of the exclosures during winter 2021-2022 and summer 2022. We also mounted 24 camera traps along the fence of the smaller exclosure to film the behavior of cervids.

Our findings give support to a potential fragmentation effect: during winter, moose FPG density was double as high outside than inside of the permanently mounted fence, while it was equal inside and outside of the exclosure with demounted strands. On just a few of all moose videos did the animals actually cross the fence, they mostly walked along or explored it. During grazing season, moose FPG density was equal or higher inside than outside of the exclosures. We hypothesize that moose used the exclosures as refuge to avoid predation of neonates by large carnivores. This hypothesis was supported by videos showing how moose mothers left their calves behind inside the fence while jumping over to forage outside. We also found that moose used forage-rich habitat to a lesser extent inside than outside of the exclosures, maybe due to interference competition with sheep. This case study is a first approach to increase our understanding of potential effects of livestock protection fences on other wildlife species. Surprisingly, even moose, a large-bodied species, seemed to be affected by the physical fence, the presence of livestock and the absence of carnivores inside the exclosures.

Thursday 13:40 - 14:00

Effectiveness of strobe light as a potential deterrent stimulus for wolves

Annika Held

Co-authors: Marianne Heberlein, Lina Oberliessen, Katja Trinkaus, Océane Schmitt, David Wewetzer, Melissa Vanderheyden, Uta König-von Borstel

The growing wolf population in Europe poses increasing challenges for livestock farmers. One way of enabling peaceful coexistence between pastured livestock and wolves would be the use of effective deterrence measures to scare the wolf away before it even explores the pasture fence, so that the wolf is prevented from discovering opportunities to pass through.

Due to the fact that canids heavily rely on vision for hunting and that they have more sensitive eyes than humans, a strobe light seems to be a suitable candidate for deterring them. The flickering light is assumed to cause short-term glare and discomfort, which should interfere with focusing on potential prey.

The aim of the study was to test the hypothesis that strobe light makes the wolves leave the feeding site and effectively prevents wolves from eating palatable food.

We tested 11 captive wolves kept in 5 groups (group sizes: 2-3) at the WolfScienceCenter Ernstbrunn, Austria. We used a spotlight with a brightness of 8000 lumen, which produced 5 seconds of flashes at 20 Hz after activation via motion sensor, if a wolf passed by. After a control week of feeding wolves with dead chicks at a designated corner within their enclosure each evening at dawn, a test week followed, with the strobe light activated and otherwise identical conditions.

Against our expectations, linear mixed-effects model analysis showed that strobe light has no effect on the time until consumption of the chicks (control vs. test: $-6.8 \text{ s} \pm 5.9 \text{ s}$; $t=1.15$; $p=0.31$), amount of eaten chicks (control vs. test: 0.0 ± 0.2 ; $t=0.02$; $p=0.98$) or the time wolves spent in the testing area (control vs. test: $-12.6 \text{ s} \pm 15.6 \text{ s}$; $t=-0.81$; $p=0.46$). Wolves showed no signs of discomfort during exposure to the deterrent. The wolves in our study were likely accustomed to light in general and were therefore able to tolerate any potential short-term glare or discomfort caused by the strobe light. It can be assumed that, aside from initial neophobia, wild wolves would respond similarly to this stimulus. In conclusion, strobe lights cannot be recommended as an effective deterrent for wolves.

Thursday 14:00- 14:20

Free-ranging cattle and the return of the wolf; implications for conservation management

Chris Smit

Co-authors: Tom Tijlma

Grazing with free-ranging cattle is a much applied management strategy in nature areas in Western-Europe. The recent return of the wolf in these areas raises urgent new questions to conservation managers. At the moment, there is very little information about how free-ranging cattle respond to the re-appearance of wolves. To what extent are these free-ranging herds capable of defending themselves (and their young) against wolves? To what degree can they develop this behavior, and how quickly can they adapt to this new situation? How does social structure or group size play a role in this, and how do these behaviors differ between different breeds? To what extent do the effects of wolves on natural grazing have consequences for vegetation development and achieving nature management goals, also in the context of opening areas to the public (public safety)? To address these questions, we set-up a study to investigate the behavior of free-ranging cattle in areas where wolves have recently returned. We use a network of wildlife cameras to capture behavior during and after cattle-wolf interactions, and use GPS collars to study habitat use of cattle over the season in relation to wolf presence. Here, we report on the behavioral responses of free-ranging Galloway cattle in a natural area in Drenthe following various recorded wolf encounters between spring 2023-2024, the first caught on wildlife cameras in the Netherlands. These well-documented wolf-cattle interactions show promising information as they highlight anti-predator behaviors from an unexperienced cattle breed, all within a year of the wolves' return. We broadly discuss the relevance of these findings for grazing management, including selection for breeds, anti-predator behaviors, and impact of herd structure and size, and we provide avenues for future studies to address current knowledge gaps.

Parallel Presentations

Theme: Preventative Measures

Thursday 14:20 - 14:40

TBC

Parallel Presentations

Thursday 14:40 - 15:00

Evaluating the non-lethal effects of wolves on cattle herds in the Swiss Jura mountains

Philippine Surer

Affiliation

Co-authors: Alex Del Fante, Cécile Weber, Nina Gerber, Florin Kunz, Erik Versluijs, Philippe Christe & Fridolin Zimmermann

Wolves have significantly expanded their range in Europe over recent decades, leading to increased livestock depredations and negative human-wildlife interactions. In Switzerland, while most damages caused by wolves concern free-grazing sheep and goats, certain areas are recently emerging as hotspots for cattle depredations, and given the importance of cattle husbandry, achieving low-conflict coexistence is crucial for the future of wolves in the country. Beyond direct mortality, wolves can induce behavioral and physiological changes in their prey (i.e. risk effect). These non-lethal effects can result in changes in behaviors, such as increased vigilance, changes in foraging time budget, shifts in group structure and dynamics, and habitat selection. So far, most studies have focused on how wild preys respond to the return of the large carnivore. However, livestock responses remain poorly understood and require further investigations.

This study aims to assess how cattle respond to the presence of wolves by comparing their habitat preferences, behavioral patterns and physiological stress in two study areas within the Swiss Jura Mountains, each experiencing different levels of wolf presence (i.e. resident packs vs sporadic solitary wolves). In each study area, we selected 5 herds and fitted 5 cattle per herd with GPS and accelerometer sensors from May to October 2024. We analyzed cattle habitat selection within the fenced pasture using step-selection analysis incorporating variables such as forest cover, distance to forest edge, forest roads, water sources and food supplements. We conducted behavioral observations and used random forest models to classify behaviors using accelerometry signatures and predicted behaviors throughout the study period. Additionally, we assessed baseline levels of glucocorticoid metabolites by measuring concentrations in feces over 5 consecutive days in all 10 herds simultaneously. Overall, we evaluated whether heifers expressed differences in habitat selection, frequency of specific behaviors and glucocorticoid metabolites levels between the two study areas. Our research provides a first evaluation of the costs of the non-lethal effects of wolves on cattle herds in the Swiss Jura Mountains. Measuring such effects could help developing methods for compensating productivity losses experienced by livestock owner, supporting the long-term coexistence of wolves and cattle farming in Switzerland.

Thursday 13:20 - 13:40

FERUS' Pastoraloup program: supporting appeased wolf coexistence

Catherine Frizat

Co-authors: Fannie Mallet

French nonprofit FERUS (named after the Latin word for “wild”) was founded in 1993 to support and promote the protection and conservation of Europe’s large predators (wolf, bear, and lynx) and to improve their coexistence with human activities like farming.

Since its early days FERUS has realized that the main key to achieving coexistence was to establish dialogue and build relationships between wolf advocates and the farming community. Aware of the challenges faced by farmers in the presence of wolves, a volunteer-based support program named Pastoraloup was established in 1999 to help farmers and shepherds implement protection methods. FERUS recruits candidates sensitized to the pastoralism/wolf theme among its members/supporters. A mandatory 5-day training camp takes place four times a year for the sixty-four selected candidates (16 per camp). Set in the heart of wolf country on a sheep farm in the French Alps, the training is a time of encounter and exchange between different stakeholders involved with the “wolf issue”.

Every year between March and November, trained volunteers are then sent on missions with FERUS’ farming partners in the field; lasting one to several weeks each mission consists mainly of night (and/or day) surveillance. Immersion is total and participants must fully embrace the shepherd’s way of life - hardships and joys.

In the past 25 years over 800 volunteers and at least 120 different farmers have participated in the program, with volunteers contributing more than 14 000 nights/days of surveillance in approximately 972 missions. There hasn’t been any predation 99% of the time in their presence.

Beyond its measurable benefits Pastoraloup’s value also resides in the human experience it generates. Indeed, one of the program’s main strengths is found in the human relationships it forges. In this space of dialogue and openness, it is easier to overcome the usual “pro-wolf and anti-wolf” divide, and to work together towards the use of fair and durable solutions - indispensable prerequisites to appeased coexistence.

In addition to highlighting Pastoraloup’s positive results, our presentation will also examine the recent creation of an emergency intervention team in the Jura region to address cattle predation.

Thursday 13:40 - 14:00

Living with wolves: A new framework to enhance coexistence with wolves by studying livestock behaviours

Erik Verlsuijs

Co-authors: Barbara Zimmermann, Anna Hessle, Morten Tofastrud

Coexisting with wolves brings multifaceted societal challenges of high complexity, such as livestock losses due to depredation. Countries often support farmers with economic compensation of livestock losses. However, farmers affected by repeated depredation events might not only suffer economically, but also emotionally. The resulting increase in stress and worry can impact their daily life, which in turn can negatively effect animal welfare. Furthermore, repeated livestock depredation will negatively effect animal welfare, as individuals which are not attacked who might have higher stress levels. In the meantime, many studies related to wolf management and coexistence are focussing directly on wolf behaviour and preventive measures to alleviate conflicts. These efforts are of great importance. However, in addition to this, we propose a new framework for studying livestock behaviours using precision livestock farming (PLF) techniques to enhance coexistence with wolves. Within livestock farming there is a strong increase in technological applications to measure and monitor animal health, with the main focus on increasing production and maintaining high animal welfare standards. These PLF techniques can reach further than only be used in highly modernized barns. One such example is the use of accelerometers, i.e. activity sensors from which behaviours or certain activity states can be derived. We have in an earlier study successfully used accelerometers in free-ranging cattle in large extensive forest areas in Norway to study cattle behaviours at high spatio-temporal resolution. Based on these experiences, we propose creating a broader network of cattle behaviour studies that consider different herd compositions, pasture types, breeds, ages, and management practices. Therefore, creating a wide knowledge base about breed specific livestock behaviours and responses towards wolf presence gives the opportunity to 1) inform farmers and suggest adjustments of management practices in specific situations, such as changing to breeds or herd compositions with a lower probability of depredation. And 2) developing tools to better monitor livestock behaviour, for example to detect sudden changes in behaviour suggesting towards wolf presence. In this presentation we will outline this interdisciplinary framework, discuss the technology and methods, and use a practical case to show how this might be implemented.

Thursday 14:00 - 14:20

Of wolves navigating a human landscape of fear

Katharina Kasper

Co-authors: Elise Say-Sallaz, Maciej Szewczyk, Paulina A. Szafrńska, Marcin Churski, Michael Clinchy, Liana Y. Zanette et al.

After a long period of persecution, wolves are recolonizing Europe's human-dominated landscapes. Previous studies from areas with low human presence or ongoing human risk find wolves to avoid humans. However, close human-wolf encounters are increasingly reported in areas where wolves are strictly protected and raise concerns about the potential habituation towards humans and dogs. We tested the behavioral responses of wolves to human, dog, and control sounds in a playback experiment, using speaker-paired camera-traps in an area without legal wolf hunting and intense human activities – the Tuchola Forest in Poland. The frequency of running (indicative of fear) and proportion of displayed head-lowering (representative of inattentiveness) explained most of the variation in behavioral responses to playbacks. Wolves ran significantly more often from humans than controls, while dog playbacks did not differ from either human or control playback. However, we found that wolves strongly avoid encounters with humans and dogs on a diel basis. After a decade of experiencing strict protection, instead of losing their fear, wolves navigate sharing their habitat on a very fine scale. Fear of humans is widely found in large carnivores and might pose an alternative coexistence strategy to habituation.

