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SCAN ME!

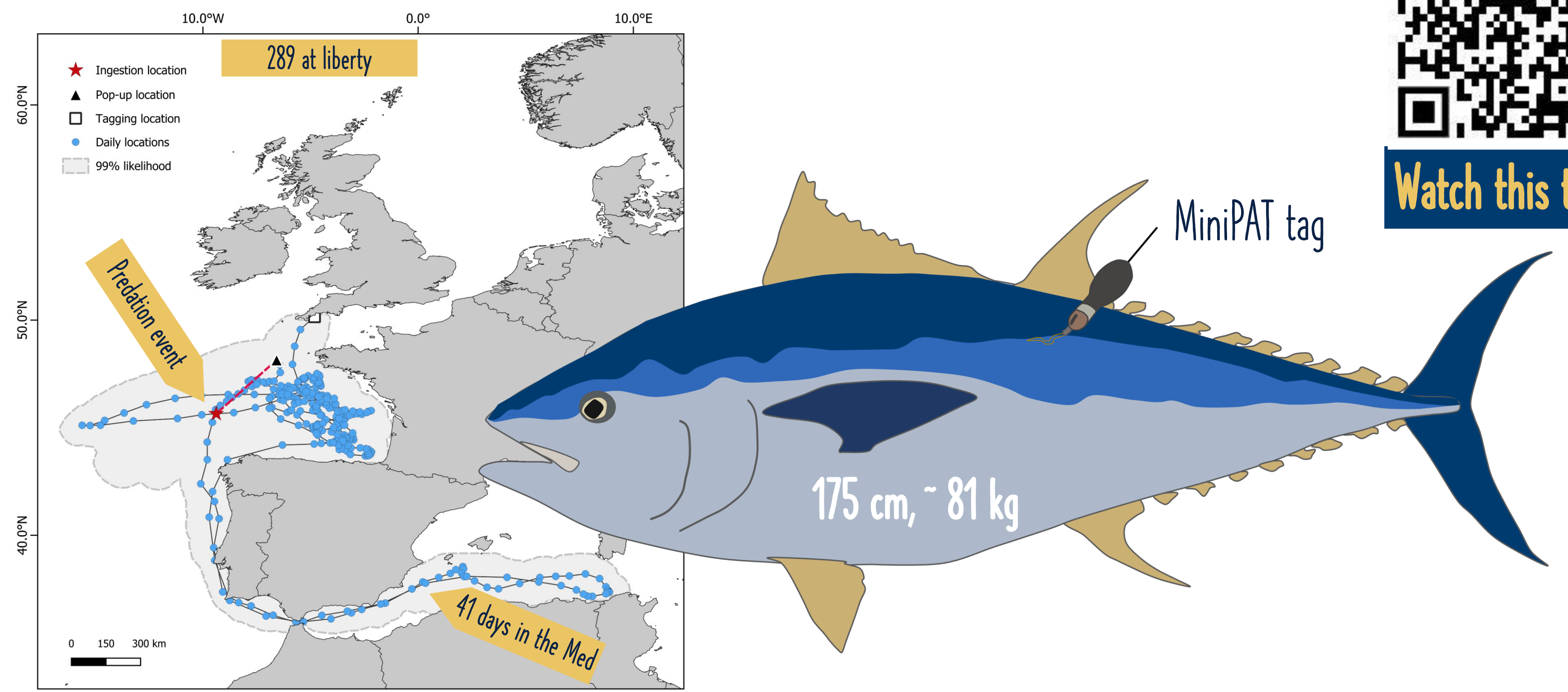


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## 1. BACKGROUND

An Atlantic bluefin tuna (*Thunnus thynnus*) was tagged off the southwest coast of England in 2018 with a Wildlife Computer MiniPAT tag recording light, temperature, depth and tri-axial acceleration at 0.2 Hz. Following 289 days at liberty, the tuna was eaten by a marine mammal in the Bay of Biscay.

Figure 1: Map of the tuna's daily location, tracked from the southwest of England in Nov 2018 for 289 days. Tuna spent 41 days in the Mediterranean before being predated on the 7<sup>th</sup> Aug 2019 in the west of the Bay of Biscay.



