

# Where have all the basking sharks gone?



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MANX BASKING SHARK WATCH

PML

Plymouth Marine Laboratory



1. Single species with circumglobal distribution

2. ~10 metre long planktivore

3. Historically exploited

4. Intrinsic part of our maritime heritage

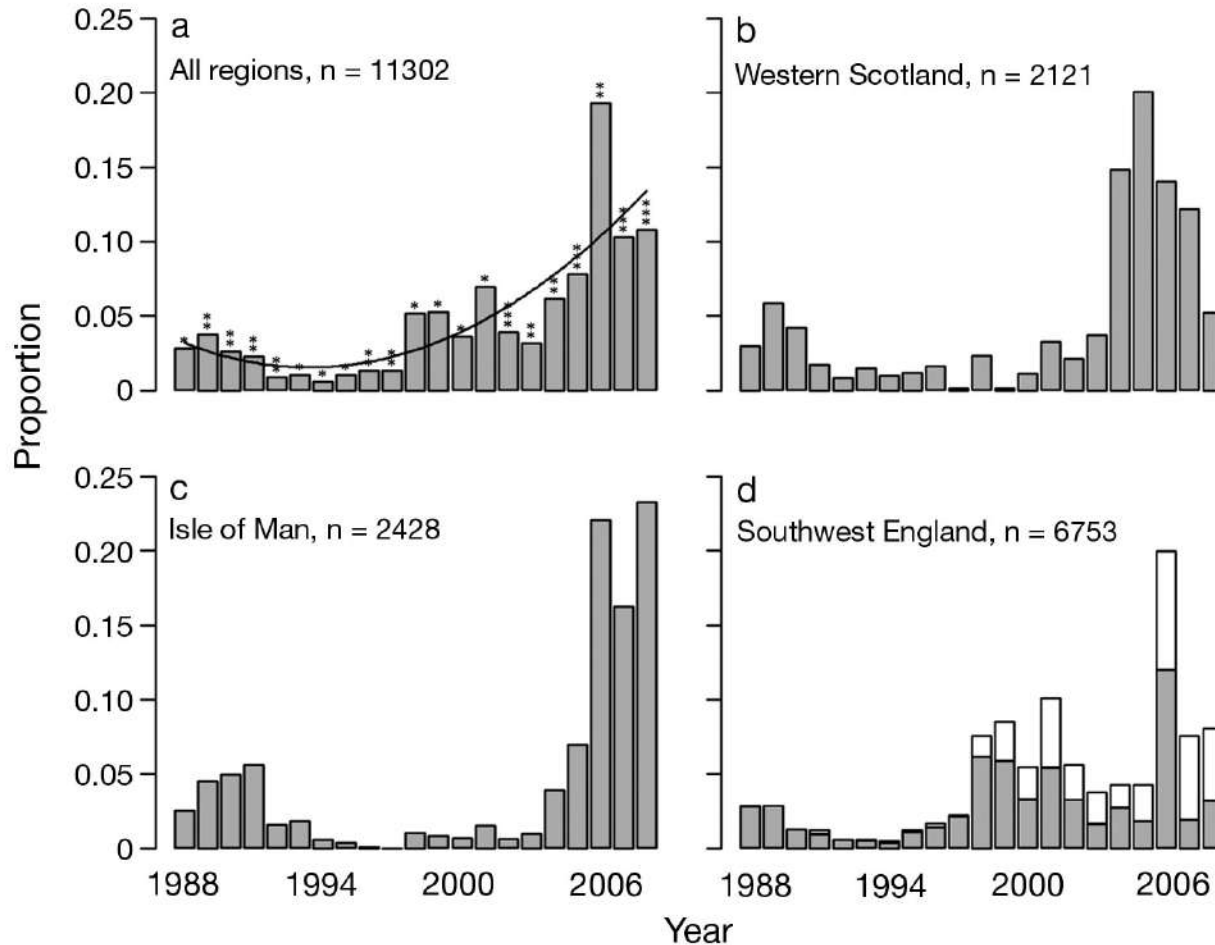
5. Public sightings declining, a cause for concern?