Thursday 14:20 - 14:40

The effect of diseases on the depredation of calves by wolves

Uri Arad

Co-authors: Dror Ben-Ami

The depredation of livestock in the Golan Heights causes a substantial economic loss to ranchers. Historically, wolf predation of mostly calves has led to both legal culling measures and illegal poisoning by ranchers, resulting in detrimental effects to the local ecosystem, including the near extinction of the Griffon Vulture. Various factors influence the susceptibility of herds to predation, including ecosystem stability, wolf pack dynamics, anti-predation strategies (guardian dogs, fences, carcass removal), herd health and more. However, little is understood about the health status of calves prior to predation, including the potential impact of diseases or other non-predatory factors. We evaluated long-term herd health records of a ranch in the Golan Heights. Utilizing high-resolution accelerometry in the same ranch, we conducted physiological observations on a free-ranging herd of 120 calves over three months in rugged, grassy terrain. To assess predator dynamics, we placed camera traps around the grazing areas to monitor predator presence, and at carcasses to observe predator interactions. Our results show that a significant loss of livestock and disappearance is due to unknown causes, and that the rate of livestock loss is similar to internationally observed rates. We found a negative correlation between the physiological well-being of the herd and decreased predation rates, despite the high presence of predators including wolves, jackals and hyaenas, in the study site. Livestock guardian dogs displaced predators at carcasses. These findings underscore the importance of herd health, in conjunction with non-lethal depredation mitigation, to mitigating predation risk and livestock loss, and inform future strategies for livestock management in wolf-inhabited regions.

Thursday 14:40 - 15:00

Anticipating wolf comeback to Western France

Hadrien Raggenbass

Co-authors: Jean-Jacques Blanchon, Fabien Quétier, Laure Kloetzer, Olivier Thaler, Jean-Marc Landry, Eric Guttierrez

Wolves have expanded from the Alps to Western France, emerging in lowland environments. This is generating an expansion of real and perceived conflicts with wolves, in a highly polarized public opinion that ranges from fascination to loathing. This is accentuated by widespread ignorance about the specie's behavior, in part due to the lack of empirical field research and posturing by politicians and local representatives over the past 35 years since wolf's comeback to France. Government support for livestock breeders to adopt appropriate protection (e.g. fences, protection dogs) can take several years to be enacted as repeated successful predation events on livestock need to have occurred before the necessary administrative processes are put in place. This means predation pressure can grow largely unimpeded in the first few years of wolves settling into a new area, with obvious financial and psychological consequences for those affected, and open defiance at the State's incapacity to act. That's a recipe for perpetuating conflict.

In partnership with a willing group of forward-thinking farmers in southwestern France, we are experimenting with involving a coalition of local people in detecting dispersing wolves, and supporting farmers in their preparation to the challenge of wolf comeback. Building on earlier experiences in the Alps and Limousin since 2018, we address the challenge of very low wolf densities and temporary presence by using speculative tracking (as defined by Liebenberg) whereby Hypotheses are formulated on wolf presence and movement pathways to increase the likelihood of finding reliable indices (categorized using SCALP criteria). Speculative tracking facilitates the subsequent use of camera-trapping and genetic analyses of scat and other biological samples.

To increase our capacity to cover large areas with low densities of indices, we train actively volunteer farmers, landowners, hunters and walkers. Their involvement is based on a charter with technical criteria as well as a shared vision around the coexistence of extensive livestock rearing and wolves in the landscape. This approach aims to help bring together diverse rural communities around vulnerable farmers before traumatic depredation events, together with poor knowledge or disinformation, become unsolvable conflicts.

Thursday 13:20 - 13:40

Visualisation an exploration of complex multi-generational pedigrees

Gregor Simčič

Co-authors: Tomaž Skrbinšek

The growing availability of genetic data has revolutionized our understanding of wolf population development and dynamics. Population monitoring schemes in many countries have enabled collection of genetic data from wild-living animals through multiple generations, allowing a deeper insight into long-term population trends. Reconstruction of pedigrees from this data has emerged as a powerful tool for investigating key aspects of wolf populations, including demography, pack structure, and reproductive behavior. However, managing and interpreting such large datasets covering multiple generations remains challenging, especially when attempting to track the spatial and temporal dynamics of many wolf packs and their interactions over time.

We introduce WildPedigreeExploreR (wpeR), an R package designed to streamline analysis and visualization of wild pedigree data. wpeR supports integration of reconstructed pedigrees with field data, allowing researchers to add spatial and temporal dimensions to their pedigree analyses, providing critical insights into population structure and dynamics.

The key features include organizing individuals into families, generating detailed temporal plots of pedigree relationships, and creating related spatial datasets that can be either directly visualized or exported for use in a Geographic Information System (GIS). wpeR is designed to be flexible and interoperable with other R packages and GIS, facilitating further analyses and graphical representations. It provides a scalable solution for handling pedigrees, from simple one-generation datasets to complex multi-generational data. Visualizations produced by the package help users intuitively visualize development of complex pedigrees across multiple generations at the landscape scale. Through simplified integration of spatial and temporal data, wpeR helps researchers to efficiently explore and interpret complex temporal and spatial dynamics of wild populations. These interpretations can provide critical insights that inform management decisions and aid in the development of effective conservation and management strategies.

Besides demonstrating the core functionalities of wpeR, we will showcase its application using 12 years of intensive genetic monitoring data from Slovenia, and highlight the potential of our approach to advance studies on population dynamics, ethology, ecology, and conservation of wolves.

Thursday 13:40 - 14:00

Does Genetic Admixture Affect Ghost Wolf Ecology?

Lilian Heinzl

Co-authors: Q. Angus, Dr. J. Olin, Dr. B. vonHoldt, and Dr. K. Brzeski

Admixed genomes, or genomes that contain components of multiple genetic lineages, can be a source for evolutionary and ecological change since they can serve as a reservoir of genetic and phenotypic novelty. One such instance is a population of coyotes (*Canis latrans*) along the Gulf Coast region of the United States that have substantial admixture with critically endangered red wolves (*C. rufus*). These species interbred before red wolves were thought to be extirpated from the wild in the 1980s. Descendants of those admixture individuals now retain ghost alleles, unique red wolf genetic diversity only represented in admixed canids, and are thus colloquially called ghost wolves. We seek to identify how red wolf ancestry may impact the ecological role of genetically admixed ghost wolves. Red wolf ancestry is positively associated with larger body size, which may influence diets of individuals and packs. We hypothesize that individuals with more red wolf ancestry feed at higher trophic levels and consume larger-bodied prey species, like deer (*Odocoileus virginianus*), than individuals with less red wolf ancestry. To test this, we are conducting a non-invasive study to: 1) determine individual ancestry by optimizing a specialized genotyping panel via Genotyping-in-the-Thousands sequencing, 2) estimate diet content with DNA metabarcoding, and 3) assess the ecological niche with stable isotope analysis of carbon and nitrogen of ghost wolves in multiple locations in southeast Texas and southwest Louisiana, USA. We collected canid scat samples from a variety of habitats in private ranches, federally managed wildlife refuges, and densely populated urban areas. We aimed to quantify seasonal diet variation by sampling in summer 2023 and winter 2024. Our results from these three approaches will be combined in a mixed model to assess how admixture affects the ecological role of ghost wolves.

Thursday 14:00 - 14:20

Prey size mediates interference competition and predation dynamics in a large carnivore community

Jack W. Rabe

Co-authors: Wesley J. Binder, Colby B. Anton, Connor J. Meyer, Matthew C. Metz, Brian J. Smith, Toni K. Ruth et al.

Direct competition for resources is especially fierce among predators, leading to disproportionately strong effects on fitness and functional roles. These competitive effects are exacerbated in complex predator guilds with dominance hierarchies that have clear winners and losers. The direct costs of losing these competitions are well understood, but the drivers of such interactions, and their indirect effects on prey, are not. We evaluated the drivers of wolf/bear interference competition for cougars, and how such competition affects cougar-prey dynamics, by leveraging 23 years of cougar predation data from northern Yellowstone National Park, USA. We show that the effect of prey size was context dependent, positively affecting how often cougars killed ungulate prey but negatively affecting how often wolves/bears found and stole cougar kills. Further, cougars increasingly killed smaller, alternative prey as larger, primary prey density decreased. Handling time was less for smaller prey, and thus kleptoparasitic interference competition by wolves and bears was less when primary prey density was lower. Our study counters theory suggesting that interference competition should increase at kills when prey density declines, interspecific competitor density increases, or kill rates increase. We demonstrate that predator, competitor, and prey traits drive the strength of and even dampen interference competition, possibly increasing coexistence in complex communities.

Thursday 14:20 - 14:40

Short-term responses of red deer to wolf presence are related to predation risk

Katarzyna Bojarska

Co-authors: Johannes Signer, Maria Zetsche, Friederike Riesch, Elina Jarmer, Nina Gerber, Suzanne van Beeck Calkoen et al.

Wolf presence may impact red deer (*Cervus elaphus*) movement and habitat selection, yielding important consequences for ecosystems and wildlife management. However, evidence for this top-down behavioural effect is still scarce in Europe. We used camera-trap and telemetry data to assess behavioural responses of red deer to wolf presence during four years of wolf recovery in Grafenwoehr Military Training Area (Bavaria, Germany). Red deer in the area are maintained at high densities to aid preservation of open (non-forested) habitats that cover approx. 40% of the area. We assessed wolf presence in two areas of approx. 4 km², corresponding to the annual home ranges of GPS-collared red deer and used by different wolf packs. Using a dense grid of camera traps (22 cameras per area), we quantified wolf presence as wolf days (when wolves were recorded on camera traps) or non-wolf days (when they were not). We compared red deer camera-trap data (GLM-predicted picture counts) and movement patterns (via integrated step selection analyses of 35 GPS-collared red deer individuals) on wolf days and non-wolf days while accounting for daily variation in human activity (estimated via human picture counts). During the study, the yearly numbers of wolf days increased three-fold. Camera traps recorded more red deer pictures on wolf days, especially at night. The increase in red deer pictures on wolf days was most pronounced when wolves started to breed in the study areas. Human activity had the opposite effect on red deer, with fewer red deer pictures on the human-busiest days, particularly during the day. Telemetry data revealed that on wolf days, red deer preference for open areas increased on a 24-hour scale but decreased at night. The responses of red deer to wolf presence were rather subtle and varied between years, seasons, and times of day, suggesting a complex relationship with the level of predation risk. While the increase in red deer camera-trap picture counts on a within-home-range scale may be interpreted as a change in movement rates, telemetry data did not detect a corresponding change. Therefore, our results corroborate the importance of considering variability among methods when studying wildlife behaviour.

Thursday 14:40 - 15:00

Unveiling the Feeding Patterns & Preferences of Wolves in Switzerland

Florin Kunz

Co-authors: Philippe Christe, Luca Fumagalli, Eduard Mas Carrio, Fridolin Zimmermann & Nina Gerber

