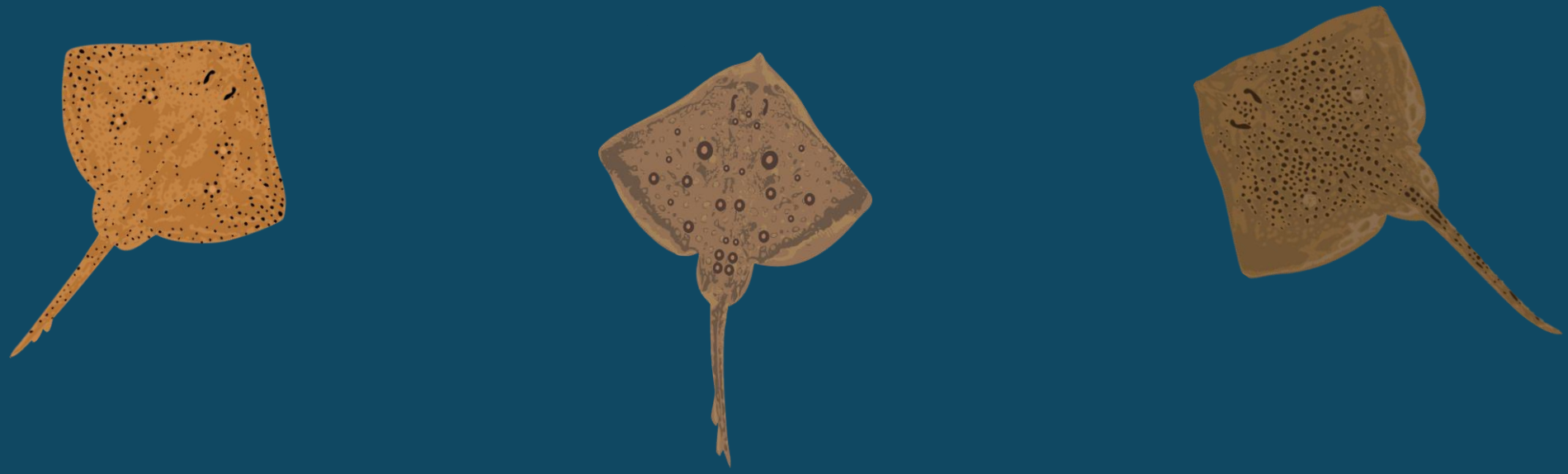
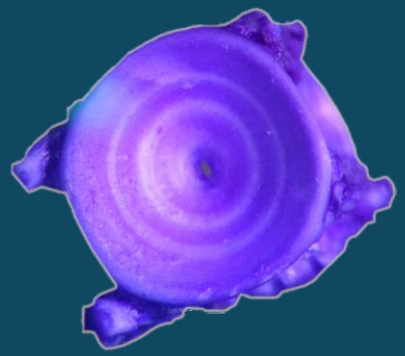
Skate Movement Ecology and Life History Characteristics

Eleanor Greenway, Jurgen Batsleer, and Jan Jaap Poos

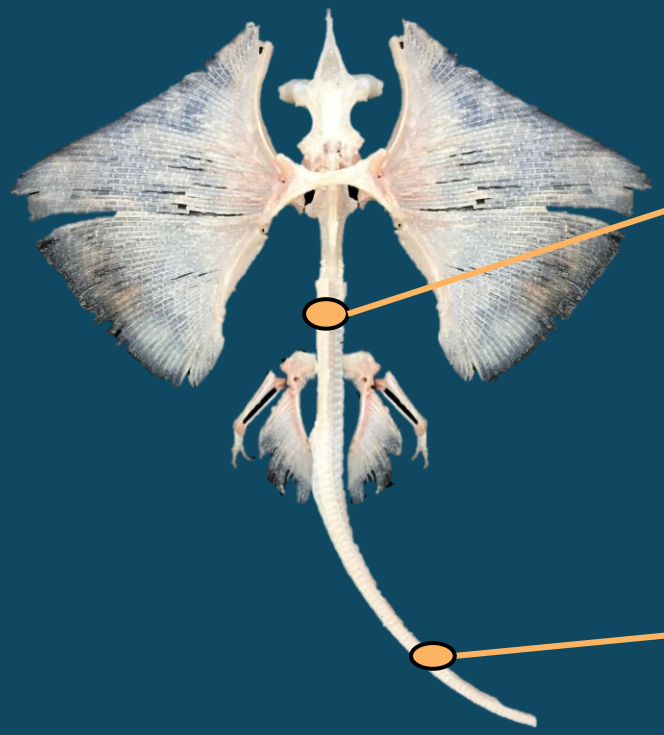


Ageing Introduction



- Age data are crucial for improving sustainable management practices
- Ageing techniques are species-specific
- Identify most precise technique
- Improve consistency of ageing methodologies across institutions

Ageing Techniques



Anterior

Posterior

Stained

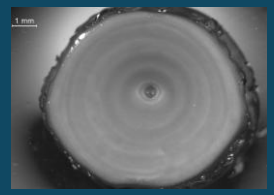
Unstained

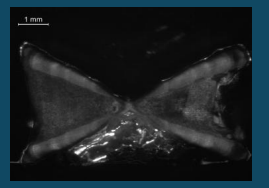
Whole

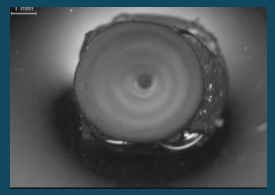
Sectioned

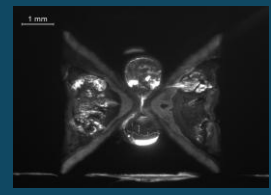
Whole

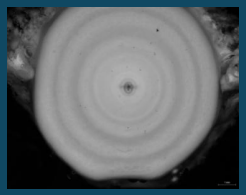
Sectioned

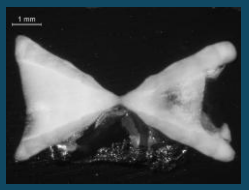


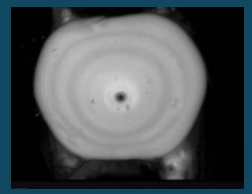


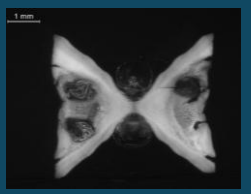










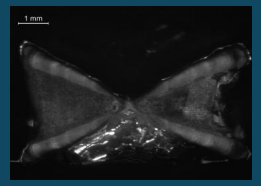


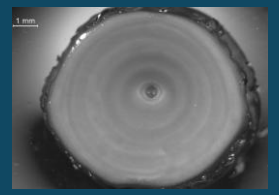
Ageing Techniques

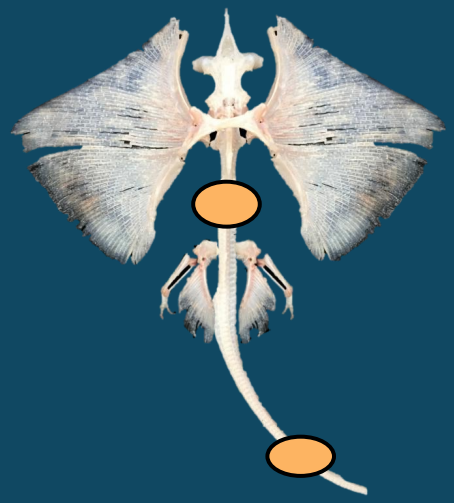
- Cleaning and staining protocol established
  - → pepsin and HCl solution
  - → 0.005% crystal violet