## Once common to coastal waters off Devon and Cornwall



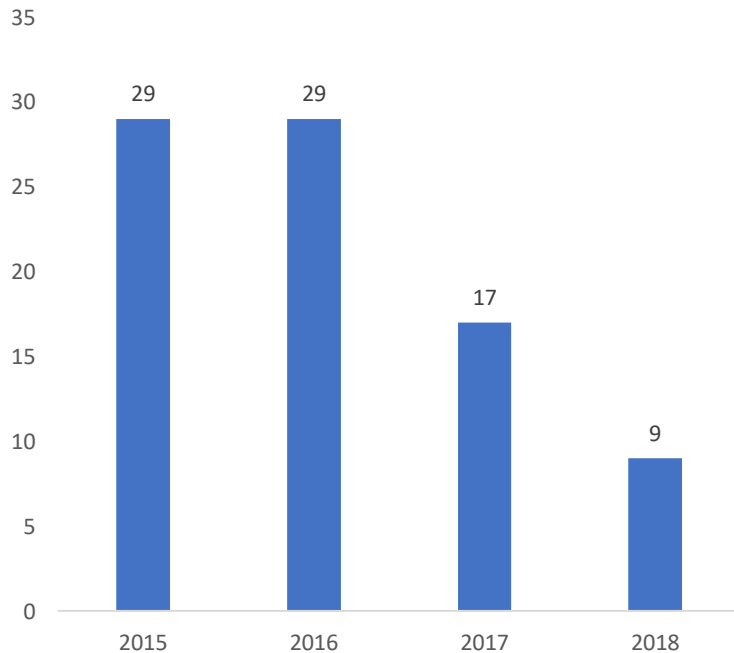
No formal abundance data, but public records through time exist - increasing sightings through time [with large spikes], particularly 2006.  
No systematic re-analysis of public sightings since 2008.



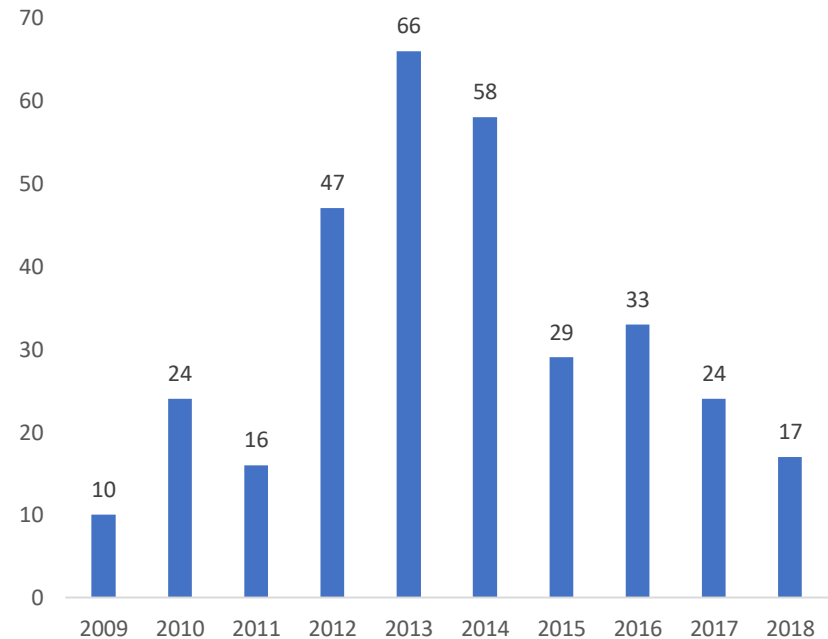
# Since 2008, numbers variable, but recent declines across sightings databases compared to historic levels