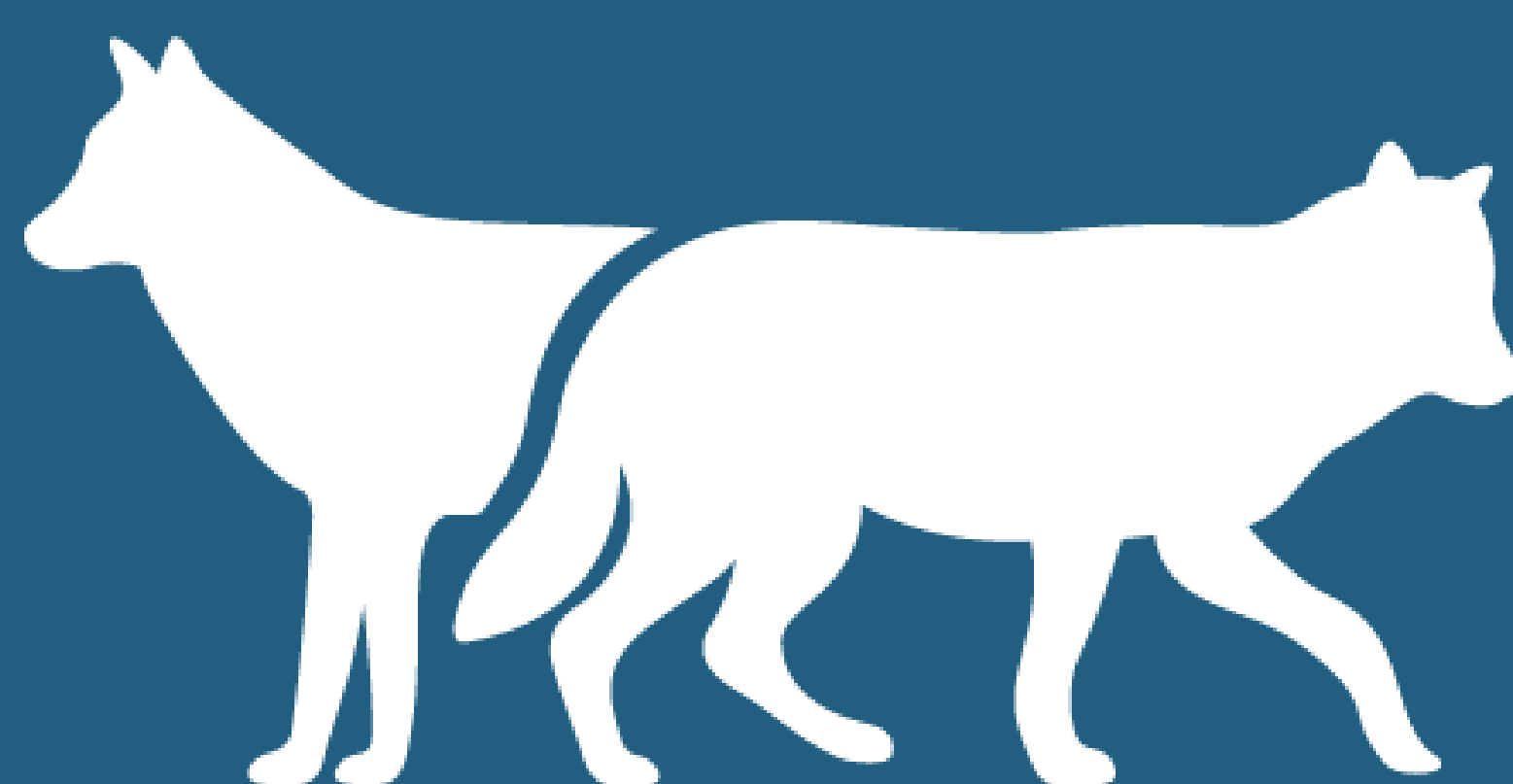
As wolves recently returned to Western Europe, questions arose regarding their local diet, their influence on local prey populations and the importance of livestock in their diet. Because of the wolves' high adaptability to different habitats and prey species, local studies are necessary to analyze their interactions with other wildlife and livestock. Most wild ungulate populations are managed and thus there is an interest in knowing more about the influence and integration of the wolves' influence in the ungulate hunting planning. In this study we explore the wolves' diet in Switzerland, based on results of DNA metabarcoding of wolf scats. This is the first insight into the spectrum of wolf prey species with modern genetic methods in the central alpine arch and the Jura Mountains. We investigate local composition in diet, compare and statistically test the frequency of occurrence of prey species over different regions, seasons, and social structures such as the one of packs and of lone wolves. Our analyses are based on wolf scats already attributed to specific individuals with molecular analyses, found by chance or near livestock killed by wolves. With this information we also incorporate the circumstances of scat detection and investigate its effect on the relative occurrence of livestock and wild prey in wolf's diet.

Further, we compare the findings of prey consumption to the relative abundance of prey species in the respective regions and calculated their preference for the main ungulate prey species. Prey abundance is a key information which is difficult to acquire. We evaluated different methods of doing so and show an approach of using data on relative ungulate presence based on camera trap data.

We found that wolves in Switzerland feed predominantly on wild ungulates. Our data also shows that scat samples taken in proximity to livestock kills can influence the resulting diet results considerably. These and further results give important insights into the feeding regime of wolves in the Central Alps and the Jura mountains.

Parallel Sessions

In addition to the standard plenary presentations and breakout sessions, the program also features a range of parallel sessions in alternative formats. These include panel discussions, interactive forums, and other engaging session types designed to foster dialogue, exchange diverse perspectives, and encourage active audience participation.



WOLVES ACROSS BORDERS

Tuesday 11:00 - 12:20

Citizen initiatives for co-existence with wolves

Moderators: Pepijn 't Hooft & Diemer Vercayie

WWF-Belgium & Wolf Fencing Team Belgium

Participants

Wolf Fencing Team Belgium

Mauro Belardi - Pasturs Italy

Jean Christophe Poupette - Entre chien et loup France

Annette Siegert - Herdenschutz Niedersachsen Germany

Across Europe, volunteer-driven initiatives are making a tangible difference daily—installing wolf deterrent fences, supporting flock protection, and educating tourists. They fill crucial gaps between policy and practice, offering constructive alternatives to polarization. These initiatives show how society can unite to implement effective damage prevention and make measurable progress toward peaceful coexistence with wolves. Drawing from a comprehensive mapping of these initiatives, we will present key data on their prevalence and impact. Speakers from five initiatives across Europe, each with a distinct approach, will share insights:

- on how their initiatives are structured and operated,
- on their tangible results and impact
- and on the important lessons learned and challenges faced

The session aims to inspire participants and highlight the high potential of volunteer-driven solutions in addressing coexistence challenges. These efforts not only provide practical, on-the-ground solutions but also foster community engagement and trust, making coexistence a shared responsibility.

Join us to explore how citizen-driven actions foster collaboration, why these efforts deserve greater recognition, and how scaling them up can enhance conservation strategies—paving the way for true coexistence between humans and wolves.

Tuesday 13:30 - 15:50

Living with Wolves: addressing emotions

Moderator: Gerda van Dijk

Leadership and Society at the University for Humanistic Studies

Participants:

Maarten Jacobs - Assistant Professor Cultural Geography at Wageningen University

Annet Muller - Horse owner in wolf territory, founder and advisor at Wij(s) met Wolven

Herman uit de Bosch - Goat farmer in wolf territory

Glenn Lelieveld - Ecologist specialised in wolves, Averti Ecologie

René Grotens - Municipal Secretary Zeist

The return of the wolf in the Netherlands leads to a variety of emotions among citizens, ranging from admiration and amazement to fear, frustration and anger. This session examines how emotions can be embedded in science and policy making. This will be highlighted from different perspectives (ecological, social, governance and communication).. The purpose of the session is to discuss the importance of including the role of emotions in science, its relevance for society, practical implications and policy making.

Wednesday 10:30 - 12:00

The wolf debate within dynamic politics, misinformation and social media

Moderator: Glenn Lelieveld

Participants:

Maria Falkevik - Process manager County Administrative Board of Värmland

Cassiopeia Camara - Environmental education specialist Department of Conservation & Recreation / Center for Human Carnivore Coexistence

Claudio Sillero - Professor of Conservation Biology Oxford University's WildCRU

Fridolin Zimmerman - Coordinator large carnivore monitoring KORA

Pepijn 't Hooft - Field Program Manager WWF-Belgium

Arie Trouwborst - Professor of nature conservation law, Tilburg University

As wolf populations expand across human-dominated landscapes in Europe and North America, public discourse surrounding their presence has intensified. This panel explores the complex intersection of wolf conservation, shifting political landscapes, and the influence of social media in shaping public opinion and policy. At the heart of the discussion is how misinformation —often amplified through digital platforms— affects both societal perceptions and legislative outcomes related to wolves.

Panelists from ecology, political science, media studies, and community engagement will examine how wolves have become symbols in broader ideological conflicts, from rural-urban divides to questions of national identity and land use. We will explore how political actors harness the polarizing nature of wolf debates to advance agendas, often blurring the line between science and ideology. Additionally, the panel will analyze the spread of politically charged narratives online, which can distort scientific understanding and marginalize local voices.

Key questions include: How do political narratives about wolves evolve across national and regional contexts? What role does social media play in reinforcing echo chambers or creating opportunities for dialogue? And how can scientists, policymakers, and communities respond to misinformation while fostering inclusive decision-making?

By unpacking these themes, this session aims to illuminate the socio-political dynamics behind wolf management and conservation, emphasizing the need for cross-sector collaboration and transparent communication in navigating a contested and politically charged terrain.

Wednesday 13:00 - 15:00

EU Large Carnivore Platform: Youth workshop

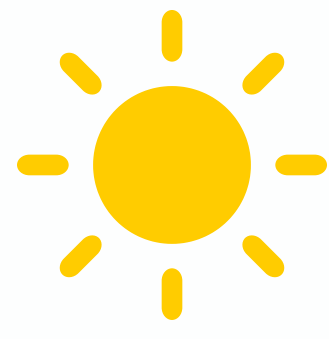
Katrina Marsden

Adelphi Research & European Commission Large Carnivore Initiative

Come play! Modelled on the stakeholder dialogue platforms on large carnivores that have been implemented in different countries, a new role play, designed by the EU LC Platform, aims to increase understanding around the management of these species. It is designed to provide an opportunity for people “to step in someone else’s shoes”, thereby promoting empathy and tolerance while getting to know the various different perspectives on the topic. The game, simulates the discussion process involving key stakeholders with an interest in large carnivores to find joint solutions and a common way forward, enabling coexistence. Building on the empathy and understanding developed in the first part of the workshop, the second half will empower you to apply what you’ve learned to create social media campaigns that reshape public narratives and promote coexistence with large carnivores. Learn about different narratives on large carnivores and come up with your own ideas on how to actively shape the public narrative through social media!

Parallel Session

Wednesday 13:00 - 15:00



Outside (off-site)

Limited places available. Please register via [Invajo](#).

Going Dutch: The Wolf Approach in Gelderland, Netherlands

Organised by the Wolf Committee of Gelderland

As part of the Wolves Across Borders conference, the Wolf Committee of Gelderland invites participants to explore the unique Dutch approach to living with wolves. In one of Europe's most densely populated and intensively used landscapes, the return of the wolf raises distinctive challenges. Under the title Going Dutch, this interactive session provides insight into how the province of Gelderland is addressing wolf-related issues on the Veluwe, the area currently home to seven of the eleven wolf packs in the Netherlands.

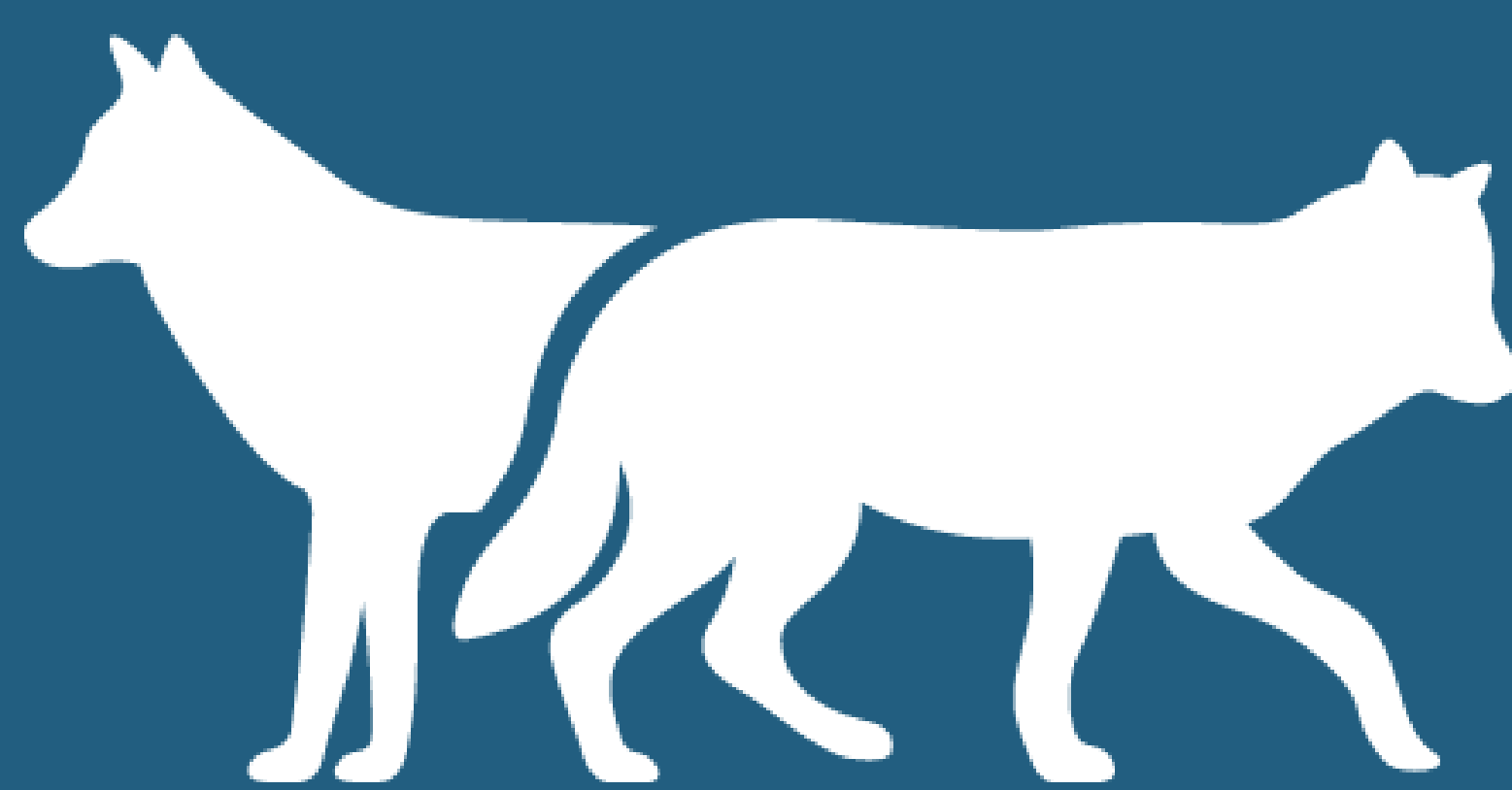
Participants will engage in a guided, small-group activity—featuring rotating discussion stations and a practical field component—focused on key topics such as:

