

# Ocean Literacy in Wales: Headline Findings Report

Report No: 633

Author Name: Atkinson, M., Wenman, C., Zachary, C.

Author Affiliation: Natural Resources Wales, Defra

## About Natural Resources Wales

Natural Resources Wales' purpose is to pursue sustainable management of natural resources. This means looking after air, land, water, wildlife, plants, and soil to improve Wales' well-being, and provide a better future for everyone.

## Evidence at Natural Resources Wales

Natural Resources Wales is an evidence-based organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff.
- Securing our data and information.
- Having a well-resourced proactive programme of evidence work.
- Continuing to review and add to our evidence to ensure it is fit for the challenges facing us; and
- Communicating our evidence in an open and transparent way.

This Evidence Report series serves as a record of work carried out or commissioned by Natural Resources Wales. It also helps us to share and promote use of our evidence by others and develop future collaborations. However, the views and recommendations presented in this report are not necessarily those of NRW and should, therefore, not be attributed to NRW.

Report series: NRW Evidence Report

Report number: 633

Publication date: May 2022

Title: **Ocean Literacy in Wales: Headline Findings Report**

Author(s): Atkinson, M. Wenman, C., Zachary, C.

Technical Editor:

Quality assurance: Lindenbaum, K.

Peer Reviewer(s) McKinley, E.

Approved By: Lewis, M.

Restrictions: None

## **Distribution List (core)**

NRW Library, Bangor 2

National Library of Wales 1

British Library 1

Welsh Government Library 1

Scottish Natural Heritage Library 1

Natural England Library (Electronic Only) 1

## **Distribution List (others)**

Organisation, Location

Organisation, Location

Organisation, Location

Organisation, Location

Individual, Organisation

Individual, Organisation

Individual, Organisation

Individual, Organisation

Individual, Organisation

## **Recommended citation for this volume:**

Atkinson M., Wenman C., Zachary C. 2022. Ocean Literacy in Wales: Headline Findings Report. NRW Evidence Report. Report No: 633, 53 pp, Natural Resources Wales, Bangor

# Contents

About Natural Resources Wales	1
Evidence at Natural Resources Wales	1
Distribution List (core)	2
Distribution List (others)	2
Recommended citation for this volume:	2
Contents	3
List of Figures	4
Crynodeb Gweithredol	6
Executive summary	6
1. Introduction	8
2. Aims	9
3. Methodology	10
4. Dimensions of Ocean Literacy	11
5. Headline Findings	12
5.1 Principles of Ocean Literacy	12
5.2 Emotional responses to the marine environment	14
5.3 Knowledge of Marine Terms	15
5.4 Perceptions of marine health and challenges	16
5.5 Benefits of the marine environment	17
5.6 Threats to the marine environment	18
5.7 Responding to threats to the marine environment	19
5.8 Attitudes to climate change	21
5.9 Responding to ocean climate change	22
5.10 Lifestyle impacts and changes	23
5.11 Purchasing and packaging actions	27
5.12 Seafood and purchasing actions	28
5.13 Food, Energy and Transport Actions	30
5.14 Marine activism	32
5.15 Communication about the marine environment	33

5.16 Visiting the marine environment	34
5.17 Length of Visits	37
5.18 Marine destinations	40
5.19 Recreational activities	43
5.20 Outcomes and motivation of visits	44
5.21 Barriers to visits	47
Conclusions and recommendations	49
Key findings	49
Differences between combined findings and Welsh findings	49
References	53

## List of Figures

• Figure 1: Emotional responses to the marine environment (weighted %)	14
• Figure 2: Perceptions on the health of and challenges facing the marine environment (weighted %)	16
• Figure 3: Extent to which Ocean Literacy principles are perceived to be true (weighted %)	12
• Figure 4: Knowledge and understanding of marine terms (weighted %)	15
• Figure 5: Most important benefits of the marine environment for society (weighted %)	17
• Figure 6: Pressures posing most threat to the marine environment (weighted %)	18
• Figure 7: Importance of protecting the marine environment	19
• Figure 8: Most important activities to address marine issues (weighted %)	
• Figure 8: Views on climate change and role of human activity (%)	21
• Figure 9: Responding to ocean climate change	22
• Figure 10: Percieved impact of lifestyle on the marine environment	23
• Figure 11: Planned lifestyle changes to protect the marine environment	24
• Figure 12: Reasons for changing lifestyle in last 12 months	25
• Figure 13: Reasons for not changing lifestyle in last 12 months (weighted %)	26
• Figure 14: Activities done in the last 12 months in relation to purchases and use of packaging (weighted %)	27

• Figure 15: Seafood (fish or shellfish) purchasing (weighted %)	28
• Figure 16: Information influencing seafood purchase	29
• Figure 17: Frequency of food, energy and transport actions (weighted %)	30
• Figure 18: Current energy and vehicle use (weighted %)	31
• Figure 19: Activities undertaken to protect the marine environment (weighted %)	32
• Figure 20: Sources of knowledge about the marine environment (weighted %)	33
• Figure 21: Visits to the marine environment in the last 12 months (weighted %)	34
• Figure 22: Distance travelled for visit (weighted %)	35
• Figure 23: Main mode of transport used for visit (weighted %)	36
• Figure 24: Length of visit time (weighted %)	37
• Figure 25: Overnight stay (weighted %)	38
• Figure 26: Visits to the marine environment in the last 12 months (weighted %)	39
• Figure 27: Length of visit time (weighted %)	40
• Figure 28: Designated/specific types of sites visited on most recent visit (weighted %)	42
• Figure 29: Activities undertaken during visit to the marine environment in last 12 months (weighted %)	43
• Figure 30: Outcomes associated with most recent visit to marine environment (weighted %)	44
• Figure 31: General motivations for visiting the marine environment (weighted %)	45
• Figure 32: Reasons for not visiting the marine environment in the last 12 months (weighted %)	47

# Crynodeb Gweithredol

(insert text) Please use the body text style and only use one “return” at the end of a paragraph.

## Executive summary

This report presents the headline findings for the Welsh sample from the survey entitled: *Survey on Ocean Literacy in the UK*. This survey was commissioned as part of the *Understanding Ocean Literacy and Ocean Climate-related Behaviour Change in the UK* project, commissioned by Defra in collaboration with Natural Resources Wales and the Ocean Conservation Trust. The primary focus of the survey was to better understand the extent and current levels of Ocean Literacy in civil audiences across England and Wales.

It is becoming increasingly clear that enhancing Ocean Literacy across society will be crucial to achieving the behaviour change needed to address the challenges facing our coasts and seas and manage them sustainably. This is recognised in a variety of policy instruments both internationally and nationally (for example the UN Sustainability Goals and the Marine Area Statement). There is, however, a lack of data on Ocean Literacy collected at the UK or Wales level. Gathering this data is crucial if Ocean Literacy is to be used effectively as a policy mechanism and for future policy development. This survey was developed to begin to fill this knowledge and evidence gap.

Ocean Literacy is defined as ‘an understanding of the ocean’s influence on a person and their influence on the ocean’. Using this definition, the survey explores a range of Ocean Literacy dimensions, reflecting the growing understanding of what this concept means. Where once Ocean Literacy focused only on knowledge, it now encompasses a wider range of dimensions including:

- Awareness
- Knowledge
- Attitudes
- Activism
- Behaviours
- Communication
- Emotional connection and
- Access, experience, and proximity with the marine environment.

The survey provides robust information on the extent to which the public understands and are aware of the benefits they receive from the marine environment. It also identifies pro-environmental behaviours among the public in relation to the marine environment, for example, switching to energy from marine renewable sources, buying more locally produced seafood products and using more public transport. Questions in the survey go on

to measure the extent of the public's attitudes towards protecting the marine environment, including intentions for change. Information is also gathered on the level and type of engagement with the marine environment, including visits and activities undertaken in the last 12 months, and identifies the barriers and drivers that shape participation. Finally, it provides information on the impact of visits to the marine environment on wellbeing.

The key findings from the survey were that:

- Welsh respondents valued the marine environment, particularly appreciating the physical and mental health benefits it gave them (86% reported that visits to the marine environment were good for their mental health and 83% reported that visits were good for their physical health).
- The overriding emotional response to the marine environment was concern (47%) followed by awe/wonder (42%). Most (87%) felt that it is important to protect the marine environment.
- Marine litter / plastic pollution was perceived to be the pressure posing the biggest threat to Wales' marine environment (76% felt it to be the biggest threat facing the marine environment). This focus on plastic may have meant that other crucial issues are not receiving the attention they need. Indeed, pressures such as species loss, sea level rise and construction at sea were perceived to be less threatening.
- A large proportion of Welsh respondents indicated a willingness to make lifestyle changes (80% have, or intended to make lifestyle changes), and these individual actions appeared to be the main way in which people take action to protect the marine environment. Other actions, such as contacting elected representatives and volunteering do not appear to be as well taken up. Of those who have not changed their lifestyle within the last 12 months, the main reason given was that they already feel they do as much as they can (45%).
- Knowledge gaps existed for several marine terms; for example, 'carbon sequestration', 'ecosystem services' and 'nature-based solutions' are not well understood (less than 50% of respondents understood these terms).
- People mostly got their information about the ocean from nature documentaries and the news (47% reported getting their information about the marine environment from television or radio).
- The most popular destinations for visitors were sandy beaches (92% of respondents reported visiting this destination over the last 12 months) and coastal towns (90% of respondents reported visiting this destination over the last 12 months).
- Walking was the most popular activity undertaken at the coast (96% of respondents enjoyed walking at the coast).

# 1. Introduction

Ocean Literacy has historically been defined as ‘an understanding of the ocean’s influence on an individual and that individual’s influence on the ocean’ (UNESCO 2018). With this early definition, an ocean-literate person is considered to be someone who understands the essential principles and fundamental concepts of ocean science, can communicate about the ocean in a meaningful way, and is able to make informed and responsible decisions regarding the ocean and its resources. Where it has traditionally been framed in terms of a knowledge-deficit (the assumption that increased knowledge translates to action), it is an evolving concept, encompassing much more than just knowledge. It is also a reflection of values, attitudes, emotions, and behaviours towards the ocean (McKinley and Burdon, 2020; Brennan et al., 2019; Stoll-Kleeman, 2019).

The importance of enhancing societal Ocean Literacy has been recognised by the United Nations in its Decade of Ocean Science for Sustainable Development 2021-2030 (UNESCO 2021), which aspires to transform the relationship between society and the ocean. In a Welsh context, Ocean Literacy is also key to delivering both the sustainable management of natural resources (SMNR) and Wellbeing Goals established by the Well-being of Future Generations Act (Wales) 2015 and the Environment (Wales) Act 2016. Furthermore, the concept of Ocean Literacy has been embedded in the Marine Area Statement and more recently, has also been identified as a key enabler for a Welsh ‘Blue Recovery’ (a co-developed integrated package which covers a cross cutting range of work areas supporting a socially just and environmentally sustainable recovery for the marine area) by the Wales Marine Action and Advisory Group.

