

A large, detailed photograph of an angel shark resting on a rocky seabed. The shark's body is broad and flat, with a mottled grey and white pattern. Its wings are spread out, and its tail is visible at the bottom left.

ANGEL SHARK PROJECT: WALES SUMMARY REPORT

JUNE 2017 TO JUNE 2022



WHAT IS AN ANGELSHARK?

There are at least 22 species of angel shark, which form one of the most threatened family of sharks, skates and rays in the world (*Squatinaidae*)^{1,2,3}. The Angelshark (*Squatina squatina*) is the only angel shark species present in Atlantic waters of north-west Europe and is listed as Critically Endangered on the IUCN Red List of Threatened Species⁴. Although there has been a reduction in Angelshark distribution in other parts of north-west Europe^{5,6}, including that recently documented in Ireland⁷ and the southern North Sea⁸, Angelsharks are still present in Wales and have been regularly reported in the Welsh Zone throughout the last decade⁹.

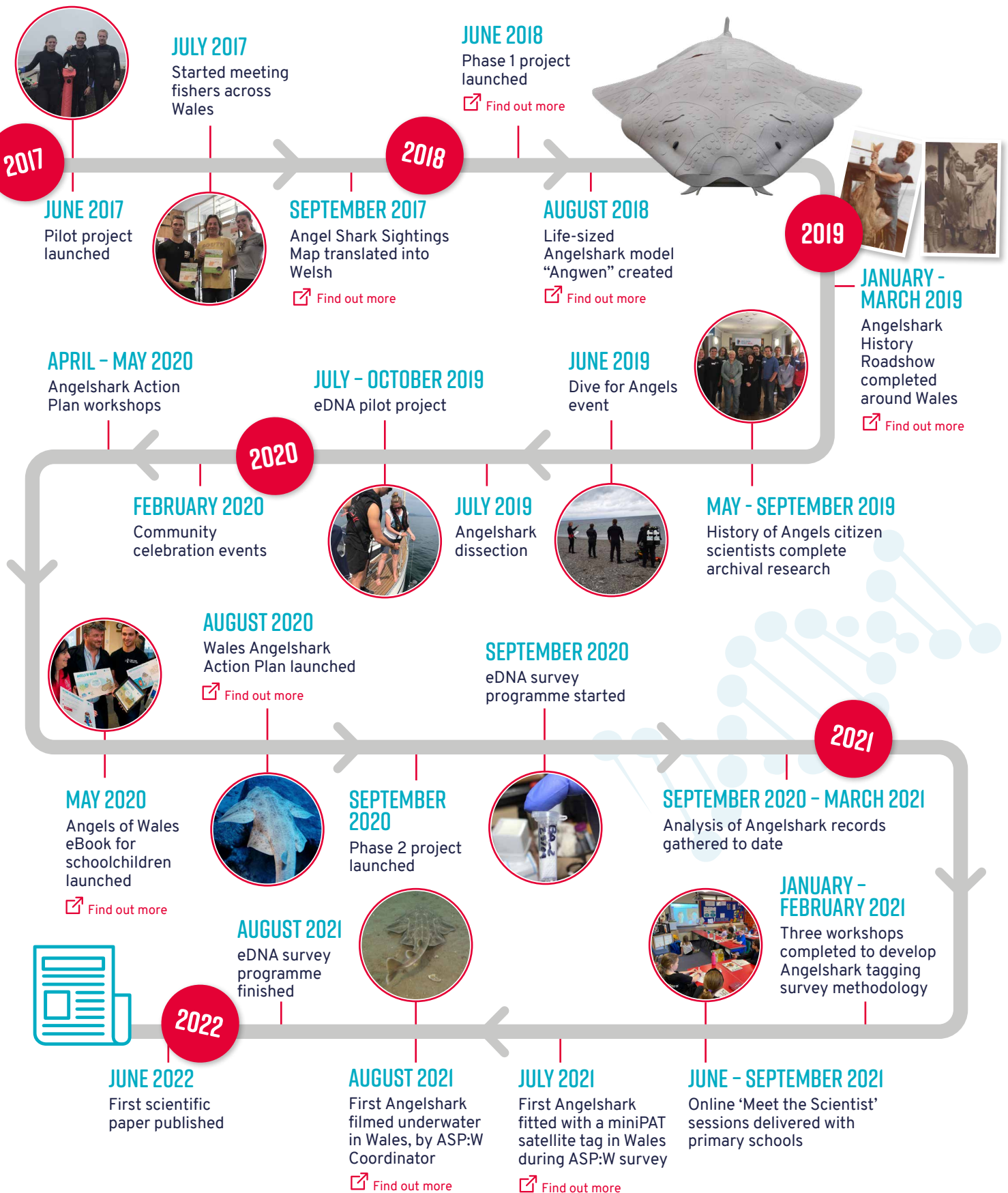
ANGELSHARKS HAVE BEEN REGULARLY REPORTED IN THE WELSH ZONE OVER THE LAST DECADE

ANGEL SHARK PROJECT: WALES

Angel Shark Project: Wales (ASP:W) aims to safeguard Angelsharks in Wales with fishers and coastal communities, using heritage, education and research. ASP:W is a collaborative project, led by Natural Resources Wales (NRW) and the Zoological Society of London (ZSL), with a steering group of 13 partner organisations.

The project has received funding from the National Lottery Heritage Fund, On the Edge and Welsh Government to date (2018-2022).

KEY HIGHLIGHTS OF ASP:W



KEY MILESTONES TO DATE



65

fishers
collaborating
with the project



Angelshark
records
gathered



142 additional
resources with
anecdotal
information on
Angelsharks
