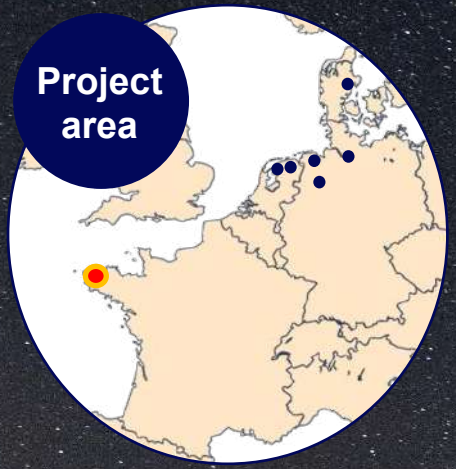
Interreg North Sea

Co-funded by the European Union

DARKER SKY Mid-term event

Monitoring effects of light pollution on biodiversity (14:45-15:00)
Focus on Brest's demonstrator sites



Enora MORIN

DARKER SKY Project manager at University of Brest (UBO)

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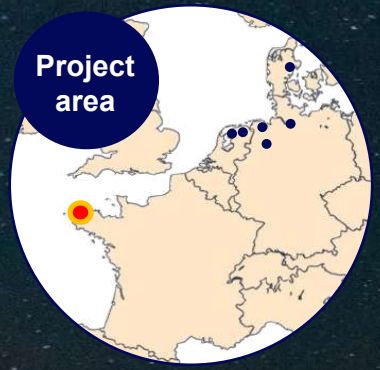
Saïg POTARD

Head of Public Lighting Department at Brest Métropole

Brest Métropole, acting on light pollution as a public authority



Population : 213 400 inhabitants

Lighting points : 36420

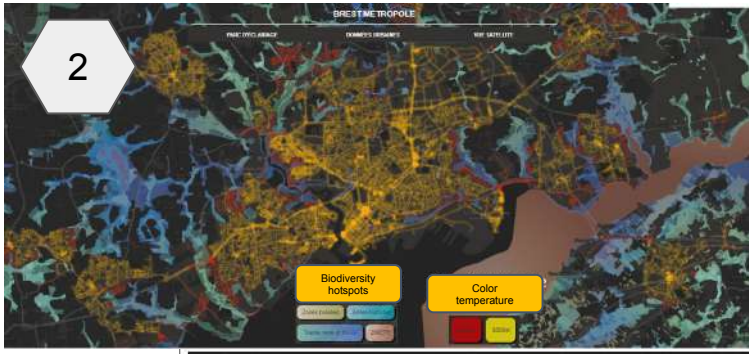
Since 2021, a new lighting strategy: the Nocturnal Ambience Coherence Scheme (N.A.C.S.), a strategy in 3 steps :

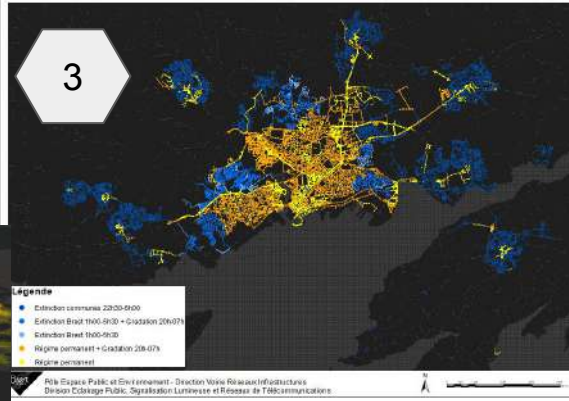
1. Diagnosis
2. Territorialisation
3. Strategy of lighting evolution

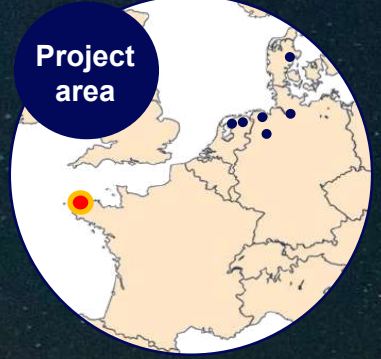
An evolving strategy, from a top-down method, to a bottom-up method