- The Dutch approach to wolf management, including the role and mandate of the Gelderland Wolf Committee, public engagement, conflict resolution, and preventive strategies.
- The need for a National Livestock Protection Team, modeled after successful programs in Belgium and Germany, and discussions on funding gaps and implementation in the Dutch context.
- A visit to the Livestock Protection Fence Demonstration Site, offering a hands-on look at various wolf-deterrent fencing methods used in the Netherlands.
- Living close to wolves, with a focus on how wolves coexist near human settlements and the implications for animal behavior and public safety.
- Voices of resistance, featuring livestock owners who currently choose not to implement protective measures, offering space for open dialogue and mutual understanding.
- Experiences with livestock guardian dogs, based on a Dutch pilot that showed promise but revealed challenges in public awareness and implementation.

The session is designed to encourage knowledge exchange and honest conversation. Experts, practitioners, and stakeholders are invited to walk, observe, and reflect together on what it means to share a landscape with wolves—and how policy, practice, and public perception can evolve accordingly.

Workshops

Workshops offer a hands-on, interactive environment for participants to engage deeply with specific topics. Led by experts in the field, these sessions focus on practical skills, collaborative learning, and active involvement, providing valuable takeaways for both research and practice.



WOLVES ACROSS BORDERS

Tuesday 16:15 - 18:15

Designing Diverse Social Conflict Resolution Approaches to Manage Human-Carnivore Conflicts

Mireille Gonzalez

The Center for Human-Carnivore Coexistence Colorado State University

Abstract

Tuesday 16:15 - 18:15

C2C: Conflict to Coexistence- an integrated and participatory approach to HWC management

Femke Hilderink & Sybille Klenzendorf

WWF-The Netherlands

Human-wildlife conflict (HWC) presents an escalating challenge to conservation and sustainable development worldwide. The World Wide Fund for Nature (WWF) has responded to this challenge by developing a globally applicable, yet adaptable approach to HWC management that can be tailored to specific local, regional or national contexts. The C2C: Conflict to Coexistence approach (referred to hereafter as C2C approach) was developed based on an existing HWC management approach launched in 2016 (the Safe Systems Approach), and is currently undergoing implementation and testing in various pilot sites in Asia and Africa. This integrated approach to HWC management intends to enhance stakeholder collaboration, conflict mediation, and the co-design- and implementation of effective HWC management strategies. Data collection and analysis uses the HWC module in SMART (Spatial Monitoring and Reporting Tool) and SMART collect.

In this session, we explore the framework and methodology of the approach and learn more about its initial implementation. We will zoom in on the main findings and challenges associated with the implementation of the integrated approach in different contexts. Since monitoring and data collection is often considered a major bottleneck in HWC management, we will discuss the application of SMART for HWC data collection and use.

Through an interactive workshop, participants are challenged to share and discuss successes and failures in HWC management from various perspectives and identify opportunities as well as challenges for implementing the C2C approach.

Aim of the session is to:

- Present the C2C: Conflict to Coexistence approach and share lessons learned from initial implementation.
- Share lessons learned (process, results, challenges) on HWC management interventions from various perspectives and identify opportunities and challenges for implementation of the C2C approach .
- Identify potential participants for a Europe focussed C2C training of trainers workshop and C2C pilot sites.

Tuesday 16:15 - 18:15

Citizen Initiatives for Coexistence: Towards a Collaborative Manual

Diemer Vercayie & Pepijn 't Hooft

Wolf Fencing Team Belgium & WWF-Belgium

This workshop invites participants from a wide range of initiatives—whether emerging, established, or those looking to revive or improve existing projects—to collaboratively develop a comprehensive manual for citizen-driven coexistence initiatives, with the goal of publishing it in a special issue of *Wildlife Biology*.

Building on the success of volunteer-driven projects across Europe, this workshop will explore the challenges and opportunities of scaling and sustaining these efforts, share best practices, and identify the resources necessary for future success. Key topics will include:

- Overview of the initiative inventory: Mapping existing initiatives, examining their impact and approaches, and identifying gaps and opportunities for collaboration.
- Lessons learned and practical tips: Key success factors of specific approaches, advice on starting, improving, or revitalizing initiatives, and addressing external challenges and critical questions.
- Funding strategies and financial challenges: Discussing ways to overcome financial hurdles, the role of professional support, and potential to access EU resources.
- The role of scientific research: Exploring the need for research on prevention measures and evidence-based strategies for coexistence.

A central goal of the workshop is to foster collaboration among participants and explore future partnerships, with a focus on creating a network to facilitate further exchange across projects. This includes discussing opportunities for collective action in larger-scale projects.

By the end of the workshop, participants will leave with valuable insights and connections that can help strengthen and scale up volunteer-driven initiatives, enabling more effective coexistence strategies across Europe.

Join us to share your experiences, contribute to the development of a review of and manual for these initiatives, and help shape the future of citizen-led coexistence efforts between humans and wolves.

Tuesday 16:15 - 18:15

Understanding emotions in human-wolf conflicts

Thorsten Gieser

Institute of Ethnology Czech Academy of Sciences

Human-wolf conflicts are often constructed as primarily rational disputes over arguments in favour or against the presence and impact of wolves in human-dominated landscapes. However, at the heart of these conflicts—whether they are direct confrontations with wolves or broader societal debates about their presence—lie complex emotions that drive and shape the interactions and narratives surrounding these animals. In this workshop, we explore the emotional dimensions of human-wolf conflicts from a humanities perspective, illustrated with examples from my ethnographic fieldwork in Germany, gaining a deeper understanding of how these emotions influence perceptions, behaviours, and policy decisions.

To begin, I propose to distinguish between emotions and feelings. Much of the research on emotions so far first tries to identify crude categories of emotion (sadness, anger, love) and second tries to measure its intensity. But are emotions really so easy to identify? And is it clear what stakeholders mean when they say, for example, that they are 'angry' (7 on a scale of 1 to 10)? While emotions refer to culturally normed categories, feelings represent the subjective experience of these emotions and are embedded within broader, lasting dispositions that influence how individuals and communities perceive and react to wolves over time. By exploring these complexities and depths of feelings, we are better equipped to address the complexities and depths of human-wolf conflicts and coexistence.

In a further step, we will discuss the relationship between rationality and feeling. Attempts to counter emotional responses to wolves with "facts" alone can be ineffective, as feelings are not merely irrational reactions but are deeply intertwined with individuals' identities, values, and lived experiences. In other words, feelings are not a mere 'additional' category to study next to attitudes, beliefs or knowledge. They are an integral part of all of them. We will explore this with the help of several examples from outreach/educational events from the field where 'emotion' and 'rationality' clash.

This workshop aims to provide participants with a nuanced framework for understanding the role of emotions in human-wolf conflicts, offering insights that can enhance conflict resolution strategies and promote coexistence between humans and wolves.

Tuesday 16:15 - 18:15

Howl You Say It? From Boomers to Zoomers

Cassiopeia Camara

Department of Conservation & Recreation (Virginia)/ Center for Human Carnivore Coexistence (Colorado)

This workshop will delve into the complexities of generational communication, offering participants an in-depth exploration of various generational cohorts. Attendees will gain a comprehensive understanding of the defining characteristics, communication preferences, and effective techniques for engaging individuals from different generations. This foundational knowledge will be applied specifically to the field of conservation communication, with a particular focus on wolf conservation.

The workshop begins by providing an overview of the key traits and values that distinguish generations, from Baby Boomers to Gen Z. Participants will learn how these differences shape communication styles and expectations, offering insights into tailoring messages that resonate across age groups. The session will then shift focus to conservation, analyzing how generational perspectives influence public attitudes toward environmental issues, with a deep dive into wolf conservation communication.

To make the learning process dynamic and interactive, the workshop incorporates engaging activities. Participants will play games designed to simulate real-world communication scenarios, helping them apply their understanding of generational dynamics in a fun and memorable way. These exercises will demonstrate how to navigate generational gaps, ensuring effective and inclusive messaging in conservation contexts.

In the second half of the workshop, participants will analyze real-world communication campaigns, focusing on conservation efforts that targeted multi-generational audiences. Case studies, including successful and unsuccessful campaigns, will be examined to identify strengths, weaknesses, and opportunities for improvement. Attendees are also encouraged to bring their own communication campaigns or specific situations to the table, allowing for hands-on, collaborative analysis and adaptation. This practical segment gives participants the chance to refine their strategies and develop actionable communication plans tailored to their unique challenges.

By the end of the workshop, participants will leave with a toolkit of generational communication strategies, specifically adapted for conservation work, and the ability to craft impactful messages that foster understanding and engagement across diverse age groups.

Tuesday 16:15 - 18:15

A crash course in wolf conflict cooking

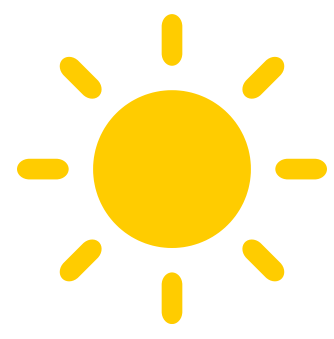
Maria Falkevik

County Administrative Board of Värmland

What is it about wolves that makes people's emotions run wild? Or is it really about wolves at all? The wolf management have many characteristics of a "wicked issue". It has a high complexity in both its socioeconomic and ecological context, and there are no simple solutions to the conflicts that inevitably will surround it. Simply telling a wolf sceptic about the wolves and their role in the ecosystem will not help. Neither will a verdict that a culling decision is legal convince someone who suspect managers of hidden agendas. So, if the conflicts can't be solved, how can we hold space for coexisting in a safe and constructive level of conflict?

The idea of adaptive management is common in wildlife management, but not always practiced when it comes to learning and improving the management of its' many conflicts. There are also many parallel issues between wolf management and wider societal conflicts where adaptive processes are becoming valued within social policy making etc. This is the area of expertise of Joseph Harrington, a senior design and strategy specialist working across the public and social sector. He will host this workshop together with Maria Falkevik, process manager at the County Administrative Board of Värmland with 20 years' experience of working with wolf management, nature resource conflicts and stakeholder participation. You can expect a dialogue between learning from different wolf conflict cases and learning about wider societal conflicts, and the importance of engaging in conflict, enabling people to be part of processes of generating responses that go beyond the lowest common compromise. Welcome to a playful and explorative workshop on how to cook a wolf conflict properly, without anyone getting burnt.

Wednesday 15:30 - 17:30



Outside

How to catch wolves

Ross Hinter & Hans van Eijden

Alberta Trappers Association & Province of Utrecht

Managing large predators such as wolves in a habitat that is constantly changing. Starting with a power point instruction and then an outdoor demonstration how the use and set soft catch traps for live capture and collaring (proven to be safe for the appropriate species under Canadian Government.

With over 30 years in the Alberta Trappers Association, Ross Hinter currently serves as Community Liaison, connecting with public, industry, Indigenous, and government partners. A specialist in urban and municipal wildlife management, he has delivered training across Canada to academic institutions, government agencies, and conservation groups. Ross also represents Alberta in humane trapping research, conducts predator-livestock conflict investigations, and certifies Trapper Education Instructors. His work is grounded in conservation and adapting wildlife management to changing environments.