**2015-2018; n = 84**



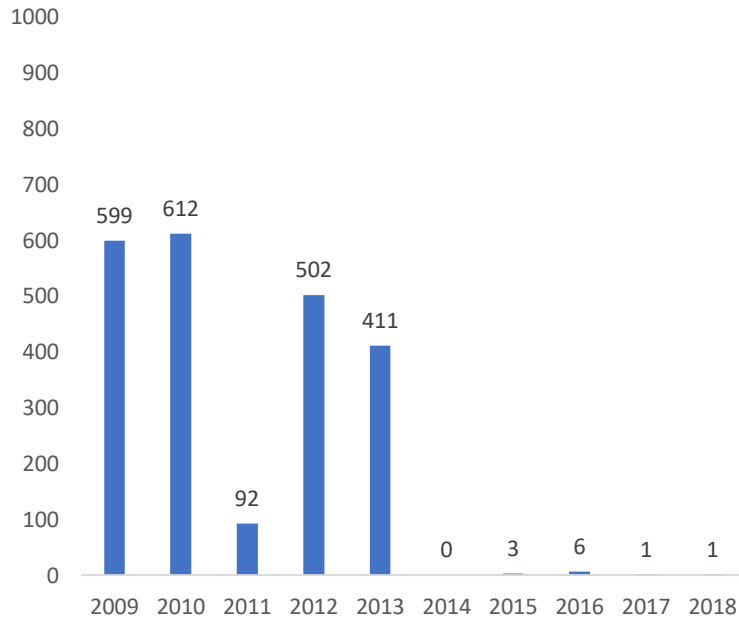
**2009-2018; n = 324**  
(2015-2018; n = 103)



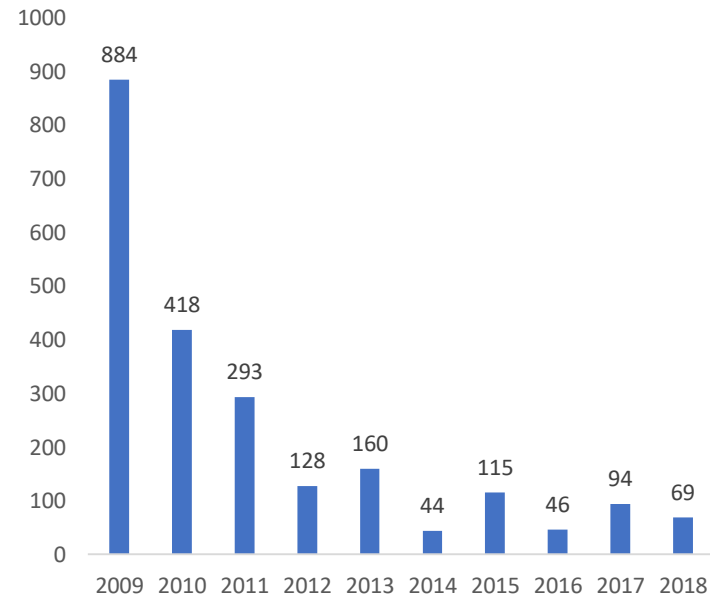
# Since 2008, numbers variable, but recent declines across sightings databases



