



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

2 July 2025 | 14:30-16:30



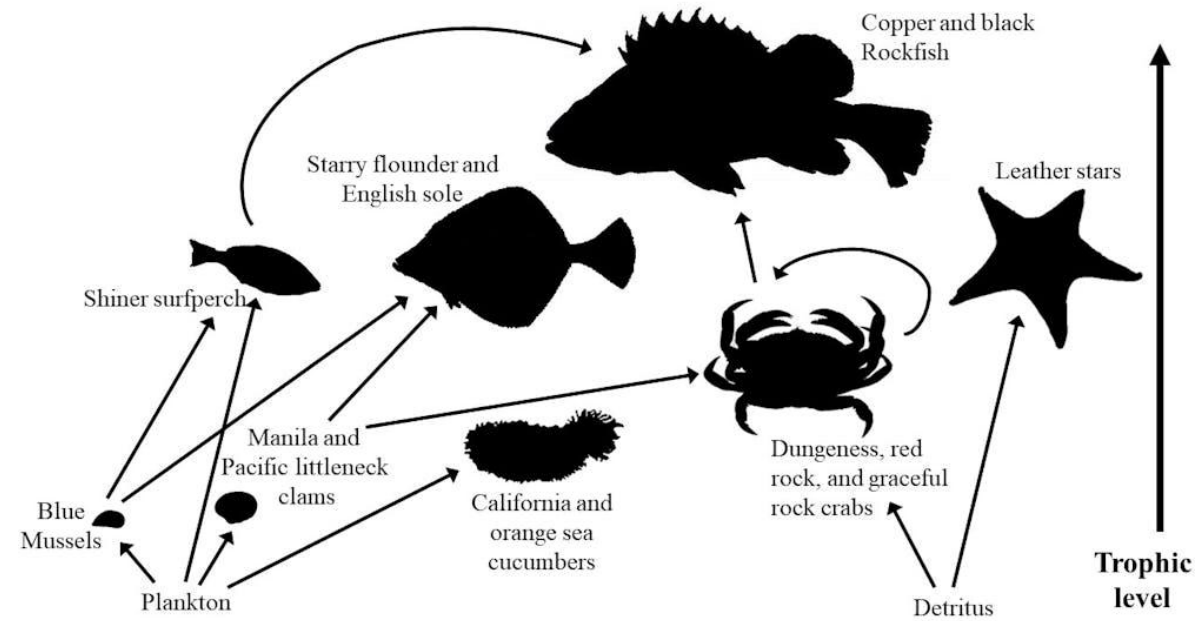
Spatiotemporal segregation drives predator-prey coexistence in the deep sea

Antoni Sánchez-Márquez, Ivan Masmitjà, Maria Vigo, Víctor Martín-Vélez, Jacopo Aguzzi, Nixon Bahamon, José Antonio García, Bernat Hereu, Joan Baptista Company and Joan Navarro

2 July 2025 | 14:30-16:30

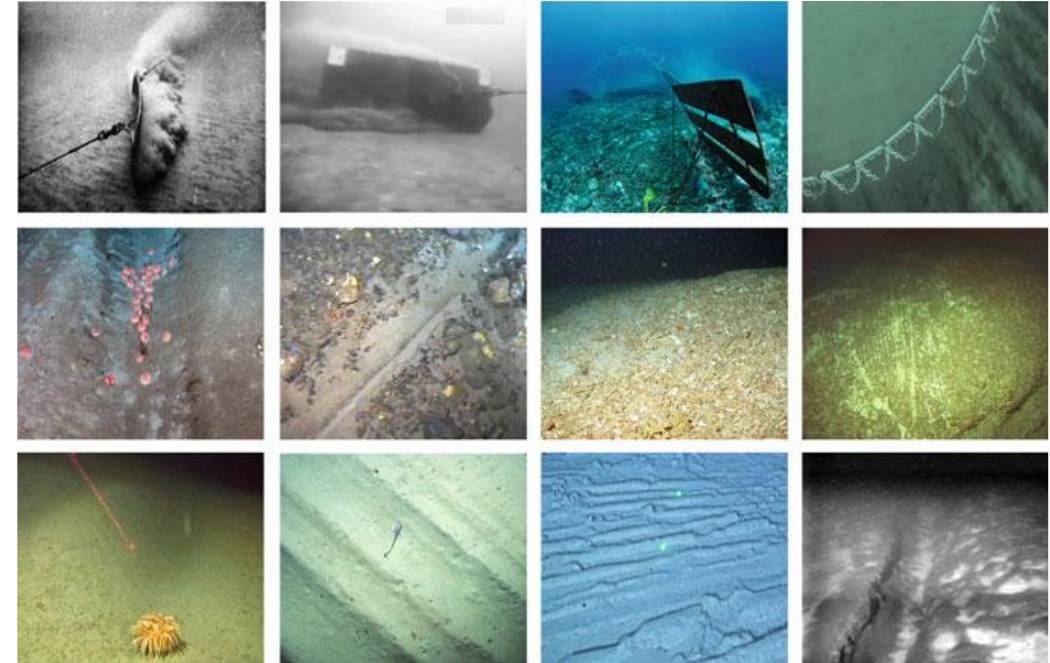
Predator-prey interactions

- Predator presence can affect prey species through a landscape of fear
- Prey behavior changes
- Species distribution patterns
- Remain poorly understood in marine ecosystems



Deep-sea habitats

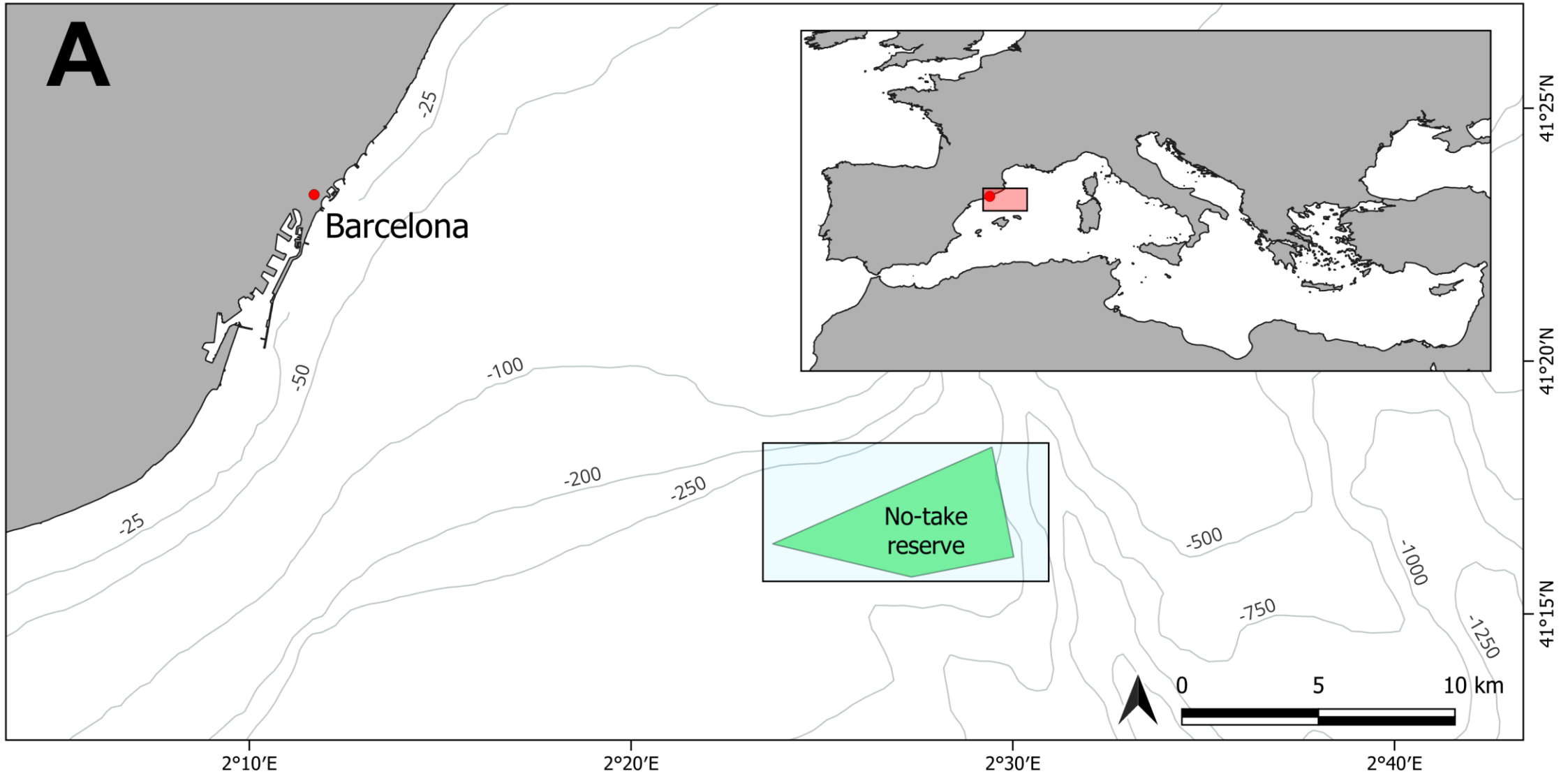
- Slow sedimentation rates
- Low productivity & biomass
- Long lived, slow growing, late maturity and low fecundity
- Vulnerable habitat