Wednesday 15:30 - 17:30

Wolf-dog hybridization in Europe: definition and assessment

Astrid Vik Stronen^{1,2}, Paolo Ciucci³ and Carsten Nowak⁴

1 Department of Biology, Biotechnical Faculty, University of Ljubljana, Slovenia

2 DivjaLabs Ltd., Ljubljana, Slovenia

3 Department of Biology and Biotechnologies "Charles Darwin", University of Rome, Italy

4 Senckenberg Centre for Wildlife Genetics, Frankfurt, Germany

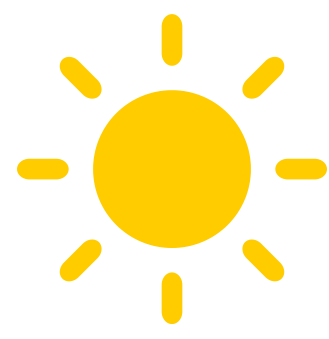
Wolf-dog hybridization, and the introgression of domestic dog genes into wolf populations—when first-generation (F1) hybrids reproduce or backcross with wolves—is considered an increasing threat to the conservation of wolves and their ecological role. Although the risk of hybridization and backcrossing is recognized in European legal instruments, we still lack a clear and science-based definition of “wolf-dog hybrid” (WDH). Posited that only genetic evidence of hybridization can be currently considered objective and reliable, ambiguities include how many generations of backcrosses a practical definition centered on conservation (as opposed to evolutionary research) should consider, and how to standardize WDH genetic/genomic testing. At present, these constraints are limiting urgently needed efforts to address and mitigate WDH in Europe and beyond.

Within the Biodiversa+ Wolfness project* (a consortium of scientists from various organizations in seven countries) preliminary actions have involved developing (i) a transparent and science-based definition of WDH for conservation management, (ii) feasible and cost-effective solutions for European-wide standardization of genetic tools and laboratory protocols, and (iii) shared recommendations for assessing WDH at the population level.

The objectives of our workshop are to share the work done in points i-iii above with a wider audience and gain from their input. After a short introduction outlining some of the challenges around WDH, we will present our WDH definition and the technical details for WDH detection and assessment at the population level. Finally, we will provide an opportunity for a guided discussion to obtain feedback from the audience. Wolf-dog hybridization is a complex, multifaceted topic, and we recognize that additional topics are relevant for a thorough discussion of WDH management. Yet, we argue that to meaningfully and productively address the whole complexity of managing WDH it is necessary to first reach solid agreements on the basic ideas presented in the workshop.

*<https://www.biodiversa.eu/2023/04/19/wolfness/>

Wednesday 15:30 - 17:30



Outside (off-site)

Limited places available. Please register via [Invajo](#).

Construction, electrification & grounding of permanent wolf-deterrent wire fencing for sheep, cattle and horses

Peter Schütte & Annette Siegert

Herdenschutz Niedersachsen

This workshop takes place outdoors and includes a 20-minute walk through the forest and across a road. Meeting point: in front of the entry door of the conference venue. Please bring weather-appropriate gear and something to drink. WC on site.

Effective protection measures to protect grazing livestock from wolf attacks are the central key to the possible coexistence of livestock husbandry and wolves and to the acceptance of wolf presence. However, erecting wolf-deterrent fencing can be fraught with some pitfalls. Whether on agricultural land, nature reserves or dykes, reservations from decision-makers and land users often have to be overcome. In order to ensure effective protection, aspects such as preparation of the fence line, professionally correct installation of suitable materials and future maintenance must be planned and implemented. The permanent electric fence stands out from the multitude of technologies. Due to the one-time installation and the comparatively easy operation coupled with a very good protective effect, this type of fence is an important instrument for reliable protection against wolf attacks. This type of fence can also be erected in difficult terrain (nature reserves, dikes, slopes).

This practical workshop will show how to set up such a permanent electric fence. Every step from ramming the wooden posts to attaching the insulators and pulling the wire will be demonstrated. Correct electrification and grounding will be described and shown in detail. Approximately 20 meters of fence will be built. Aspects such as protective effects, animal welfare for sheep, cattle and horses as well as impact on wildlife movements will be discussed. The participants can lend a hand themselves and will be trained in the various working steps. All materials and tools can be tried out.

Wednesday 15:30 - 17:30

EU and regional large carnivore platforms: what we've learned so far and future application

Katrina Marsden¹ & Valeria Salvatori²

1: Adelphi Research, 2: Istituto di Ecologia Applicata; National Environmental Research Agency (ISPRA)

In 2014, stakeholders and the European Commission worked together to call into life the “EU Platform on Coexistence between People and Large Carnivores”. The Platform’s mission is "To promote ways and means to minimize, and wherever possible find solutions to, conflicts between human interests and the presence of large carnivore species, by exchanging knowledge and by working together in an open-ended, constructive and mutually respectful way".

The EU Platform members supported the idea to set up or regional / local platforms in different countries across Europe in order to transfer the approach of the EU large carnivore platform to local communities. In 2018 and 2019, pilot platforms were set up in six EU countries. These platforms aim to engage and encourage all relevant actors to share their views and address conflicts surround large carnivore presence openly and constructively. At the same time, LIFE projects such as the EUROLARGE CARNIVORE Project and LIFE Wild Wolf also employing the “platform method” to bring different stakeholders together.

The EU Platform with the support, the regional platforms and the LIFE projects have worked together to exchange upon their extensive experience with preparing and running regional dialogue platforms on large carnivores in different European countries and draw out lessons learned into a toolkit. In this workshop, experiences from different platforms would be drawn together to examine their impacts and discuss future uses of this approach.

Wednesday 15:30 - 17:30

How to vlog while doing research

Erik den Boer

Ecologist, and Filmmaker

Communication to the larger public is very important in science. Especially when it comes to a sensitive topic as wolves. Video can be a powerful tool in this communication and nowadays everybody has a decent camera in his pocket: a smartphone. This workshop I will give some hands-on tricks and tools to make a short video about your work and your research.

The workshops will show examples of formats, you can choose like an interview, voice over, vlog etc. It will pay attention to composition, sound, diversity of shots and a short introduction in editing. We will practice and learn from beginners mistakes. It is an open and interactive workshop that can adapt to questions or needs of the participants. According to their demands we can practice with presenting, interviewing or other aspects from filmmaking.

After this workshop hopefully you feel more assured and equipped to use video in communicating your work.

Wednesday 15:30 - 17:30

The Future of Wolves Across Borders

Aimee Tallian & Marloes Leeftang

Supported by Glenn Lelieveld, Grant Spickelmier, Nina Gerber, Nuno Guimarães, Jenny Glikman, Kinga Magdalena Stępnia, Hannah Weber, Daniel Mallwitz

Wolves Across Borders International Steering Committee

Wolves have always been at the center of human-wildlife coexistence, and their management is politically polarized and contentious. Furthermore, the world's wolf population ranges across an incredibly diverse collection of countries which represent a broad spectrum of cultures, environments, economies, and government structures. This is especially true in Eurasia, where wolves cross between the borders of over 50 different nations. Variation in cultural values, political objectives, monitoring strategies, and knowledge base about local wolf populations makes cross-border management complex. The goal of Wolves Across Borders is to facilitate open conversation and knowledge exchange between nations that support wolf populations and the researchers, managers, non-profits, and stakeholders that work with wolf ecology, management, and conflict resolution.

The first edition of Wolves Across Borders was held in Stockholm, Sweden in 2023. Hosted by the Scandinavian Wolf Research Group, it brought together over 300 researchers, policymakers, managers, students, and stakeholders and was generally regarded as a success. The second edition is currently being hosted by the Dutch Mammal Society, in collaboration with their network in the Netherlands and Belgium. The long-term goal is for a new collaborative group to host the Wolves Across Borders conference every 4th year (next conference in 2028), alternating with the International Wolf Center in the United States that also hosts their conference every 4th year. Thus, there will be an international wolf conference hosted every second year alternating between North America and Eurasia. However, to ensure the long-term success of Wolves Across Borders, it is vital to 1) have participation from researchers, managers, and stakeholders across the Eurasian continent and 2) have an effective organizational structure for the Steering Committee and other participants to work within. The goal of this workshop is to bring together interested parties to discuss the future of Wolves Across Borders, co-develop an organization structure that will help ensure easy trade-off between consecutive conference organizers, and select the Steering Committee for the 2028 conference.

Thursday 15:30 - 17:30

Turning Sound into Discovery - Using Sound to Study Wolves

Paul Howden-Leach

Wildlife Acoustics

This workshop will explore how bioacoustics can be used as a non-invasive survey and research tool to identify wolf vocalization , the workshop will will cover equipment, deployment methods, recommended recording schedules as well as data analysis techniques. The workshop will focus on using a combination of both free and paid software (Kaleidoscope Pro from Wildlife Acoustics) to extract vocalizations from hours of audio recordings. Kaleidoscope Pro includes a cluster analysis feature that extracts audible signals of interest from larger files, and is also the first step towards building simple and advanced classifiers. Attendees will get a chance to look and handle different pieces of recording equipment and look at different deployment methods. In addition temporary Kaleidoscope Pro license will be provided to attendees, along with example recordings to “play along” with the software element of the workshop. “

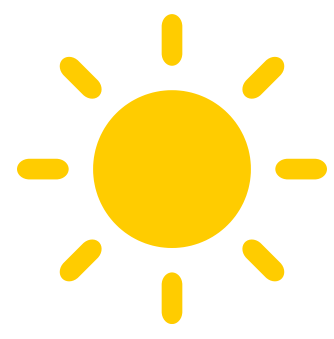
Thursday 15:30 - 17:30

The use of UAV (Unmanned Aerial Vehicle) and handheld thermal cameras in research

Theodoros Kominos

Aristotle University of Thessaloniki

TBC



The craft and art of trapping wolves

Josip Kusak

Biology Unit at the Veterinary Faculty, University of Zagreb

Trapping wolves with leghold traps is still used alongside modern, non-invasive methods of research and management. This ancient craft is adapted to ensure the safety and health of the trapped animal. However, anyone who resorts to this method should be aware that if they are successful, they will inflict an unpleasant experience on a sentient being. The skills of trapping and the “secrets of the trade” are normally passed on directly from one researcher/trapper to another, according to the "master -> apprentice" principle. This is also the best way to minimise the possibility of misconduct and not endanger the welfare of the animals caught.

This workshop will give an overview of the whole process, starting with the justification of the decision that it is necessary to live trap wolves. It will then describe how to prepare for wolf trapping, including equipment and pre-trapping field surveys. Leghold trap choice will be elaborated, and its functioning demonstrated. The other needed equipment will be listed, and its conditioning before trapping will be explained. The choice of equipment for wolf tranquilization will be briefly explained, but without details about the tranquilization and handling of tranquilized animal. The veterinarian, who must be present at the capture, is responsible for the veterinary protocols. An example of the field study that precedes the decision on where and when to set the traps will be shown. The setting of the trap will be demonstrated first on screen and then in reality, explaining each step of the process, followed by the activation of the trap, the setting of the bait and maintenance during the trapping campaign.

The safety procedures will be discussed and demonstrated in detail, including the choice of trap type and size, the differences in the design of various leghold traps, the choice of trap location, the way the trap is set, baited and constantly monitored. One of the most important factors affecting the safety and welfare of trapped animals is the response time. How to shorten the response time and all other safety factors will be elaborated and discussed with the workshop participants. Workshop participants will have the opportunity to open, set and trigger the leghold traps themselves - an experience that every trapper must have.

Thursday 15:30 - 17:30

Trapping and collaring wolves under different conditions across Europe

Aldin Selimovic

Research Institute of Wildlife Ecology Vienna

Capture and collaring of wolves has remained one of the most important methods in wolf research throughout history. Although capturing of wolves has a very long tradition in some regions and cultures, diversity of habitats used by wolves makes this a difficult task for researchers. With a lot of hard work invested and competition thoughts many of paths to success remained hidden and unshared with other groups targeting the same species. Nowadays, researchers realized that wolf research mostly makes sense if data is shared across borders. In this workshop we aim to present capture and collaring methods that have been used in Austria since 2019 and since 2022 in the Czech Republic leading to success with different approaches. Especially, the variability in land and human use of study areas is the best example that there is no ultimate or universal method to capture wolves. In Austria we are using three different trap types and due to our study area being military restricted area we are limited in time and locations for trap sites. In the Czech Republic, trapping takes place in protected areas (national parks or landscape protected areas) where human access is usually not restricted. Tourists often accompanied by dogs pose a challenge to successful trapping and collaring of wolves, as dog owners often do not always respect the rules and their pets can interfere disrupt the trapping efforts. Additional extreme care is necessary when wolves trigger traps and during sedation time. Preparation of the trapping devices and choice of trap sites is also adapted to the study area. Additionally, we want to discuss the choice of baits and lures and their effects on bycatch, types of trap sets used and behavior of trapping personnel on site. Our main aim is to share the methods that have worked but more importantly the approaches that have not and to invite other colleagues who share the same interest and passion for trapping wolves to discuss these issues.