Despite the growing interest in Ocean Literacy, there is a lack of data on Ocean Literacy, and how this translates to behaviour change, collected at the UK level. An Ocean Literacy-specific survey was therefore developed as part of the project ‘[Understanding Ocean Literacy and ocean climate-related behaviour change in the UK](#)’ delivered in partnership by Defra, Natural Resources Wales and the Ocean Conservation Trust. The project had three work packages with the following aims:

- **Work Package 1 (October 2020):** To undertake an evidence synthesis to: (1) examine the links between Ocean Literacy and behaviour change and (2) identify indicators and question-modules which can be used to assess and track ocean and climate-related behaviour change (e.g., switching to energy from renewable sources and using more climate-friendly transportation).
- **Work Package 2 (December 2020):** To design and test questions and indicators for inclusion in an online survey, using both qualitative and quantitative pre-testing. This highlighted how such questions might be applied in a national/global context.
- **Work Package 3 (March 2020):** To implement an online survey to gather baseline data on the existing levels of Ocean Literacy and engagement in ocean climate-related behaviours in the English and Welsh populations.

Evidence synthesis undertaken as part of Work Package 1 further developed the concept of Ocean Literacy (McKinley and Burdon 2020). It recommended a range of additional measures of Ocean Literacy, including aspects of emotions, access, experience and proximity, social values and motivations and set out a range of possible survey indicators



for measuring these. These additional dimensions were incorporated into the survey design and testing (Work Package 2) and in the questions for the survey (Work Package 3).

This report summarises the headline findings from the Welsh sample of the online survey. For England and Wales combined headline findings, see [‘Survey on Ocean Literacy – Headline Findings Report’](#) (Defra, 2021).

## 2. Aims

The aim of the survey was to gather baseline data on the levels of Ocean Literacy and climate-related behaviours in England and Wales. The survey was designed to answer the following research questions:

- 1. What is the link between Ocean Literacy and climate-related behaviours?**  
There is limited understanding of the behaviour dimension of Ocean Literacy and whether Ocean Literacy, including an understanding of the ocean’s role in climate regulation and the impact of climate change on the ocean, can lead to behaviour change (such as engagement in climate-related behaviours, such as switching to energy from renewable sources, buying more locally produced food and using more public transport).
- 2. What are the levels of Ocean Literacy and climate-related behaviours in the adult population of England and Wales?** Most of the Ocean Literacy research in the UK has focused on awareness, knowledge and attitudes towards marine issues and climate change (including, for example, ocean acidification). However, research into other dimensions of Ocean Literacy (e.g., communication, behaviour, and activism) has been limited. In addition, research into all dimensions of Ocean Literacy can support a range of indicators of the social and cultural value of the marine environment.

### 3. Methodology

Delivery of the survey was contracted out to BMG Research. Once the questionnaire was finalised, it was translated into Welsh by Natural Resources Wales and all respondents in Wales were offered the option to complete the survey in Welsh. 14 respondents completed the survey in Welsh.

Fieldwork was conducted between Tuesday 16th February to Monday 15th March 2021. In total 8,440 interviews were achieved (6,092 England and 2,348 Wales) against the original target of 8,400 interviews (6,000 England and 2,400 Wales).

The findings in this report describe proportions of respondents from an overall weighted base. The weighted base is the adjusted sample size within each sub-group after weighting procedures have been applied to reflect the relative proportions of the population based on key socio-demographic and geographic information. This is applied to the overall unweighted base of 2,440 respondents in Wales, which is the total number of survey responses achieved. The figures presented in the report have been rounded to the nearest whole percentage.

Further details about the methodology used in the survey, including sample design, weighting, demographic information and final survey are contained in [‘Survey on Ocean Literacy – Technical Report’](#) (Defra 2021a).

## 4. Dimensions of Ocean Literacy

Building on the original definitions of Ocean Literacy, six dimensions of Ocean Literacy, including awareness, knowledge, attitudes, communication, behaviour, and activism were proposed by Bennan et al. (2019). However, there are several other related models and concepts, and the definition of Ocean Literacy continues to evolve.

In addition to the six dimensions listed above, this report includes data gathered relating to two additional dimensions: *Personal or emotional connection* and *Access, experience & proximity*. Further detail on these dimensions and the supporting evidence for them can be found in [‘\*Understanding Ocean Literacy and ocean climate-related behaviour change in the UK – An Evidence Synthesis\*’](#) (McKinley and Burdon 2020).

The full list of Ocean Literacy dimensions included in this report is:

- Awareness
- Knowledge
- Attitudes
- Communication
- Behaviour
- Activism
- Personal or emotional connection
- Access, experience, and proximity

Throughout this report, bullet points at the end of each section make clear which dimension of Ocean Literacy the findings presented relate to.

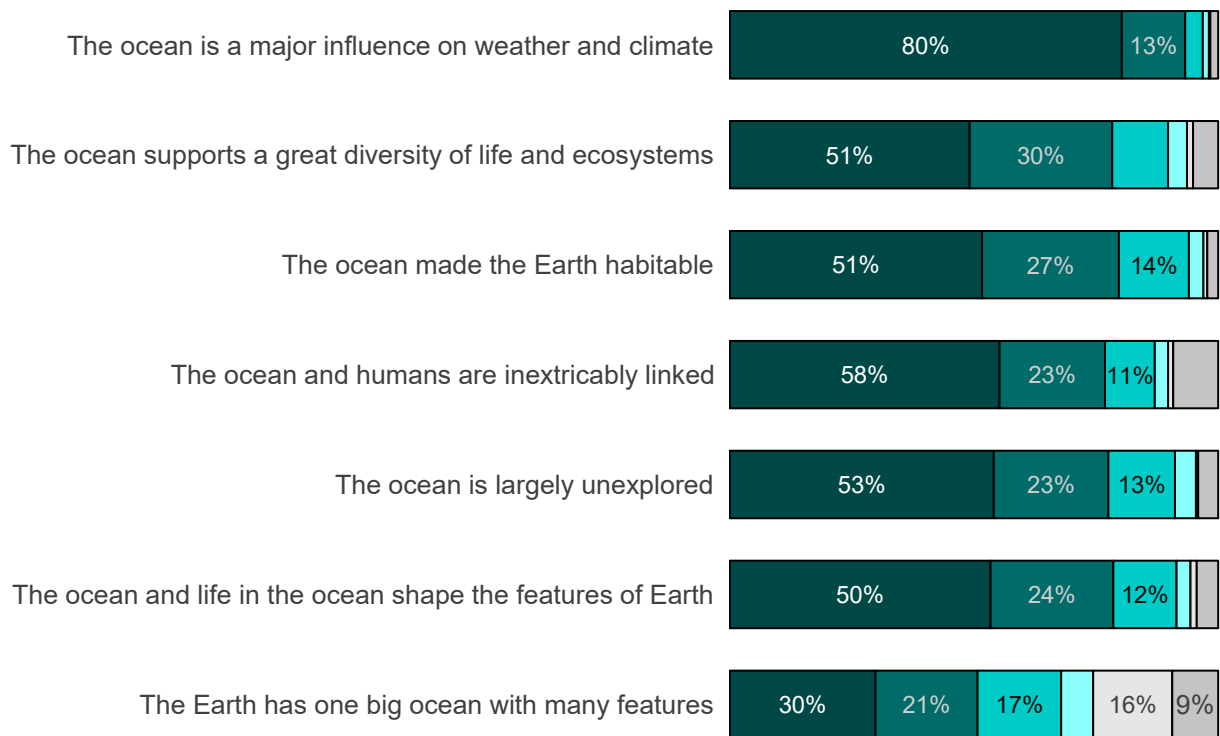
# 5. Headline Findings

## 5.1 Principles of Ocean Literacy

[Seven principles](#) related to people’s understanding of the impact on the ocean and the ocean’s impact on them are commonly used to describe Ocean Literacy. Survey respondents were asked to indicate the extent to which they believed these principles were true (Figure 1).

The vast majority believed that the principles were true to some degree, ranging from 98% who believe that ‘The ocean is a major influence on weather and climate’ to 75% who believe that ‘The Earth has one big ocean with many features’.

**Figure 1: Extent to which Ocean Literacy principles are perceived to be true (weighted %)**



■ Completely True ■ Mostly True ■ Somewhat True ■ Slightly True □ Not at all True □ Don't know

Q3: The following are principles about the marine environment. Please indicate how true you believe each statement to be.

Unweighted base: 2,348

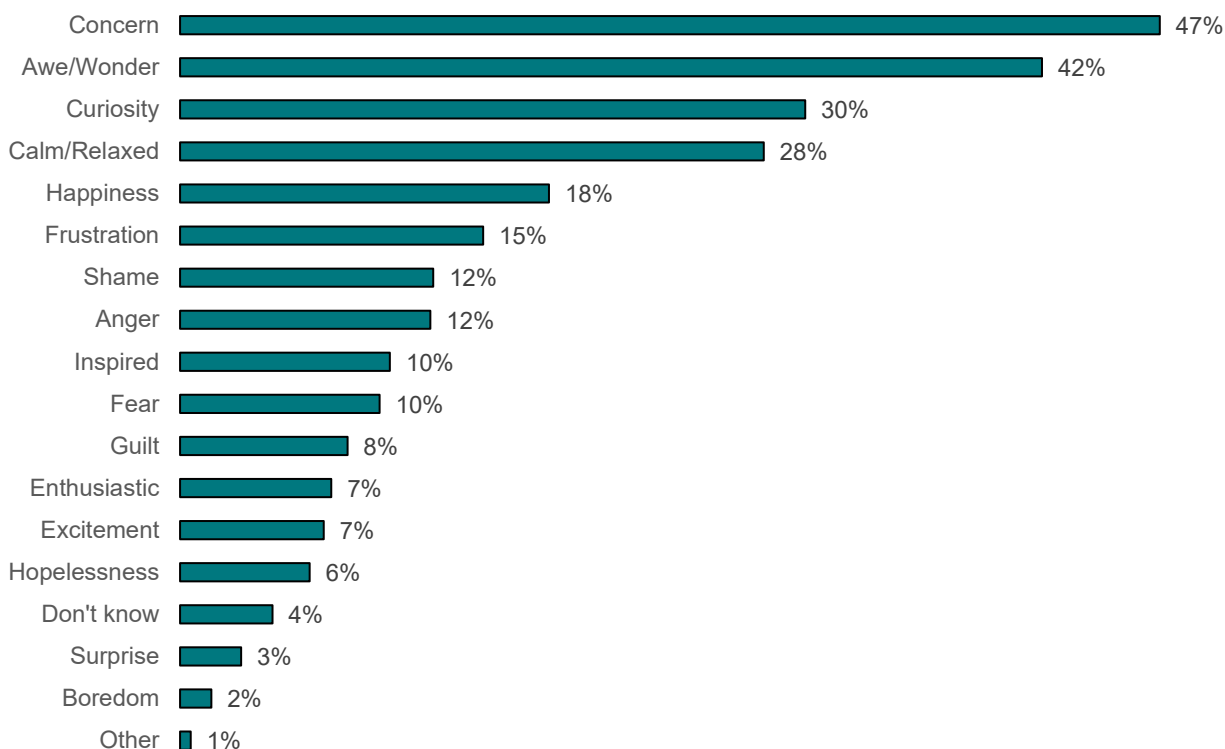
**Dimensions:**

- Personal or emotional connection
- Attitudes
- Knowledge
- Awareness

## 5.2 Emotional responses to the marine environment

When asked about their emotional response to the marine environment (Figure 2), concern (47%) was the most reported feeling, closely followed by awe/wonder (42%). Curiosity (30%) and calm/relaxed (28%) were also frequently reported feelings. Few respondents associated marine environment with boredom (2%), surprise (3%) or hopelessness (6%).