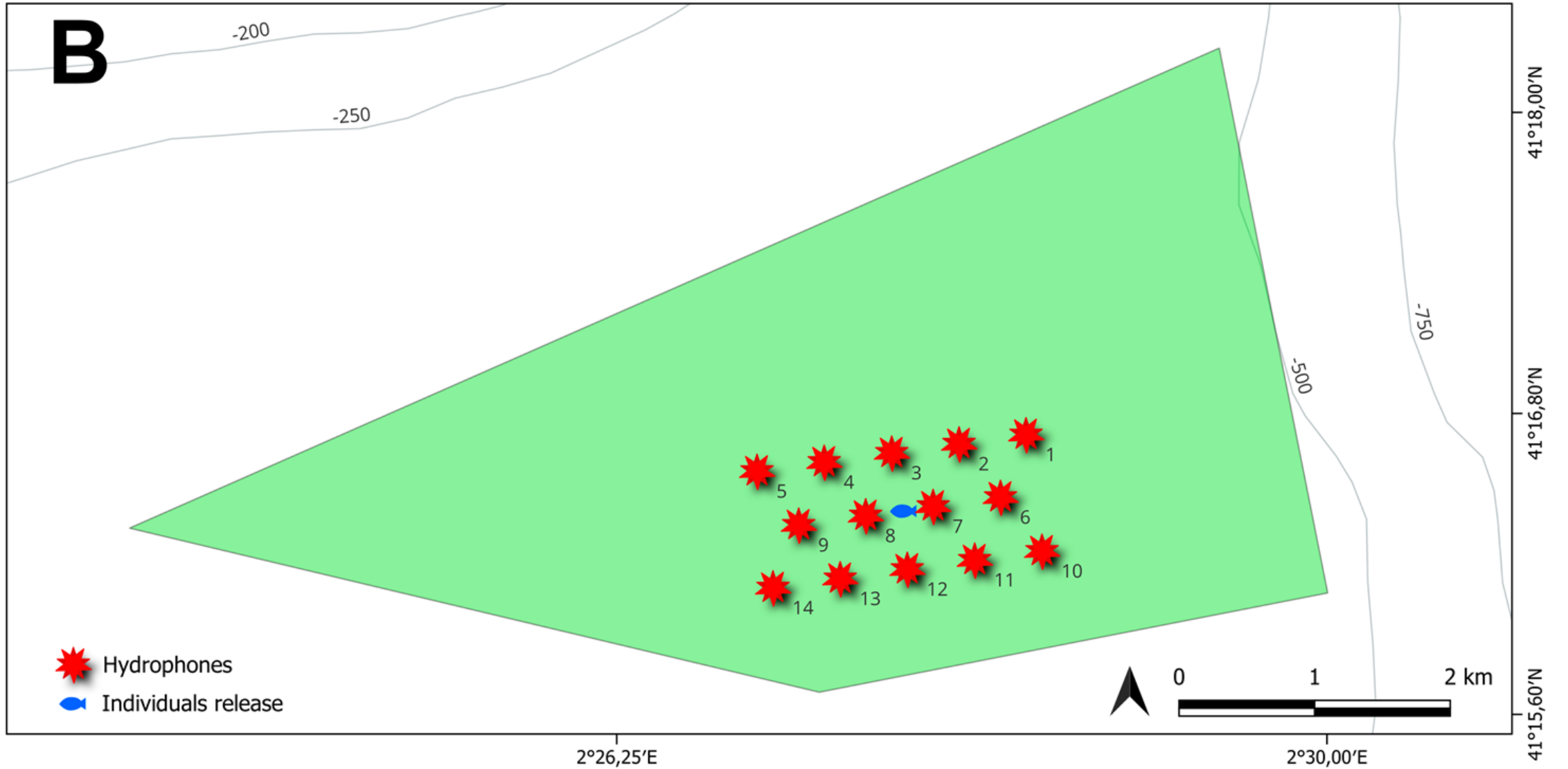
Extracted from Oberle et al., 2017. DOI: 10.1007/978-3-319-57852

Investigate **spatial ecology** and **diel activity patterns** of **two predators** and one of their **prey** in **deep-sea** using acoustic tracking methods in a no-take MPA