## 2. PREDATION EVENT

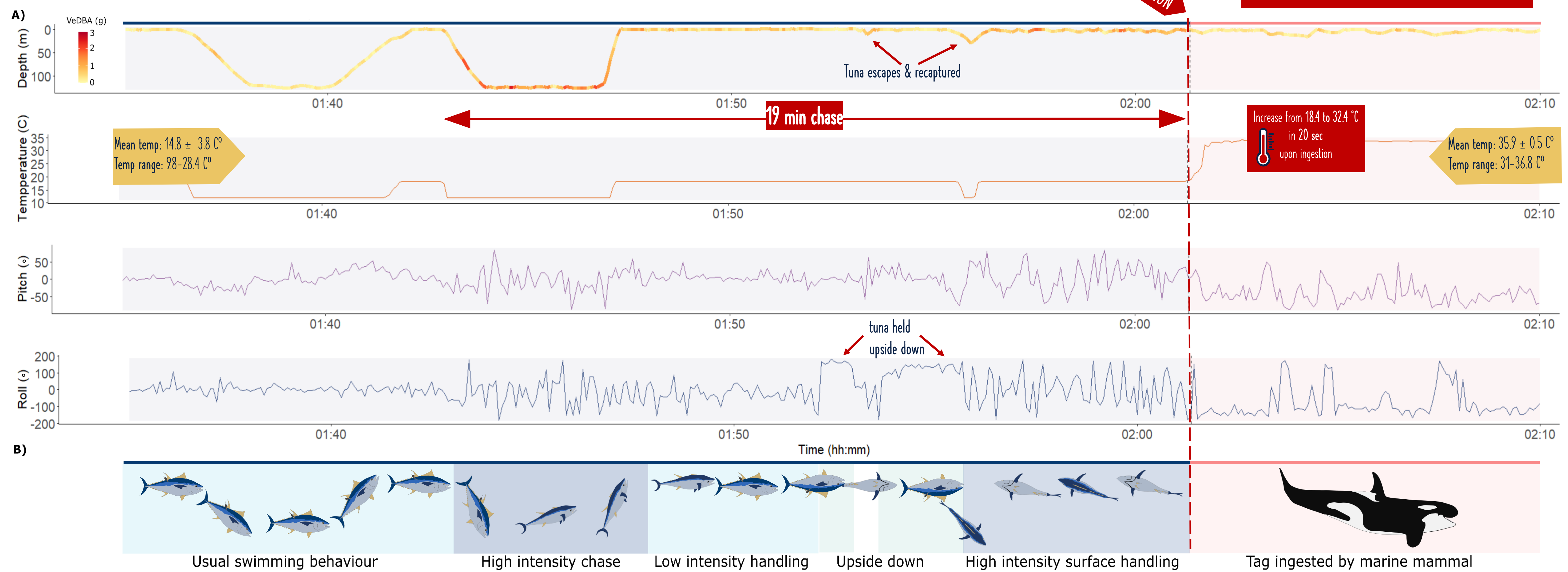


Figure 2: Time series of the predation event marked by the vertical dotted line. Blue & pink shading corresponding to periods tag is attached to the tuna & inside the marine mammal respectively. (A) Depth profile coloured by the activity (VeDBA, g), temperature (°C), pitch (°) and roll (°) with graphical representation of tuna posture of the tuna leading up to the predation event coloured by different behavioural phases (B). The tag was ingested by the marine mammal for 11 days before expulsion, recording depth use and internal temperature.