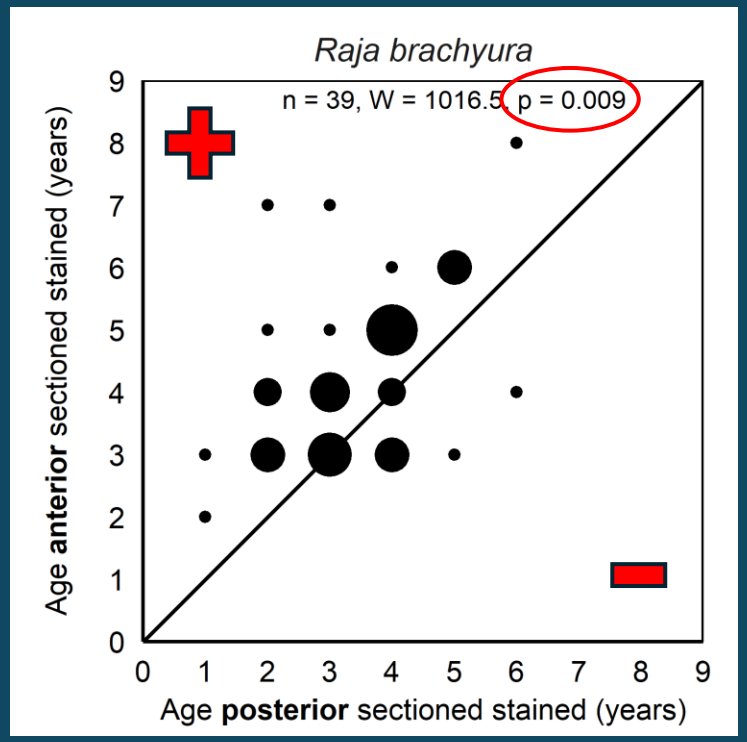
- Modal ages from 8 age readers

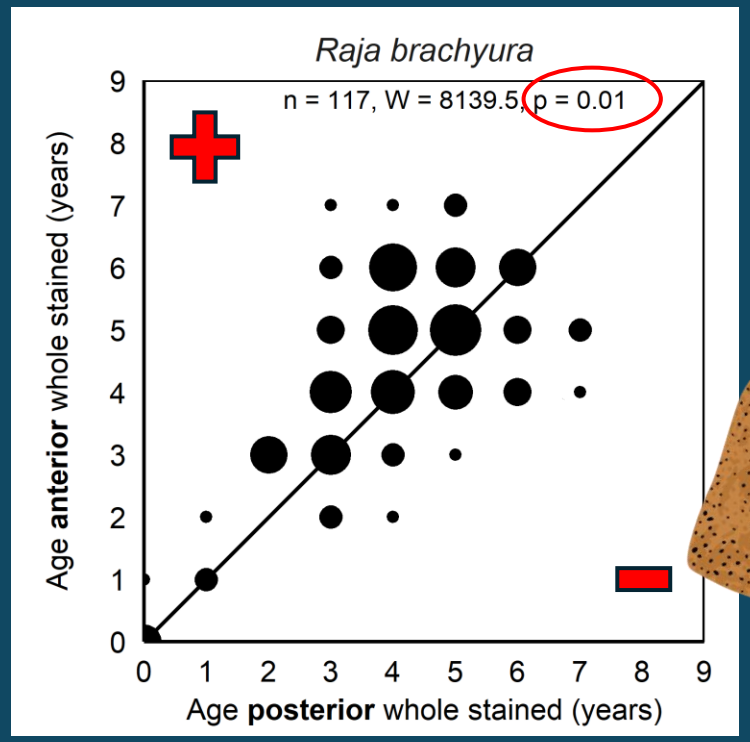
Results: Anterior vs Posterior

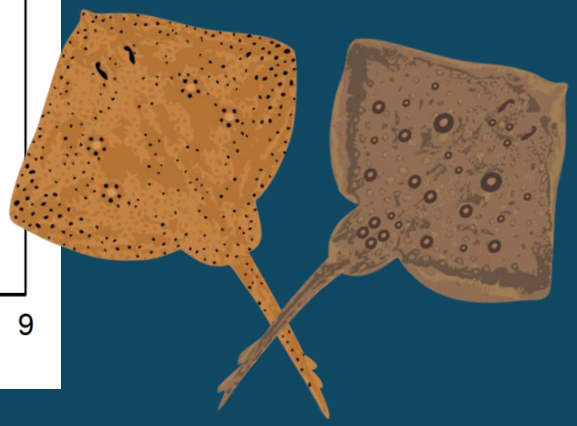




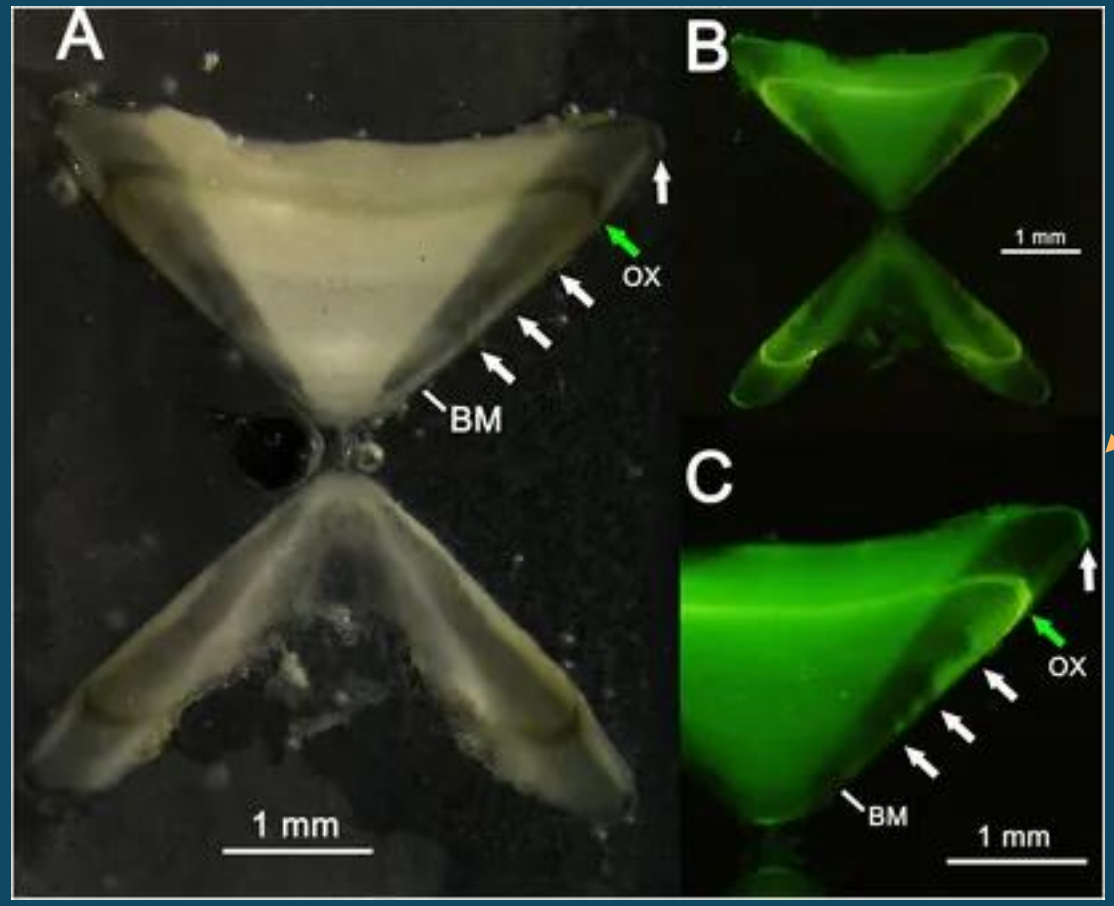


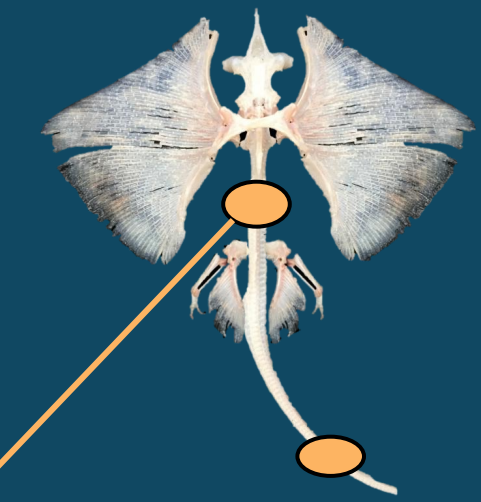






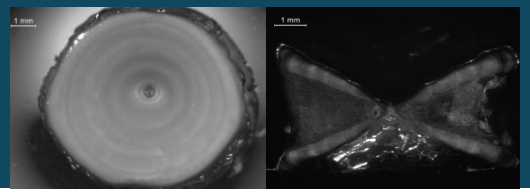
Anterior vs Posterior - Validation

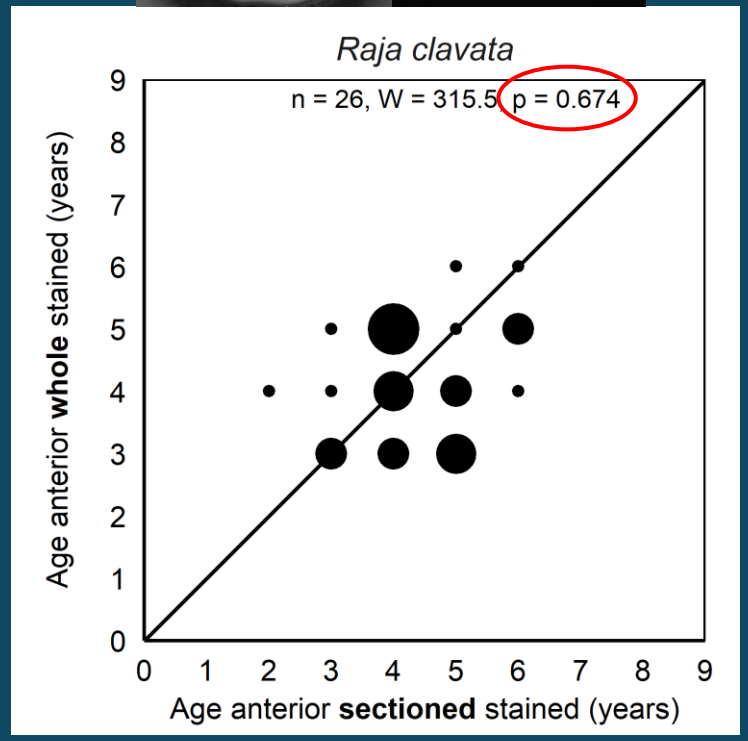


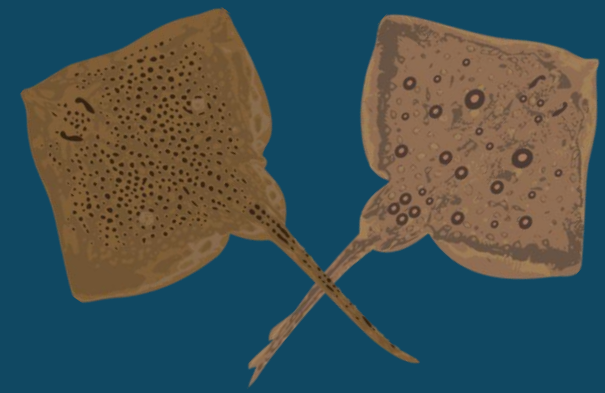


(Carbonara etal., 2020)