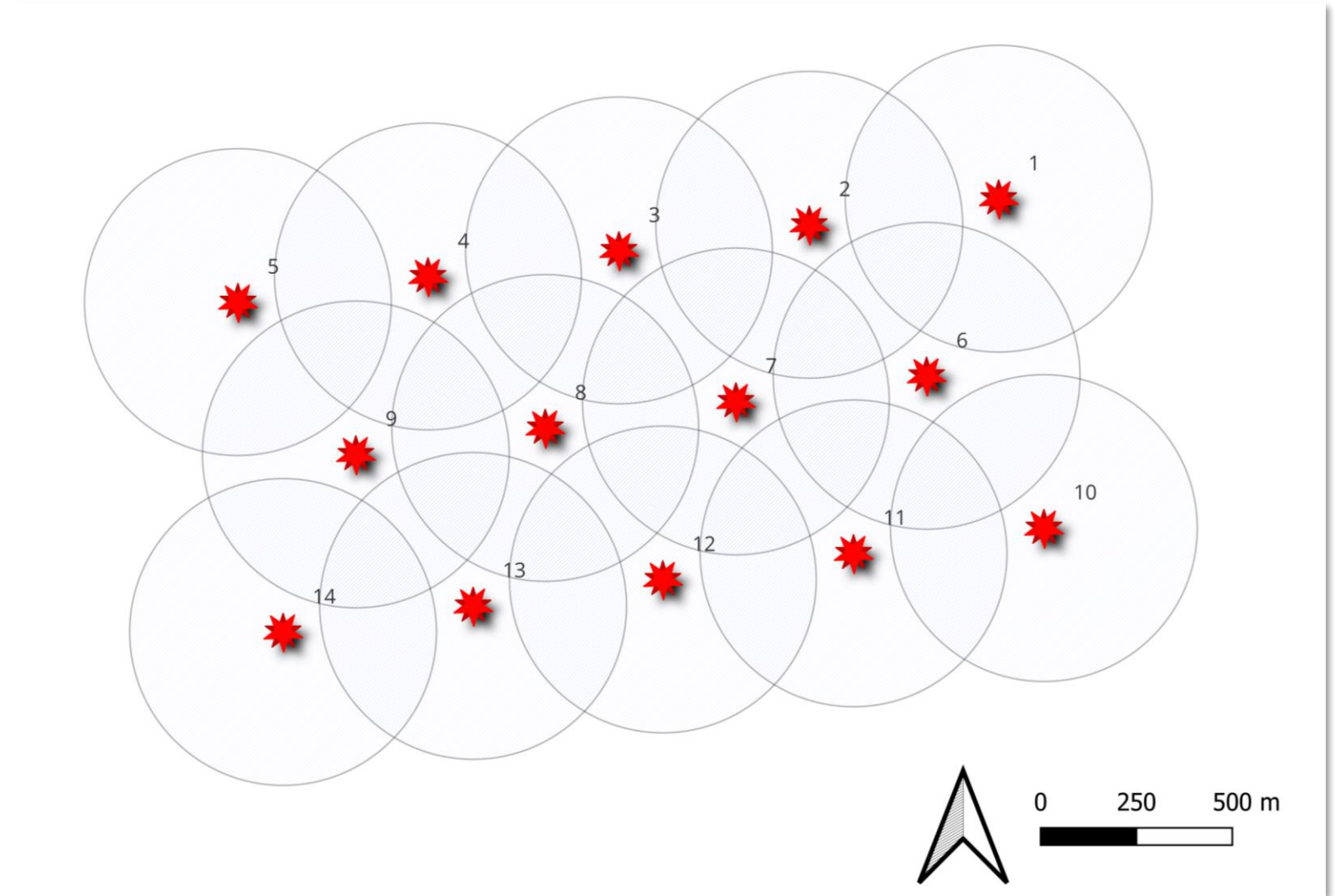
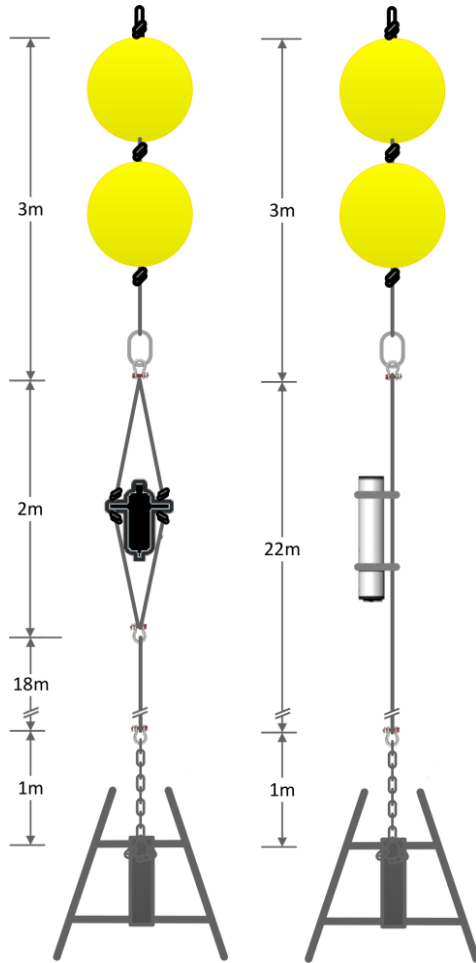
Study area



Study area



Acoustic array



Species selection



Small-spotted catshark (*Scyliorhinus canicula*)



Horned octopus (*Eledone cirrhosa*)

Survivability

Abundance

Size



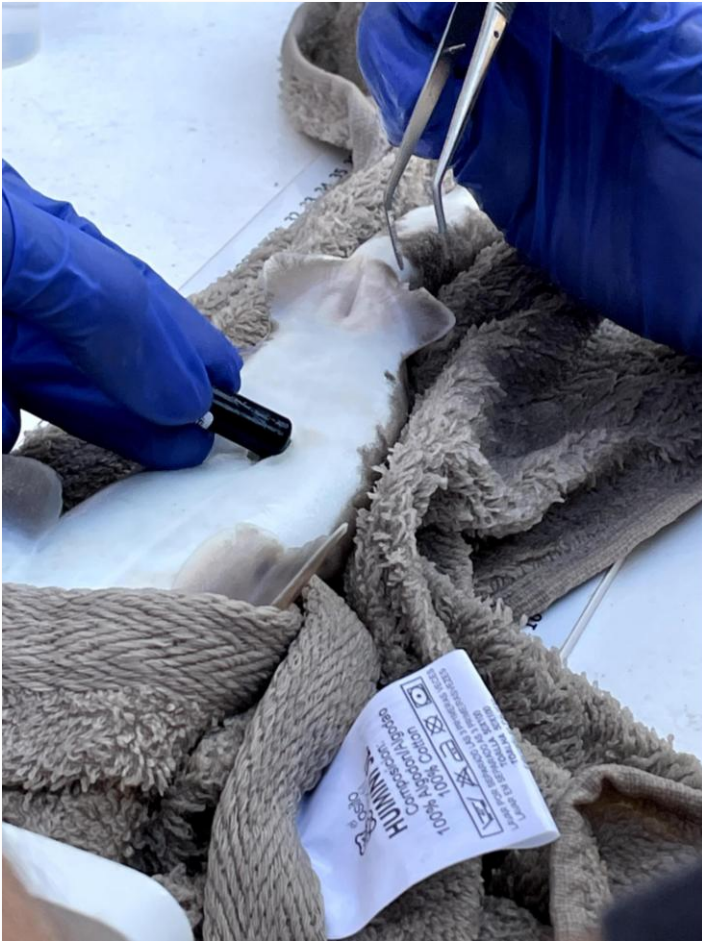
Norway lobster (*Nephrops norvegicus*)



European conger eel (*Conger conger*)