Interactive map examples :

1. Mobility issues
2. Biodiversity issues
3. Street lighting operating modes: dimming and switching off







Demonstrator site n°1

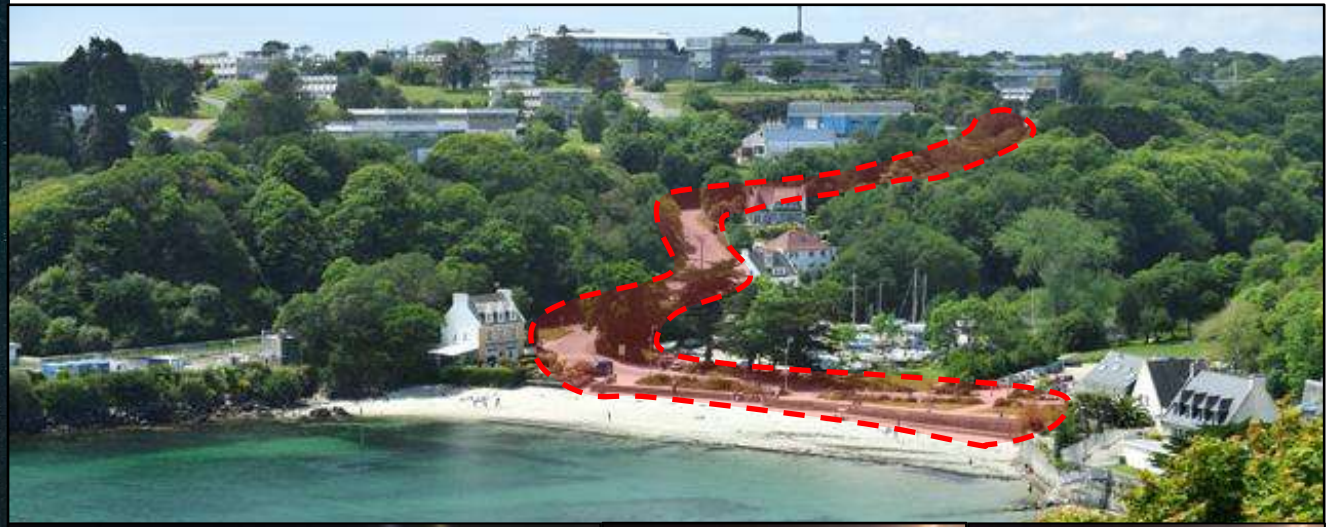
Saint-Anne Valley, *Brest, France*

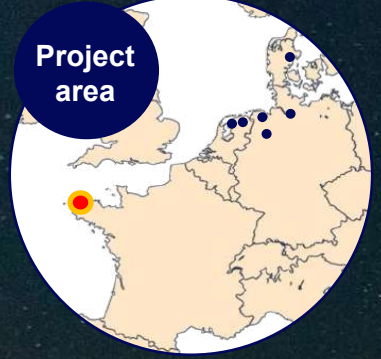
Modifications including:

Lower temperature of color

Presence detection during night : pedestrian and vehicles

Switch-off from 01:00 to 05:30 (programming change in progress)





Demonstrator site n°1

Sainte-Anne Valley, *Brest, France*

Modifications including:

