



BEeS

The LifeWatch ERIC Biodiversity & Ecosystem
eScience Conference



Heraklion, 30 June - 3 July 2025

04 July 2025 | 16:00



Session: Tracking the Wild: Unlocking Insights into Animal Movement, Behaviour, and Biologging

2 July 2025 | 14:30-16:30



First Documentation of Migration Dynamics of European Eels in Cyprus through Acoustic Telemetry

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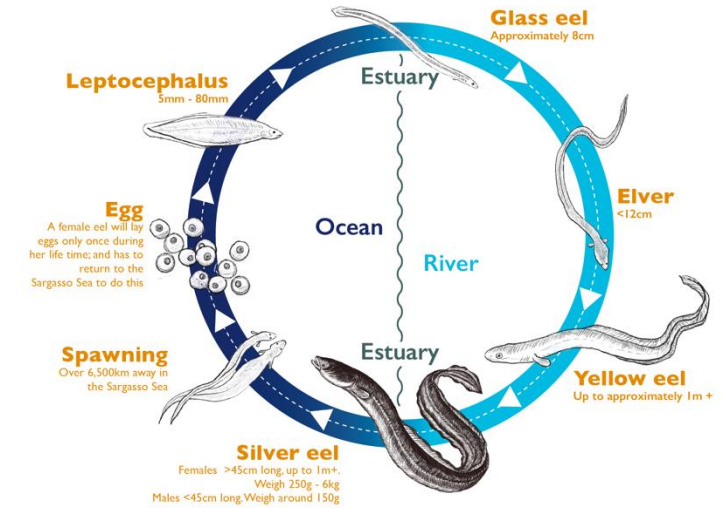
Why Study European Eels?

Species background: Critically endangered, *Anguilla anguilla*, complex life cycle, panmictic spawning, need for migration to Sargasso Sea.

Conservation concern: Severe population decline (95% since the 1980s), understudied in some Mediterranean and eastern populations.

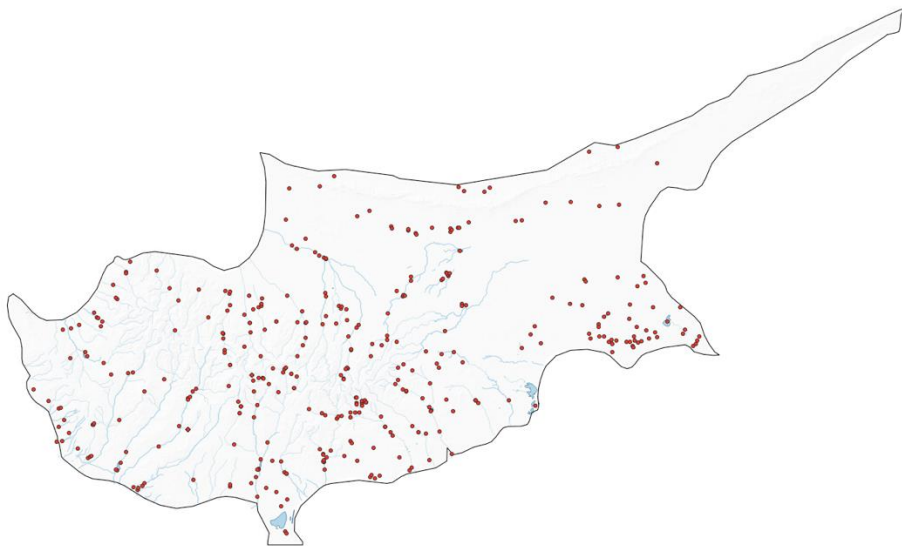
Research gap: No prior acoustic telemetry studies in Cyprus.

Study aim: Understand movement ecology of yellow and silver eels in a semi-arid Mediterranean river system.