Acoustic tagging

Small-spotted catshark



Horned octopus



Norway lobster



Traditional tagging

Small-spotted catshark



Horned octopus



Norway lobster

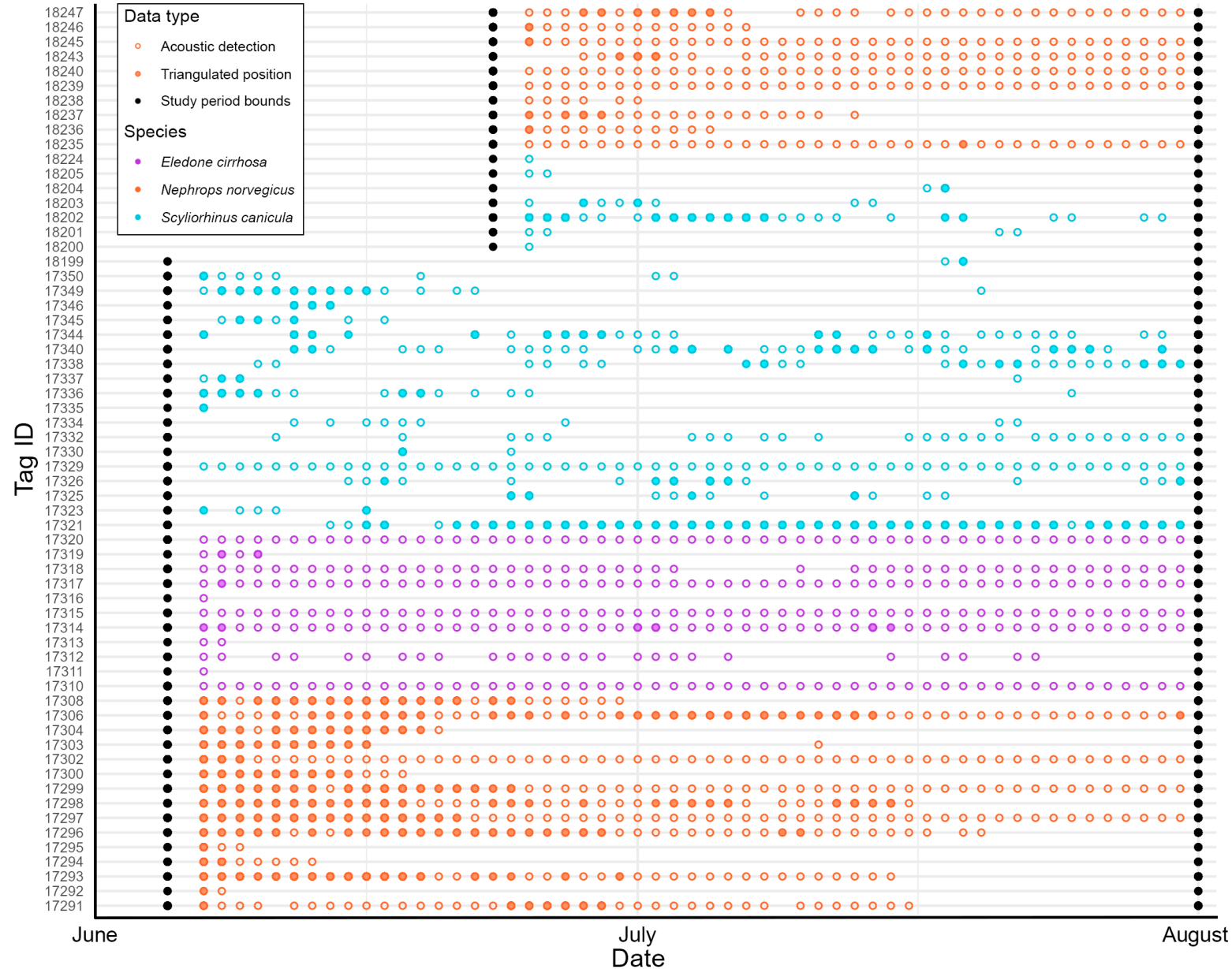


Released individuals

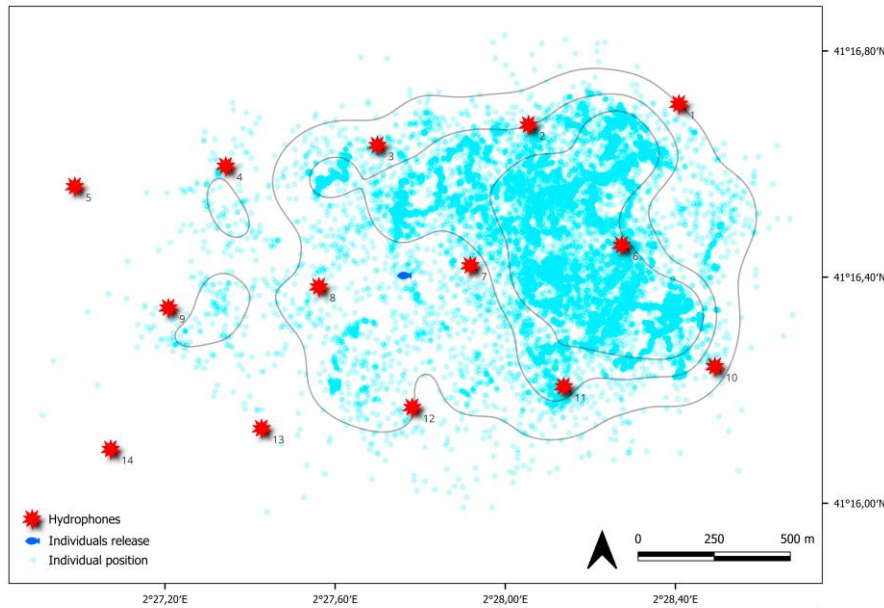
	June 2023
Small-spotted catshark	38
Horned octopus	13
Norway lobster	32
Total	83 ind