**Figure 2: Emotional responses to the marine environment (weighted %)**



Q2. How do you feel when you think about the marine environment? Please select the three emotions which come closest to how you feel.

Unweighted base: 2,348

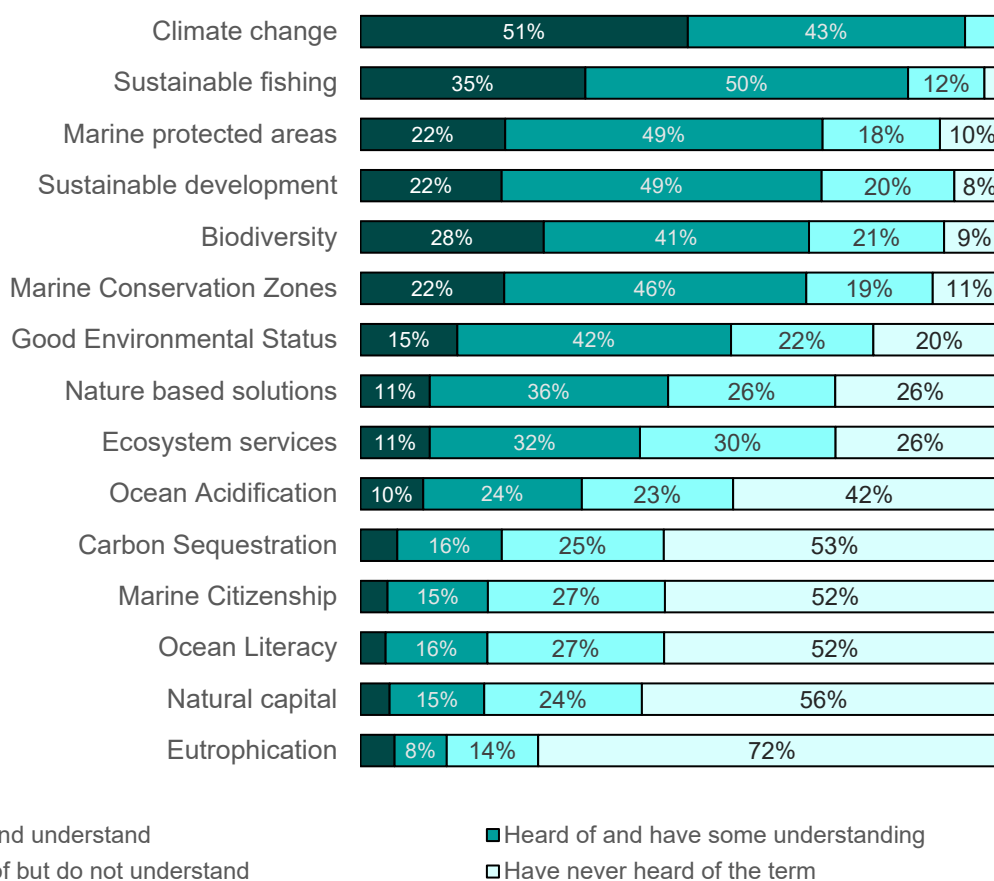
### Dimensions

- Personal or emotional connection

## 5.3 Knowledge of Marine Terms

When asked about their familiarity and understanding of a series of key ocean and climate related terms, climate change (93%) and sustainable fishing (85%) were the terms most known and understood by survey respondents (Figure 3). Other broadly understood terms were marine protected areas (71%), sustainable development (71%) and biodiversity (69%). On the other hand, nearly three quarters (72%) had never heard of eutrophication, while other terms respondents frequently indicated that they had not heard of included natural capital (56%), Ocean Literacy (52%) and marine citizenship (52%).

**Figure 3: Knowledge and understanding of marine terms (weighted %)**



Q7: Please indicate how familiar you are with each of these terms by selecting the relevant box

Unweighted base: 2,348

### Dimensions:

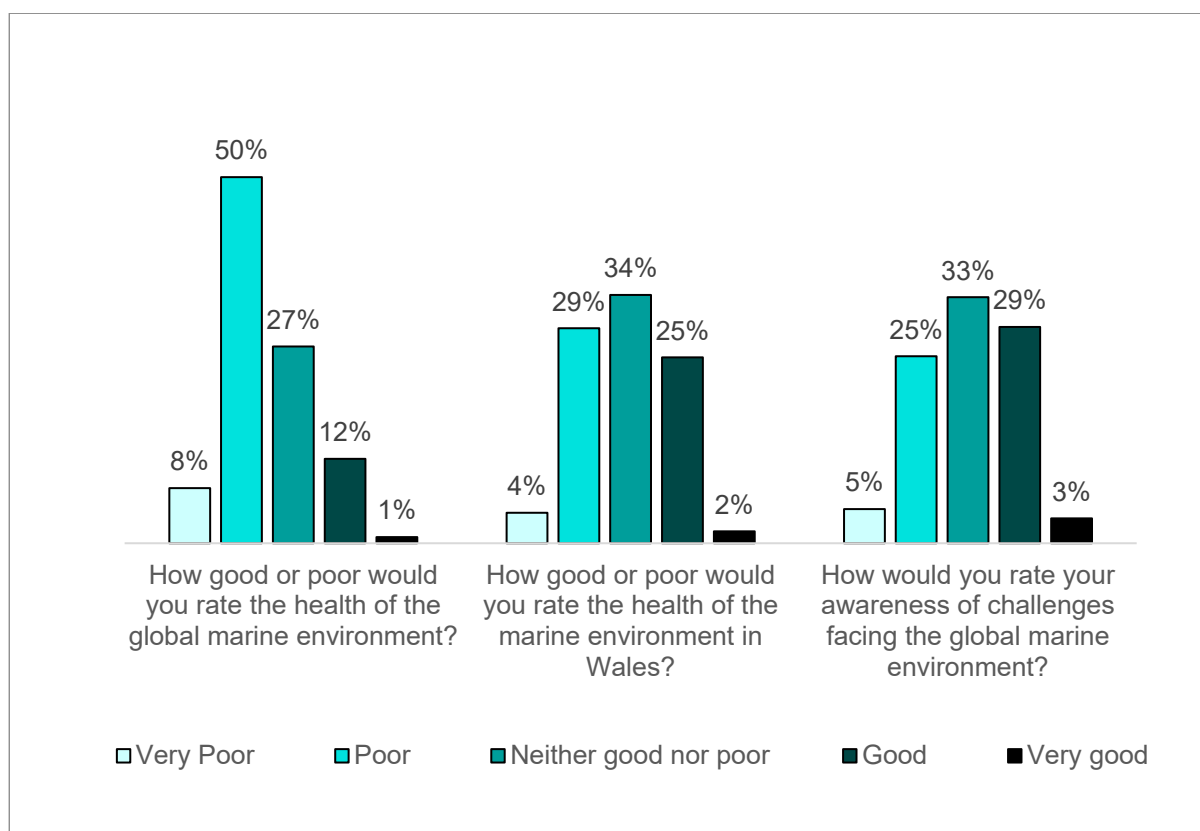
- Knowledge
- Awareness

## 5.4 Perceptions of marine health and challenges

58% rated the health of the global marine environment as poor or very poor. A lower proportion rated the health of the Welsh marine environment as poor or very poor (33%). 27% rated it as good or very good (Figure 4).

Although 30% considered their awareness of the challenges facing the global marine environment as poor or very poor, a similar proportion (32%) of respondents rated their awareness as good or very good.

**Figure 4: Perceptions on the health of and challenges facing the marine environment (weighted %)**



Q4: How good or poor would you rate the health of the global marine environment?

Q5: How good or poor would you rate the health of the marine environment around England/Wales?

Q6: How would you rate your awareness of challenges facing the global marine environment?

Unweighted base: 2,348

### Dimensions:

- Knowledge
- Awareness

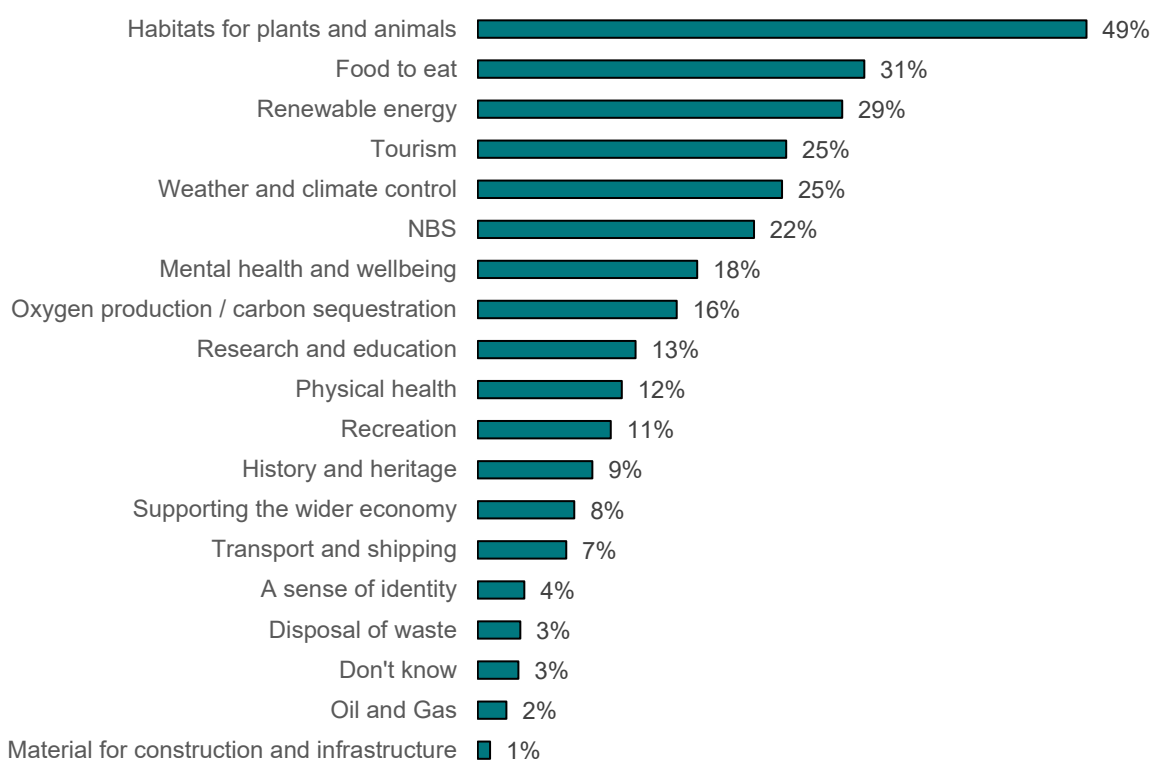


## 5.5 Benefits of the marine environment

When asked what they thought the three most important benefits for society are of the marine environment in England and Wales (Figure 5), the top response selected was habitats for plants and animals (49%), followed by food to eat (31%) and renewable energy (29%).