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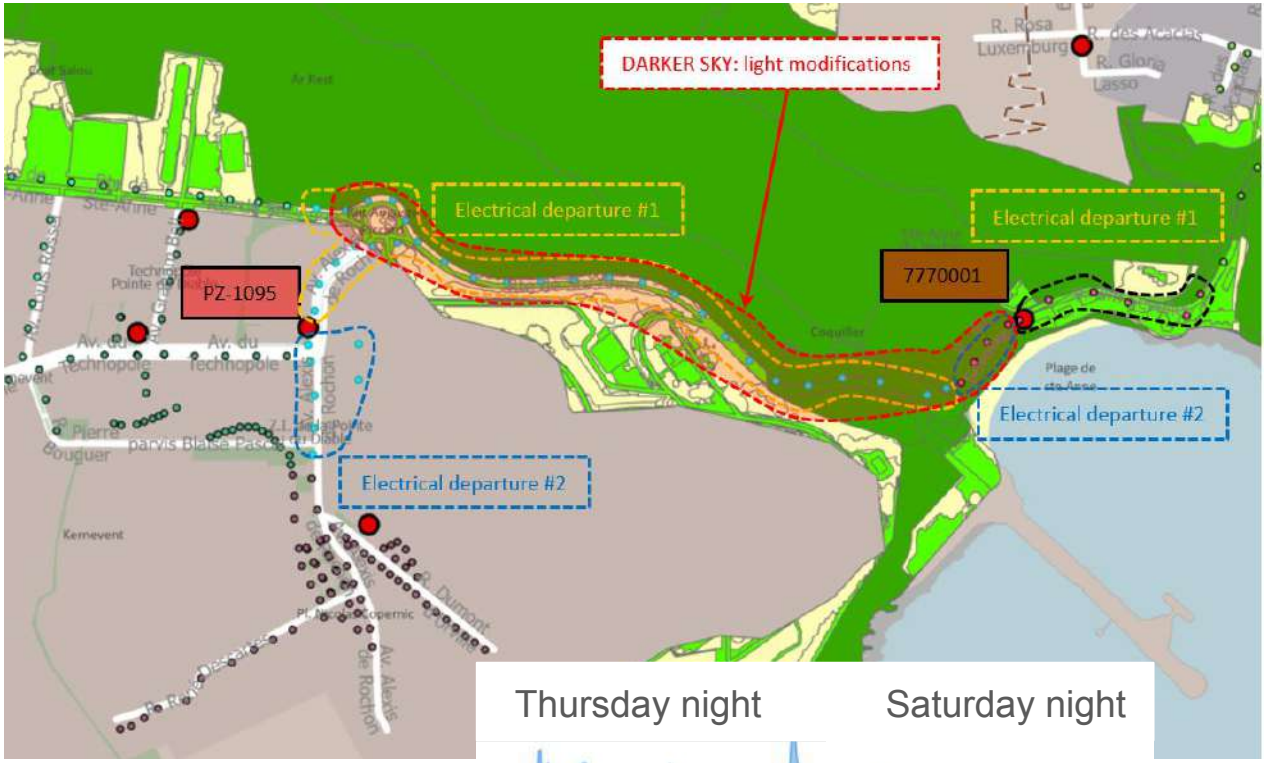
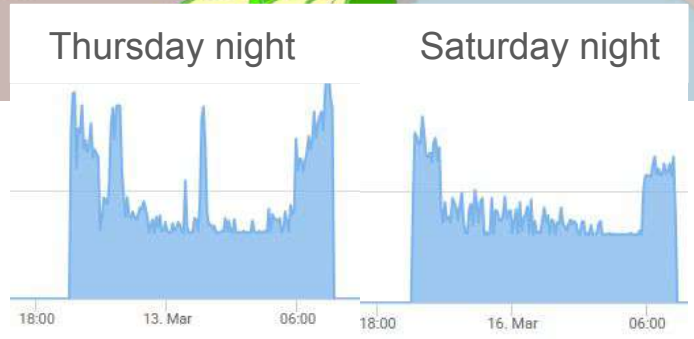
Presence detection during night : pedestrian and vehicles

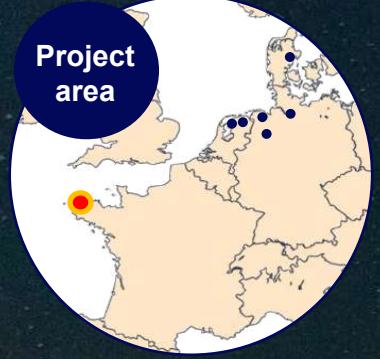
Switch-off from 01:00 to 05:30 (programming change in progress)



Electrical cabinet PZ-1095:

Functionment after setting the detection (07/03/2025)