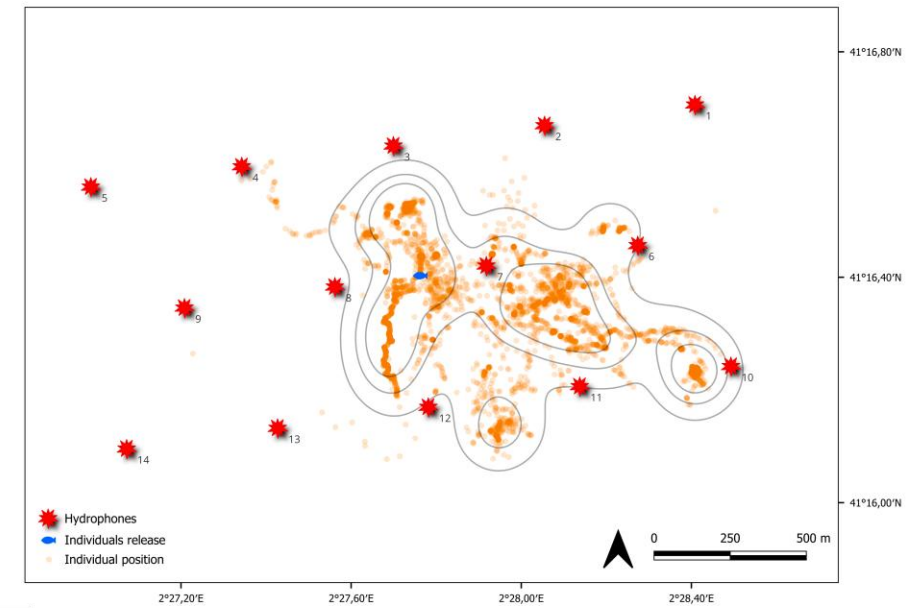
Data visualization: abacus plot



Positioning data



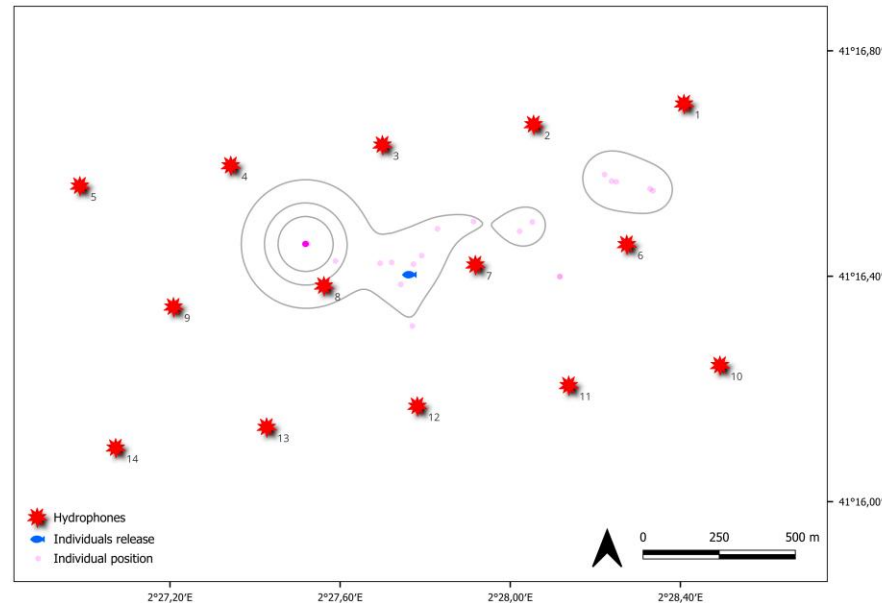
Horned octopus



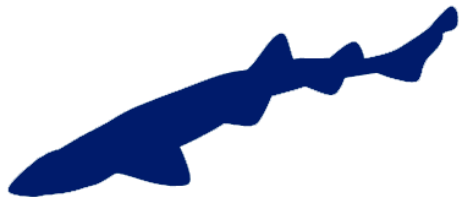
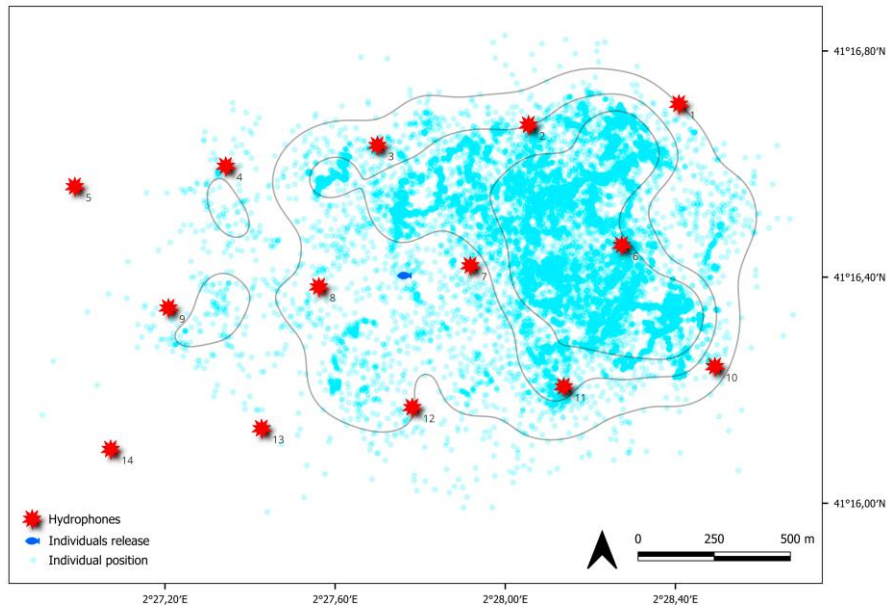
Norway lobster