On the other hand, very few people identified providing material for construction and infrastructure (1%), oil and gas (2%) and disposal of waste (3%) as important benefits.

**Figure 1: Most important benefits of the marine environment for society (weighted %)**



Q9. In your opinion, what are the three most important benefits that society gains from the marine environment?

Unweighted base: 2,348

### Dimensions:

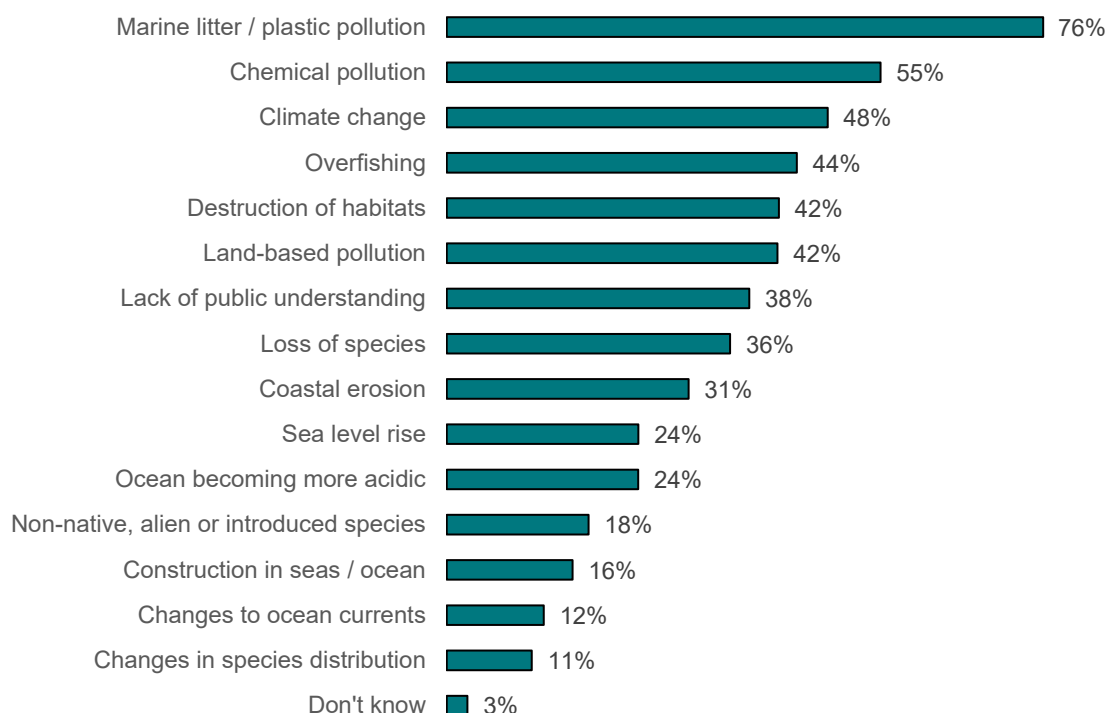
- Personal or emotional connection
- Attitudes
- Knowledge
- Awareness

## 5.6 Threats to the marine environment

Three quarters of Wales' respondents (76%) felt that marine litter/plastic pollution was the most important threat to the marine environment (Figure 6). This was followed by chemical pollution (55%), climate change (48%) and overfishing (44%).

Pressures which respondents believed pose the least threat to the marine environment were changes in species distribution (11%), changes to ocean currents (12%) and construction (16%).

**Figure 2: Pressures posing most threat to the marine environment (weighted %)**



Q10. Which of the following, do you think pose the most threat on the marine environment in England and Wales?

Unweighted basis: 2,348

### Dimensions:

- Attitudes
- Knowledge
- Awareness

## 5.7 Responding to threats to the marine environment

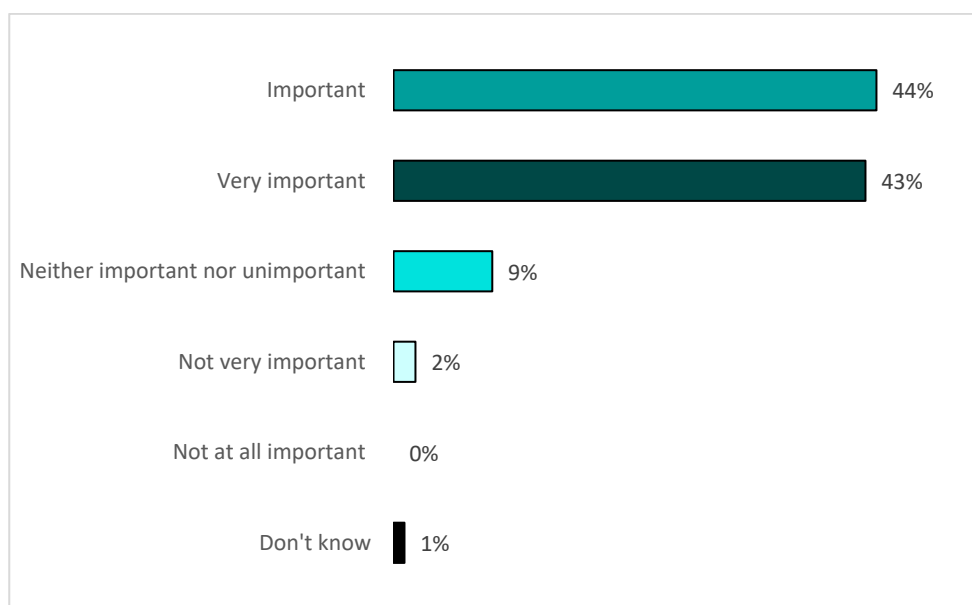
A large majority of Welsh respondents (87%) felt that protecting the marine environment is important or very important (Figure 7). Less than 1% of respondents felt that protecting the marine environment was not at all important.

A range of activities addressing other issues affecting the marine environment (i.e., non-ocean climate issues) in England/Wales were provided to respondents who were asked to select the three most important (Figure 8).

Regulating the production and use of single-use plastics (56%) was selected as the top choice, followed by controls on pollution from industry and/or agriculture (42%) and changing consumption and behaviour to reduce waste and marine pollution (41%).

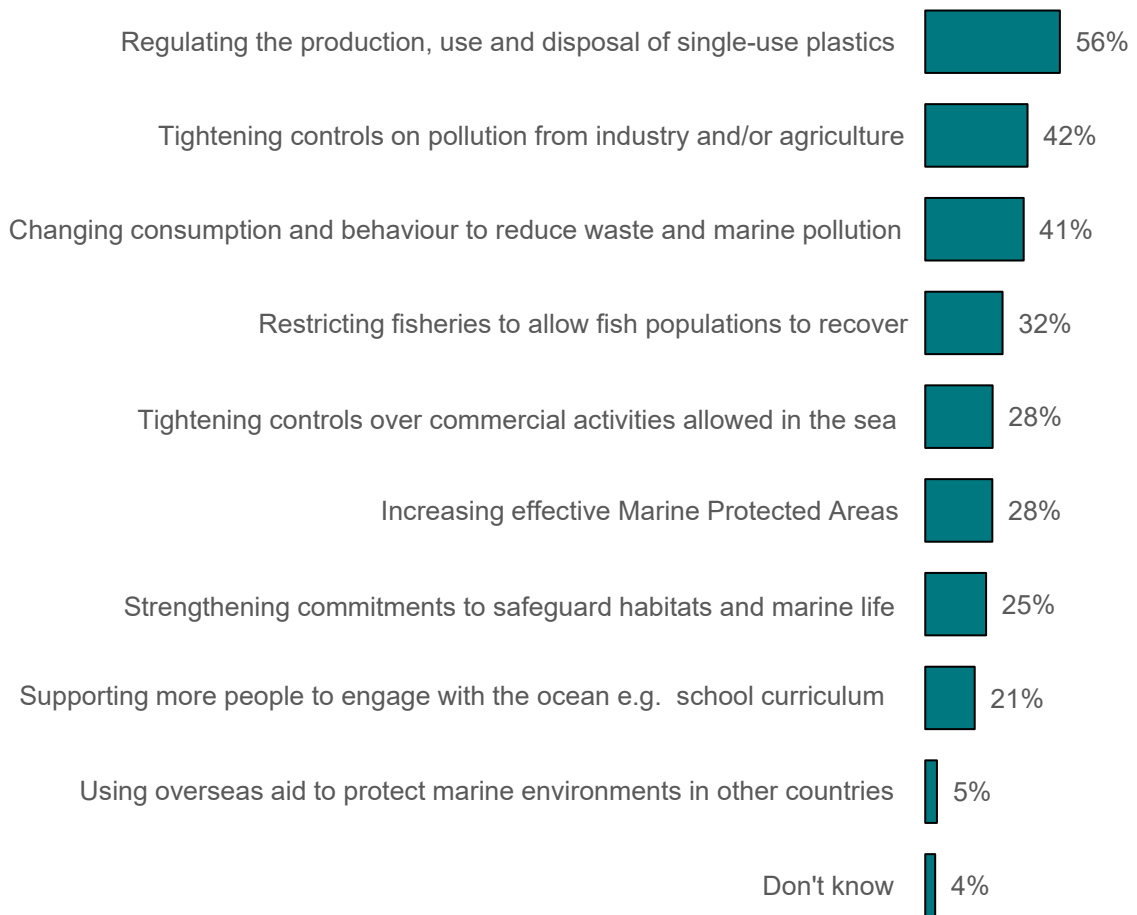
The activity least likely to be selected was using overseas development aid to protect the marine environment (5%).

**Figure 7: Importance of protecting the marine environment (weighted %)**



Q8: How important is protecting the marine environment to you personally? Unweighted base: 2,348

**Figure 8: Most important activities to address marine issues (weighted %)**



Q13: The following activities all address other issues affecting the marine environment in England/Wales. In your opinion, which three do you think are the most important?

Unweighted base: 2,348

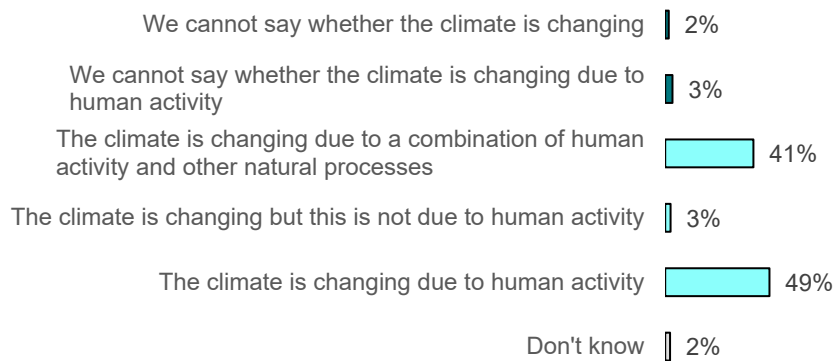
**Dimensions:**

- Attitudes
- Knowledge
- Awareness

## 5.8 Attitudes to climate change

When asked about their views on climate change, the vast majority said the climate is changing (93%). However, views were more split on causes of climate change with 49% saying this is due to human activity and 41% feeling that that it is due to a combination of human activity and natural processes. Only 3% said climate change was not due to human activity (Figure 9).