Thursday 15:30 - 17:30

How to manage close encounters with wolves in human dominated landscapes

Valeria Salvatori

Affiliation

Wolves are increasingly reported in human dominated landscapes, being sighted nearby or in human settlements also during daylight. Although in the majority of cases their presence passes unperceived, they are also often reported to interact with humans or domestic animals in different manners, showing behaviours that range from scared to aggressive and predatory. The LIFE WILD WOLF project started in 2023 and is aimed at analysing the phenomenon of wolves living in human dominated landscapes and producing a set of guidance documents for adequate management of critical situations. Aspects investigated so far include past records of wolf behaviours while interacting with humans or dogs, a proposal of behavioural definitions, standardised data collection for all cases of interaction, spatial analysis of habitat selection through GPS collars of more than 300 wolves in anthropized areas of Europe, and preliminary results from knowledge and attitude surveys.

The workshop will include an interactive session for discussing the definition of behaviours and for brainstorming on how to communicate the potential threat posed by wolves without alarming the local population.

Thursday 15:30 - 17:30

How to talk with press

Mathilde Klaasse, Joke Bijl, Vera Eijsink & Glenn Lelieveld

Affiliation

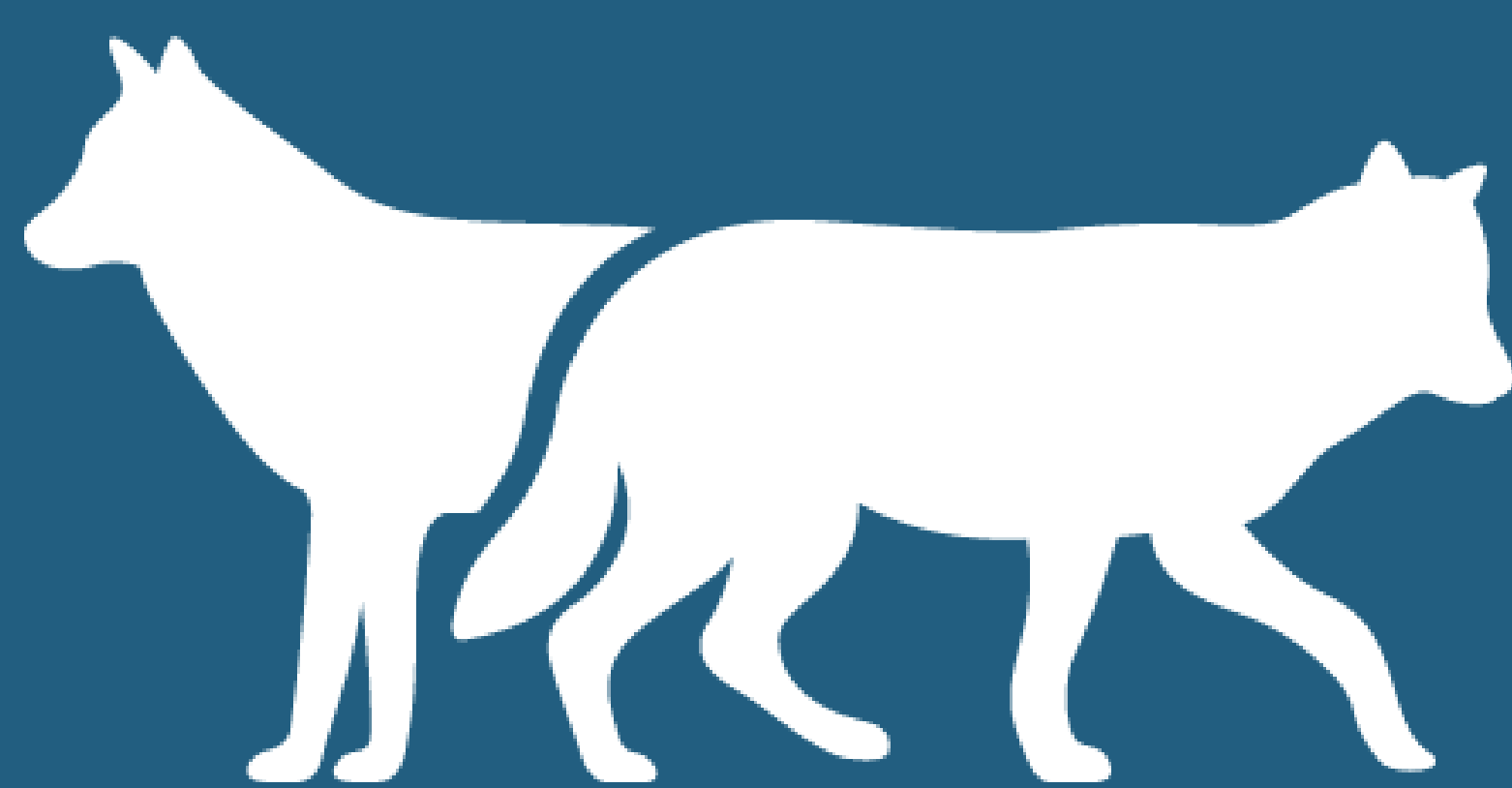
Did you know that with good communication you can reach millions of people almost for free? And with that reach and your story you get more support and nuance for your message. You, as a scientist or nature lover, have your story to tell about how you see the world and the role of wolves in it. This might be much more nuanced than the ever-present headlines “wolves did this, wolves did that”. Unfortunately, you do not always get the time and space to tell your story.

But how to tell your story via the press? Donald Trump is talking about journalists as 'fake news' and 'enemy of the people'. And it is true that many scientists and spokespersons have a ‘dynamic’ relationship with the press. But if you want to get your message to the people, the press is often an easy way to go. So, how do you make sure the media works to your advantage? How does talking with the press work? What are the do's and don'ts? How can you build a good relationship with pleasant journalists who know their job? Together we dive into the wonderful world of journalism.

The best way to learn how to talk to the press is to practice. In the safe environment of the workshop room we will get to work, together. Using a few realistic cases, we will start with a role-play. The journalist working with you starts out nice, but is looking for very specific answers. Your job will be to tell your story to the best of your abilities!

Posters

The poster session provides an opportunity for researchers, practitioners, and students to showcase their work in an interactive setting. Covering a wide range of topics related to wolves, this session encourages informal discussion, networking, and knowledge exchange among attendees. Join us to explore diverse projects and connect with fellow participants in a dynamic, visual format.



WOLVES ACROSS BORDERS

Posters

1	Robin Rigg	Knowledge exchange across borders: helping each other learn to live with wolves
2	Iina Ala-Kurikka	Connecting the Pack: coordinating communication in the LIFE BOREALWOLF project
3	Robin Schäfer	Diet of wolves in selected territories in Lower Saxony in Germany using DNA metabarcoding
4	Małgorzata Warda	Hunting strategies of the gray wolf (<i>Canis lupus</i>) in the highly fragmented anthropogenic landscape of Pomerania
5	Joliene Wennink	Habitat Suitability Analysis of the golden jackal (<i>Canis aureus</i>) for the Netherlands
6	Antje Weber	Settlement by wolves in Saxony-Anhalt, Germany, based on family matters?
7	Lina Oberließen	Research at the Wolf Science Center
8	Sabina Nowak	Illegal shooting of wolves by foreign trophy hunters in Western Poland
9	Katharina Kasper	Towards transboundary wolf management in post-recovery Europe: Compromising perspectives and shifting acceptability.
10	Mari Lyly	Disseminating information about large carnivores to the Finnish youth
11	Wessel Veenbrink	A wolf's way of water: Wolf space use in relation to frozen waterbodies
12	Barbora Cerna Bolfikova	Genetic admixture between Central European and Alpine wolf populations
13	Katarzyna Bojarska	Red deer display stronger behavioural responses to human voices than to wolf howls
14	Carmela Musto	Pathogen circulation in the dog-wolf interface in human-dominated landscapes in Italy
15	Kurt Ackermann	What if Japan (Still) Had Wolves?
16	Joanna Toczydlowska	Coexistence of Wolves and Humans: Spatial and Temporal Analysis of Wolves' Habitat Use in a Human-Dominated Landscape

Posters

17	Katarzyna Kozyra-Zyskowska	What do wolves eat in the Oder Delta? Diet composition and individual identification of gray wolf in recolonization area on Poland-Germany border
18	Maria Virginia Boiani	Friends or Foes? Using camera-trap data and spatial count models to estimate wolf population size in the Italian Alps
19	Aldin Selimovic	Wolf population and monitoring developments in Austria
20	Dragana Šnjegota	Tracking the Wild: A Decade of Wolf Monitoring in Bosnia and Herzegovina
21	Oksana Grente	The French wolf genetic database: 27 years of non-invasive monitoring
22	Mihir Godbole	The Indian grey wolf - Conservation and Ecology
23	Madeleine Nyman	Focus shift from national to local large carnivore management – examples from the LIFE BOREALWOLF project
24	Madeleine Nyman	How to combat illegal killings of large carnivores in a society with a deep-rooted human-wildlife conflict?
25	Mari Tikkunen	Protective vests for hunting dogs mitigate the wolf-human conflict in Finland
26	Malgorzata Witek	Space use strategies in a saturated grey wolf (<i>Canis lupus</i>) population in Central Europe
27	Victor Sazatornil	Minimum pack size, litter size, and birth phenology of Indian wolves
28	Florin Kunz	Challenges and strategies capturing wolves in a human-dominated landscape
29	Julia Kamp	Livestock predation by wolves in Saxony-Anhalt, Germany, is mostly not conducted by territorial wolves
30	Michał Figura	Rescue, rehabilitation, and post-release monitoring of grey wolves in Poland
31	Michał Figura	The use of graphic novels in communicating scientific information about wolves