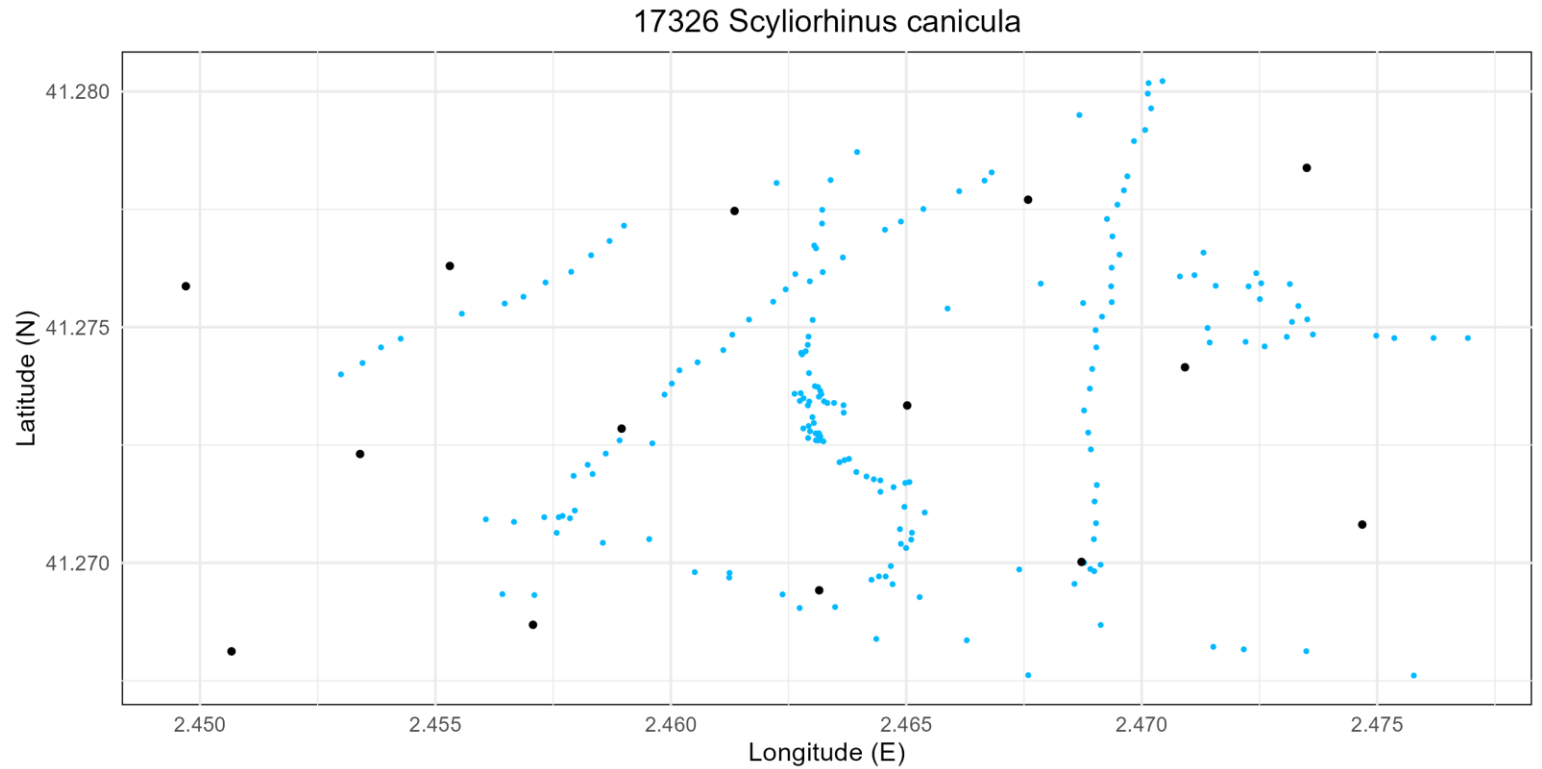
Small-spotted catshark



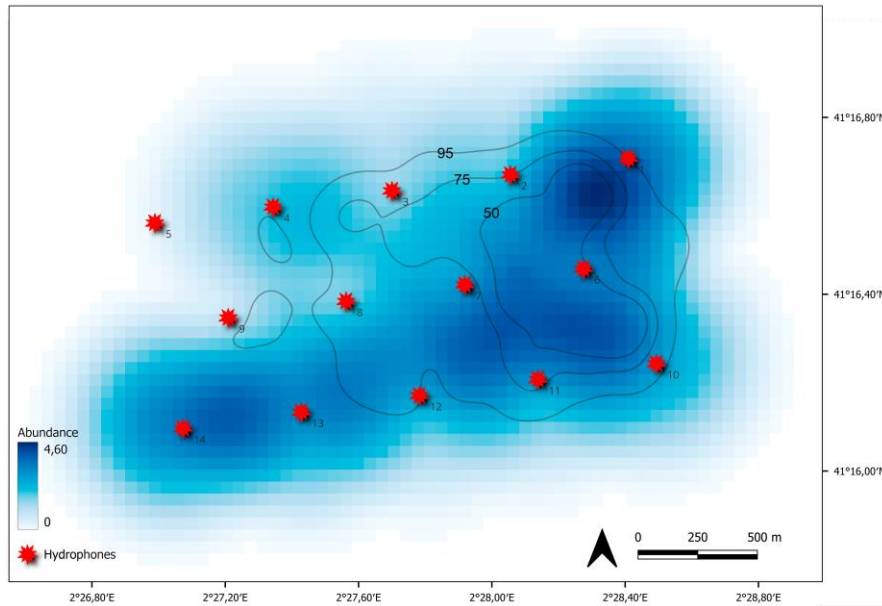
Positioning data



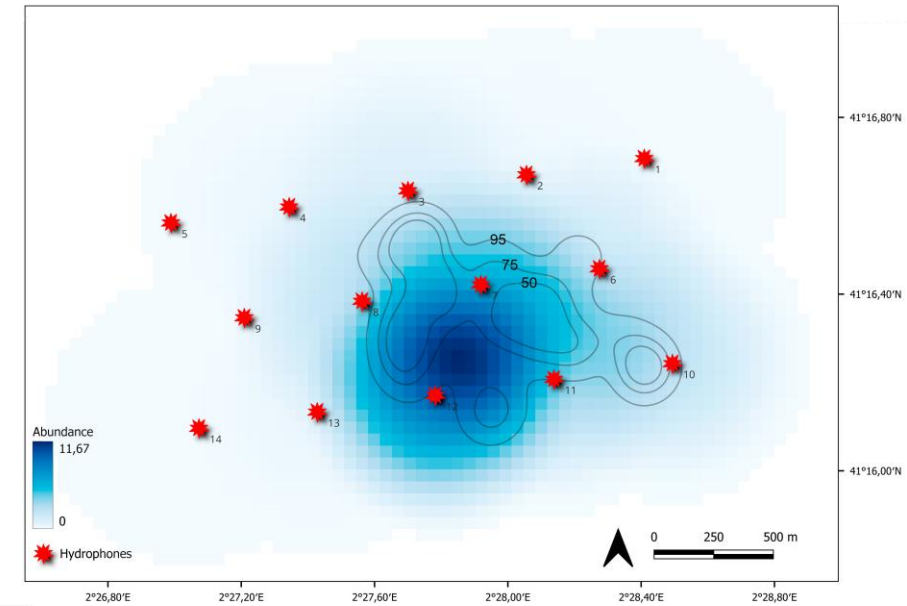
Small-spotted catshark



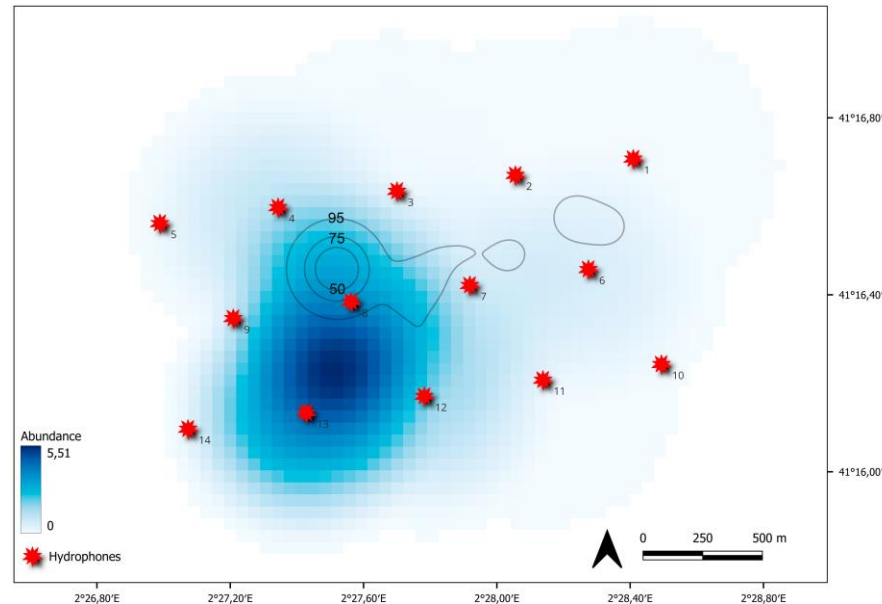
Detection data



Horned octopus



Norway lobster

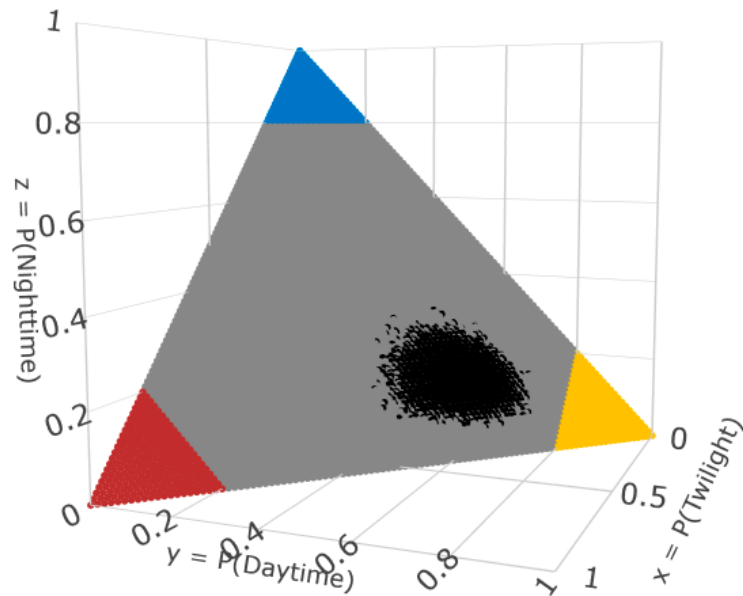


Activity patterns

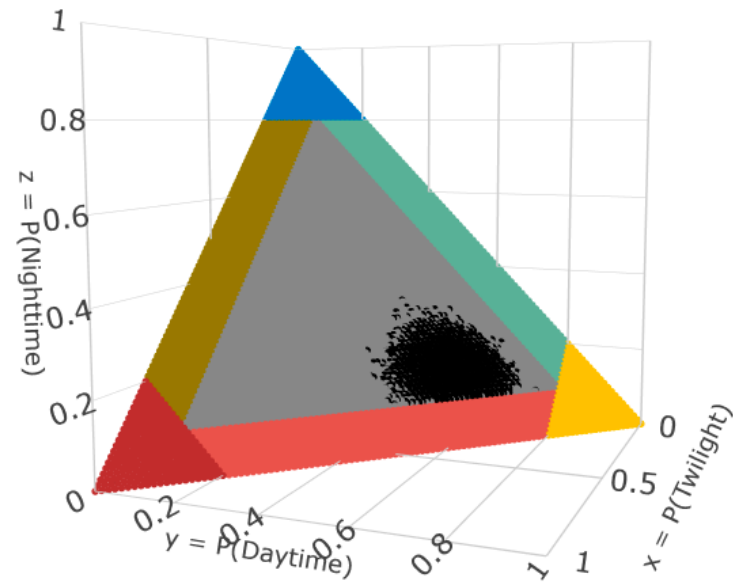
Gerber et al., 2024. DOI: 10.1111/1365-2656.14035



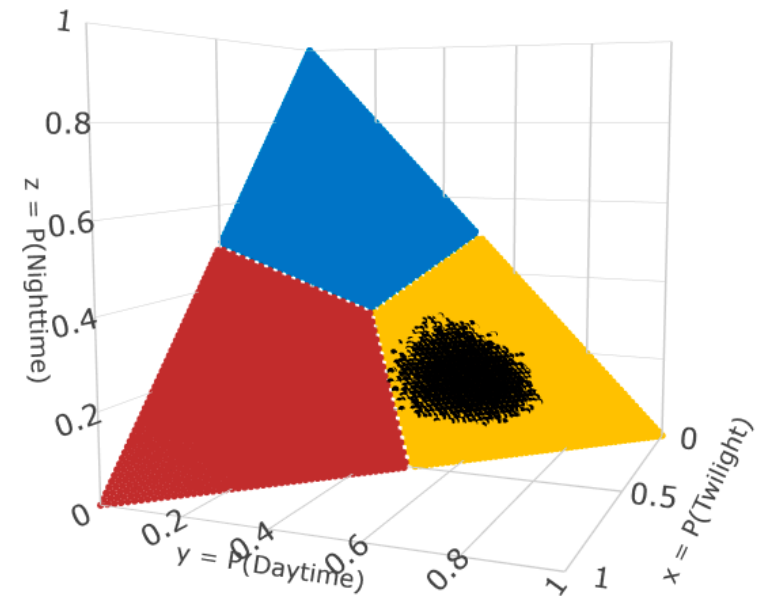
Traditional



General



Maximizing



● Cathemeral General ● Crepuscular ● Crepuscular-Nocturnal ● Diurnal
 ● Diurnal-Crepuscular ● Diurnal-Nocturnal ● Nocturnal ● posteriors