**Figure 9: Views on climate change and role of human activity (weighted %)**



Q11: Thinking about the changing climate and human activity, which of the following statements come closest to your view?

Unweighted basis: 2,348

### Dimensions:

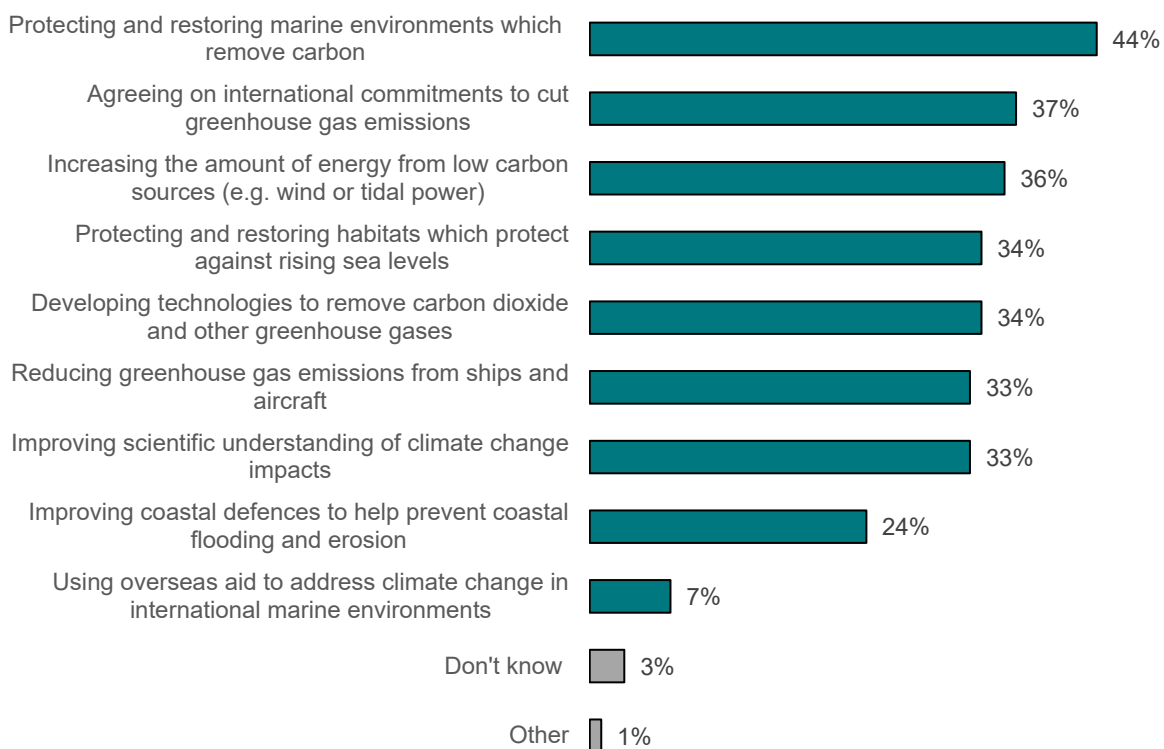
- Attitudes
- Knowledge

## 5.9 Responding to ocean climate change

Respondents were asked to choose the top three most important activities which could potentially address the effect of climate change on the marine environment in England and Wales (Figure 10).

From Welsh respondents, protecting and restoring marine habitats which remove carbon was the top choice (44%), followed agreeing on international commitments to cut greenhouse gas emissions (37%). Improving coastal defences to help prevent coastal flooding/erosion (24%) and use of overseas development aid (7%) were least likely to be considered as important.

**Figure 10: Responding to ocean climate change (weighted %)**



Q12: The following activities could potentially address the effects of climate change on the marine environment in England/Wales. In your opinion, which three do you think are the most important?

Unweighted base: 2,340

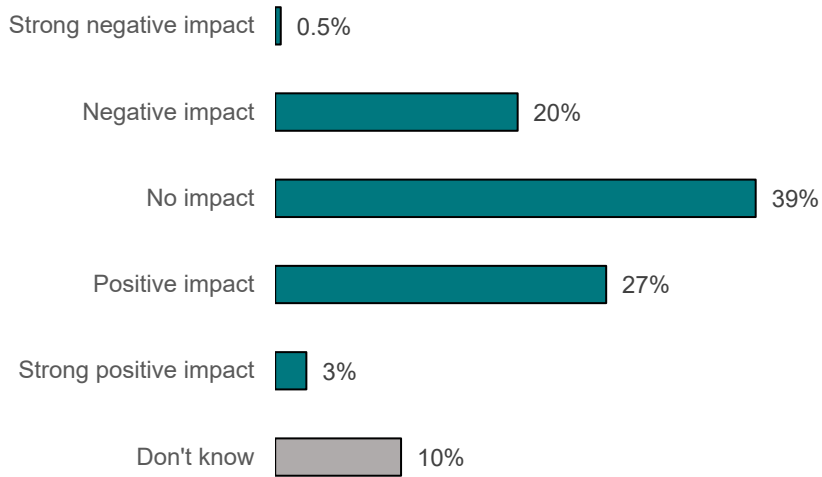
### Dimensions:

- Attitudes
- Knowledge
- Awareness

## 5.10 Lifestyle impacts and changes

50.5% felt that their lifestyle impacts on the marine environment (Figure 11). 30% felt that their lifestyle had either a positive or strong positive impact on the marine environment, whereas 20.5% felt that their lifestyle had a negative impact on it.

**Figure 11: Perceived impact of lifestyle on the marine environment (weighted %)**

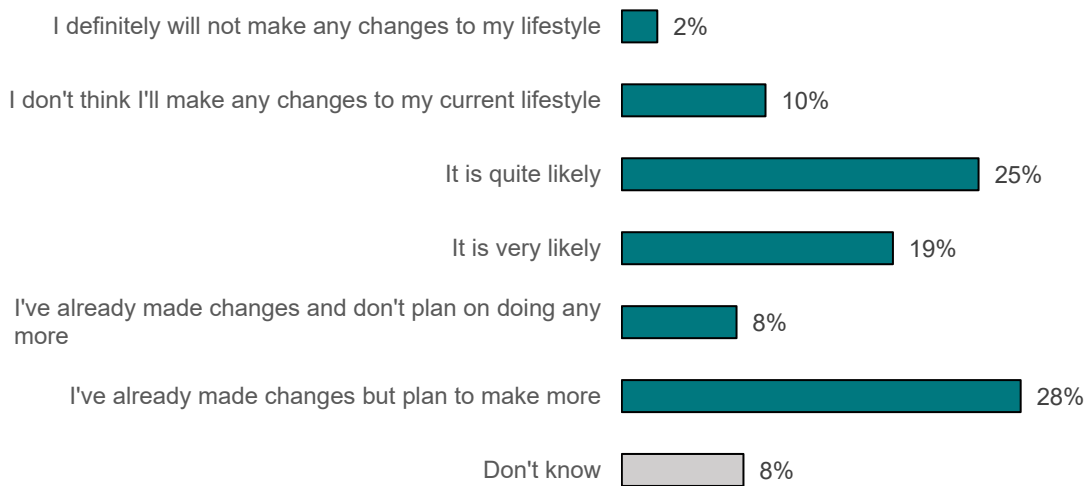


Q17: What impact do you think your lifestyle has on the marine environment?

Unweighted basis: 2,348

When asked about their willingness to make changes for the marine environment, only 2% said that they would not make any lifestyle changes within the next 12 months to protect the marine environment (Figure 12). 28% indicated that they have already made changes but plan to make more and 44% said it is quite or very likely they will make changes. 8% said they have made changes but do not plan on making any more.

**Figure 12: Planned lifestyle changes to protect the marine environment (weighted %)**



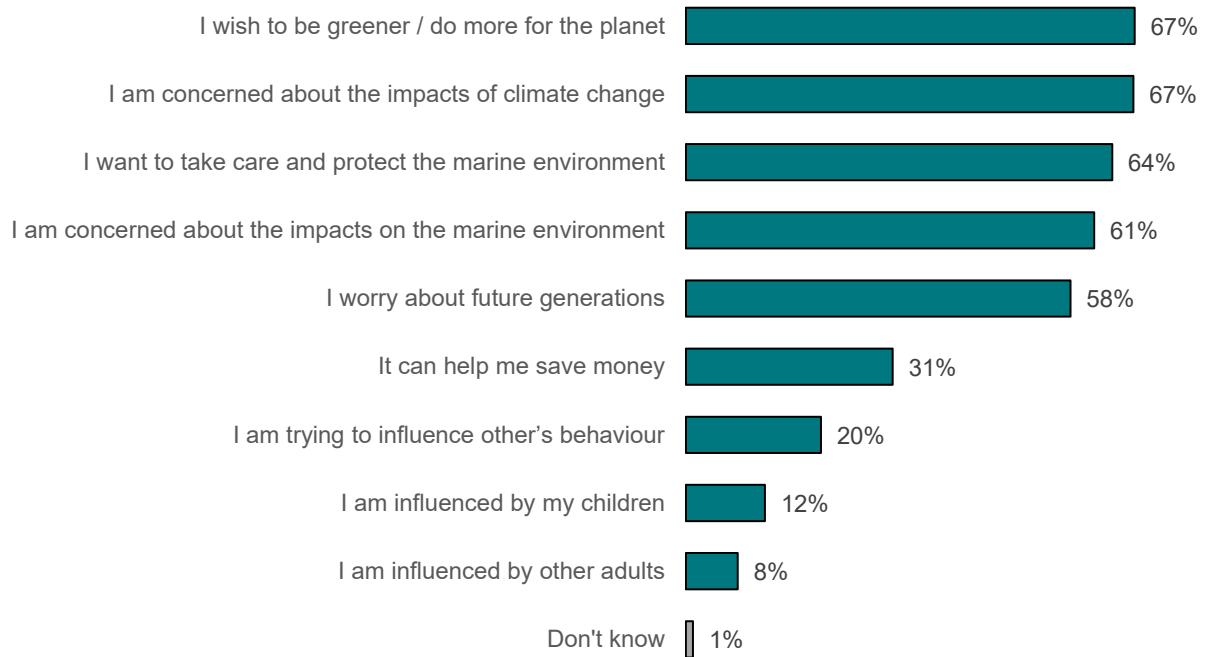
Q22: Within the next 12 months, do you plan on making changes to your lifestyle to protect the marine environment?

Unweighted basis: 2,348



The top reasons for making lifestyle changes in the last 12 months (Figure 13) were the desire to be greener (67%), concern over the impacts of climate change (67%), the desire to take care of the marine environment (64%) and concern about the impacts on the marine environment (61%).