collated



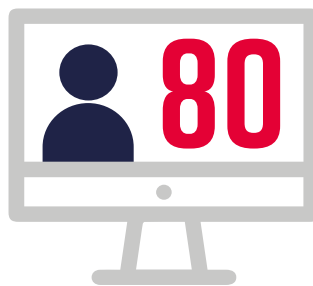
snorkelling or diving
surveys completed



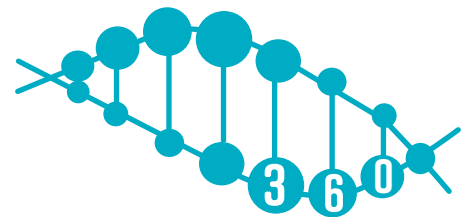
Angelshark
tagged with
miniPAT
satellite tag



13
organisations
developed
the Wales
Angelshark
Action Plan



schoolchildren join online
'Meet the Scientist' sessions



water samples
taken for eDNA
analysis



Over

600,000

people
reached
by social
media



26

citizen scientists volunteers
participated in archival
research or surveys



Over

300 MILLION

people reached
through
press releases
worldwide

INVESTIGATING ANGELSHARK ECOLOGY IN WALES

ASP:W has been working to address key knowledge gaps around the distribution, ecology and habitat use of Angelsharks in Wales. Our first scientific paper was published in June 2022, found here (Barker *et al.* 2022), below are some of our key findings:

How and where do we find Angelsharks in Wales?



Working with fishers is critical to study Angelsharks: 2,231 Angelshark records have been collected by ASP:W, spanning between 1812 and 2021. 97.62% of these records were provided by commercial, recreational and charter fishers, as part of our fisher engagement programme.



Records from communities and archives add important context: 142 historical resources provided important anecdotal information on Angelsharks in Wales, used to help interpret results of scientific research.



There is evidence of Angelshark presence across Wales: Angelshark records were obtained from across the coast of Wales, with North Cardigan Bay, Tremadog Bay, Carmarthen Bay, Conwy Bay, and the outer Severn Estuary hosting record “hotspots”.

Inshore waters are important habitat for Angelsharks: 97.62% of Angelshark records were reported within 6 nautical miles (nm) of the Welsh coast.