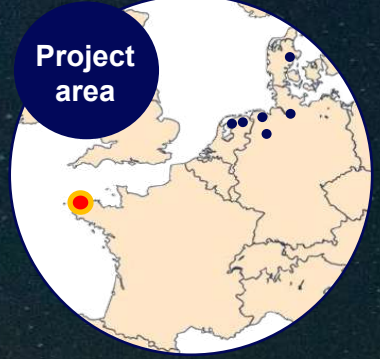


Demonstrator site n°2

Moulin Blanc beach, *Brest, France*

Modifications including:

Decrease in support height
Better photometry of luminaires (light distribution)
Change of color temperature lanterns
Detection of users
Partial switch-off : 22:30-06:00
Programming change in progress



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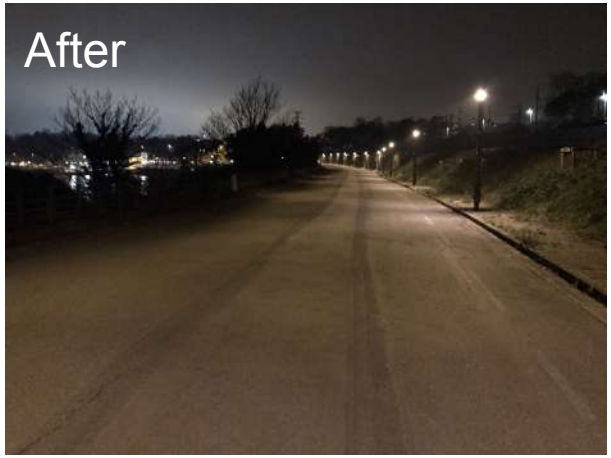


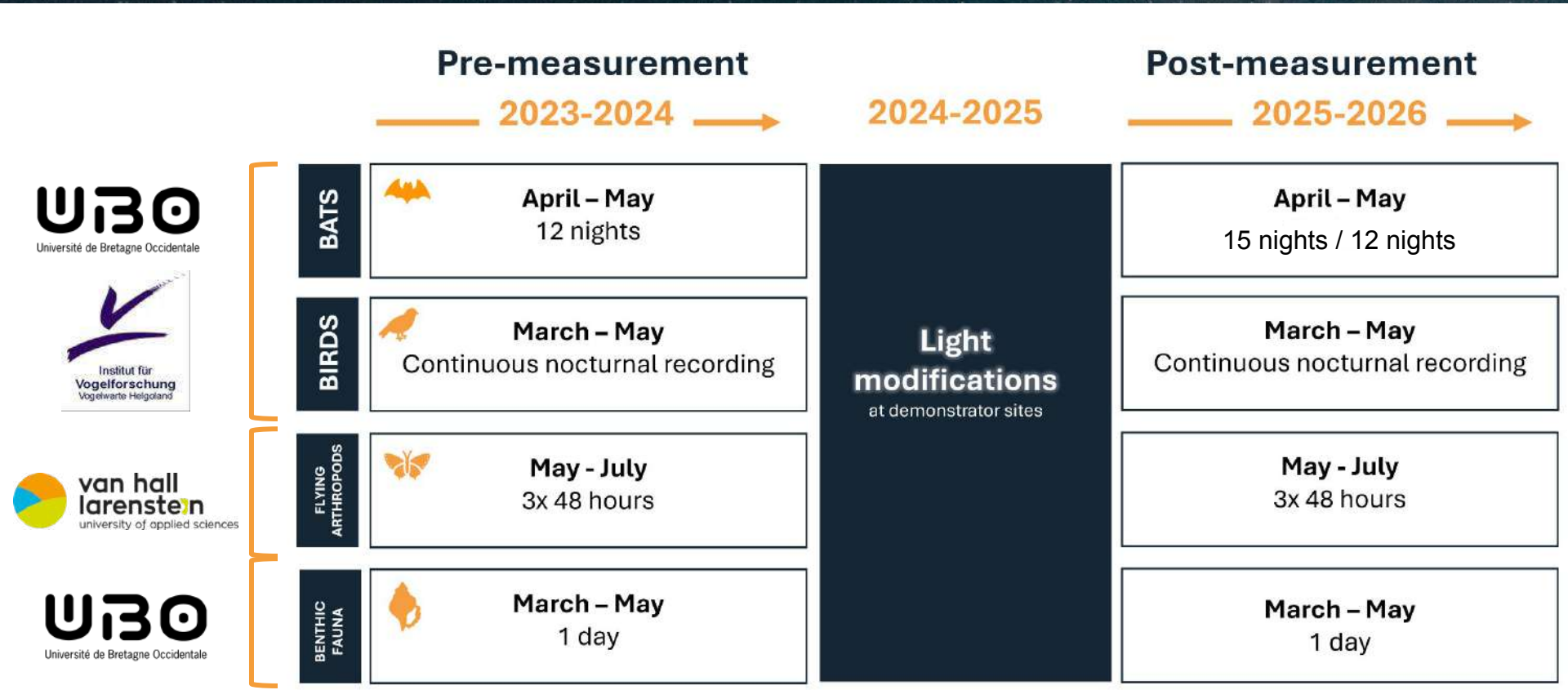
Total installed lighting flux	
Before light works: TOTAL : 521 800 lm in maximum illumination	After light changes: TOTAL : 187 400 lm in maximum illumination Illuminance study for a lighting better adapted to the needs of users