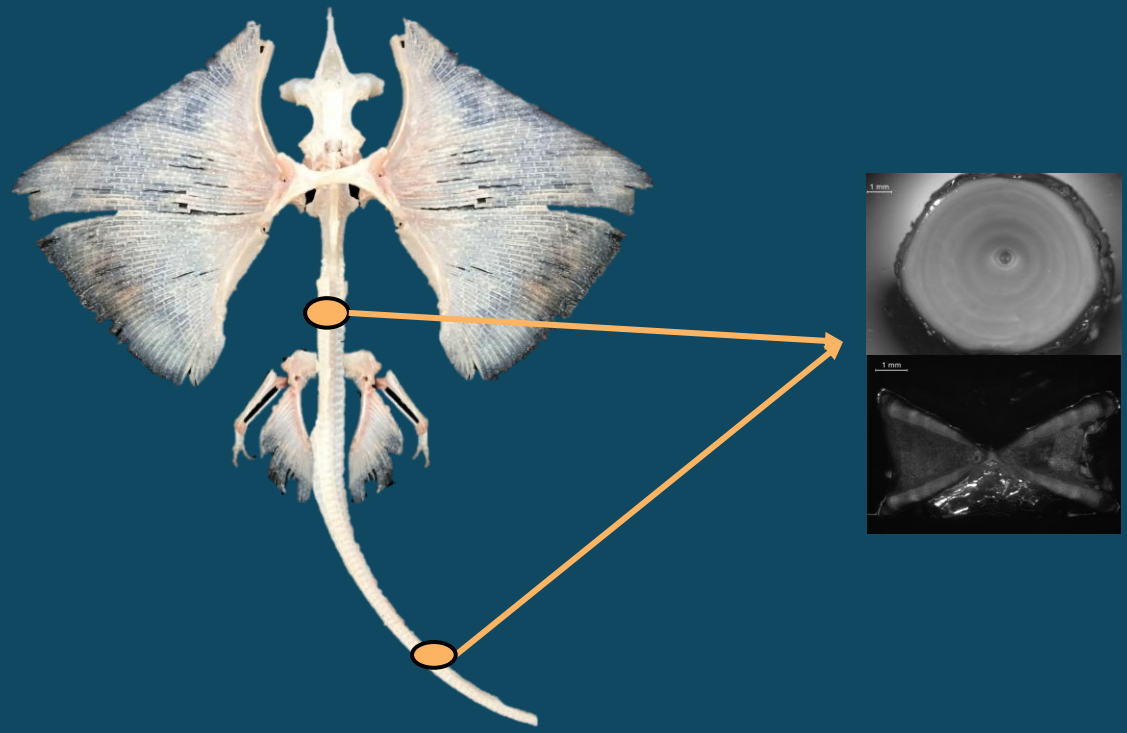
Results: Sectioned vs Whole

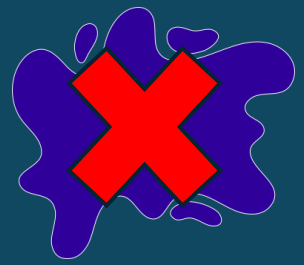


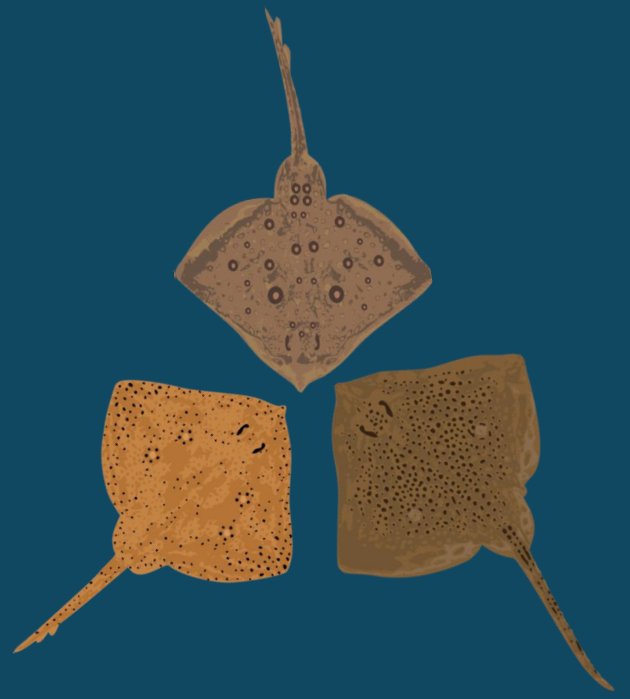




Results: Stained vs Unstained





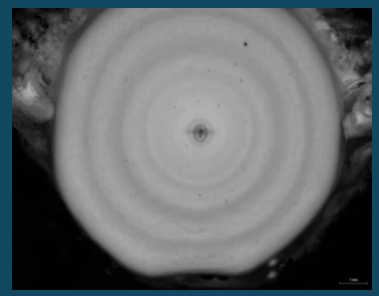


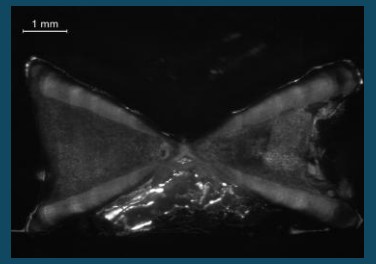
Ageing Techniques - Conclusions

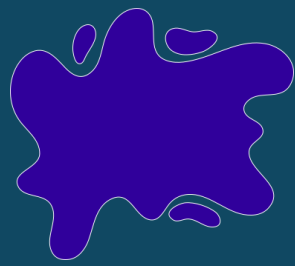
Anterior

Whole

Unstained





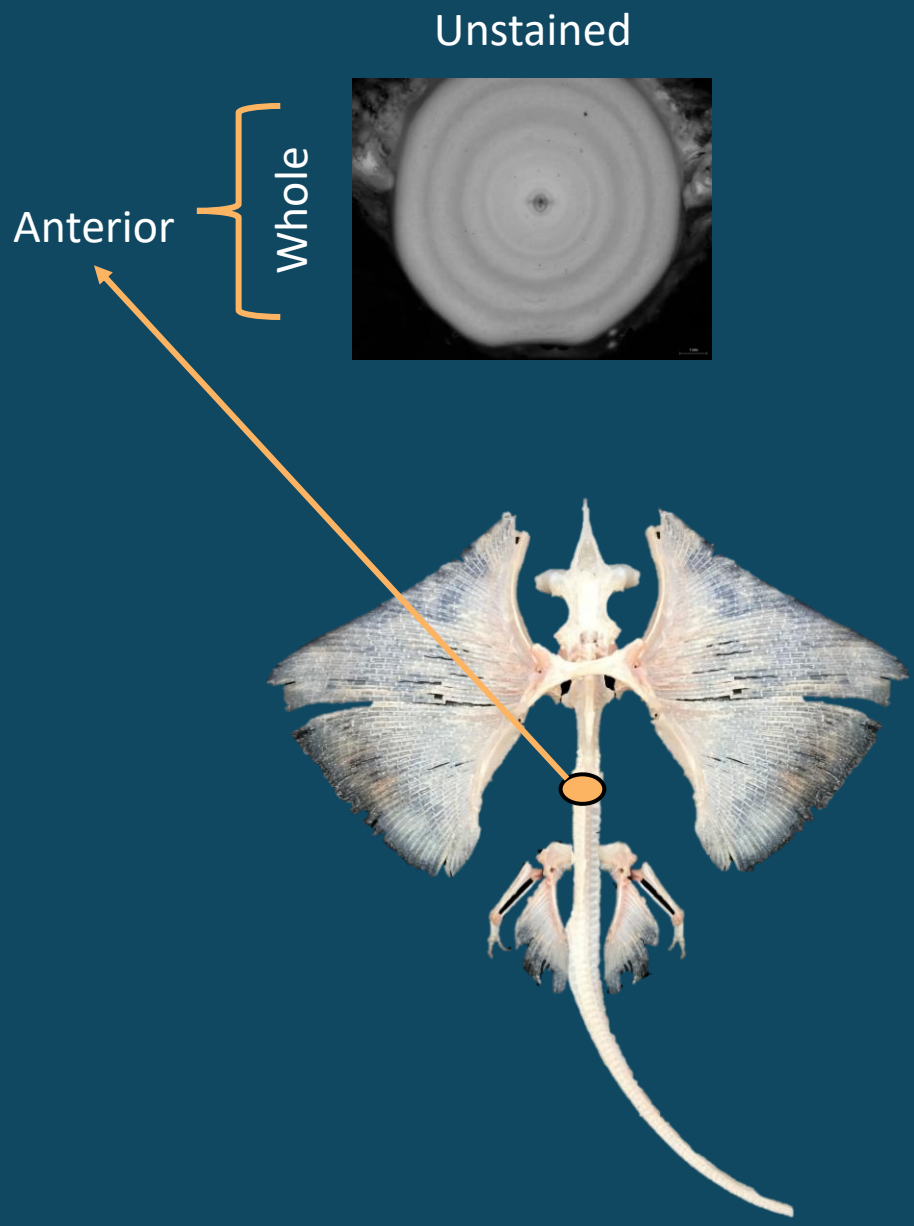


Ageing Techniques - Conclusions

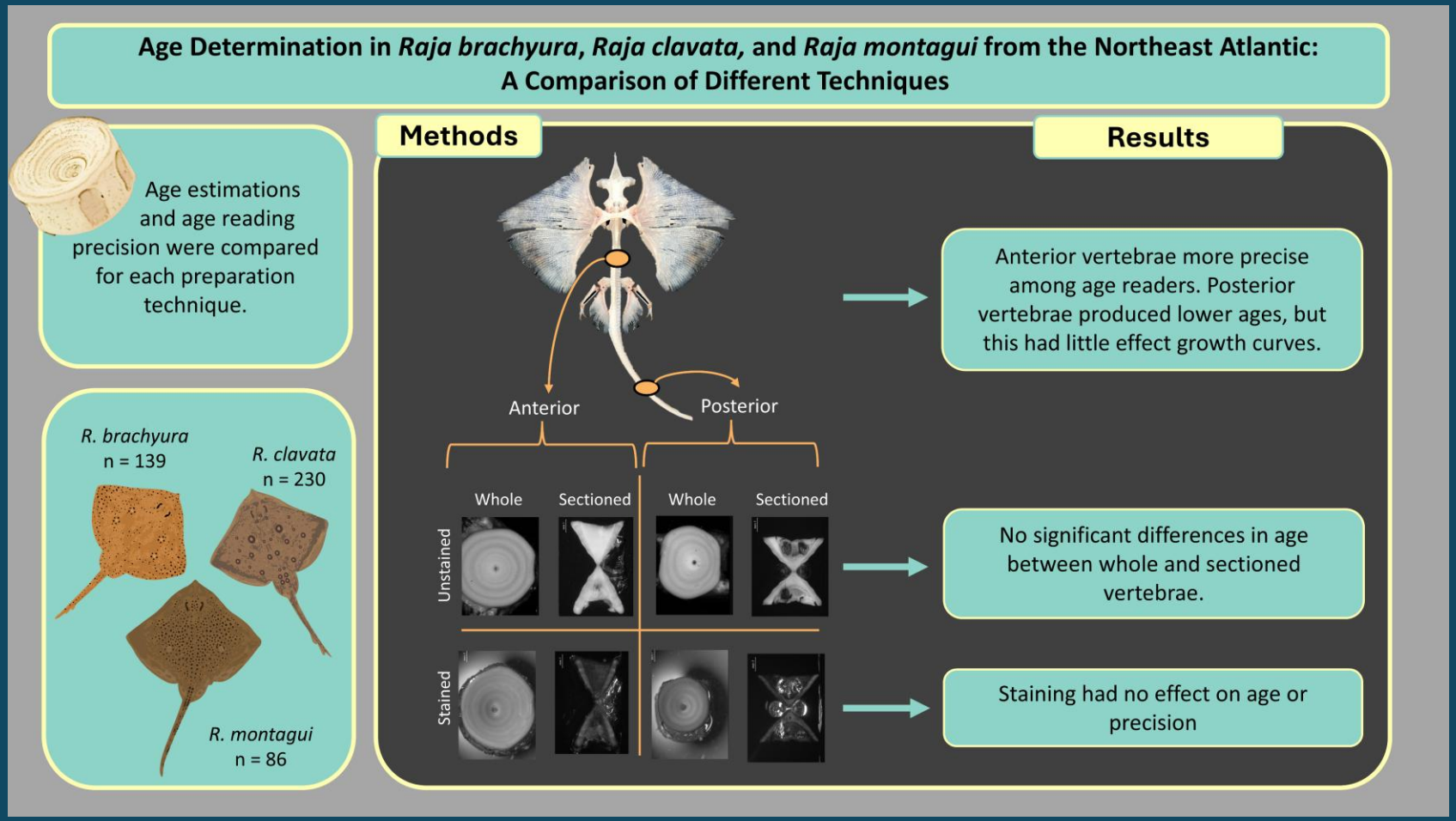
- Refined techniques offer better insights into ageing data
  - → growth rates
  - → longevity
  - → reproductive patterns

- Essential for assessing stock health and setting catch limits

- Move towards species-specific stock assessments

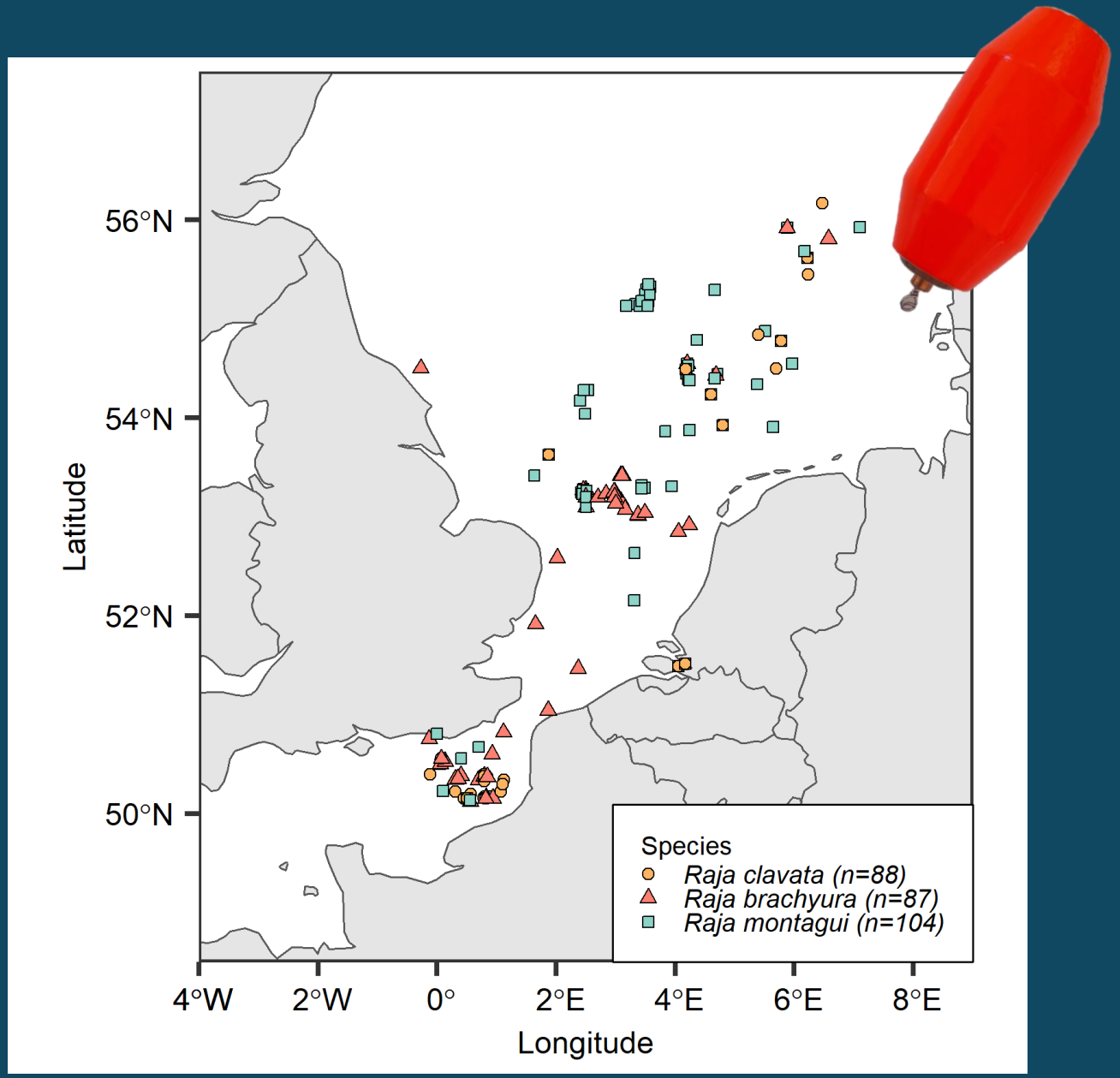


Greenway, E.S.I, Elias, L., Bellodi, A., Carbonara, P., et al. (submitted). PlosOne.