**2009-2018; n = 2227**  
*(2015-2018; n = 11)*

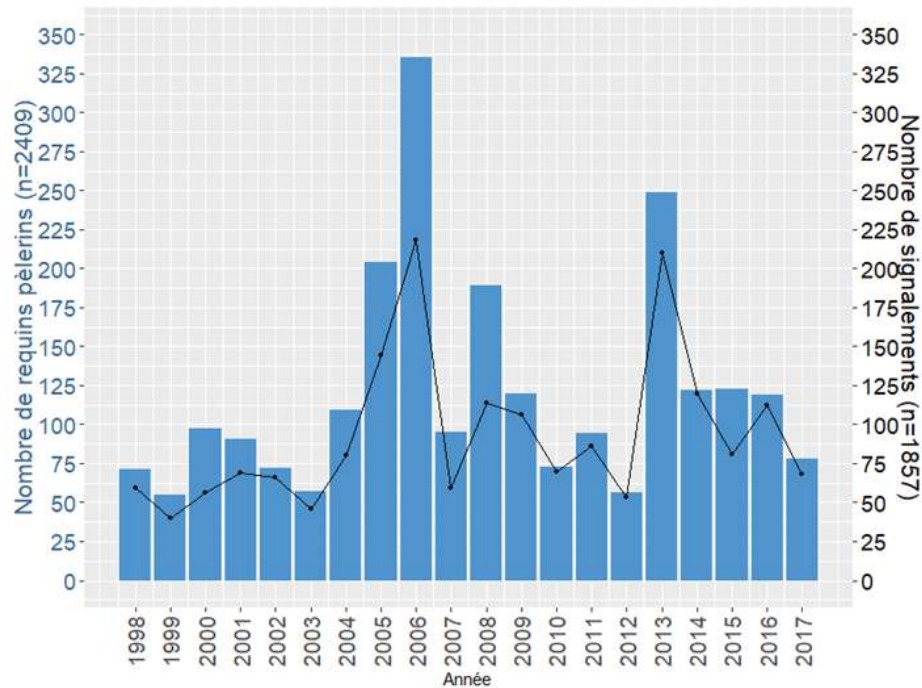


**2009-2018; n = 2251**  
*(2015-2018; n = 324)*



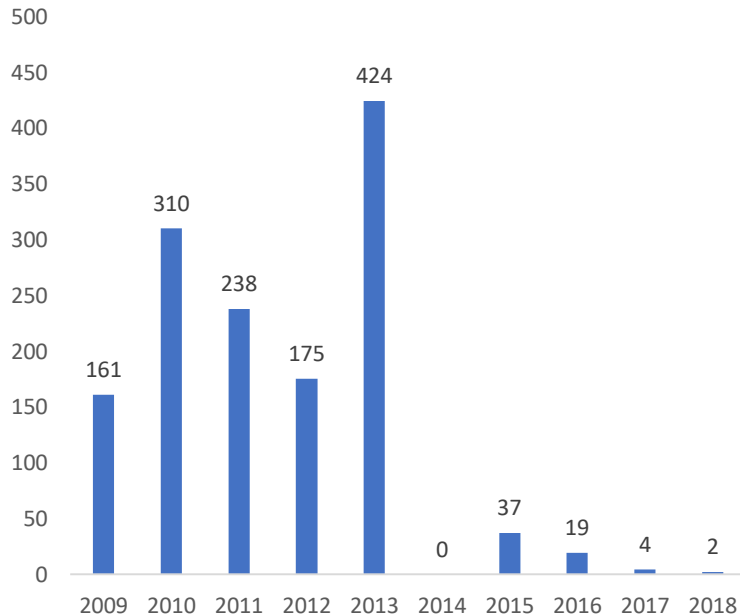


**And further afield, here we have data from the entire French Atlantic coast, 25% of all records are from Brittany coast and there is annual decline for the region**

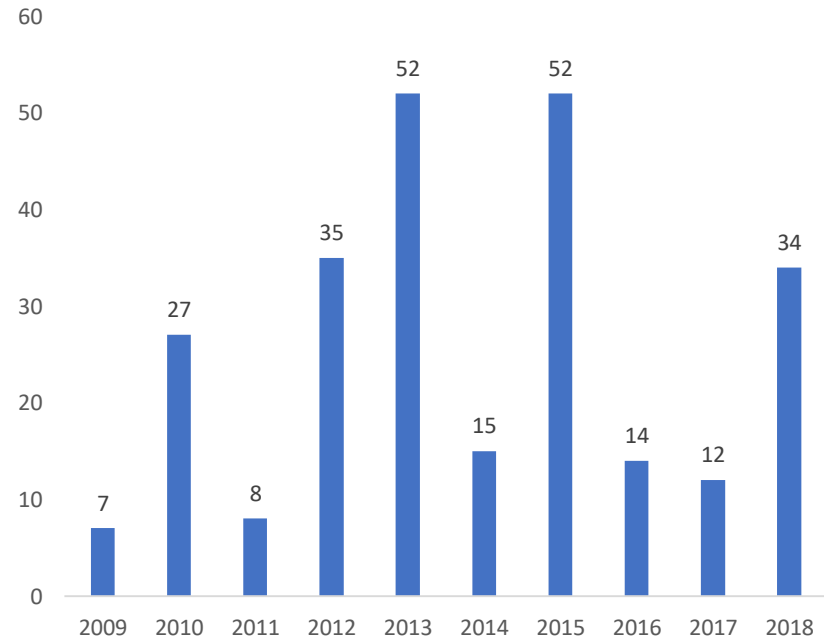


# What about Scotland, have the sharks all moved north? The basking shark 'heartland' is far less accessible for ad-hoc sightings...