## 3. DEPTH DIFFERENCE

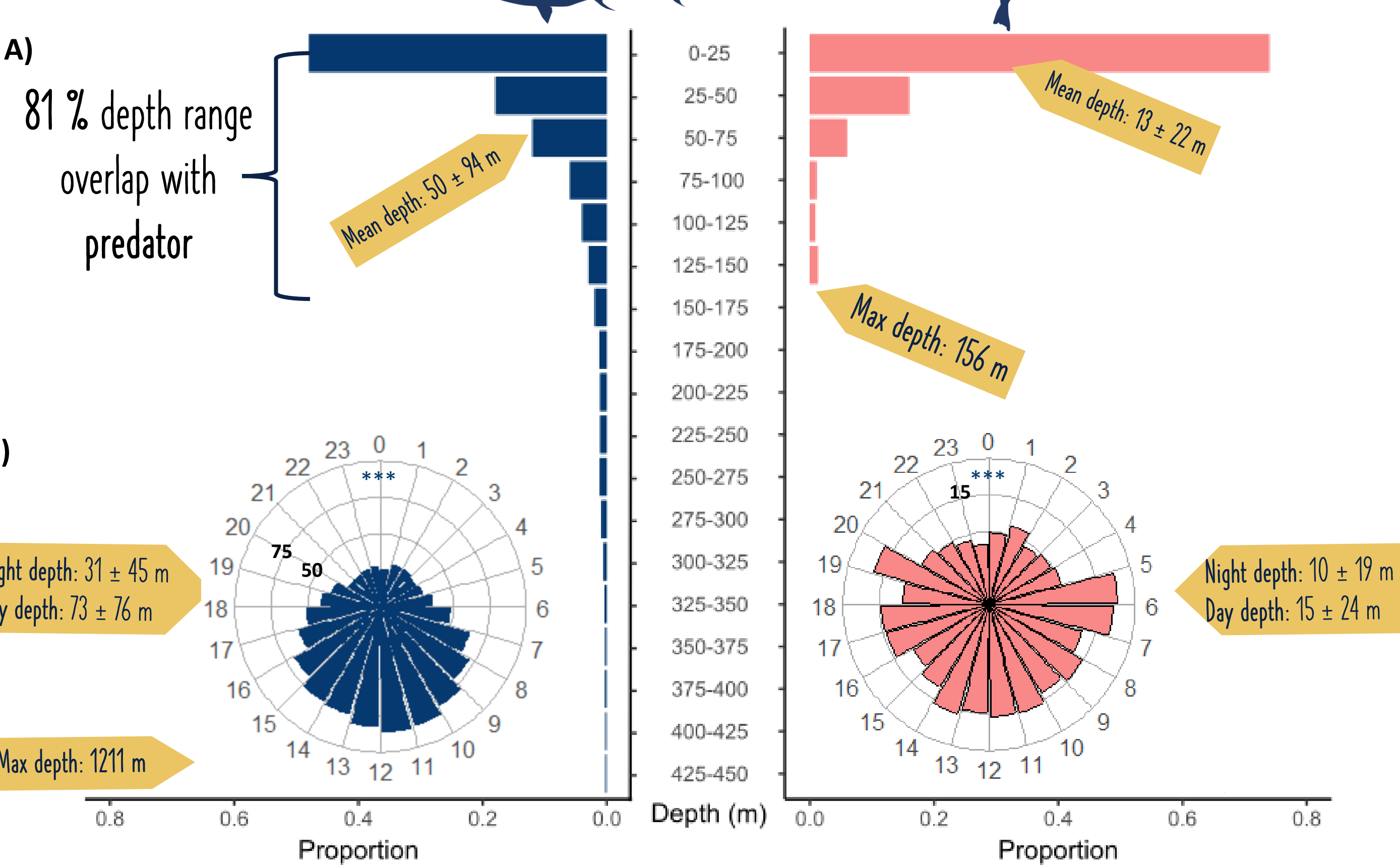


Figure 3: Differences in depth use (A) and mean depth by hour of the day (B) between the tuna (blue) and the marine mammal (pink). Both the tuna and marine mammal had diel patterns of depth use, swimming significantly deeper during daylight hours than at night.