**Figure 13: Reasons for changing lifestyle in last 12 months (weighted %)**



Q24: [where likely to make changes to lifestyle to protect the marine environment] is this because?

Unweighted base: 1,858

The top reasons for not making lifestyle changes in the last 12 months (Figure 14) were already doing as much as possible (45%), the belief that any changes would not have an impact (22%) and it being too expensive (21%).

**Figure 14: Reasons for not changing lifestyle in last 12 months (weighted %)**



Q23: [Where unlikely to make changed to lifestyle to protect the marine environment] Is this because?

Unweighted balance: 292

**Dimensions:**

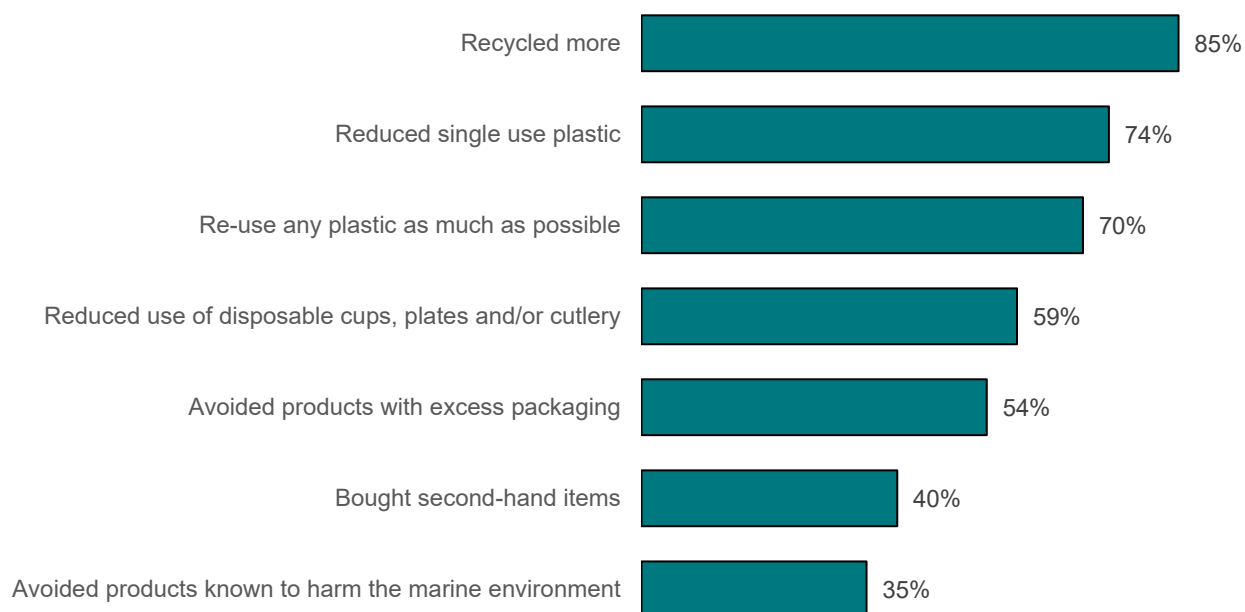
- Activism
- Behaviour
- Attitudes
- Knowledge
- Awareness

## 5.11 Purchasing and packaging actions

The most common activity undertaken in relation to purchases and packaging in the last 12 months was recycling more (85%) (Figure 15). A high proportion also said they had reduced single use plastics (74%) and had re-used plastic as much as possible (70%).

The least common activities were buying second-hand items (40%) and avoiding products known to harm the marine environment (35%).

**Figure 15: Activities done in the last 12 months in relation to purchases and use of packaging (weighted %)**



Q18: Thinking about the purchases you have made and your use of packaging, which of the following activities have you done in the last 12 months where possible?

Unweighted base: 2,348

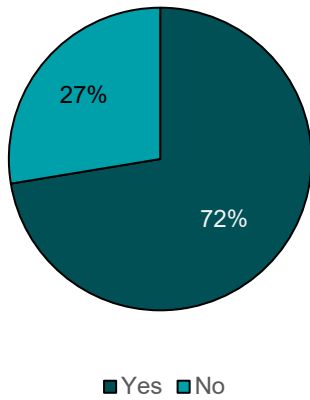
### Dimensions:

- Behaviour

## 5.12 Seafood and purchasing actions

72% of respondents said that they purchase seafood (fish or shellfish) (Figure 16).

**Figure16: Seafood (fish or shellfish) purchasing (weighted %)**

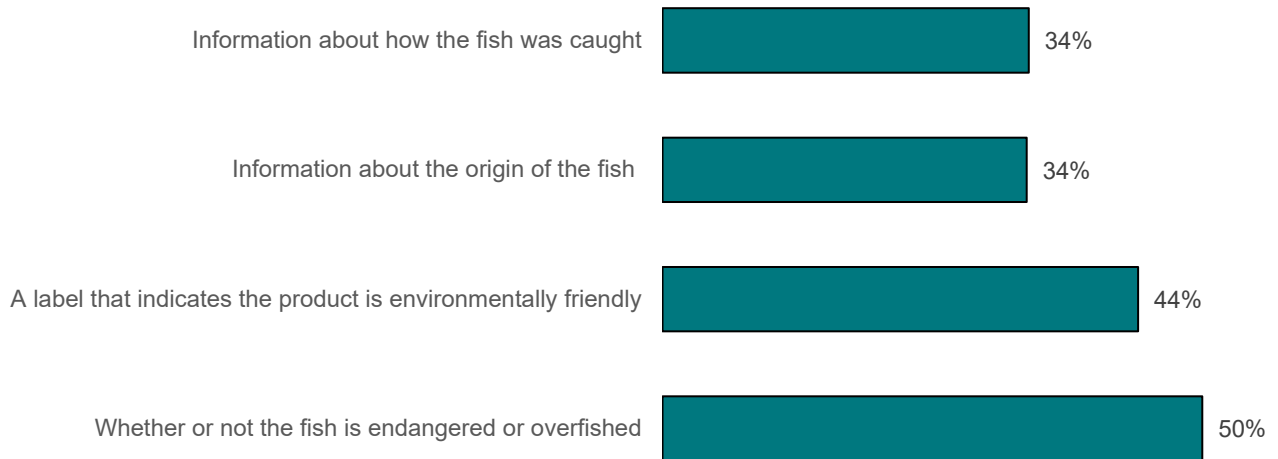


Q19: Do you ever purchase seafood (fish or shellfish)?

Unweighted base 2,348

Of these, 50% said that information about whether or not the fish is endangered or overfished influenced their purchase (Figure 17). Labels indicating the product was environmentally friendly influenced 44% of people who bought seafood. Less significant was information about how the fish was caught (34%) and the origin of the fish (34%).

**Figure17: Information influencing seafood purchase (weighted %)**



Q20: When buying seafood (fish or shellfish), to what extent, would each of the following influence your purchase?

Unweighted base:1,693

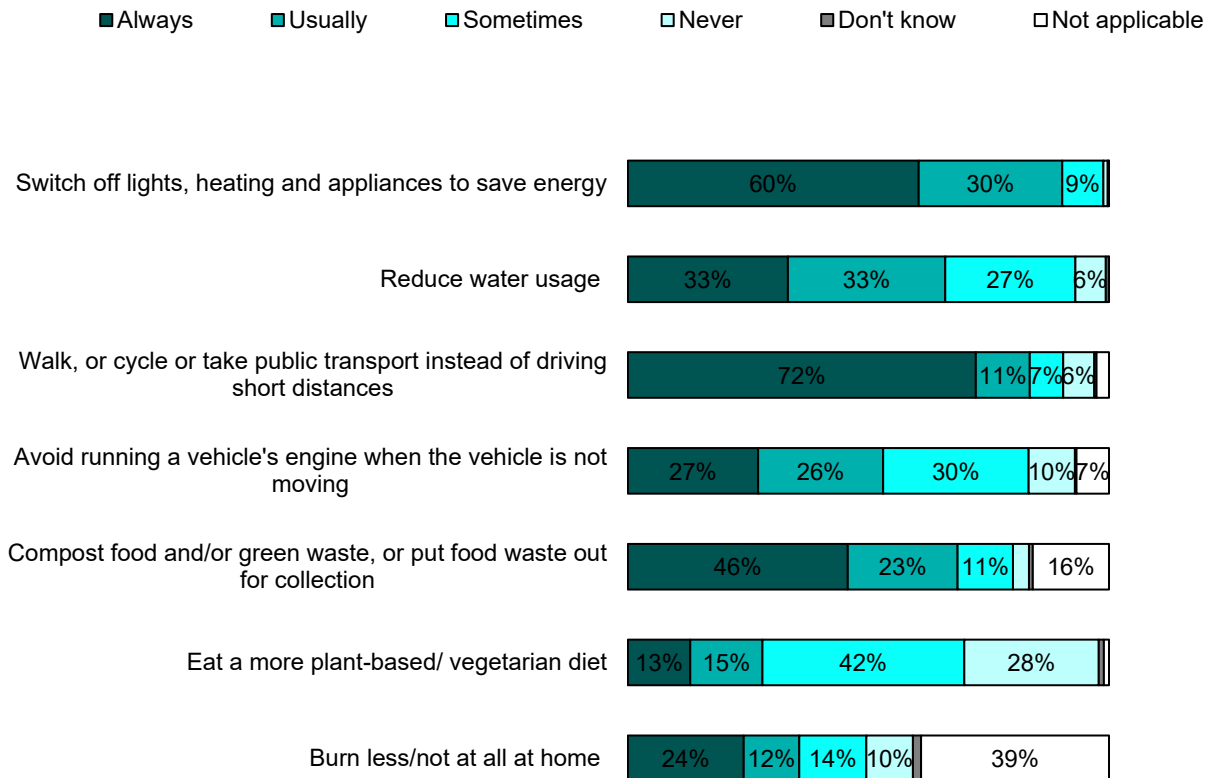
**Dimensions:**

- Behaviour
- Communication
- Knowledge
- Awareness

## 5.13 Food, Energy and Transport Actions

When asked about food, energy, and transport behaviours, 90% said they usually or always switch off lights, heating, and appliances to save energy (Figure 18). 66% reduce water usage and 83% walk, cycle or take public transport instead of driving short distances.