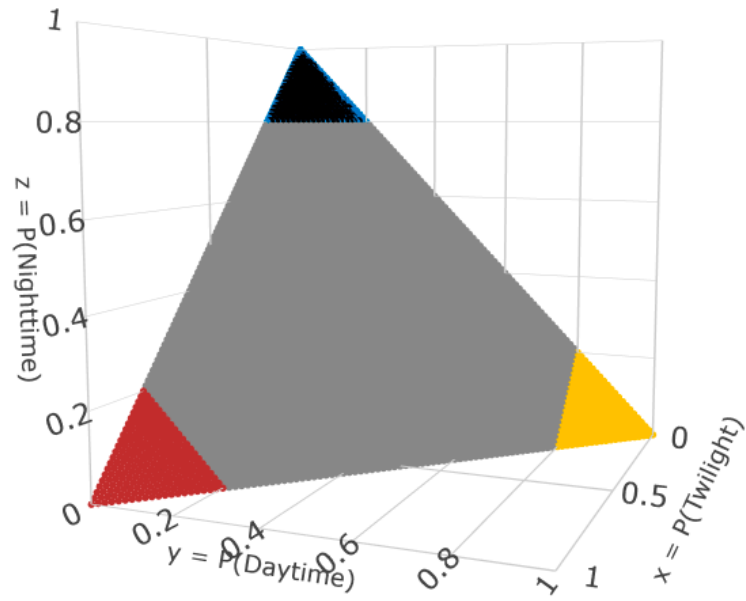
Activity patterns

Gerber et al., 2024. DOI: 10.1111/1365-2656.14035

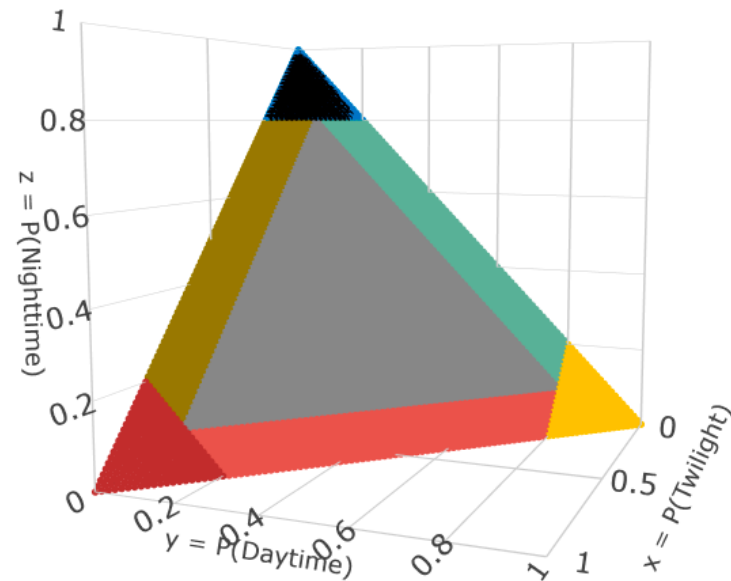


Horned octopus

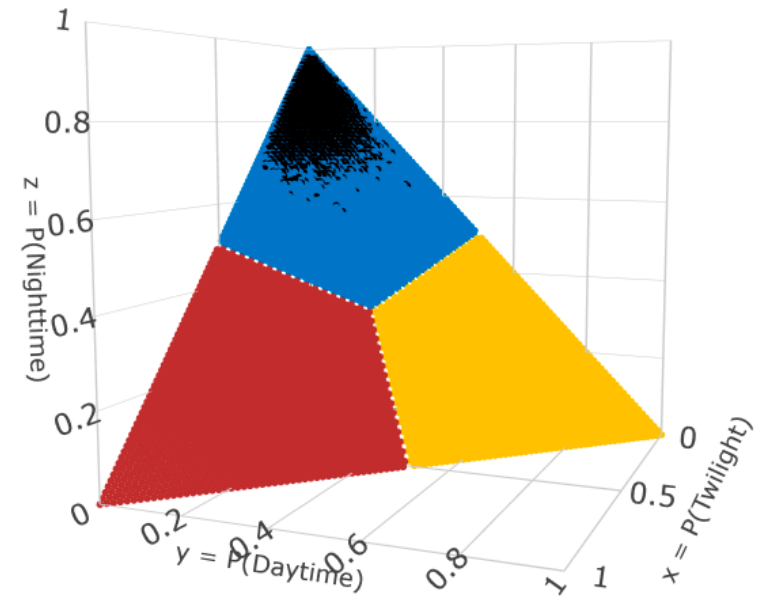
Traditional



General



Maximizing



- Cathemeral General
- Crepuscular
- Crepuscular-Nocturnal
- Diurnal
- Diurnal-Crepuscular
- Diurnal-Nocturnal
- Nocturnal
- posteriors

