



# THE DISTRIBUTION OF FIN WHALES IN THE BAY OF BISCAY IN RELATION TO BATHYMETRY AND SEA SURFACE TEMPERATURE



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## Introduction

Despite being one of the most abundant species in the North Atlantic, very little is known about the distribution of fin whales (*Balaenoptera physalus*) in relation to oceanographic parameters, including bathymetry and sea surface temperature (SST). Fin whales are believed to prefer cooler waters, and feed on euphausiids and pelagic schooling fish. The summer feeding season in the Bay of Biscay coincides with a peak in prey distribution and abundance. Further investigation is required to expand our knowledge of the species on a global scale.

## Results

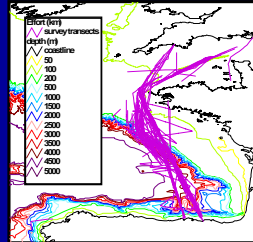


Figure 1: Effort data of surveys (km) for 1998-2003

## Method

Fin whale sightings were mapped following surveys made by Organisation Cetacea aboard stable-platform ferries between 1998 and 2003. Only confirmed fin whale sightings were analysed. Bathymetry data from Gebco, and SST data from satellite AVHRR, were analysed using the GIS program ArcView.

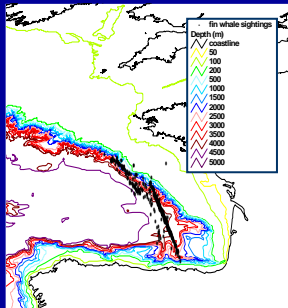


Figure 2: Sightings shown in relation to bathymetry

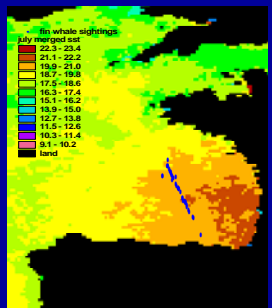


Figure 3: July sightings in relation to mean SST (1998-2003)

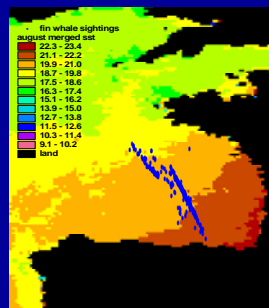


Figure 4: August sightings in relation to mean SST (1998-2003)

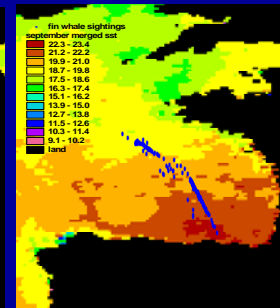


Figure 5: September sightings in relation to mean SST (1998-2003)

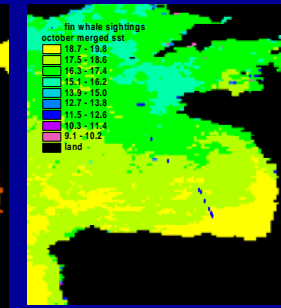


Figure 6: October sightings in relation to mean SST (1998-2003)

Fin whale distribution peaked in August (58.5% of sightings). Mean SST at sighting locations (July – October) was 20.24°C (n = 470, SD = 1.01°C), with a mean depth of sightings at 3350.0m (n = 470, SD = 1049.2m). There was a significant positive correlation between number of sightings with increasing depth (250m intervals) (Pearson correlation = 0.520, p = 0.027) and between number of sightings and increasing temperature (0.5 °C intervals) (Pearson correlation = 0.744, p = 0.006).

## Conclusions

Fin whales in the Bay of Biscay show a preference for deep waters off the continental shelf region. Substantial changes in depth over small areas may encourage upwelling of cold, nutrient rich waters to the surface, enhancing productivity. While there appears to be a significant correlation between fin whale sightings and SST, these increased temperatures may induce the high productivity of prey, rather than having a direct impact on whale abundance or distribution. Although the euphausiid bloom occurs in April, fin whales do not aggregate until July, when euphausiids are large enough to become attractive prey. Future studies should focus on primary productivity in the region, and the effect of food on the migration of fin whales to the Bay in the summer months. Further studies should be carried out with expanded survey effort into the south-western shelf region of the Bay of Biscay.

### Acknowledgements

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### References

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