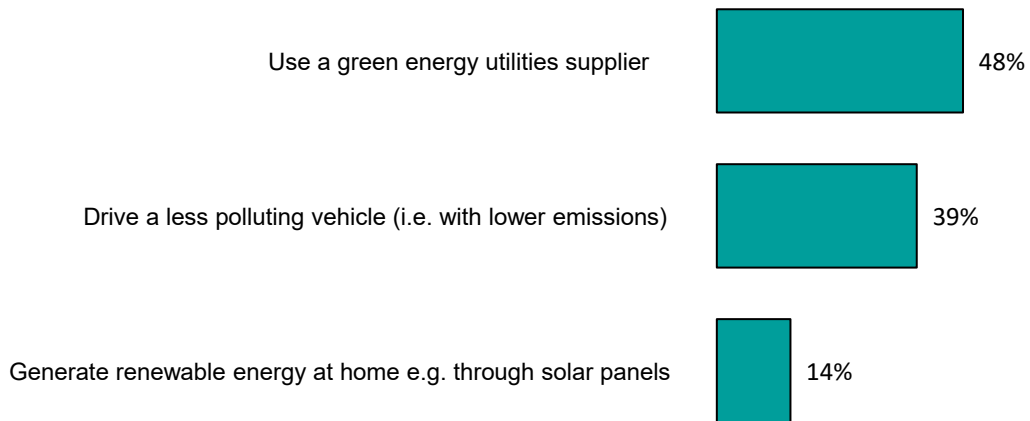
**Figure 18: Frequency of food, energy, and transport actions (weighted %)**



Q21: Thinking about your food, energy, and transport use, which of the following do you currently do?  
Unweighted base: 2,348

48% use a green energy utilities supplier and 39% drive a less polluting vehicle, but only 14% generate renewable energy at home (e.g., through solar panels) (Figure 19).

**Figure 19: Current energy and vehicle use (weighted %)**



Q21: Thinking about your food, energy, and transport use, which of the following do you currently do?

Unweighted base: 2,348

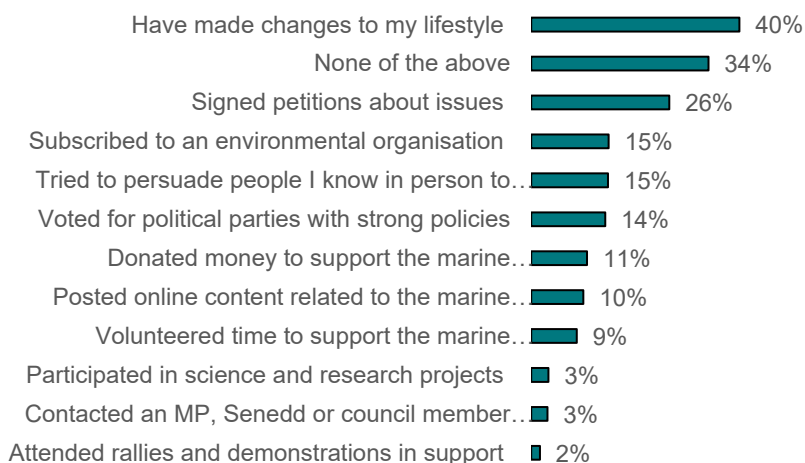
**Dimensions:**

- Behaviour
- Communication
- Knowledge
- Awareness

## 5.14 Marine activism

The most common action people in Wales had undertaken to protect the marine environment was making lifestyle changes (40%), followed by signing petitions (26%) and subscribing to environmental organisations (15%) (Figure 20). Direct action in rallies or demonstrations (2%), contacting elected representatives (3%) and participating in science and research projects (3%) were the least undertaken actions.

**Figure 20: Activities undertaken to protect the marine environment (weighted %)**



Q15: Which of the following activities, if any, have you done to protect the marine environment?

Unweighted basis: 2,348

### Dimensions:

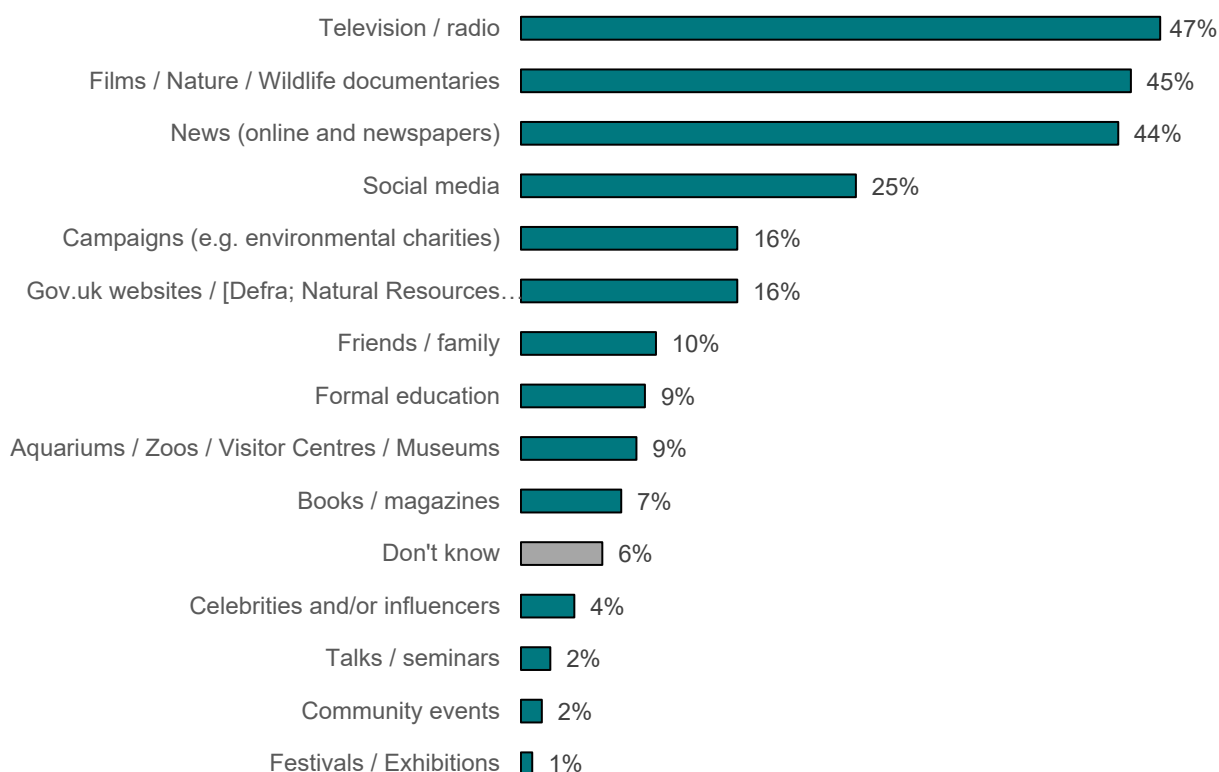
- Activism
- Behaviour
- Attitudes



## 5.15 Communication about the marine environment

The most common sources of knowledge/information about the marine environment in the last 12 months was TV and Radio (47%), films, nature, and wildlife documentaries (45%) and news media (44%) (Figure 21). While social media was indicated by 25% of respondents, only 4% indicated a role for celebrities or influencers. The least common sources were talks/seminars (3%), community events (2%) and festivals/exhibitions (1%).

**Figure 21: Sources of knowledge about the marine environment (weighted %)**



Q14. Thinking about the last 12 months, where do you think your knowledge/information about the marine environment in Wales mostly come from? Please select a maximum of three.

Unweighted base: 2,348

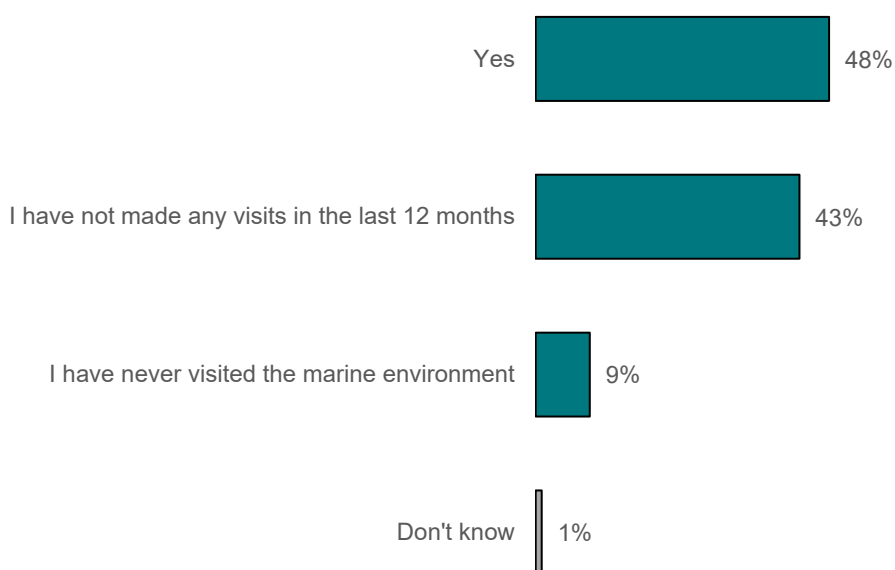
### Dimensions:

- Communication
- Knowledge
- Attitudes

## 5.16 Visiting the marine environment

In the last 12 months, 48% of respondents in Wales had visited the marine environment. 43% had not visited in the last 12 months and 9% had never visited (Figure 22). It is worth noting that this research took place during the Coronavirus pandemic which may have impacted on people's ability or motivation to visit the marine environment.

**Figure 22: Visits to the marine environment in the last 12 months (weighted %)**

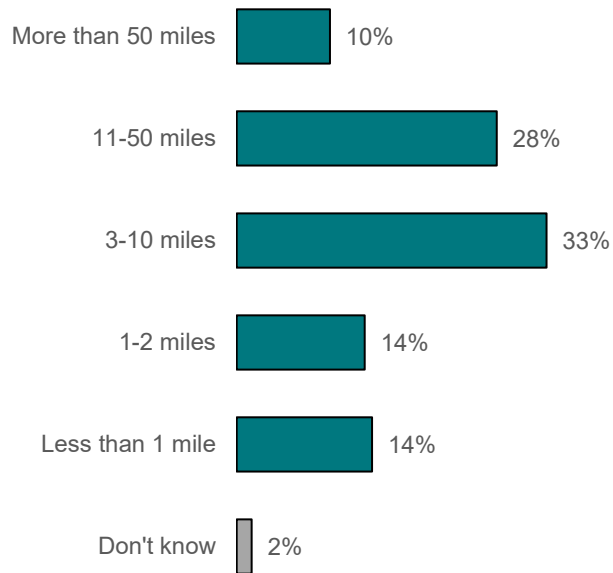


Q25: Thinking about the last 12 months have you made any visits to a marine environment?

Unweighted base: 2,348

Most respondents travelled less than 50 miles (89%) to get to the coast. Only 10% travelled more than 50 miles (Figure 23).