Cyprus case study

- Due to most river being ephemeral, several dams (108) and many weirs have been constructed so far for irrigation purposes.
- Important limiting factor in both upstream and downstream migration of European eels



European eel status in Cyprus

- Cyprus was granted exemption (2009/310/EC) on April 2009 from any obligation to apply an EMP.
- Following this decision, additional findings suggested that *A. anguilla* may be more widespread than previously thought (Zogaris et al. 2012) (Griffiths et al. 2023)



Silver eels in Cyprus

- Until December 2024 no records of Silver eel presence in Cyprus.
- Allow the exemption of any policies regarding an eel management plan.
- First documented evidence of silver eel migration from Cyprus. (n=100+)



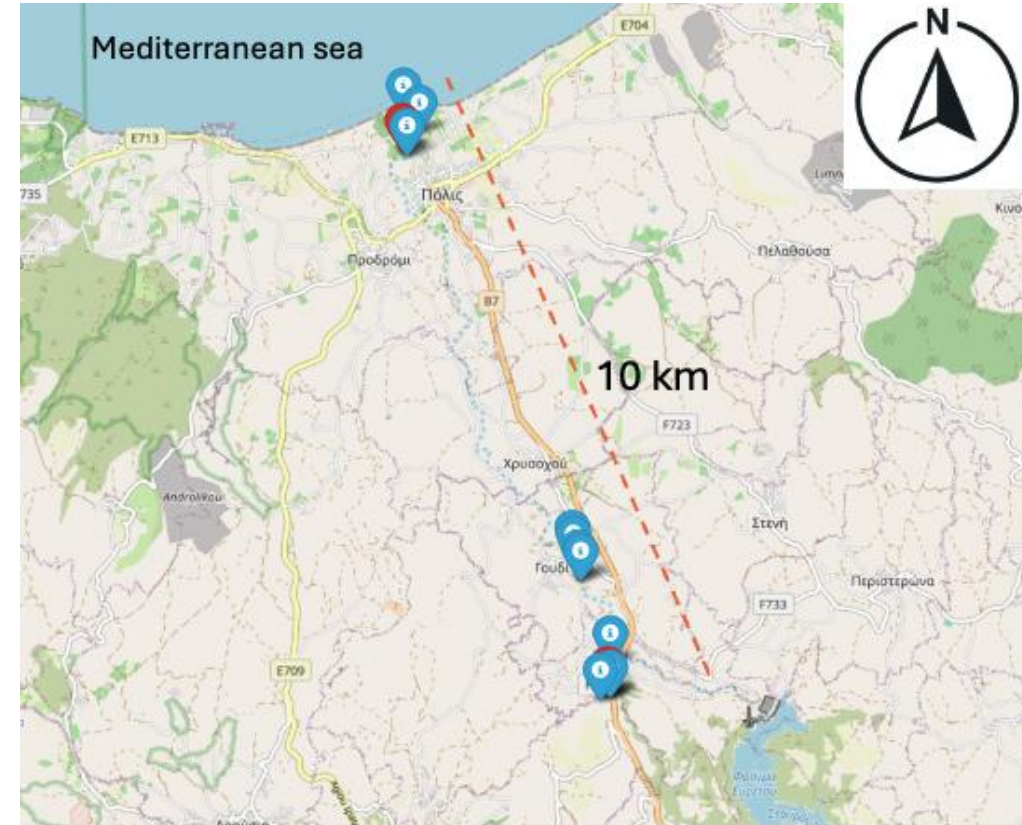
Study Aims

- Investigate eel movement patterns in a semi-arid Mediterranean river.
- Detect diel and seasonal patterns in behaviour.
- Identify environmental cues triggering migration.
- Locate possible migratory bottlenecks.

Study Area and Setup

Total of 6 acoustic receivers (VR2W) deployed:

- 5 in riverine habitats
- 1 in nearshore marine site
- Covers freshwater to sea continuum.
- First deployment of its kind in Cyprus.