## 4. PREDATOR IDENTIFICATION

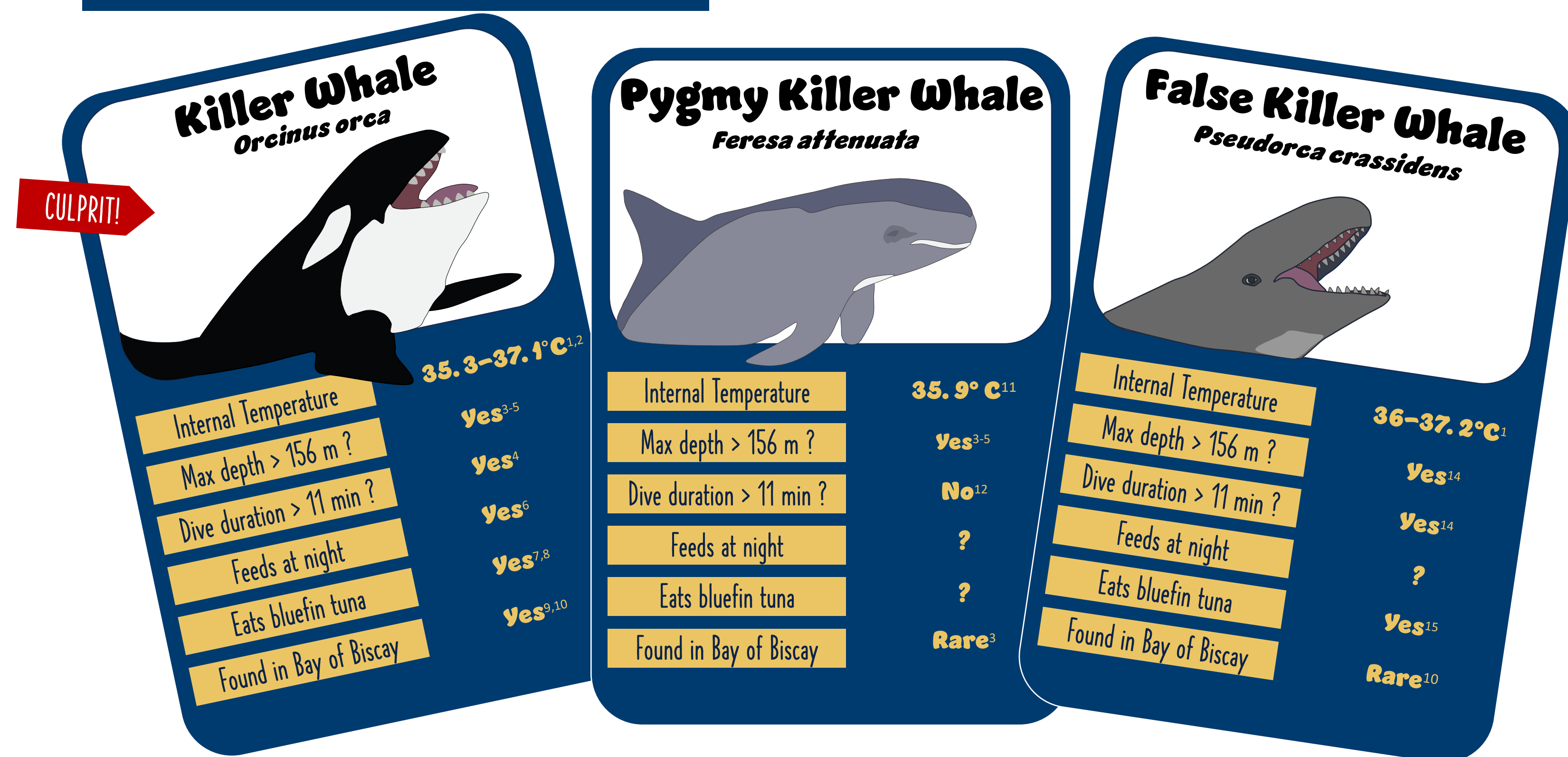


Figure 4: Possible predators of the tuna based on prevalence in the Bay of Biscay, diet, internal temperature, depth use and behaviour. An orca was deemed the most likely candidate and are known to depredate tuna longlines<sup>10</sup> and to hunt wild tuna using an endurance-exhaustion technique<sup>7</sup> for small fish (< 1.5 m in length) or to cooperatively hunt large tuna (>1.5 m).

## 5. FEEDING BEHAVIOUR

At least 77 feeding events were identified over 11 days (mean 6.9 events/day) from drops in body temperature. Feeding occurred both day and night and was significantly deeper during daylight hours than at night. While prey type could not be identified, time interval following larger meals were significantly longer than after smaller meals based on max temperature from heat increment of digestion.