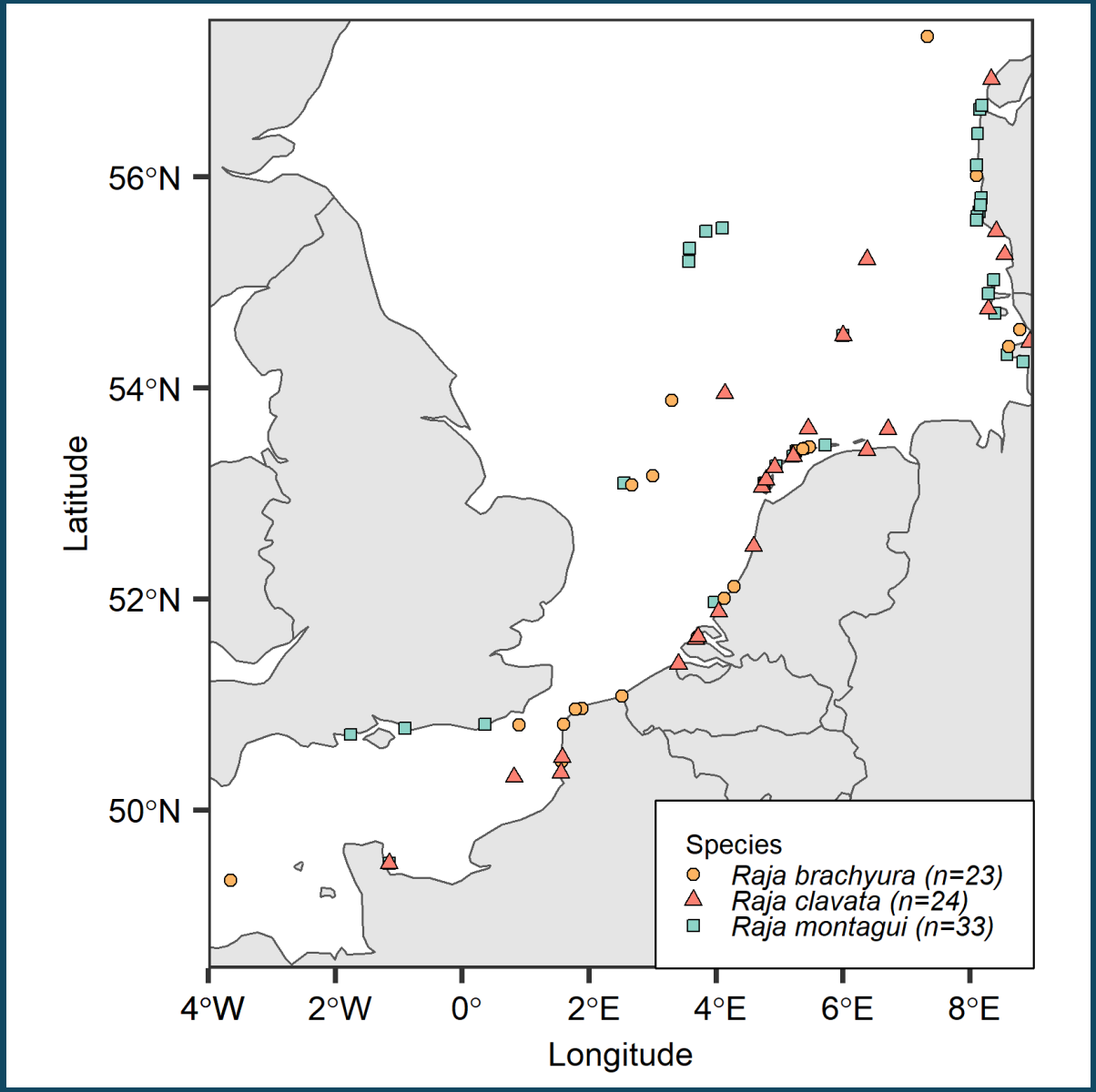
Movement Introduction

- ‘Pop-off’ Data Storage Tags (pDSTs)
- Floatation Collar allow tags to be found by ‘stranding’
- Record Depth and Temperature Data