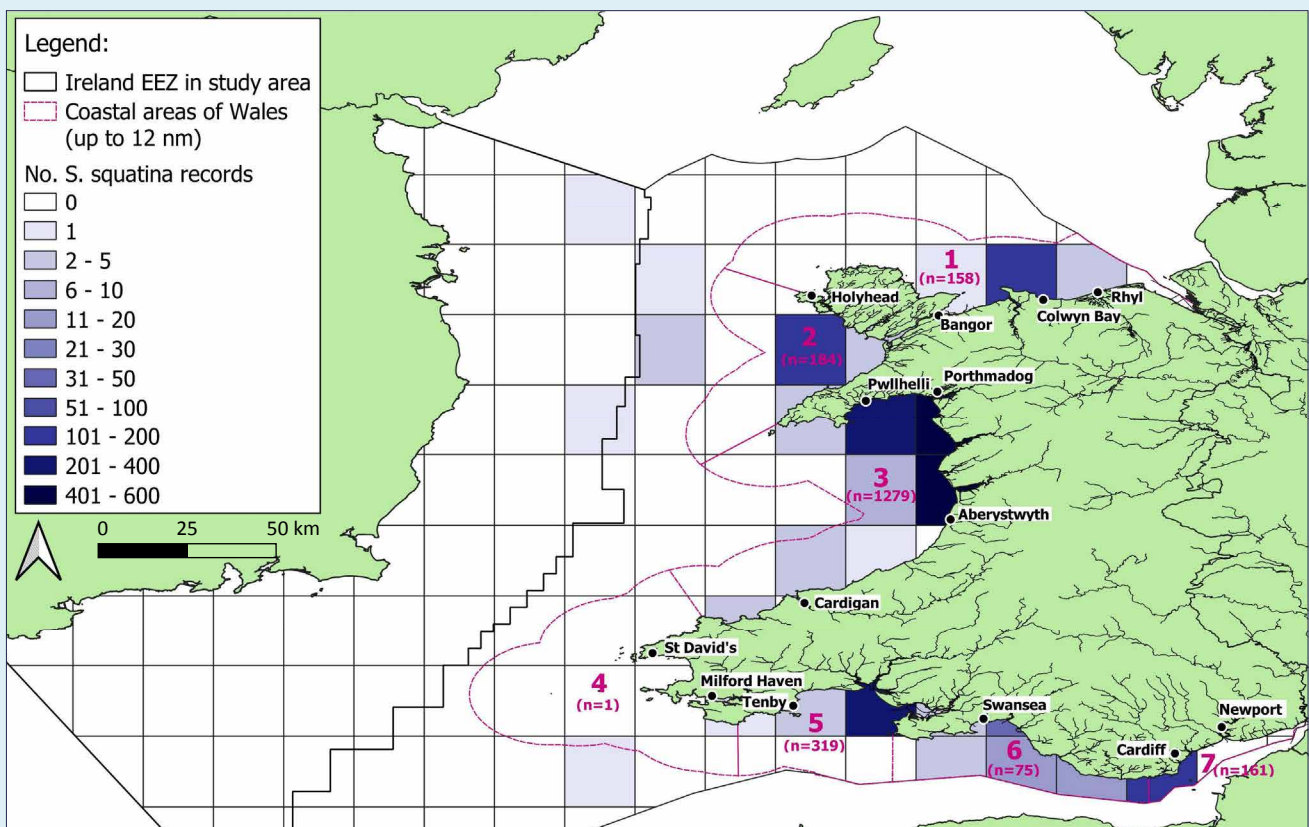


Image © Jake Davies



85

NEWBORN OR JUVENILE ANGELSHARK RECORDS WERE REPORTED TO ASP:W

What is driving Angelshark distribution in Wales?

Several environmental variables drive

Angelshark distribution: Species Distribution Models predicted that sea surface temperature, chlorophyll-a, salinity and depth have the greatest influence on Angelshark distribution.

Wales could be an important breeding area for Angelsharks: 85 newborn or juvenile Angelshark records were reported to ASP:W and in August 2021, ASP:W Project Coordinator, Jake Davies, captured rare footage of newborn Angelshark.

How do Angelshark records change over time?