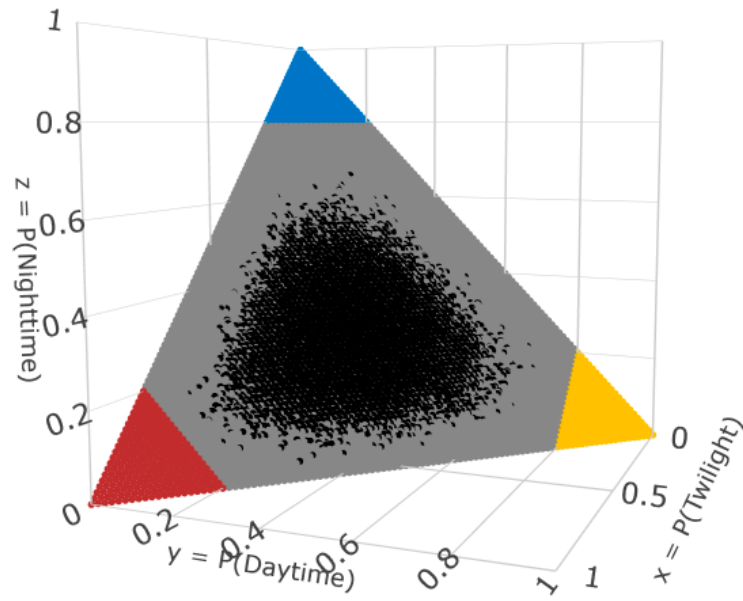
Activity patterns

Gerber et al., 2024. DOI: 10.1111/1365-2656.14035

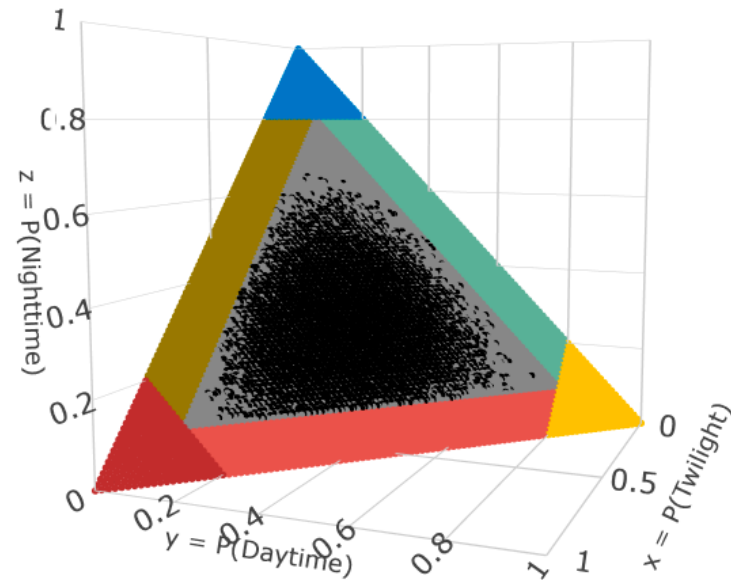


Norway lobster

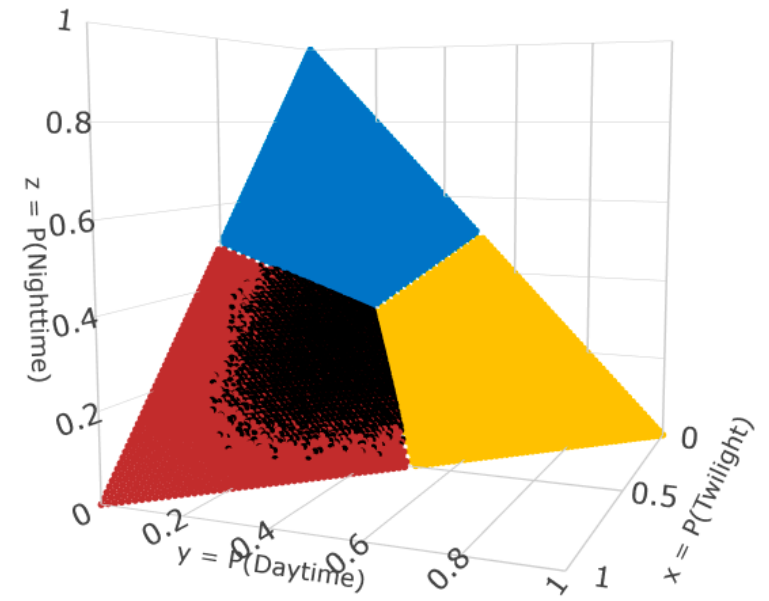
Traditional



General



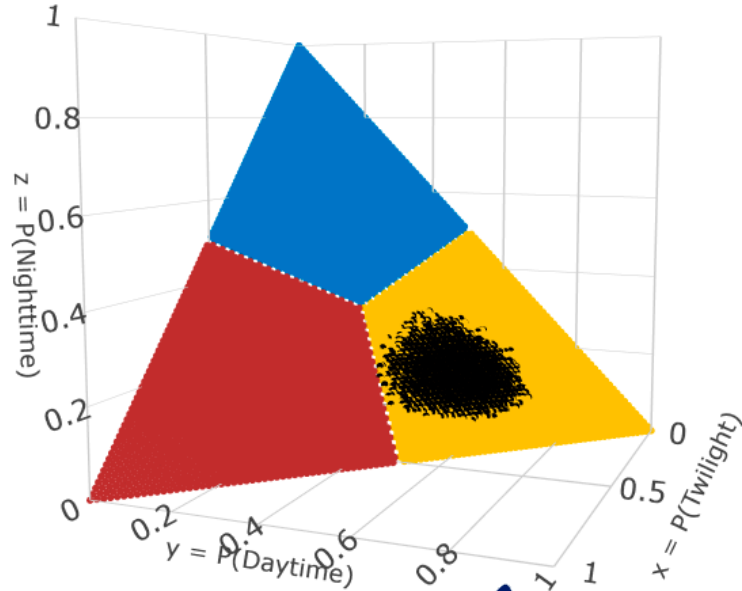
Maximizing



- Cathemeral General
- Crepuscular
- Crepuscular-Nocturnal
- Diurnal
- Diurnal-Crepuscular
- Diurnal-Nocturnal
- Nocturnal
- posteriors

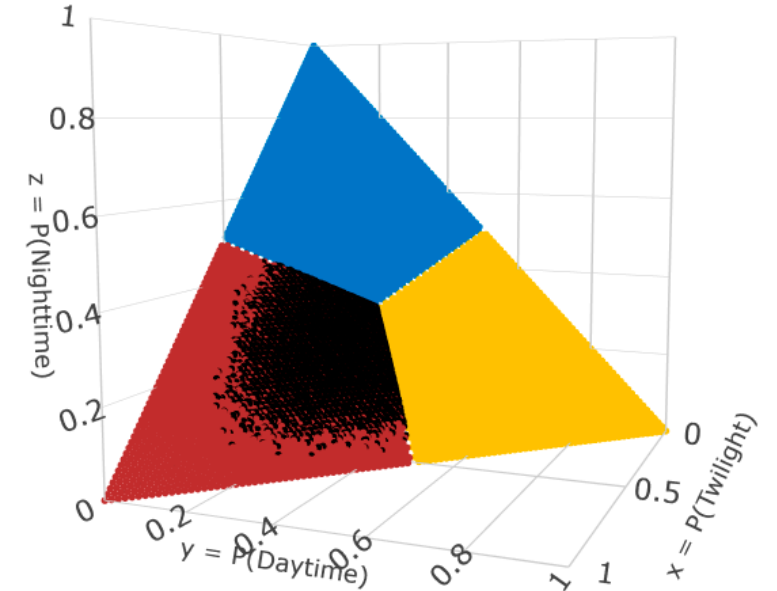
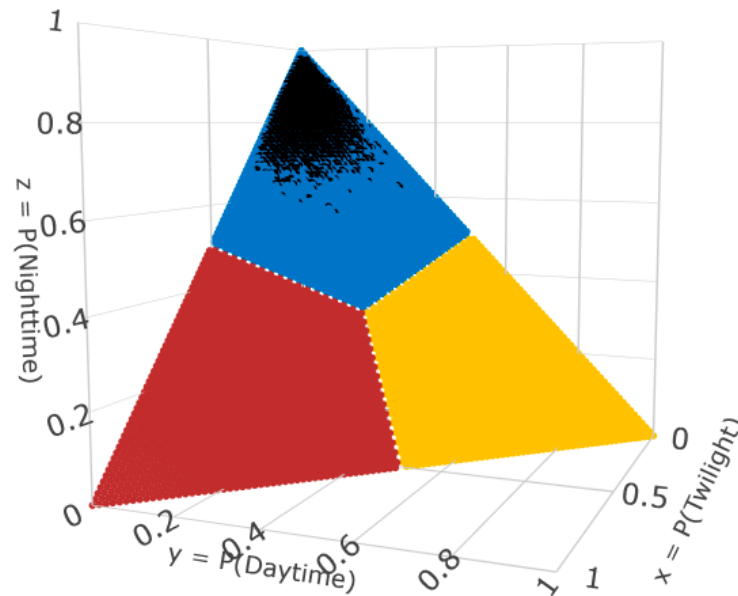
Activity patterns

Gerber et al., 2024. DOI: 10.1111/1365-2656.14035



Small-spotted catshark

Horned octopus



Norway lobster

Conclusions

- This study **advances** the understanding of **spatial ecology** and **predator-prey dynamics** of **deep-sea** species
- **Spatial** and **temporal segregation** of **predator** and **prey species** over a two-month time period

Thank you!

Questions?



BEEs

The LifeWatch ERIC Biodiversity & Ecosystem
eScience Conference



Heraklion, 30 June - 3 July 2025

Antoni Sánchez-Márquez



antoni@icm.csic.es / antonisanchezmar@gmail.com



0000-0003-0414-4928