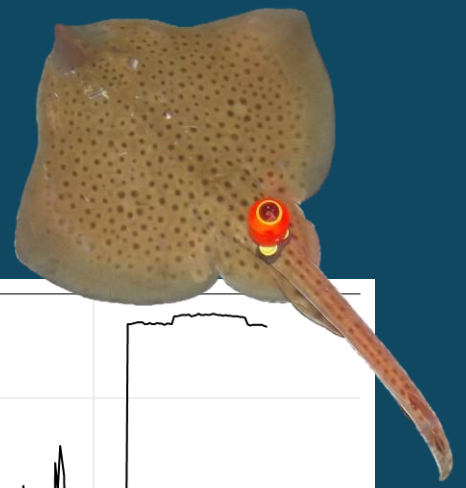


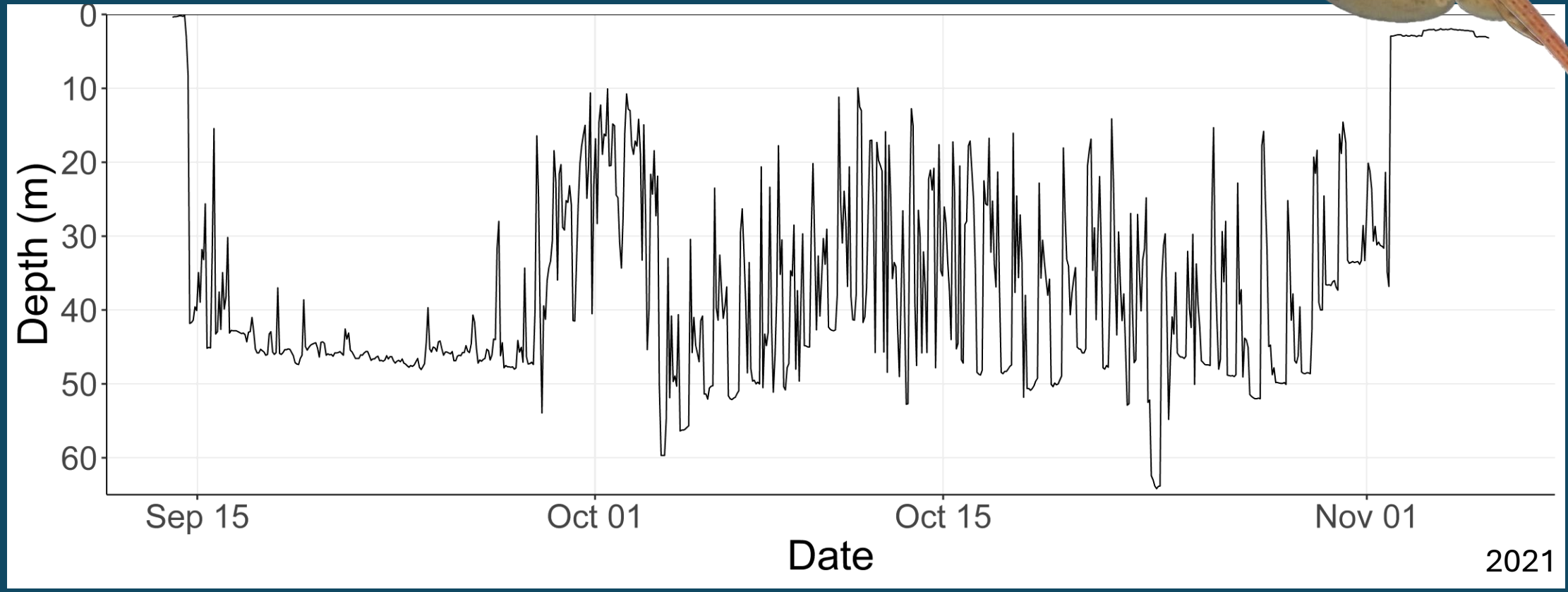
Tag Recaptures

- 80 recaptures
- Most recovers from beach-combers
- 12 tags with >6months data

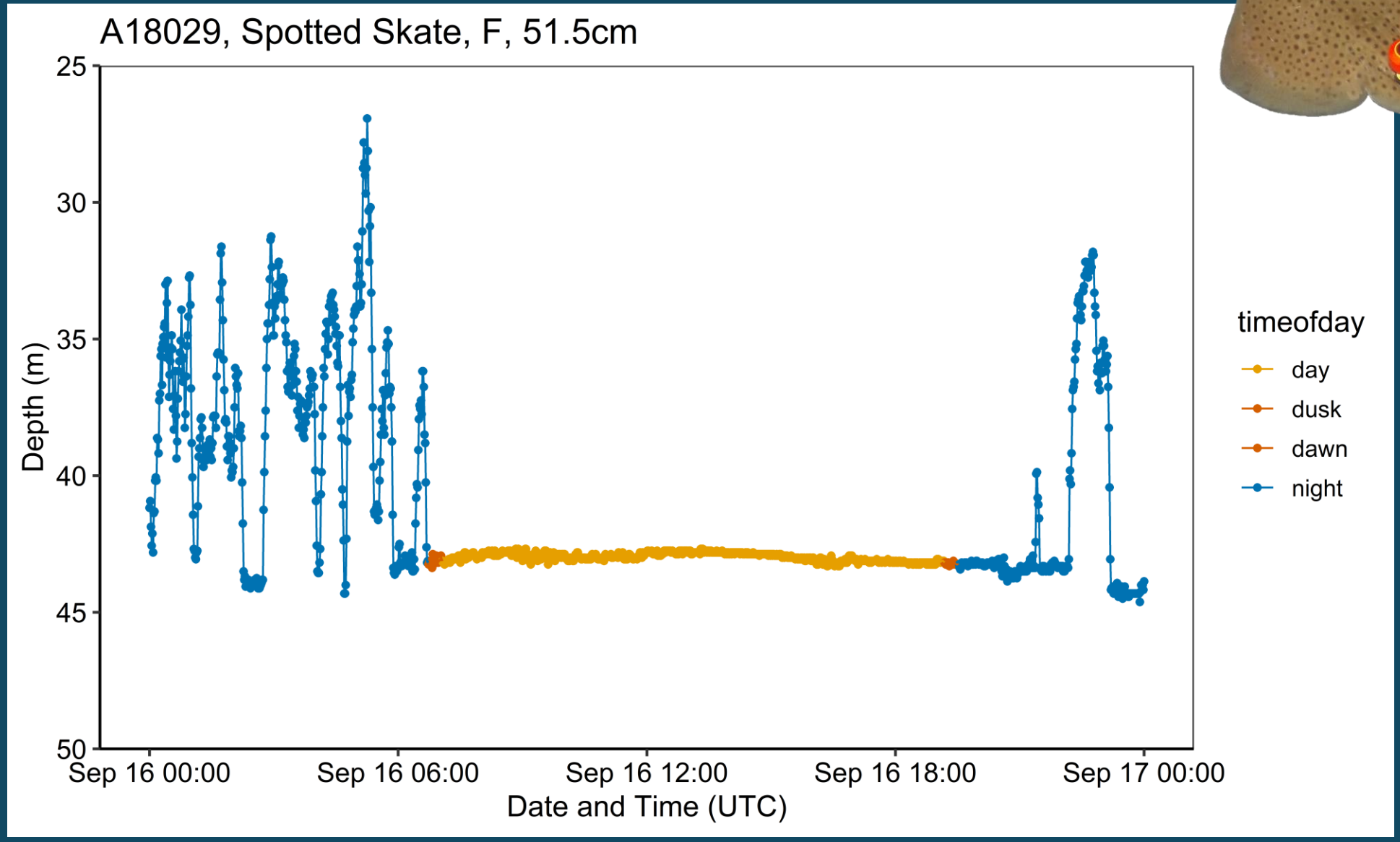


Data Overview

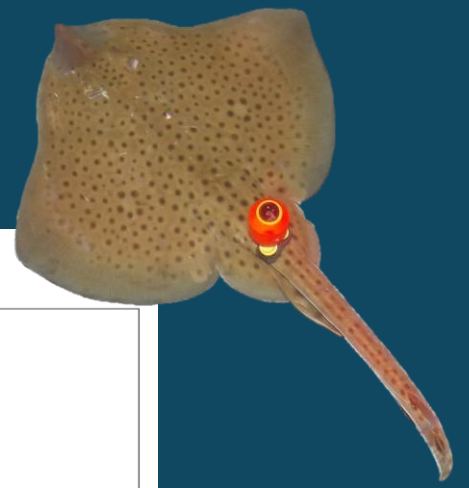


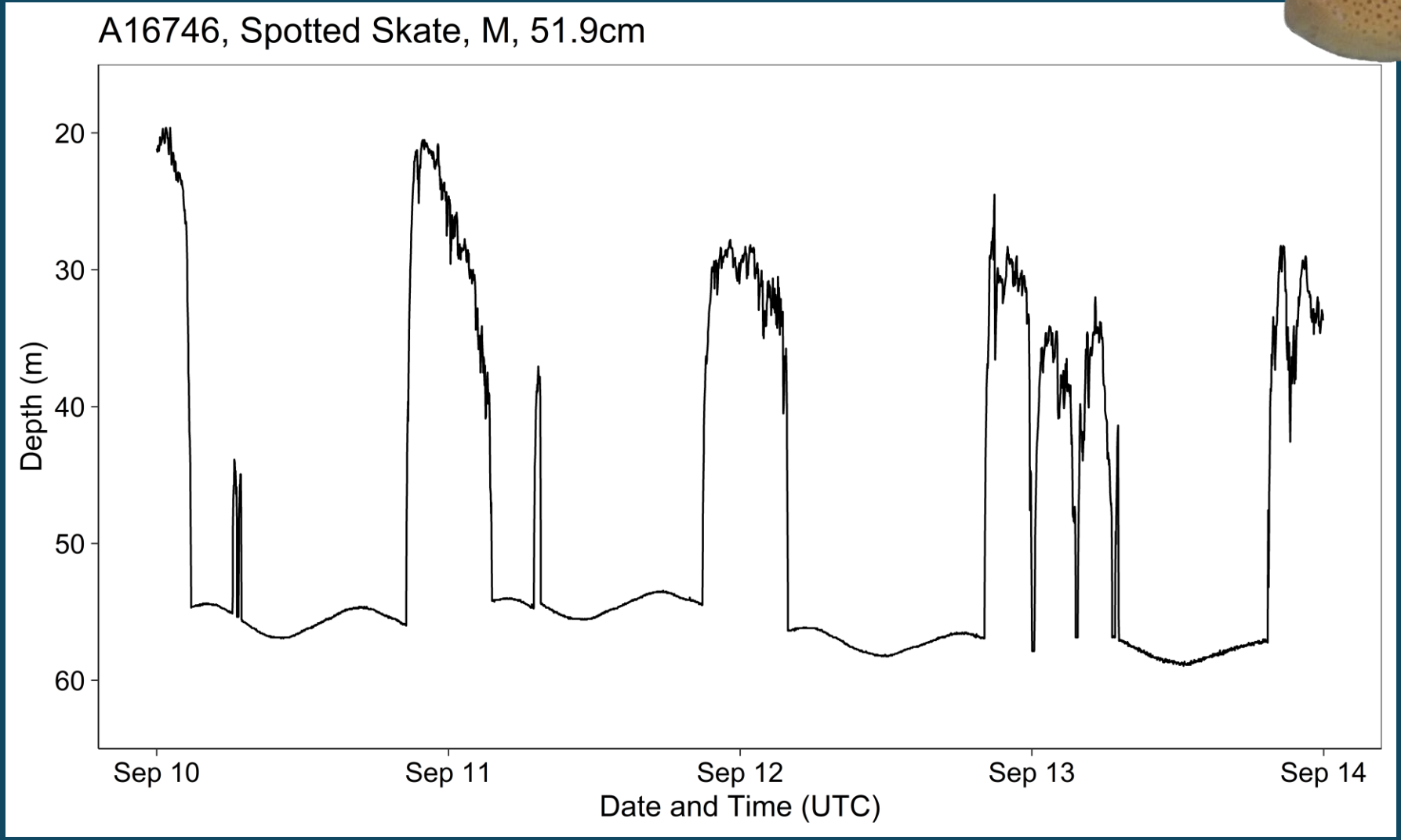


Diel Vertical Migration

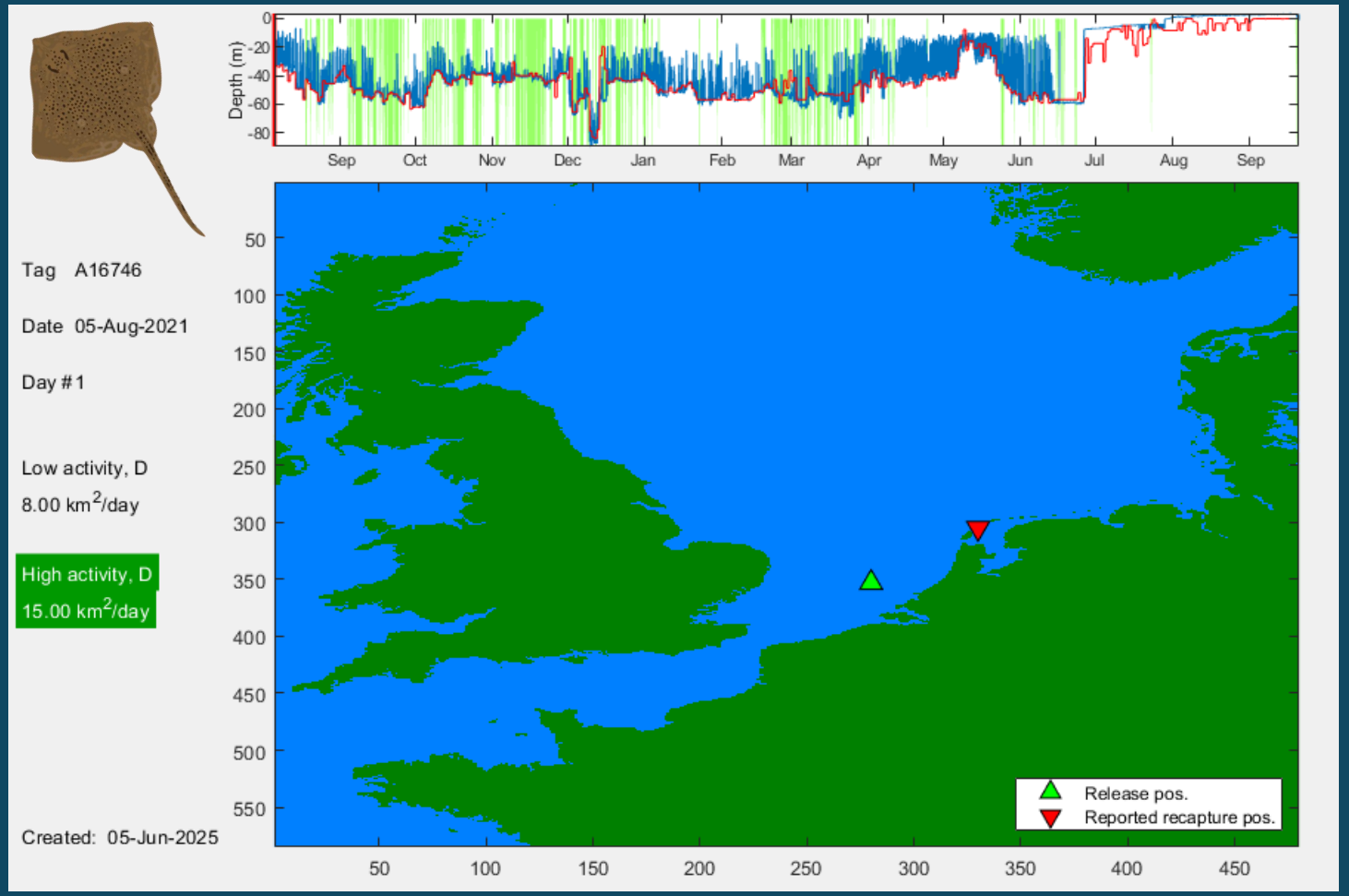


Diel Vertical Migration

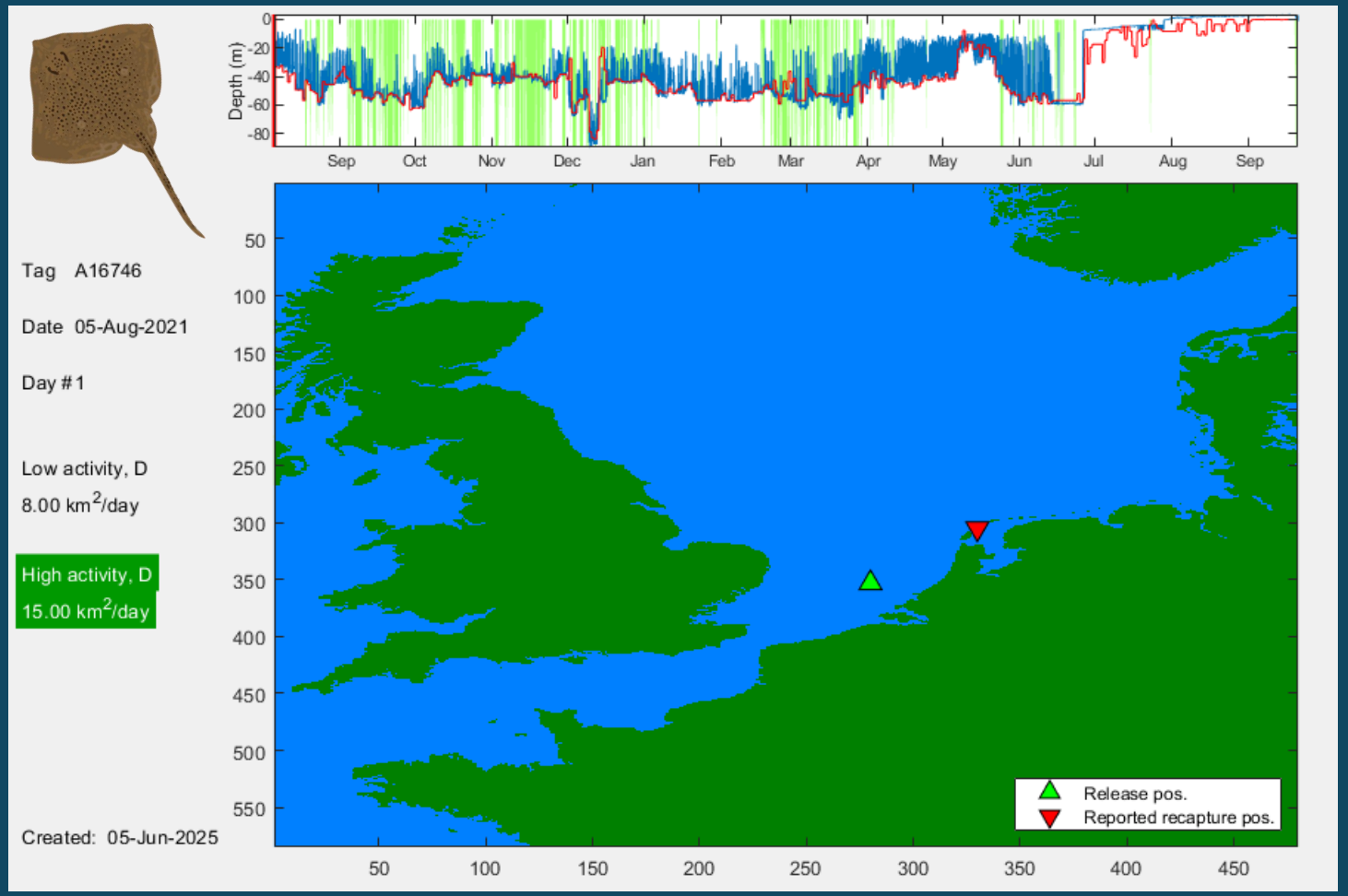




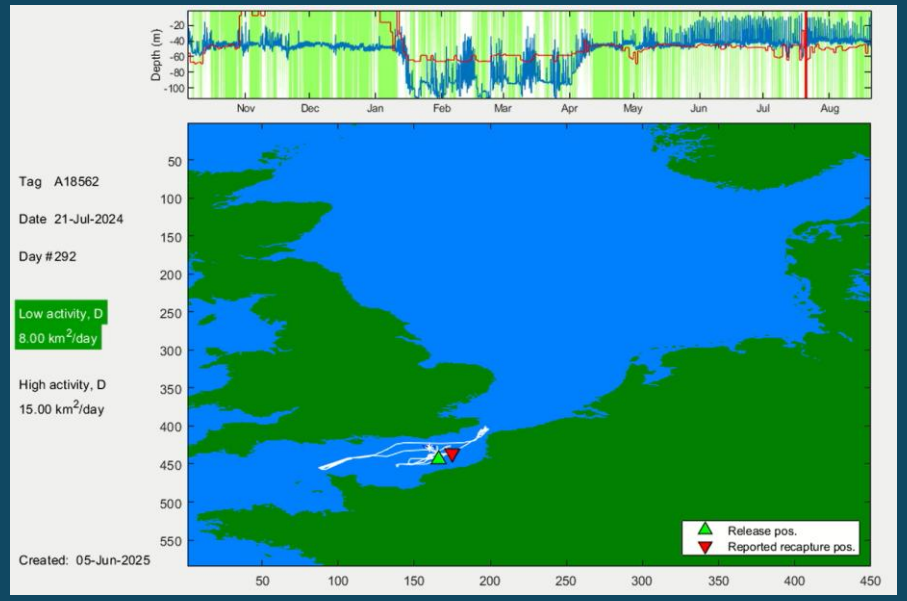
Seasonal Migration - Tidal location method