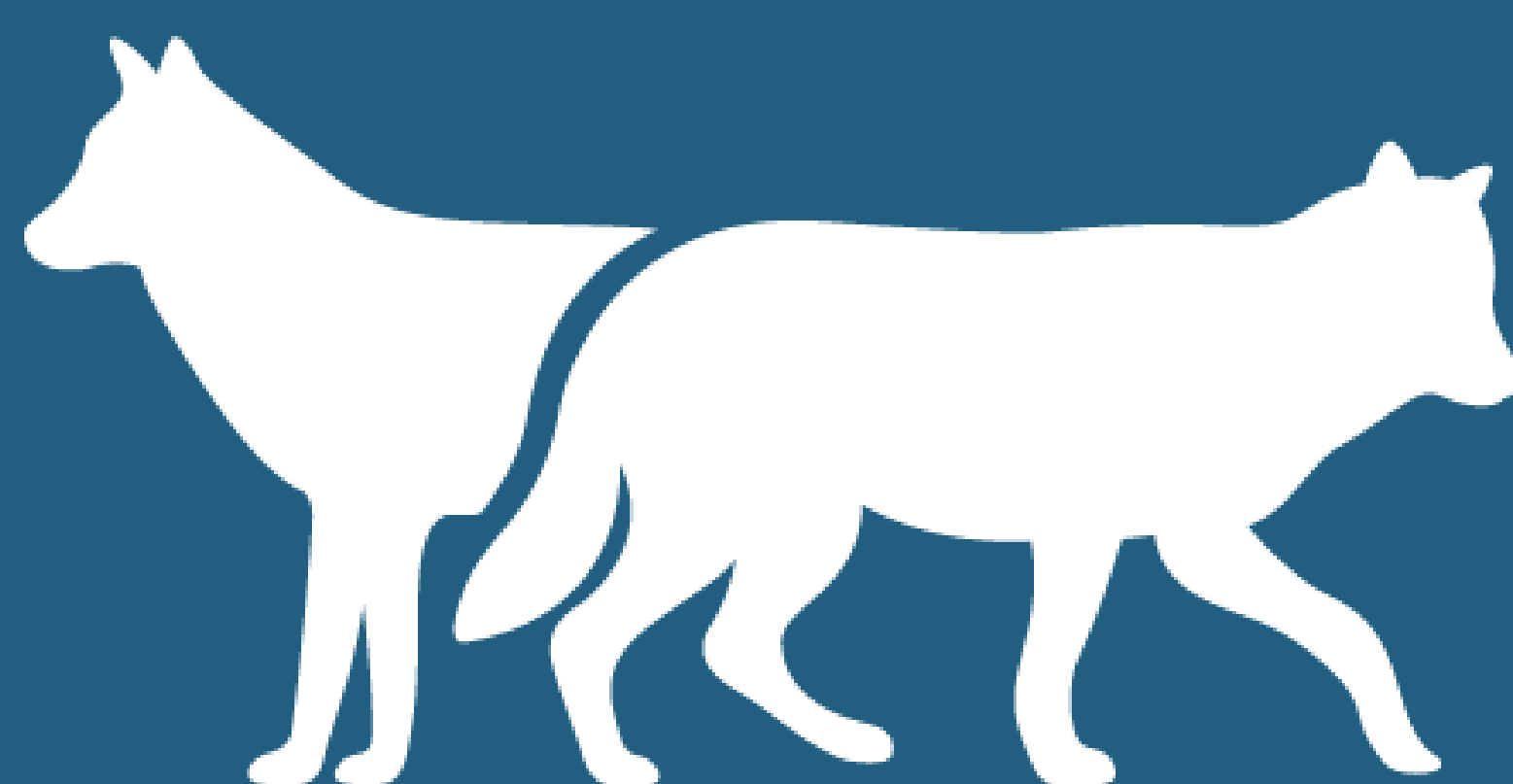
Posters

32	Luca Fuchs	Livestock depredation risk maps for wolves in Austria
33	Mari Tikkunen	Toolbox against wolf depredation helps livestock farmers to protect animals in Finland
34	Carolin Schlautmann	Sarcoptic mange in wolves
35	Barbora Cerna Bolfikova	Genetic Insights into Wolf-Dog Hybridization: Managing Risks to Wild Populations
36	Barbora Cerna Bolfikova	Understanding Wolf Attacks on Livestock Through Genetic Analysis
37	Francisco Álvares	Horses on the menu: Patterns and drivers for free-ranging horse consumption by Iberian wolves
38	Charlotte Steinberg	Behaviour of wild animals at wolf-repellent fences
39	Aleš Vorel	Understanding habitat selection in relation to movement strategies in a Central European human-dominated landscape
40	Peter Schütte	Project “Herdenschutz Niedersachsen” – practical support for effective livestock protection against wolf attacks in Germany



Movies

Relax and unwind in our cozy Wolf Theater, where a curated selection of documentaries and films will be shown throughout the conference. Featuring powerful stories, stunning wildlife cinematography, and thought-provoking insights into the lives of wolves, these screenings offer a unique way to deepen your understanding and appreciation of these iconic animals.



WOLVES ACROSS BORDERS

Movies

Want a moment to chill out? Come hang out at the movie theater!
Movies will be shown each day, according to the schedule below.

Time	Monday	Tuesday	Wednesday	Thursday
9:00		9-10.20 The pack that parished (5x)	8:30-10 WOLF	9-10.30 Wolvenland
10:00	10-11:30 WOLF (Cees van Kempen)		10-10:30 Lives with wolves	10:30-11 The wolf and man (3x)
11:00		11-12:30 Wolvenland	10.30-12 Wolvenland	11-12 Golden jackal project (5x)
12:00		12:20-13:30 The trouble with wolves		12:20-13:20 Lamb and the wolf
13:00			13-13:40 The wolf within	13:30-14 Lives with wolves
14:00		14-15 The trouble with wolves	14 The pack that parished (4x)	14-15 The trouble with wolves
15:00	15:15-15:50 The wolf within'	15:15-15:50 The wolf within'	15:15-15:50 The wolf within'	15-15:30 The pack that parished
16:00	16-17 The trouble with wolves	16-17 The trouble with wolves	16-17 The trouble with wolves	15:30-17 Wolvenland
17:00	17-17:50 Wonders of the wolf	17-17:50 Wonders of the wolf	17-18 Wonders of the wolf	
18:00	18-19:30 Wolvenland		18-19:30 Wolvenland	
19:00	19:30 Lives with wolves	19-20 Wonders of the wolf	19:30 Golden jackal project	19-20 The trouble with wolves
20:00	20:00 Lamb and the wolf	20-21:30u WOLF		20:30-22 WOLF
21:00				

Meet the maker!

For some movies there are representatives joining us at the conference.
Want to have a chat about the movie(s) you watch? Reach out to the producer or submitter!

The wolf within' - The European Nature Trust; Federico Manneschi/Alessio Bariviera

The pack that parished - The Grassland's Trust - Mihir Godbole

Wonders of the wolf - Angie Ruiz

Golden Jackal project - Jennifer Hatlauf

Lives with wolves - Gonalo Ferro da Costa

Lamb and the wolf - Carnivore Conservation Programme - Martin ap

WOLF - Cees van Kempen (tbc)



Public Transport Information

Apps and Websites

There are a few apps you can download and use for information about public transport. Both websites are available in English. When planning your trip you will see the costs.

- NS-app (Dutch Railway Company) or the website www.ns.nl for trains, including international trains. Also shows bus connections.
Purchasing an online ticket via the NS app is cheaper than paying a physical ticket at the train station.
- 9292-app or the website www.9292.nl, for all public transport.

Train connections

Schiphol - Lunteren

Schiphol – change in Amersfoort Centraal - Lunteren

Schiphol – change in Ede Wageningen - Lunteren

Schiphol – change in Utrecht Centraal – change in Ede Wageningen - Lunteren

Arnhem Centraal - Lunteren

Arnhem Centraal - change in Ede Wageningen - Lunteren

Utrecht Centraal - Lunteren

Utrecht Centraal – change in Ede Wageningen - Lunteren

Rotterdam Centraal - Lunteren

Rotterdam Centraal – change in Amersfoort Centraal - Lunteren

Rotterdam Centraal – change in Utrecht Centraal – change in Ede Wageningen - Lunteren

Düsseldorf Airport - Lunteren

Düsseldorf Airport- change Duisburg Hbf - change Arnhem Centraal - change Ede Wageningen - Lunteren.

Brussel Airport Zaventem - Lunteren

Brussel Airport Zaventem - change Rotterdam Centraal - change Utrecht Centraal – change Ede Wageningen - Lunteren

Eindhoven Airport - Lunteren

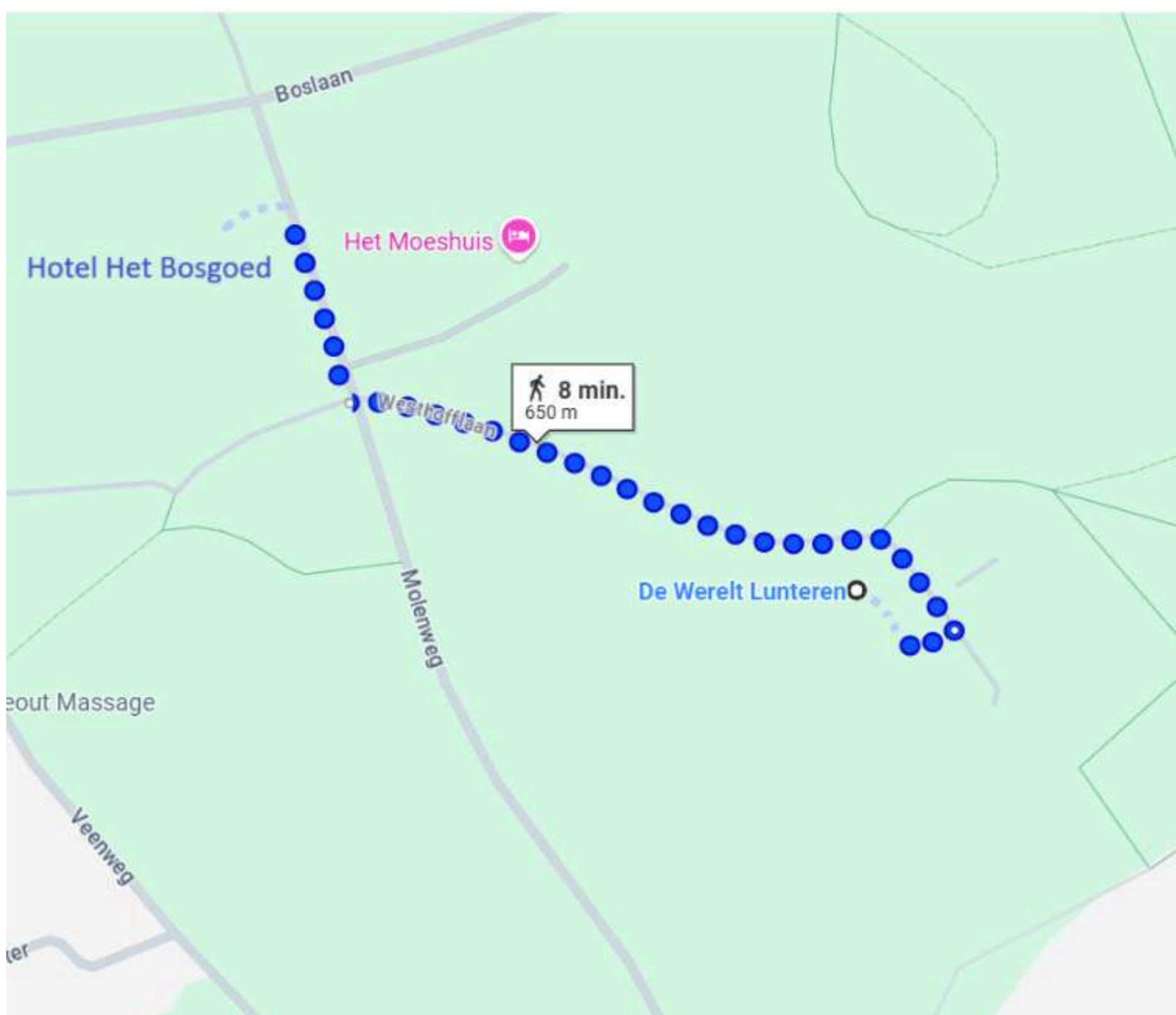
Eindhoven Airport - bus to Eindhoven Centraal - change Utrecht Centraal - change Ede Wageningen - Lunteren.