Evaluation Process

Objective of ecological monitoring:

Understand what species live at our demonstrator sites, their nocturnal activity and compare two types of lighting.

Evaluation Process: Ecological monitoring



Evaluation Process: Ecological monitoring

Main steps of ecological monitoring

Creation of common protocols → **Definition of treatment & control zones** → **Set-up & maintenance of monitoring equipment**

Placement of recorders at Sainte-Anne demo site

Bats monitoring at Sainte-Anne Valley

Results for 2024 monitoring (pre-light modifications)

Monitoring implemented

6 audiomoths (inc. 3 control)

Bats species identified

12 identified species

(10 in all points)

Barbastella barbastellus

Eptesicus serotinus

Myotis daubentonii

Nyctalus leisleri

Pipistrellus pygmaeus (1 point)

Plecotus auritus (3 points)

Plecotus austriacus

Rhinolophus ferrumequinum)

Nyctalus noctula

Pipistrellus kuhlii

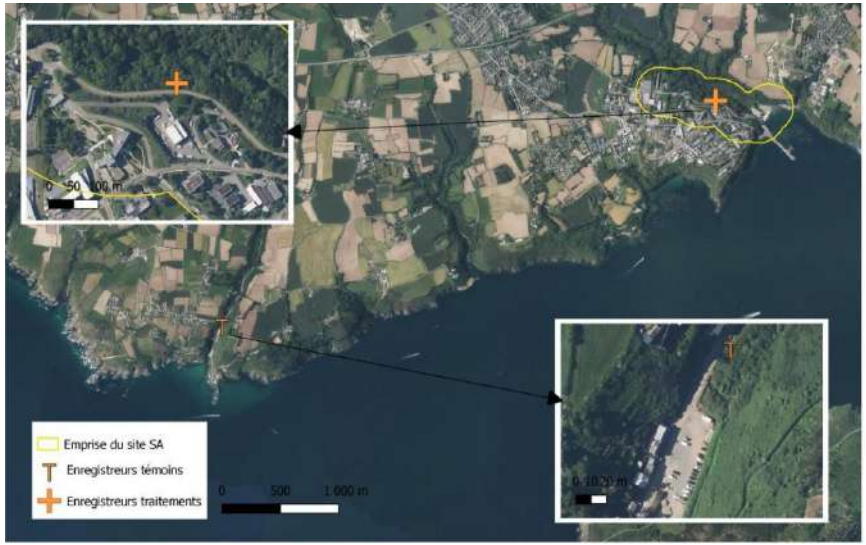
Pipistrellus nathusii

Pipistrellus pipistrellus

Birds monitoring at Sainte-Anne Valley

Results for 2024 monitoring (pre-light modifications)

Monitoring implemented



2 song-meters (inc. 1 control)

<u>For each recorder:</u>

~ 7000 recordings

~ 1150 hours of recording

Birds species identified

Turdus merula
Black bird

Phylloscopus collybita
Common Chiffchaff

Erithacus rubecula
European Robin

- Evaluation of diversity (Sound analysis)
- Focus on 3 sensitive species :
  - acoustic activity (abundance)
  - phenology