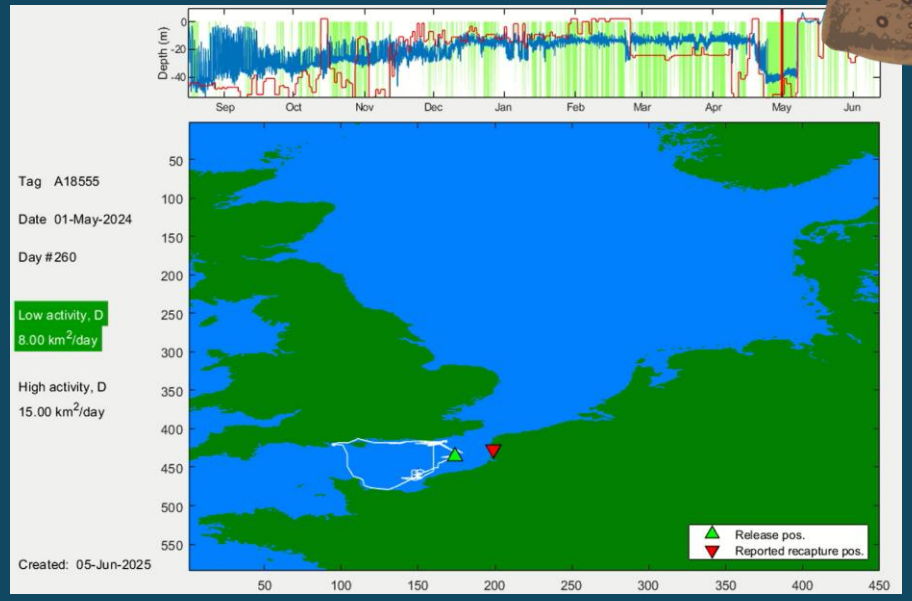


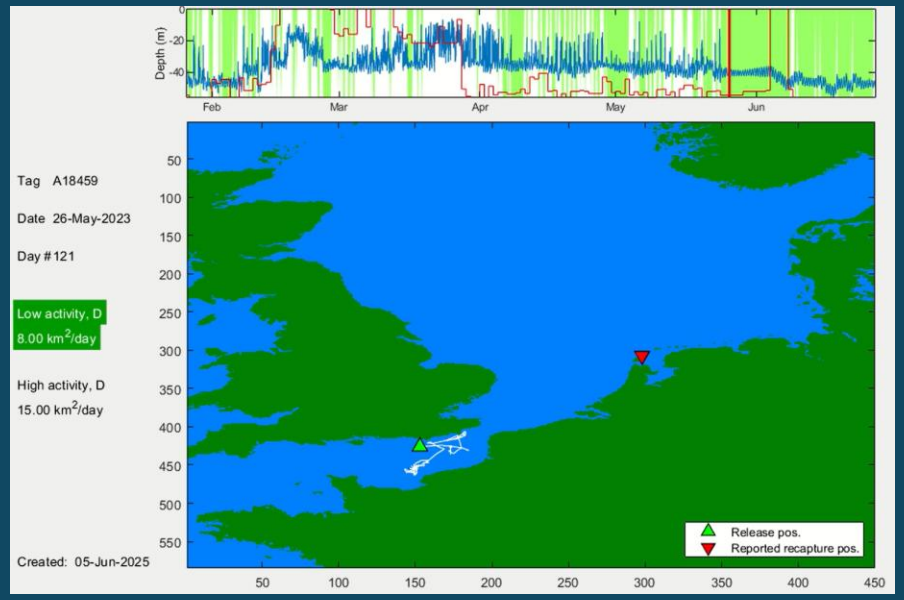
Seasonal Migration - Tidal location method