**2009-2018; n = 1370**  
(2015-2018; n = 62)



**2009-2018; n = 373**  
(2015-2018; n = 112)





# Distribution of marine species subject to cyclical fluctuations...

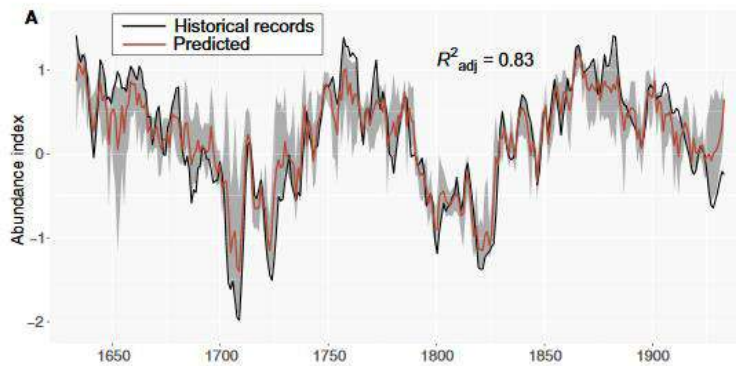
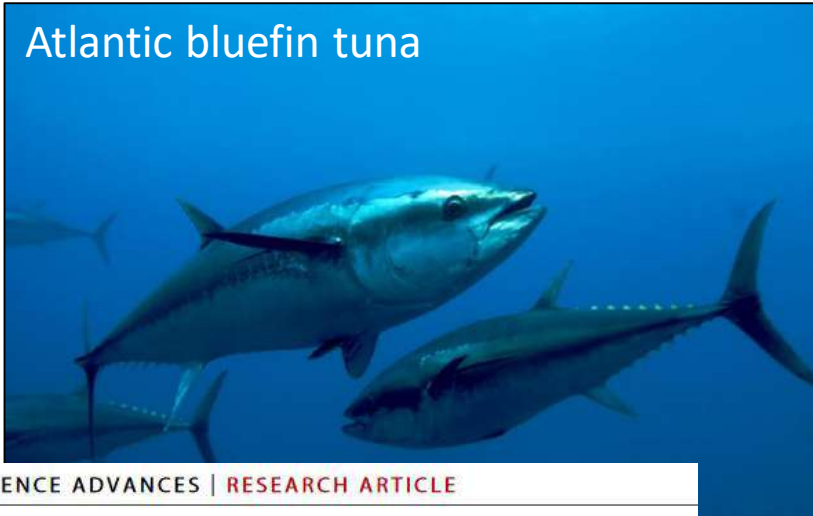