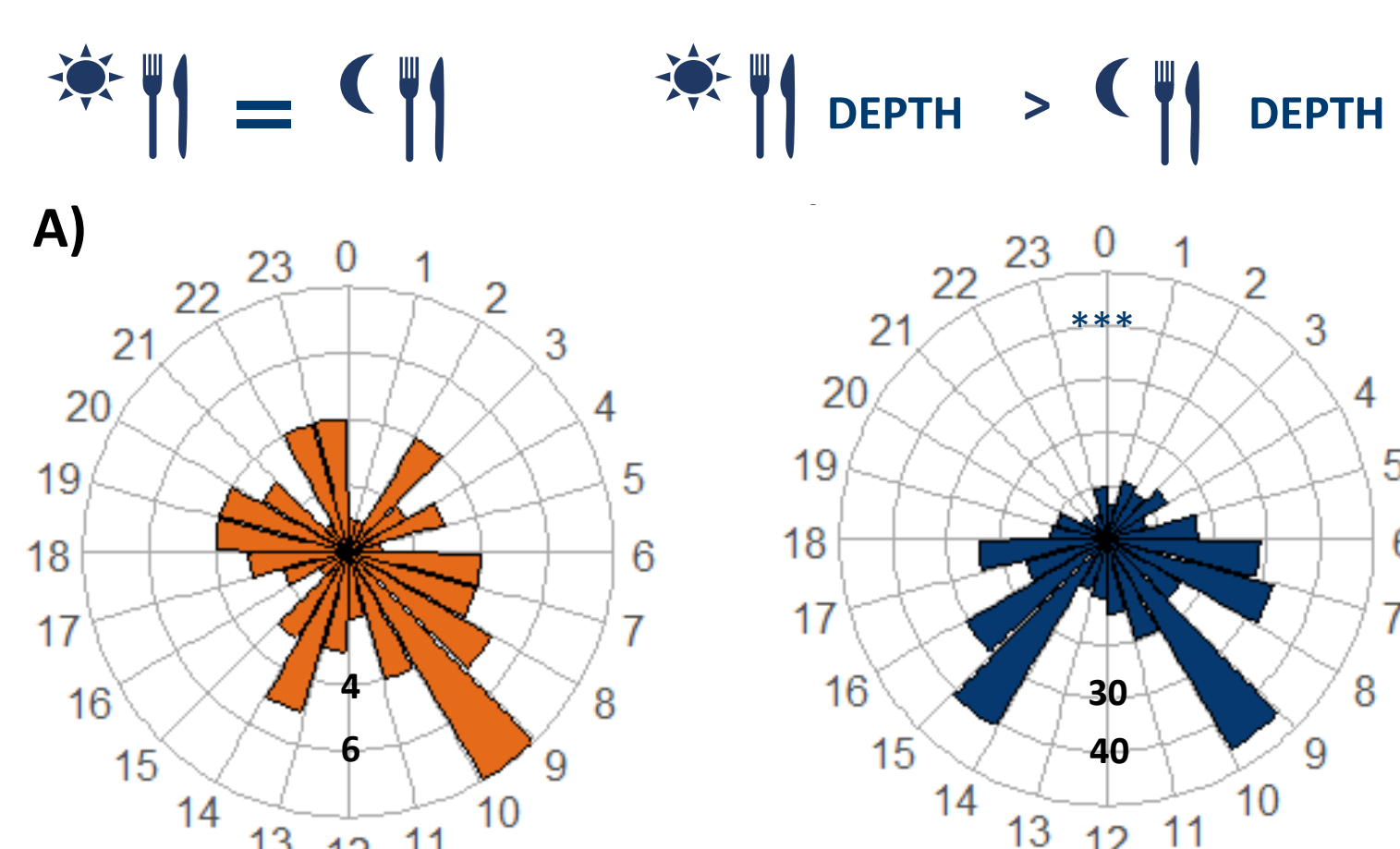


Figure 5: (A) Mean number and (B) mean depth of feeding events by time of day. Feeding occurred 24/7 and was deeper during the day.

First high-res biologging record of a cetacean hunting and eating a bluefin tuna!

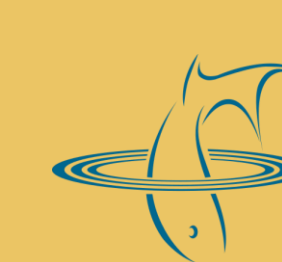


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