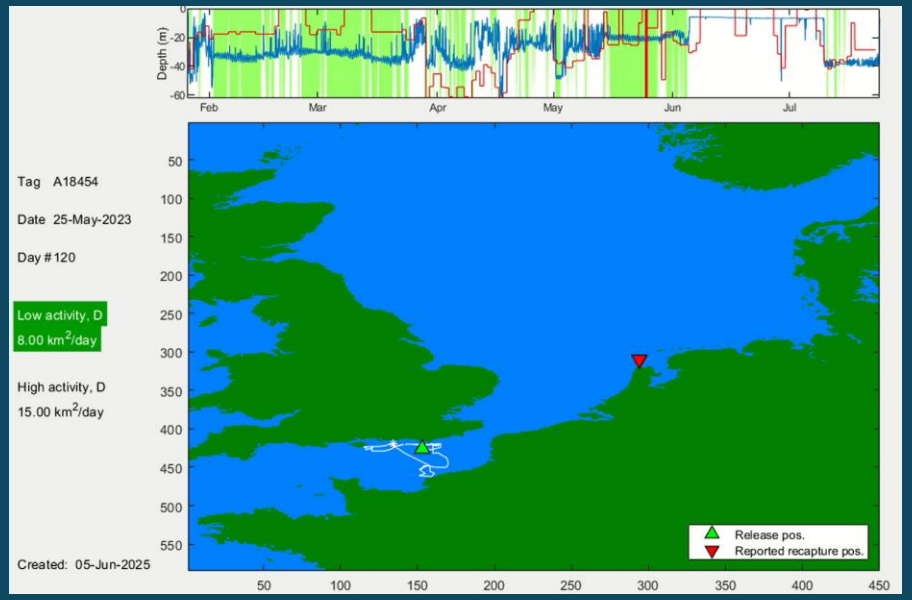


Seasonal Migration – Thornback Skate

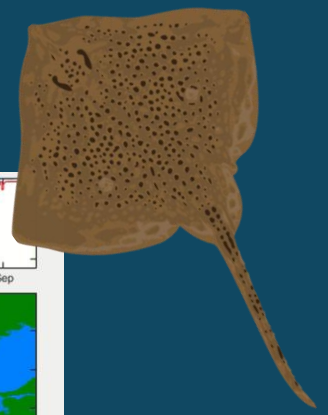


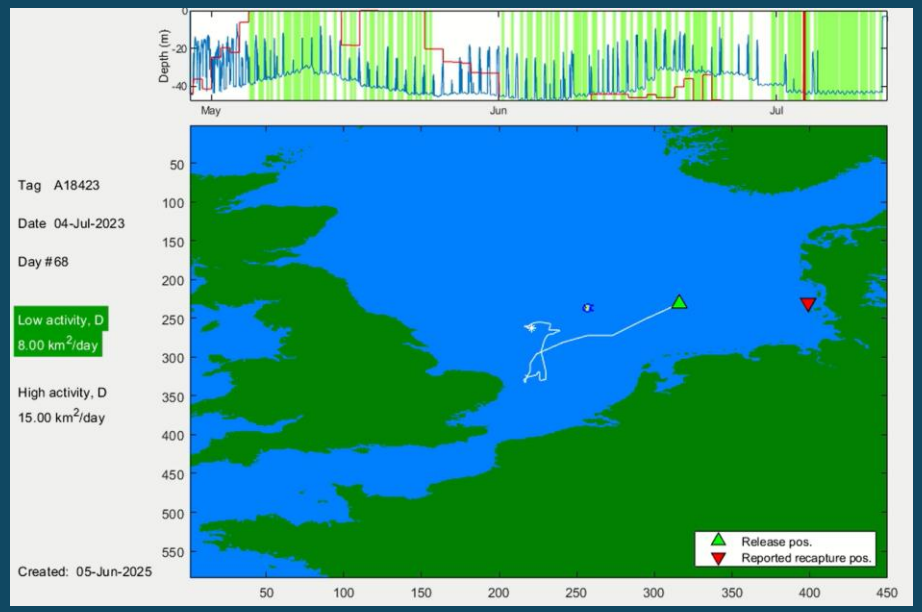


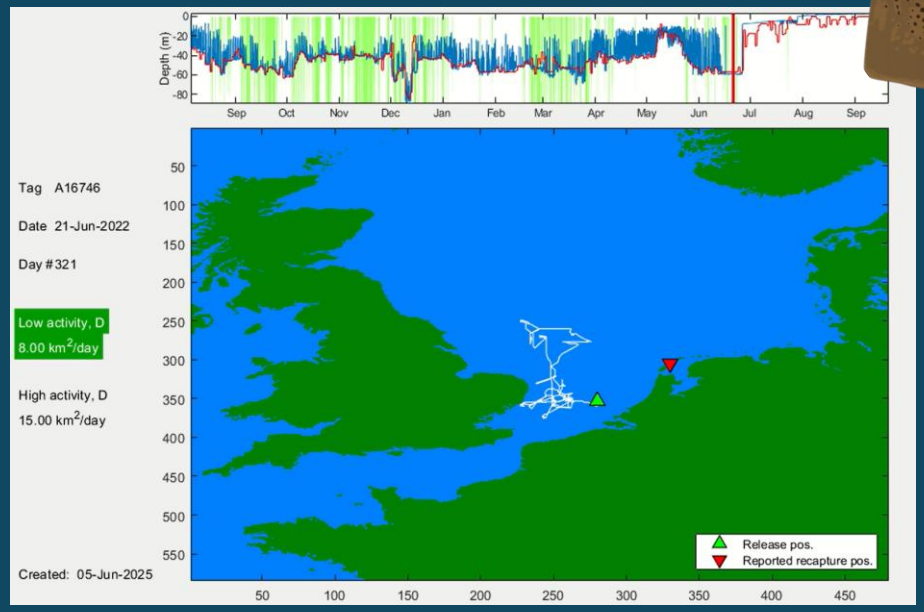


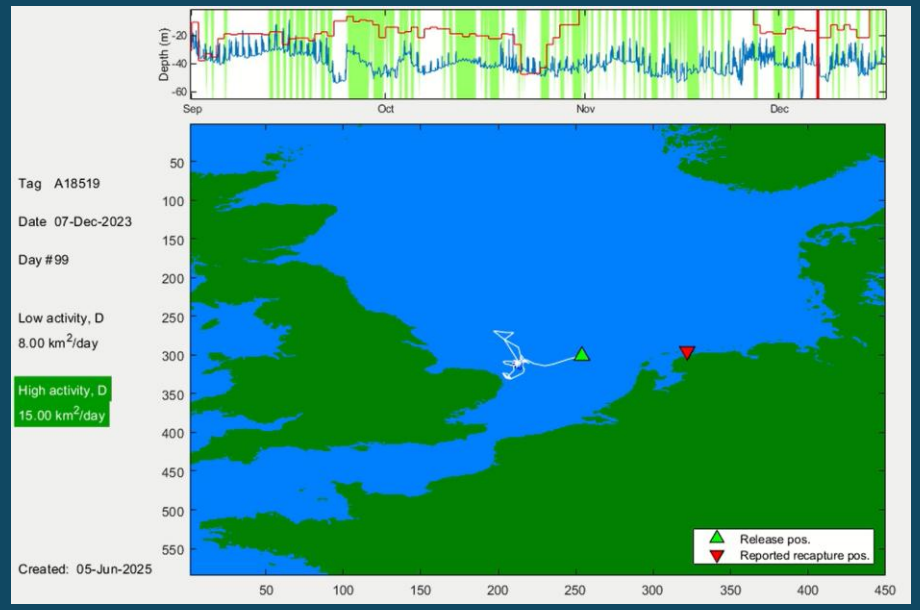


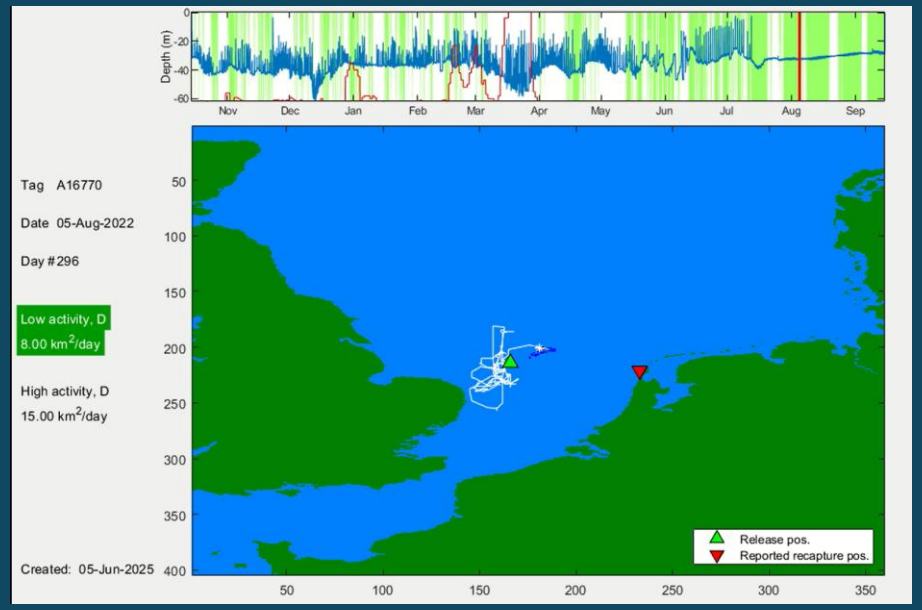
Seasonal Migration – Spotted Skate



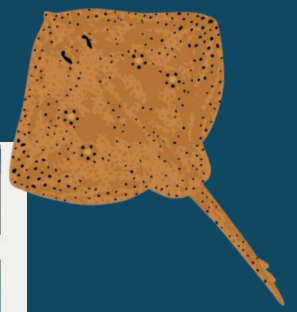


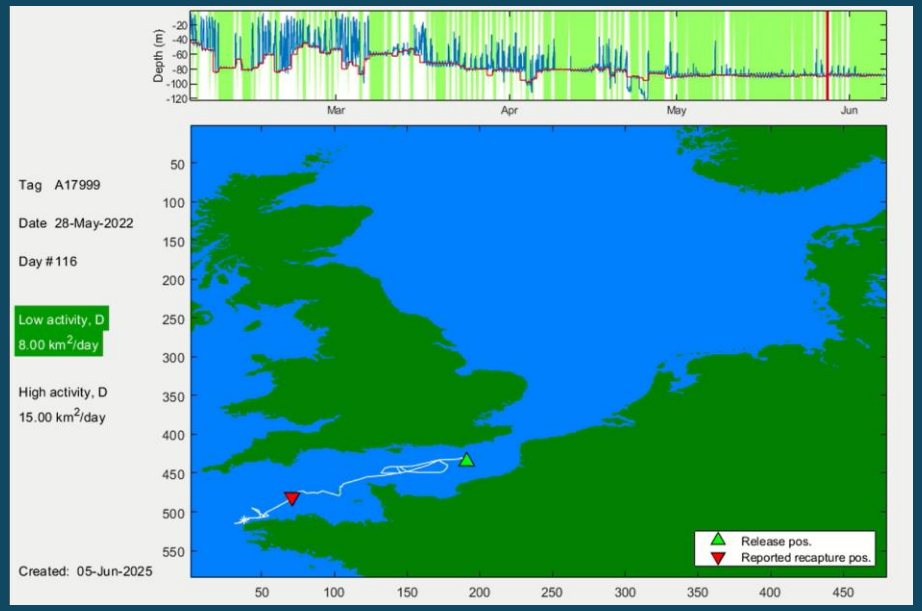


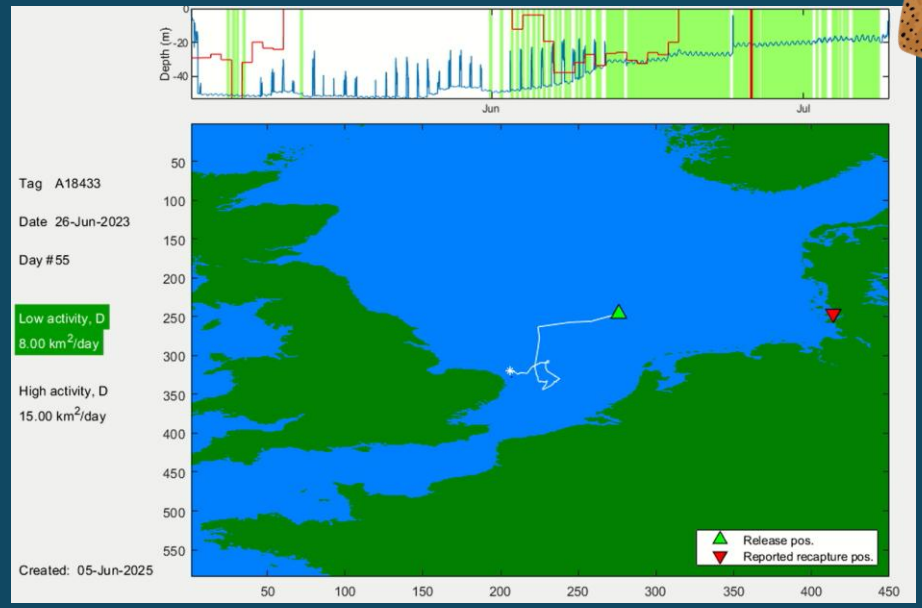




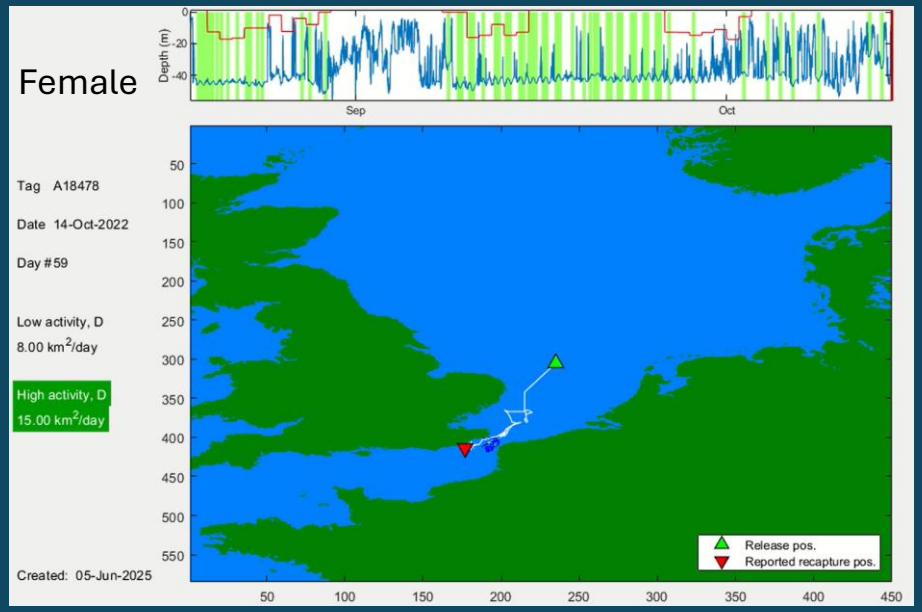
Seasonal Migration – Blonde Skate



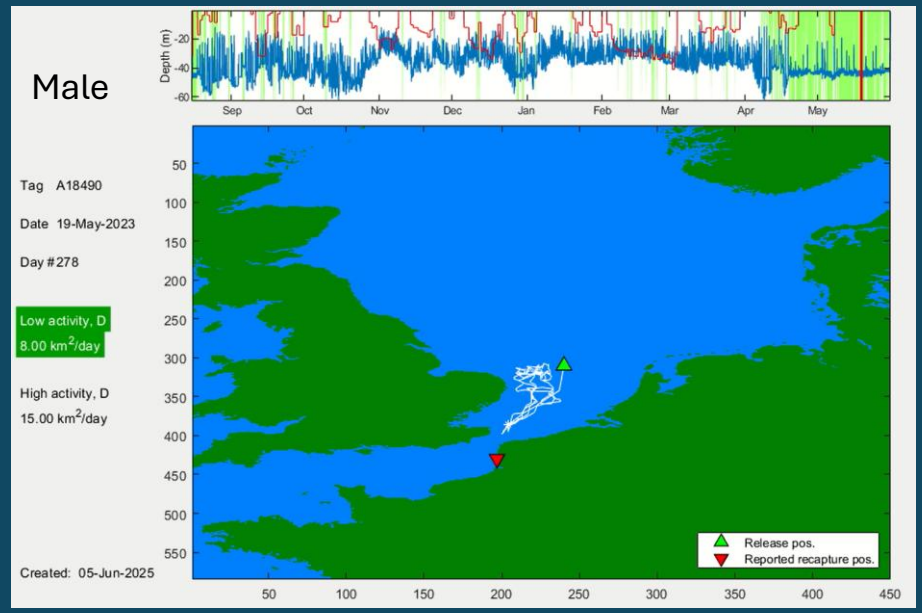




Female

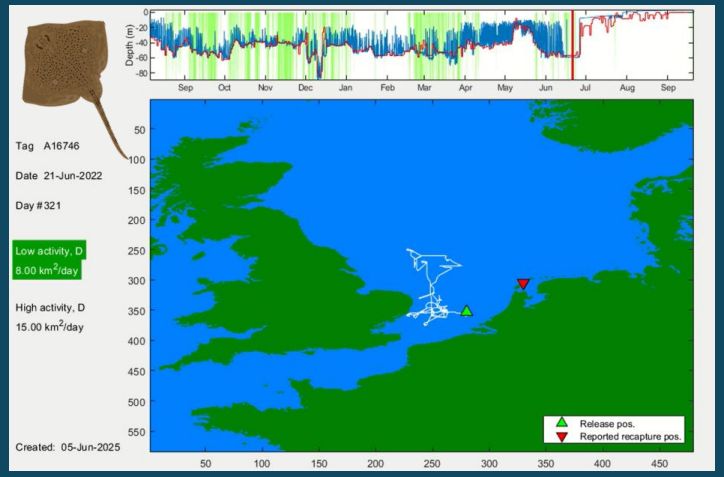


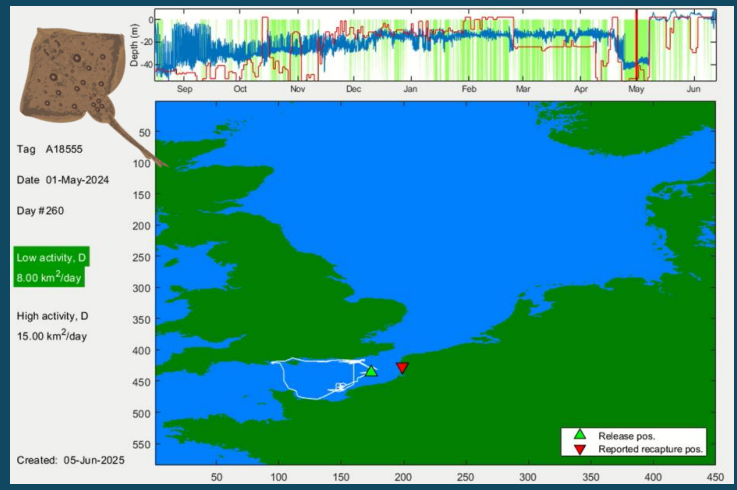
Male



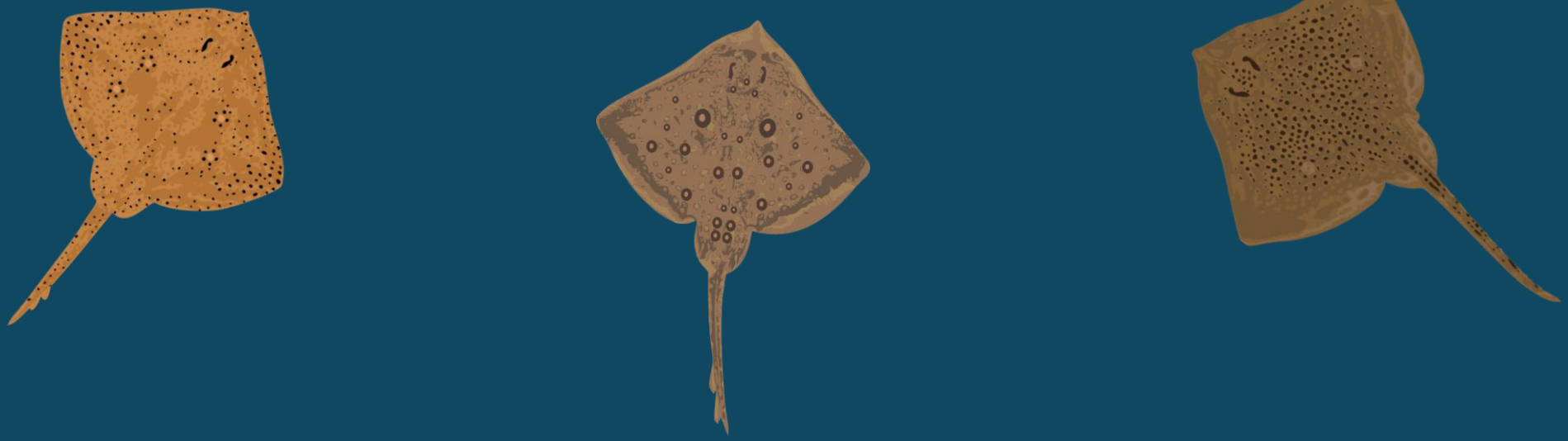
Migration Conclusions

- Exhibit daily vertical migrations, which correlate with time of day
- Skates tend to stay around the same area