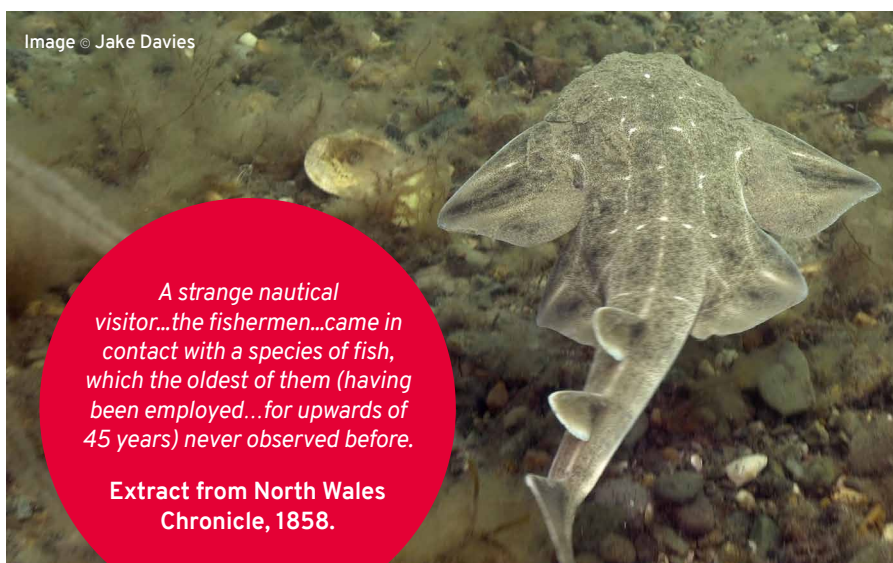
There is large variation in the number of records provided each decade: The greatest number of Angelshark records were provided in the 1970's, 1980's and 1990's, but this might be due to greater fishing effort during that period.

There are different descriptions on the prevalence of Angelsharks in Wales: The description of Angelshark "rarity" varied geographically and seasonally throughout the 200-year time period studied, suggesting an unequal distribution of Angelsharks throughout Wales.

Many factors influence the number of Angelshark records reported:

Two examples include 1) changes to fishing effort (e.g. the number of fishers operating, the type of fishing vessel, fishing location, target species and seasonal changes in these factors will influence the number of Angelsharks accidentally encountered); 2) People's ability and knowledge of where to report Angelshark records has changed (e.g. the internet and social media has allowed much easier reporting).

Image © Jake Davies



A strange nautical visitor...the fishermen...came in contact with a species of fish, which the oldest of them (having been employed...for upwards of 45 years) never observed before.

Extract from North Wales Chronicle, 1858.

In order to safeguard the future of Angelsharks in Wales, further research is needed to investigate Angelshark status and ecology in Wales, as outlined in the Wales Angelshark Action Plan.

RESEARCH COMPLETED IN ASP:W PHASE 2



eDNA

Environmental DNA surveys (eDNA) were carried out to understand Angelshark seasonality in North Cardigan Bay. Monthly water samples were taken at 10 sites over 12 months (September 2020 - August 2021). These were filtered and then analysed for Angelshark eDNA to determine whether the species was present.

24

A total of 120 water samples were collected and Angelshark DNA was detected in 24, which encompassed all 10 sites.



Tagging

An Angelshark survey and tagging methodology was developed in collaboration with government agencies, research groups, NGOs and fishers. In July 2021, the first Angelshark was fitted with a miniPAT satellite tag and ID tag to gather information on offshore movement (tagging was completed by trained personnel under license).



Project SIARC

In October 2022, Project SIARC (Sharks Inspiring Action and Research with Communities) was launched to expand techniques to other elasmobranch species. ASP:W continues under the umbrella of Project SIARC, find out more: www.projectsiaarc.com

DELIVERY OF THE WALES ANGELSHARK ACTION PLAN

The Wales Angelshark Action Plan provides a priority list of actions to be delivered over the next five years towards the Vision of a thriving population of Angelsharks in Wales. These actions were developed following a series of workshops, that discussed the threats and evidence gaps in the context of existing policy and management measures, for Angelsharks in the Welsh Zone.

Actions are categorised under five goals:

- 1 **HABITAT AND ENVIRONMENT**
- 2 **FISHERIES**
- 3 **COMMUNITY**
- 4 **ANGELSHARK CONNECTIVITY**
- 5 **EVIDENCE GAPS**

22 ACTIONS IN PROGRESS

2 ACTIONS COMPLETED

Find out more:

www.angelsharkproject.com/wales

🐦 @AngelShark2014

📘 @angelsharkproject

📷 @angelsharkproject

Project SIARC & ASP:W Lead Partners



Project SIARC & ASP:W Steering Groups include:



Kindly funded by:

ON THE EDGE 



References:

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Date: June 2022

Reference: Angel Shark Project: Wales Summary Document, 2022. ZSL/NRW