Diurnal birds singing at night
> Potential ALAN effects

Flying arthropodes monitoring at Sainte-Anne Valley

Results for 2024 monitoring (pre-light modifications)

Monitoring implemented

14 sticky traps (inc. 7 controls)

Analysis through abundance

Before modifications :

No main difference in size, total and nearly all order abundance between control and treatment zone

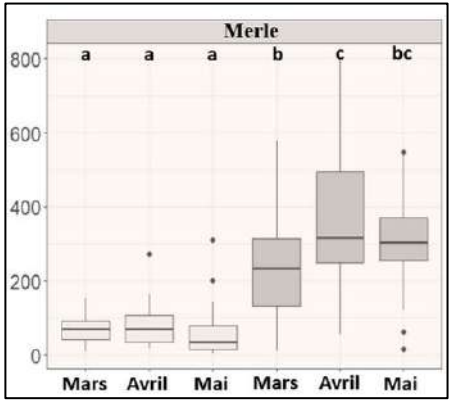
Ecological monitoring
Next steps

Next steps:

- Analysis of 2024 & 2025 data for comparison between sites and methods used for replication at transnational level.
- See if different types of light modifications has an impact on biodiversity Experimental so lighting changes might not have an effect!

Final objective:

- Creation of a monitoring guide after testing and approving of methodology for biodiversity monitoring for LP.
- Bring findings to a transnational level to better accompany municipalities/ports wanting to implement new lighting solutions.



Connect with us!

Interreg North Sea

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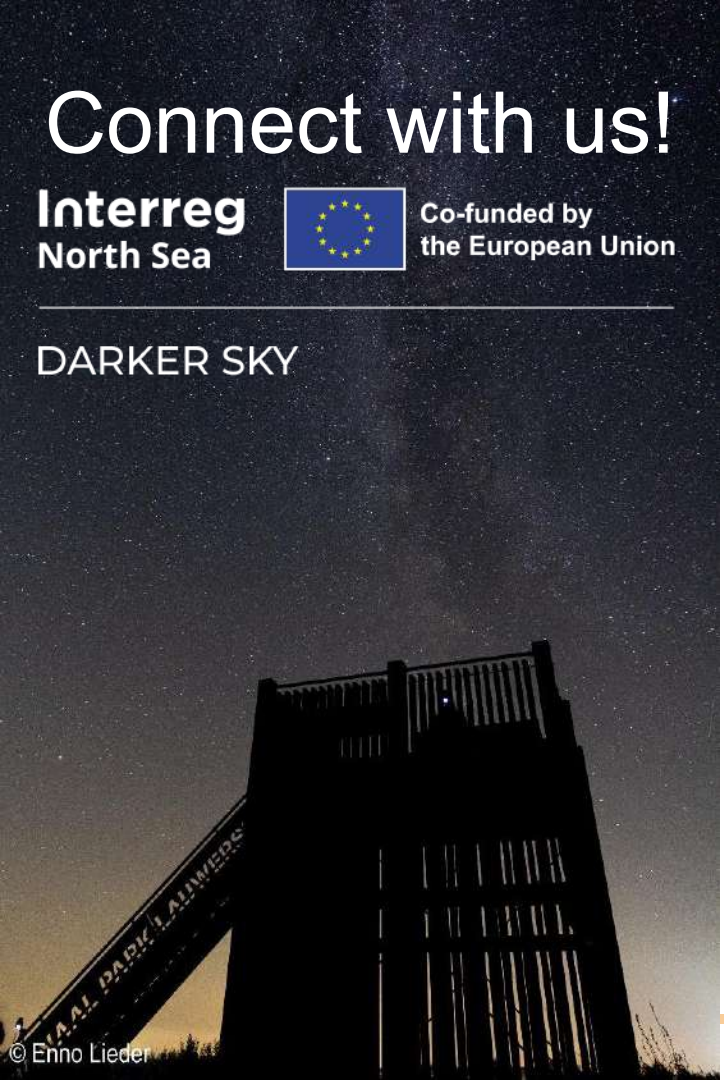

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