Fig. 1. Faillettaz (2019) Science Advances

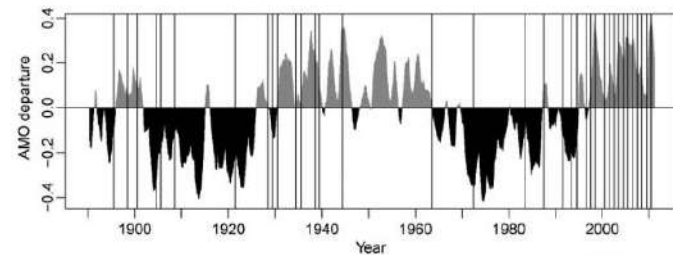
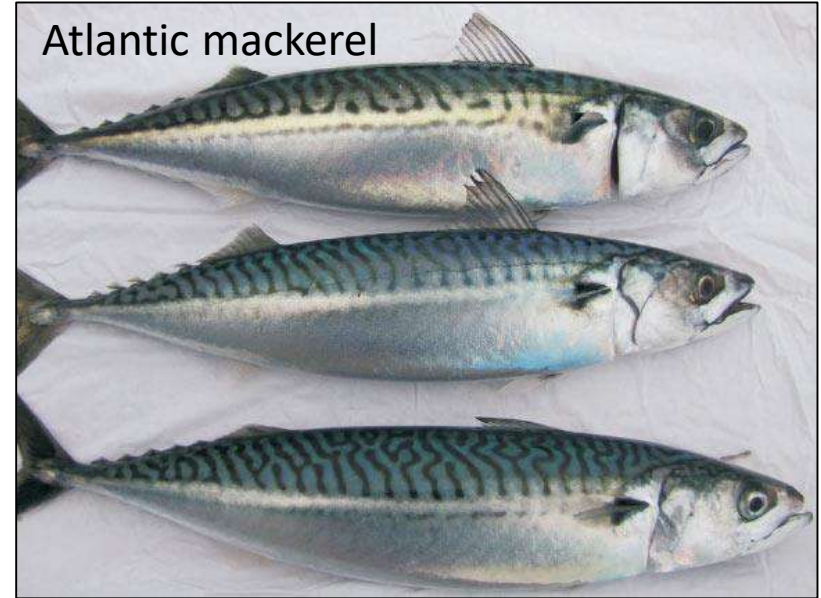
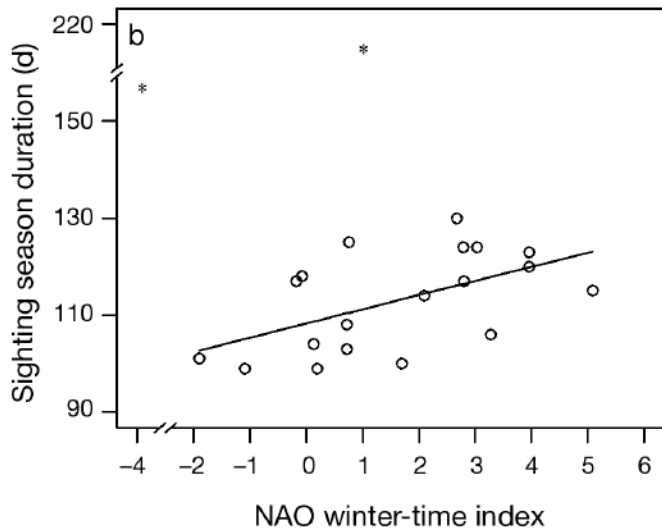
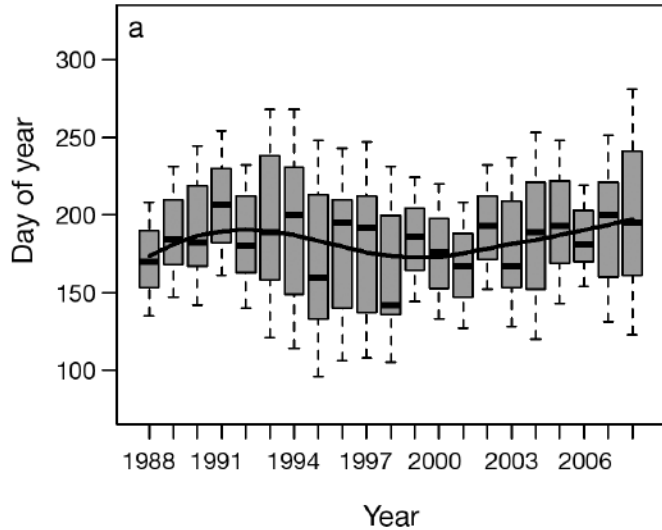
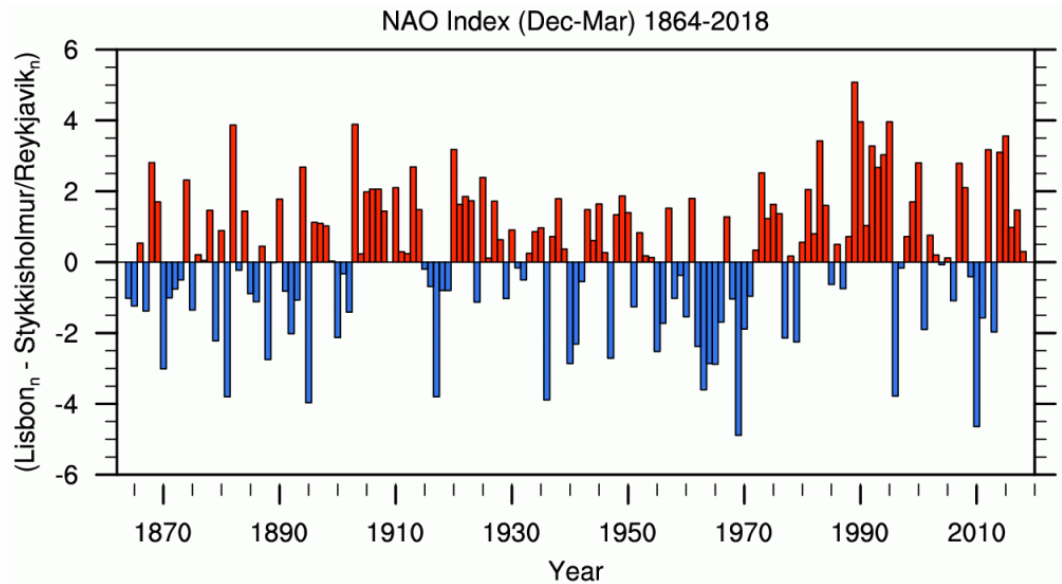