- Blonde skates showed slight mixing between upper 7d and lower 4c
- → limited tags returned!





Thank you for listening!



NEV
NEDERLANDSE ELASMOBRANCHEN VERENIGING

Sportvisserij Nederland

Ministry of Agriculture, Nature and Food Quality of the Netherlands

Rijkswaterstaat
Ministry of Infrastructure and Water Management

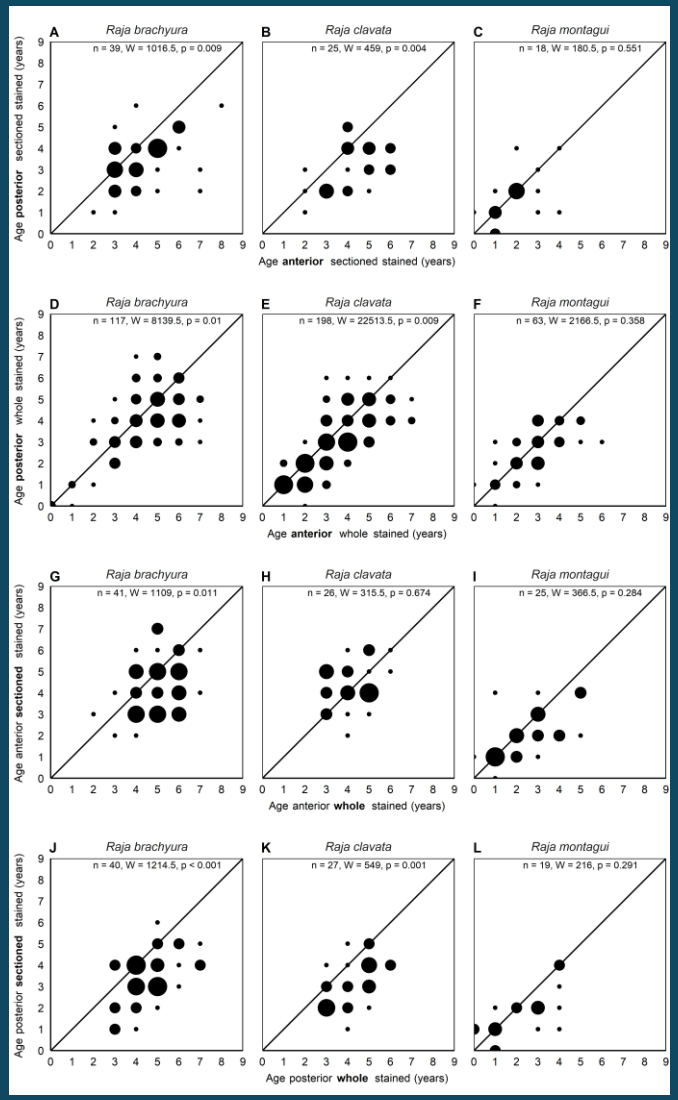
Nederlandse Vissersbond

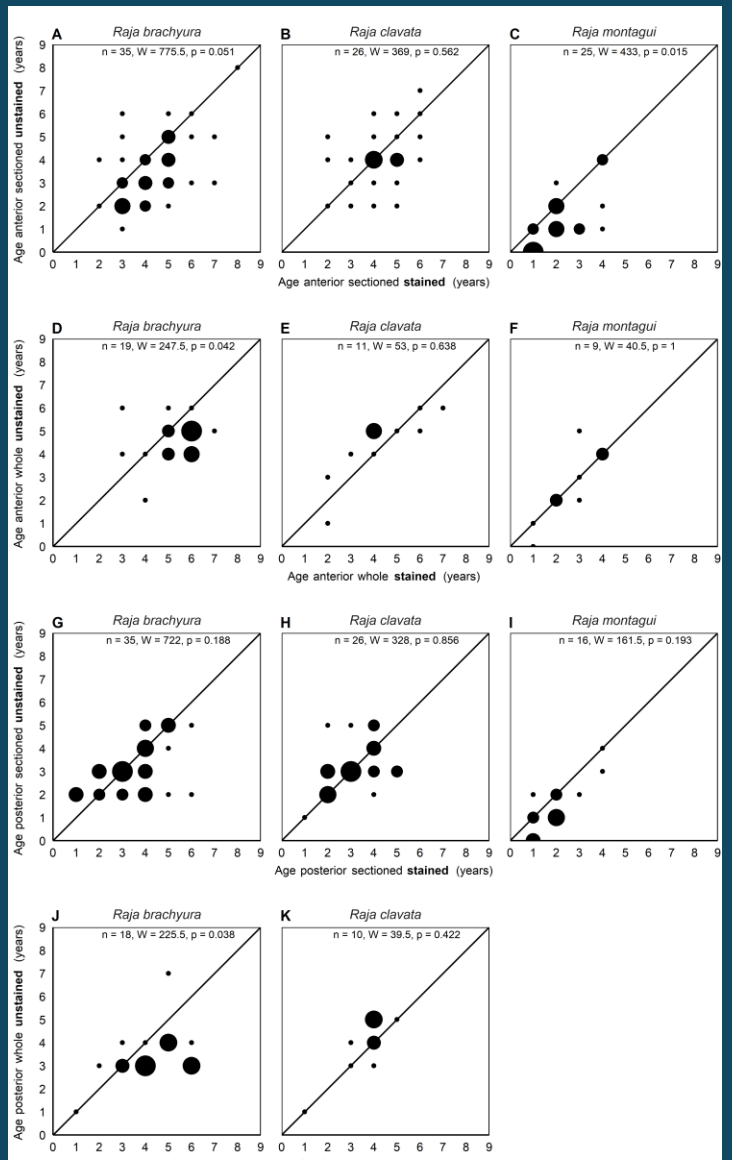
VisNed
VISSERS MET TOEKOMST

WWF

Visserij-innovatiecentrum
Zuidwest-Nederland

Ageing Techniques - Results





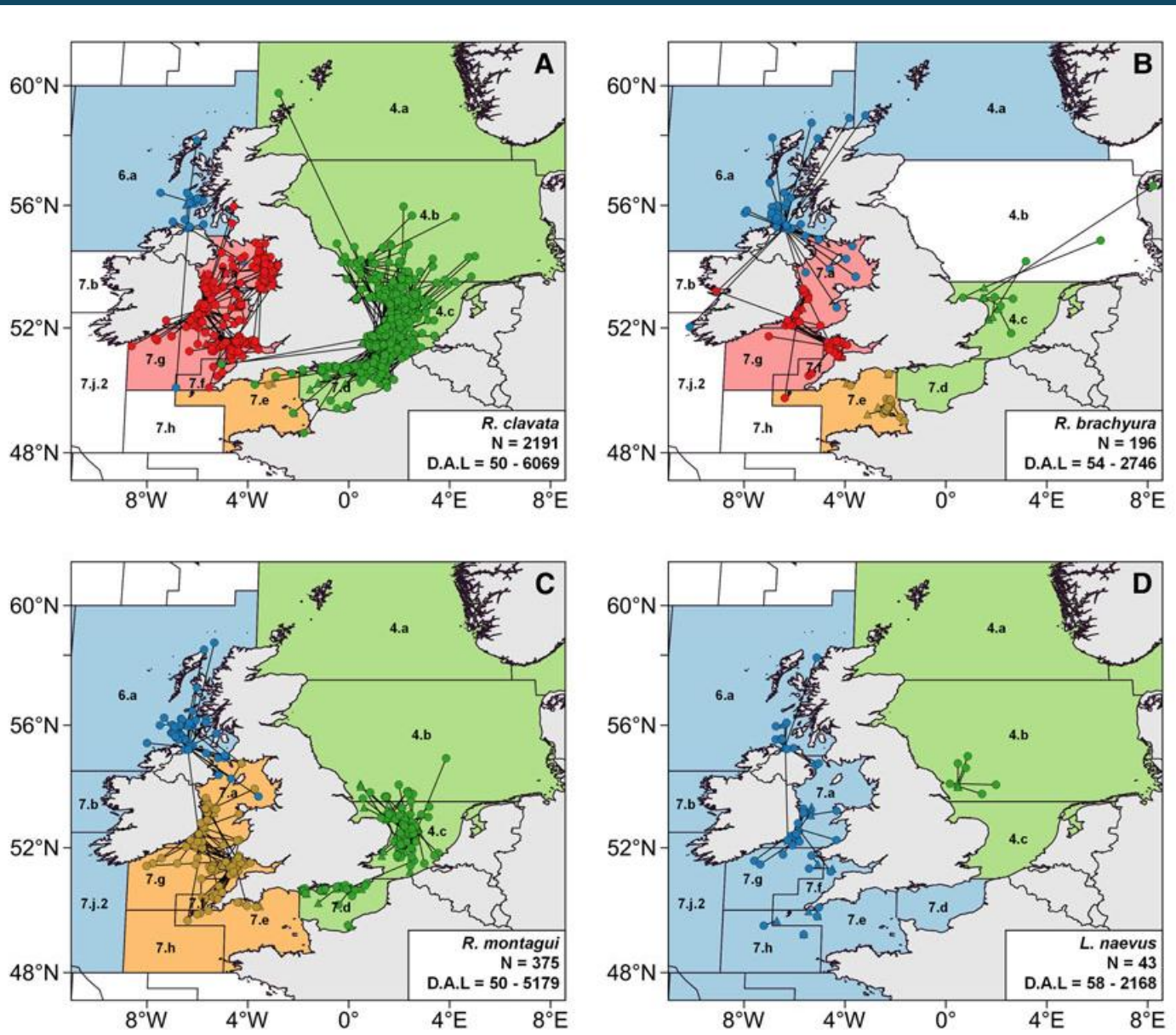


Fig. 1. Tag releases (triangles), returns (circles) and straight-line distances (lines) for (A) *R. clavata* (N = 2 191), (B) *R. brachyura* (N = 196), (C) *R. montagui* (N = 375) and (D) *L. naevus* (N = 43) at liberty for ≥50 days (D.A.L.). Different colours indicate ICES stock units.

(Bird et al., 2020)