Walking Routes to the Conference Center

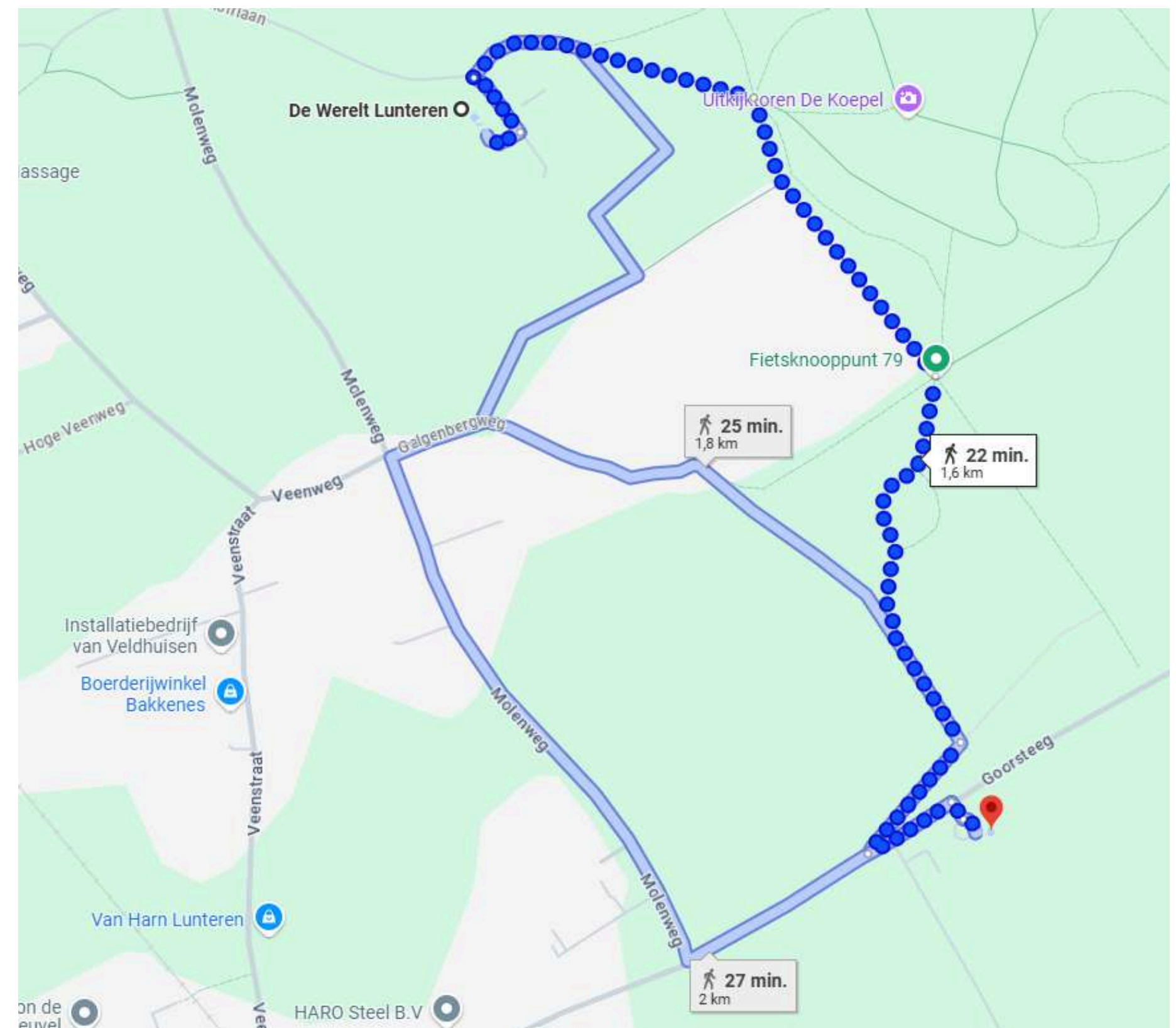
Walking routes to the Conference Center

Please use Google Maps to follow the route in real time

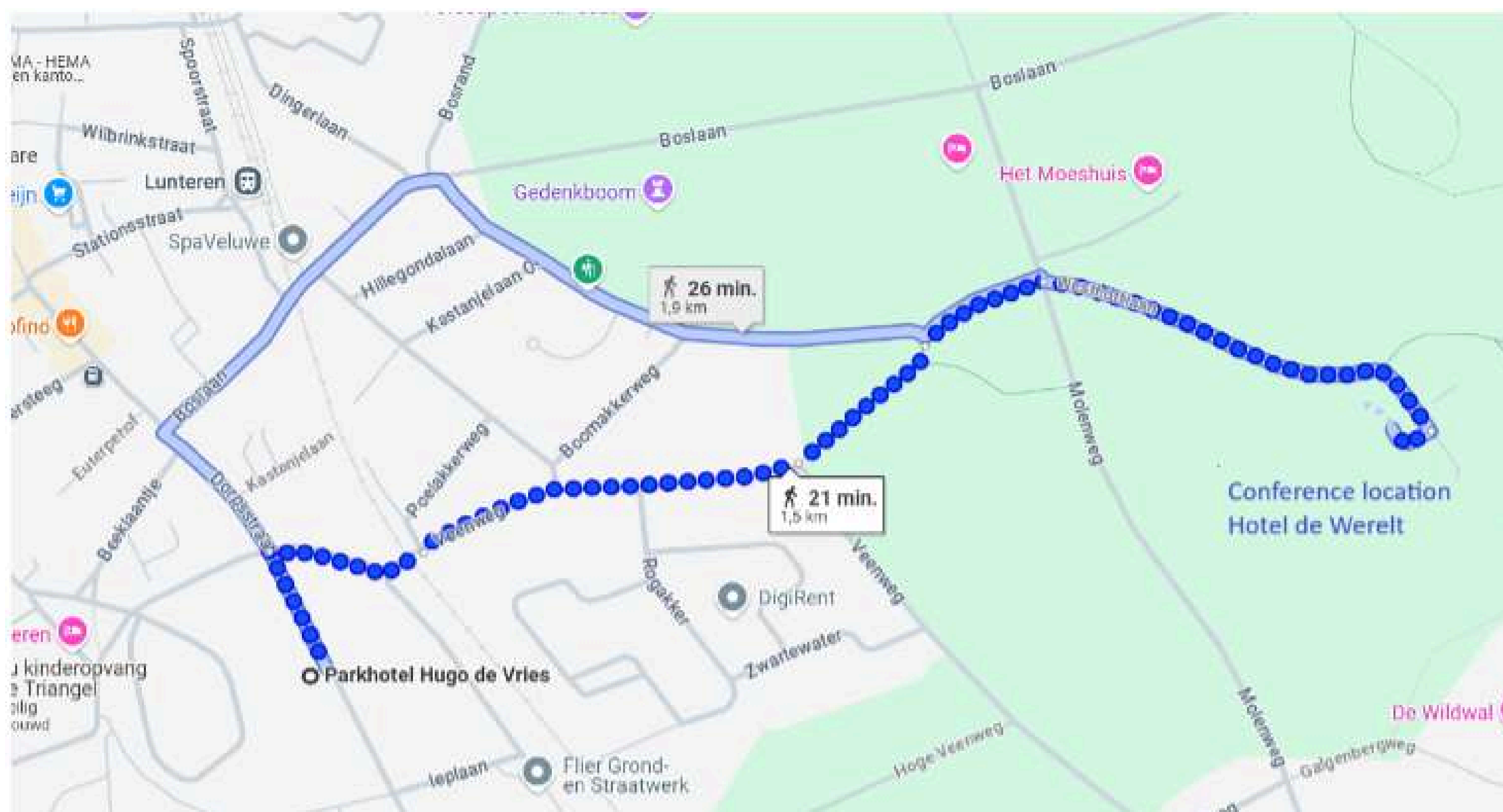
Hotel Het Bosgoed - Conference Center De Werelt
8 min walk



Hotel 50/50 Belmont - Conference Center De Werelt
22 min walk



Parkhotel Hugo de Vries - Conference Center De Werelt
21 min walk



Your Hosts

Wolves Across Borders 2025 Team



Marloes Leeflang



Julia Schepers



Luna van Weele



Mathilde Klaasse



Glenn Lelieveld

Organizing Consortium

Wolves Across Borders 2025 is organized by a Dutch and Belgian Consortium. Partners of the consortium are: Dutch Mammal Society, Agentschap Natuur en Bos, Natuurmonumenten, Dierenbescherming, FREE Nature, University of Groningen and The institute for Science in society.

Dutch Mammal Society

The Dutch Mammal Society is a non-governmental organization focussed on monitoring wild mammals, with the aim of conserving and protecting. They aim to bring together all those doing research on wild mammals and their habitats as well as those engaged in their conservation. The conservation work of the Dutch Mammal Society is based on research, the results being used for the protection of wild mammals and their habitats.

Your Hosts

Agentschap Natuur & Bos

The Agency for Nature and Forests are conserving and protecting more than 90,000 hectares of nature reserves, forests and parks in Flanders. Together with various partners, they are generating greater support for nature. Their projects vary from planting forests, initiatives that strive for a higher quality of natural areas, to improving the accessibility of nature in human-dominated landscapes.

Natuurmonumenten

Natuurmonumenten (Dutch Society for Nature Conservation) is the largest association for nature conservation in the Netherlands. They are committed to restoring biodiversity in the whole of the Netherlands. With creating a robust ecosystem, nature can better adapt to climate change. Natuurmonumenten aims to not only restore nature reserves, but also valuable landscapes and cultural heritages.

Dierenbescherming

The Dutch Society for the Protection of Animals stands for the protection of animals, by acknowledging their value and promoting their interests. They aim to better protect animals by helping people make animal-friendly choices in their daily lives. Their goal is to eventually have a world where the interests of animals are self-evident in the thinking and actions of people.

FREE Nature

FREE Nature's (Foundation for restoring European Ecosystems) work focuses on the restoration and development of European ecosystems. They develop landscapes that shape and sustain themselves and where natural processes flourish. The core of their work is the grazing of nature reserves by large free-living grazers such as bison, wild cattle, water buffalo, deer and wild horse.

University of Groningen

The University of Groningen is a research university with a global outlook, deeply rooted in Groningen, City of Talent. Quality has had top priority for four hundred years, and with success: the University is currently in or around the top 100 on several influential ranking lists.

The Institute for Science In Society

The Institute for Science in Society (ISiS) at Radboud University conducts research and provides education at the interface between science and society. Its mission is to analyze, assess and improve the societal embedding of science and technology.

Your Hosts



AGENTSCHAP
NATUUR & BOS

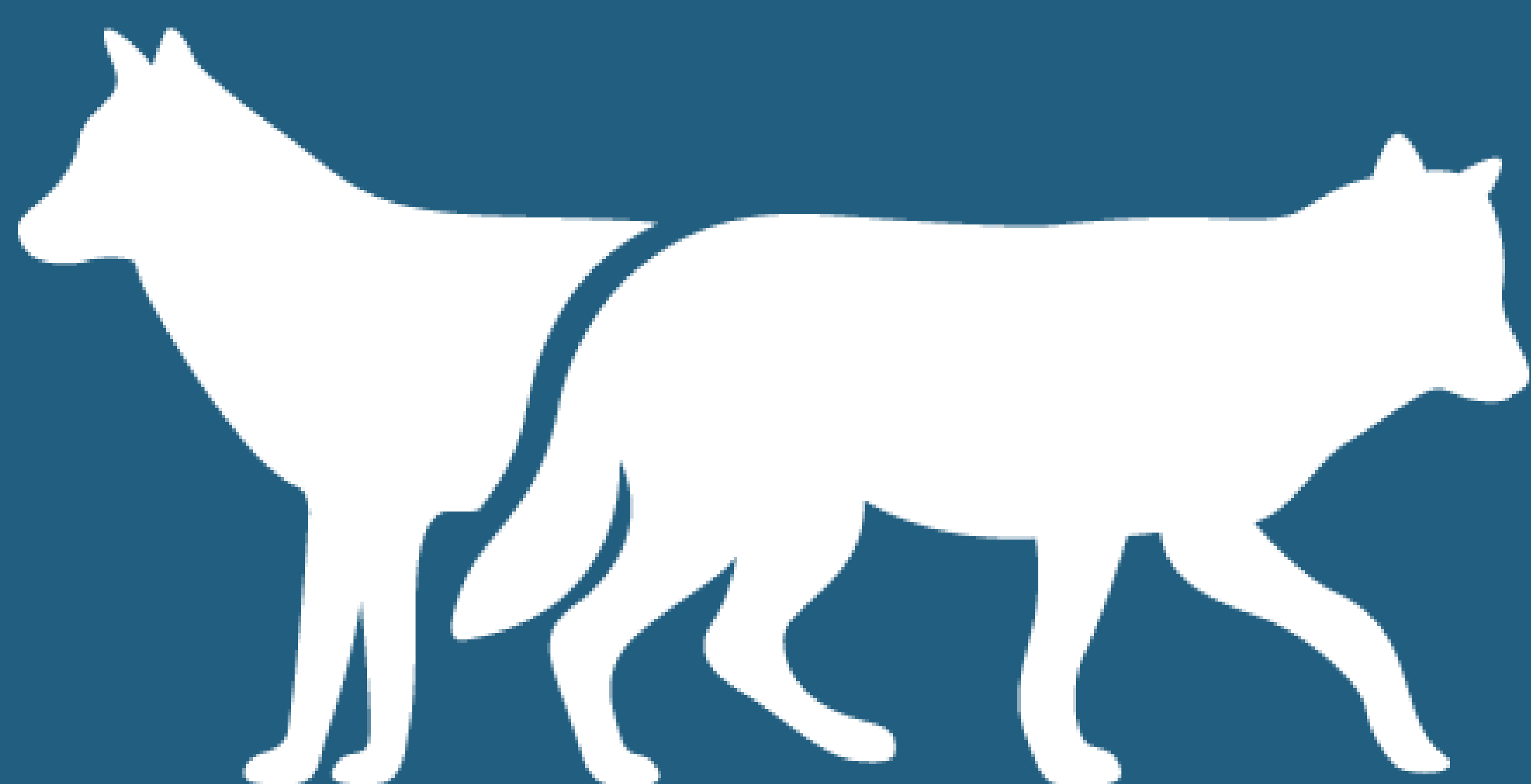


Radboud University



university of
 groningen





WOLVES ACROSS BORDERS