Figure 7. AMO (12-month running average; data from <http://www.esr.noaa.gov/psd/data/correlation/amon.us.long.data>) with the years when mackerel were recorded in Icelandic waters superimposed as vertical lines.

Fig.7. Astthorsson (2012) ICES J Mar Sci



In 2012 we established a relationship between the duration of the sightings season and the North Atlantic Oscillation (higher NAO longer sighting seasons), but this likely no longer holds as records are so sparse...

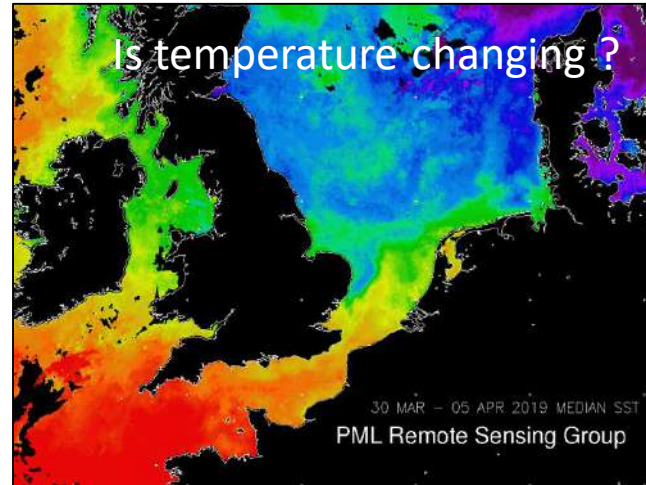


<https://climatedataguide.ucar.edu/climate-data/hurrell-north-atlantic-oscillation-nao-index-station-based>

Witt et al. 2012. MarEcolProgSer 459:121-134

+ve NAO=Mild, stormy and wet winters, -ve= cold, calm and dry winters

The trend in declining records is fairly stark in most databases, across multiple regions. **So what has changed?**



**Likely no single explanatory reason...**

## What next?

- Does the disappearance matter? Is there much we can do anyway?  
Understanding drivers of change is important to help in describing and managing change, helps to motivate and improve stewardship.
- Collaborative work to establish region (NE Atlantic) wide patterns – pulling together organisations, naturalists, Universities, international partners...
- Which other groups could we engage? L4@PML and CPR team for plankton, ecotour operators across the UK, shelf sea oceanographers, wildlife groups
- **Basking shark summit?** Gather intelligence from across region. Formalise ideas and thoughts on how we answer this challenging question
- Please contact me if you are interested in being involved.... this is an honest inclusive exercise to improve shared knowledge



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