Tagging and Tracking

- Surgical implantation of acoustic tags (yellow & silver eels).
- Anaesthesia and sterile procedure used.
- Tags: 16 V7/V9 series (dependent on size class).
- Manual scans with vr100-hydrophone



Acoustic receivers

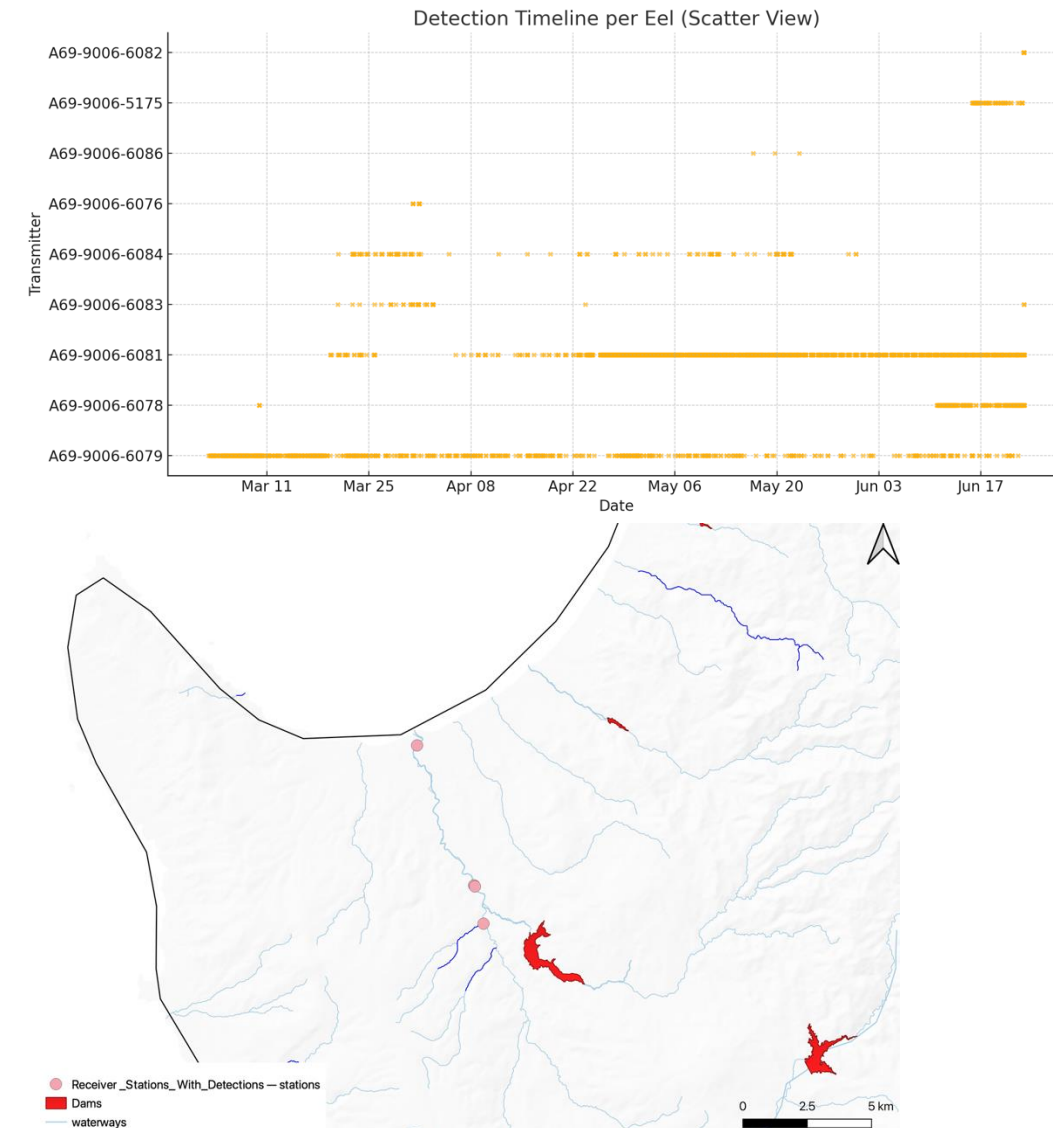


Acoustic tags

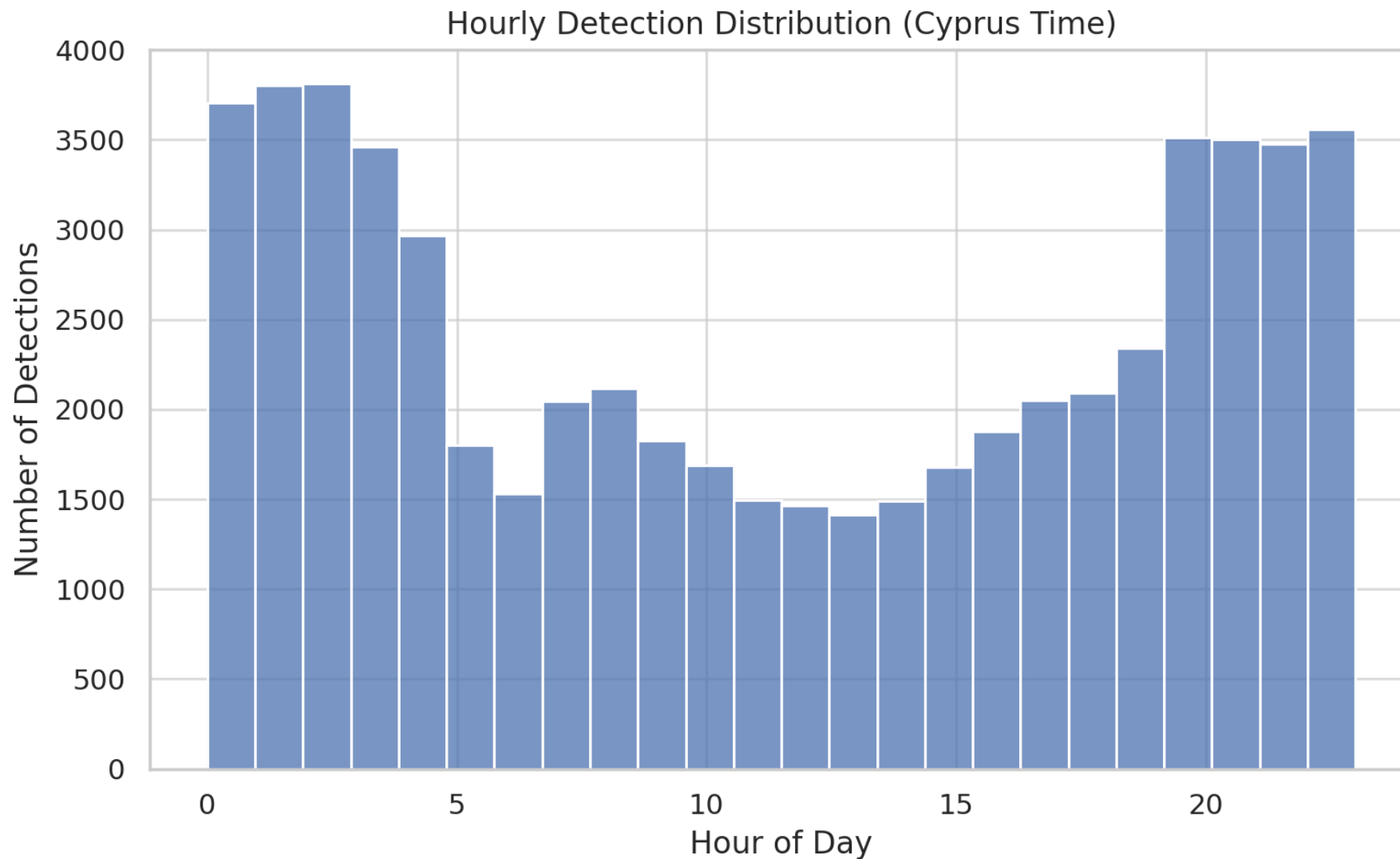


Early Insights from Detections

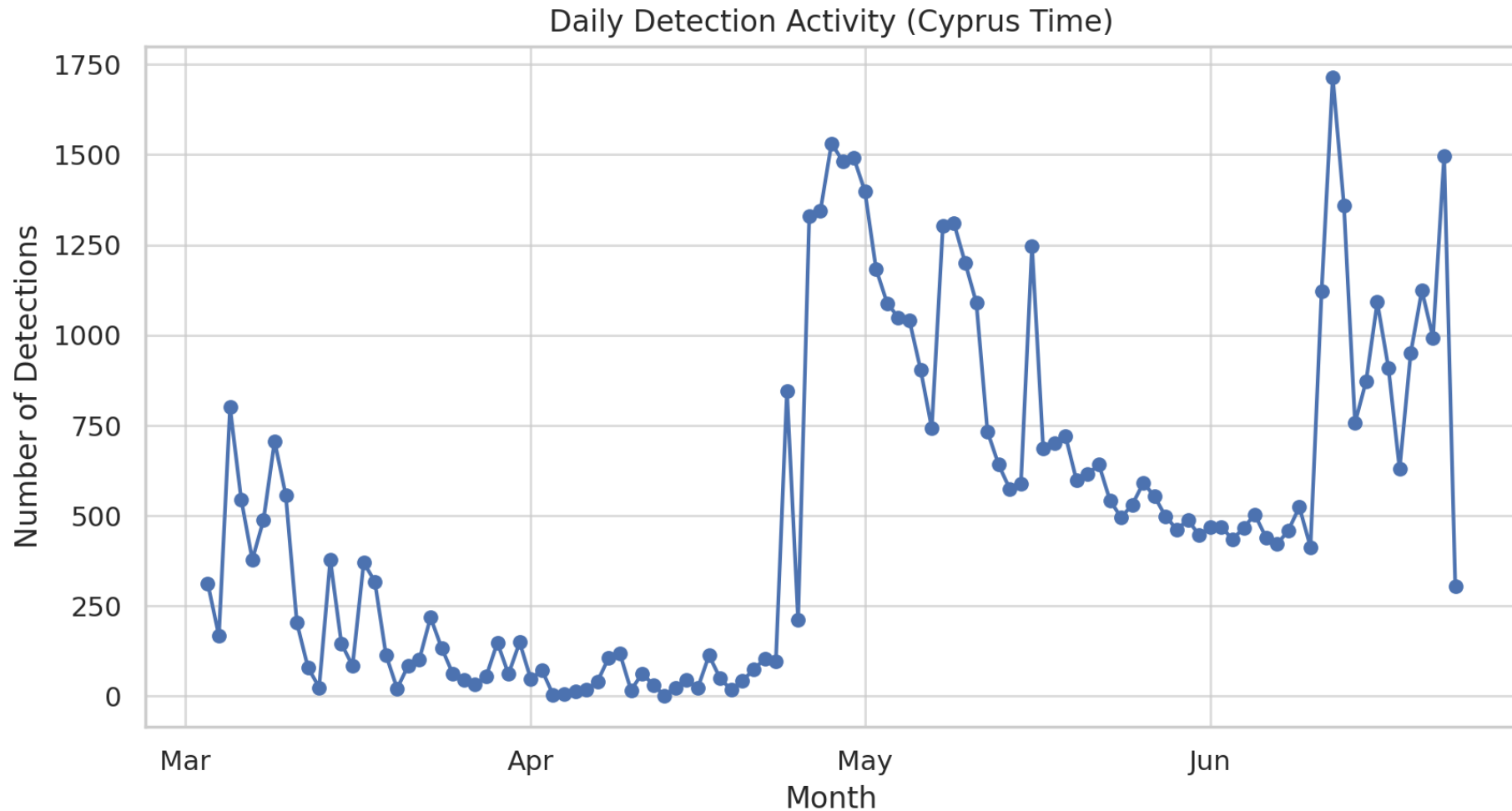
- Eel activity peaks at night (diel patterns).
- Limited rainfall with limited movement.
- 70% of tagged individuals detected
- Silver eel detections in June
- Some tagged eels stalled at upstream barriers.



Eel activity peaks at night (diel patterns).



Possible shifts in habitat use with season





What Does This Tell Us?

- Diel and seasonal behaviours driven by environmental cues.
- Semi-arid flow regimes may desynchronise migration.
- First biological data from Cyprus more data are needed.
- Identifies critical habitats and possible bottlenecks.

Ongoing Work & Future Direction

- Tagging continues in autumn 2025 (silver eel migration).
- Expanded sample size and multi-season coverage.
- Permanent environmental sensor integration (temp, flow, moon phase).
- Potential for broader Mediterranean comparisons.



Acknowledgements

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- William Beaumont GWCT



Thank you!



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Questions?
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