**Figure 23: Distance travelled for visit (weighted %)**

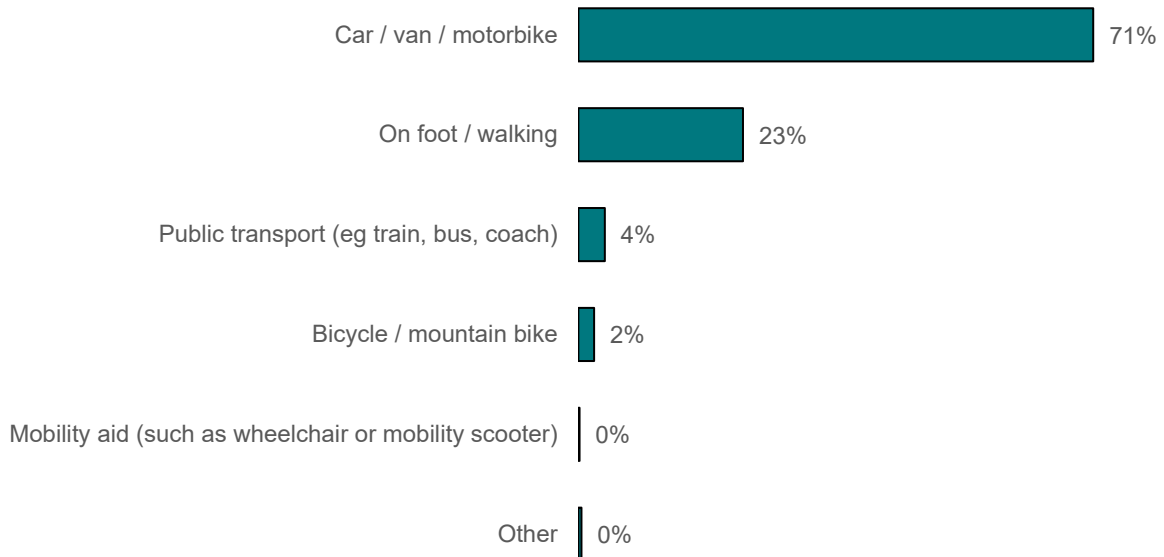


Q31: Approximately how far in miles did you travel to get there?

Unweighted base: 1,116

The most common form of transport used to travel to marine environments was car / van or motorbike (71%) (Figure 24). However nearly a quarter walked to the coast (23%).

**Figure 24: Main mode of transport used for visit (weighted %)**



Q32: What was the main form of transport you used to get there?

Unweighted base: 1,116

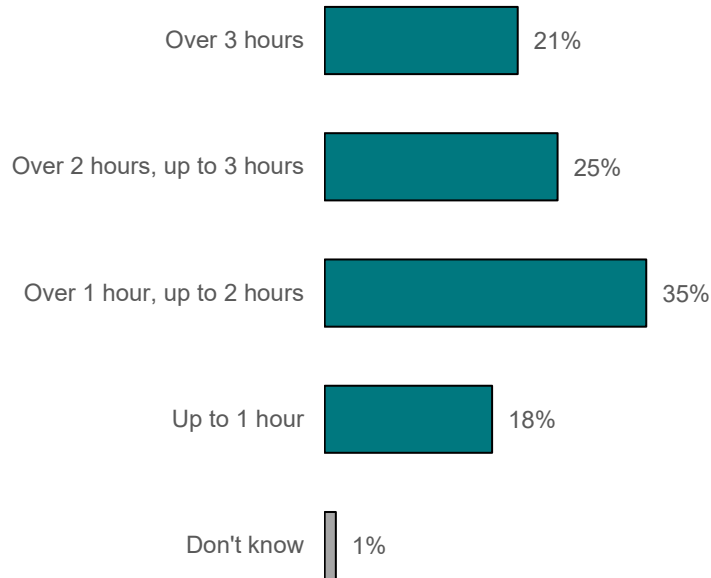
**Dimensions:**

- Access, experience, and proximity
- Behaviour

## 5.17 Length of Visits

Of those who had visited the marine environment in the last 12 months, the most common length of time spent there at their last visit was between 1 and 2 hours (35%) (Figure 25).

**Figure 25: Length of visit time (weighted %)**

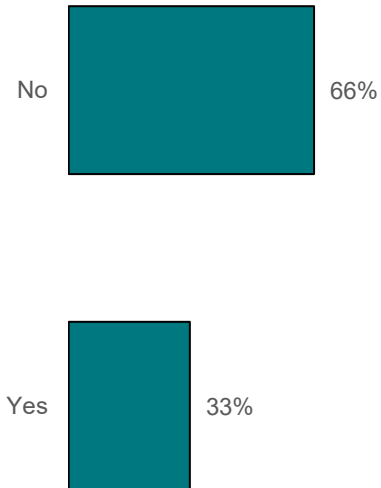


Q28: Thinking about your most recent visit to the marine environment over the last 12 months, how long did you spend there?

Unweighted base: 1,116

Most respondents who had visited the coast had not stayed overnight (66%) (Figure 26).

**Figure 26: Overnight stay (weighted %)**

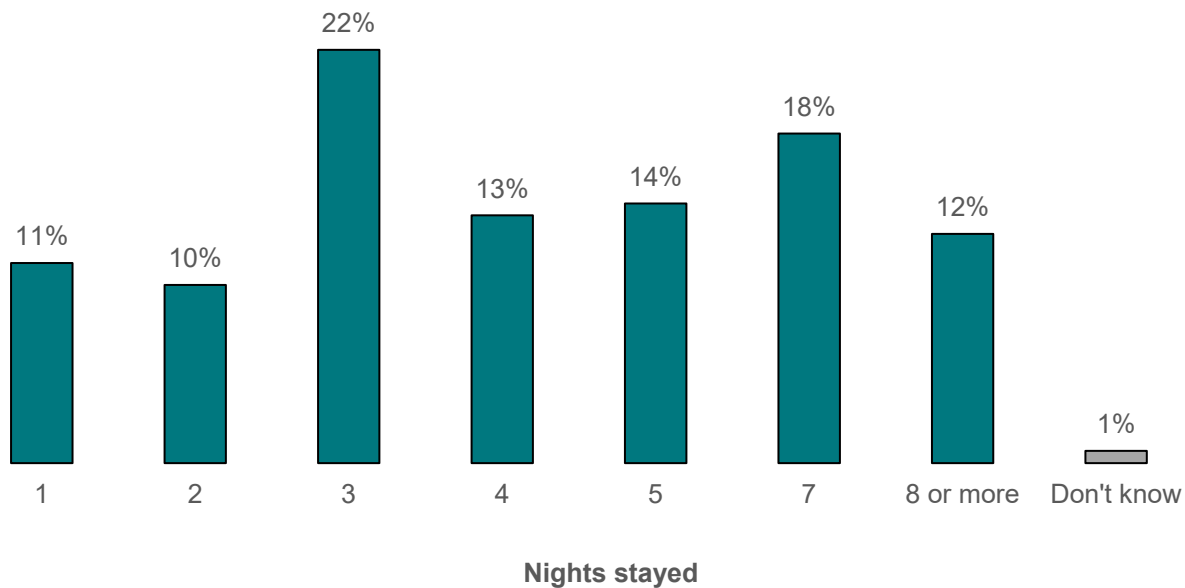


Q29: Did you stay overnight away from home during this trip?

Unweighted base: 233

Most common number of nights stayed at the coast is 3 (22%) followed by 7 (18%) (Figure 27).

**Figure 27: Number of nights stayed (weighted %)**



Q30: How many nights did you stay away from your home during this trip?

Unweighted base: 76

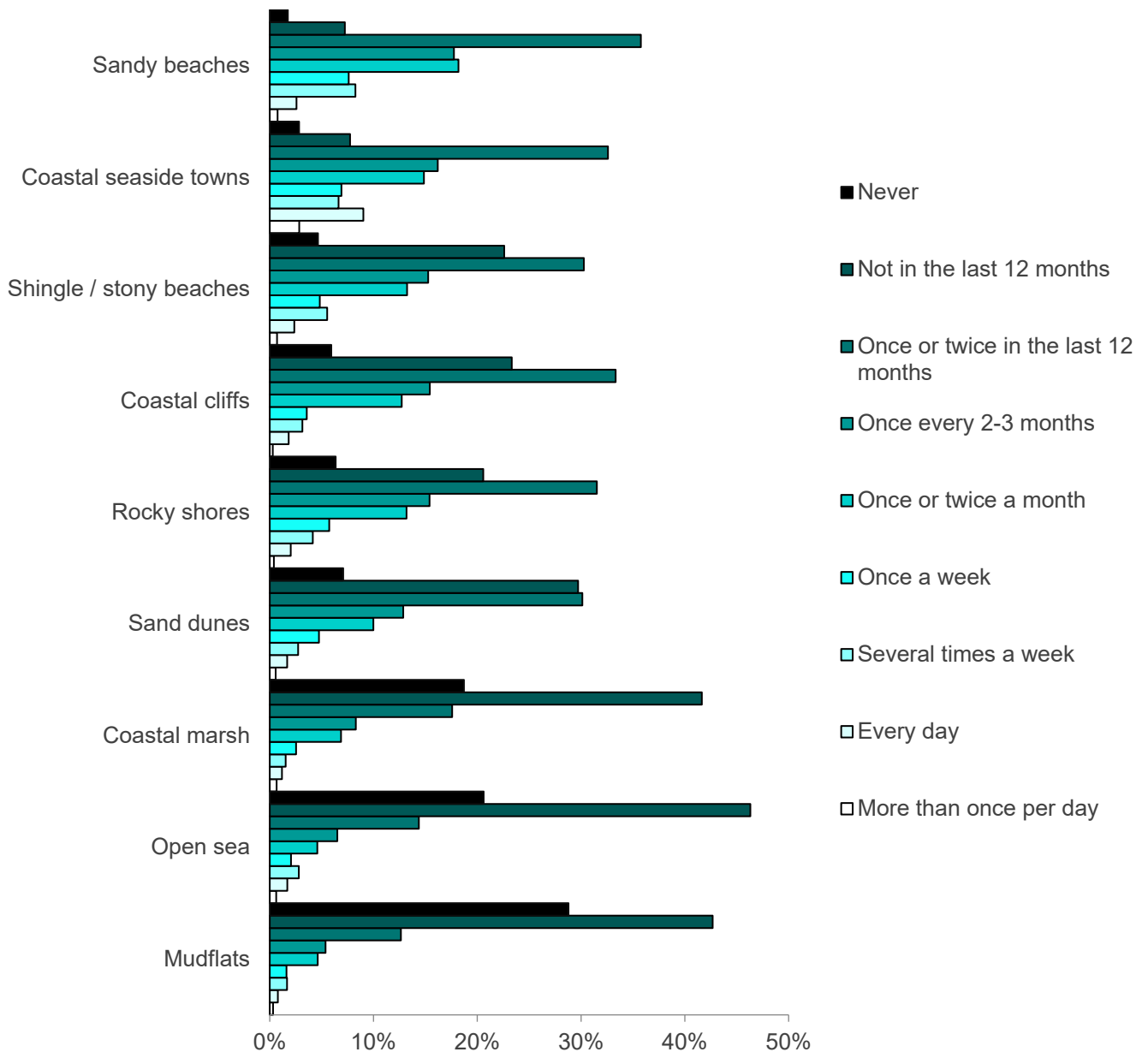
**Dimensions:**

- Access, experience, and proximity
- Behaviour

## 5.18 Marine destinations

Of those respondents who had visited the marine environment in the past 12 months, the places most visited for leisure were sandy beaches (92% of respondents reported visiting this destination) and coastal / seaside towns (90% of respondents reported visiting this destination). Open sea (34%) and mudflats (28%) were the least visited (Figure 28).

**Figure 28: Frequency of visits by marine environment types (weighted %)**



Q26: Thinking about the last 12 months, how often on average, if at all, have you spent your leisure time in the following marine environments. This does not include indoor locations and places which you visit as part of your job.

Unweighted base: 1,116

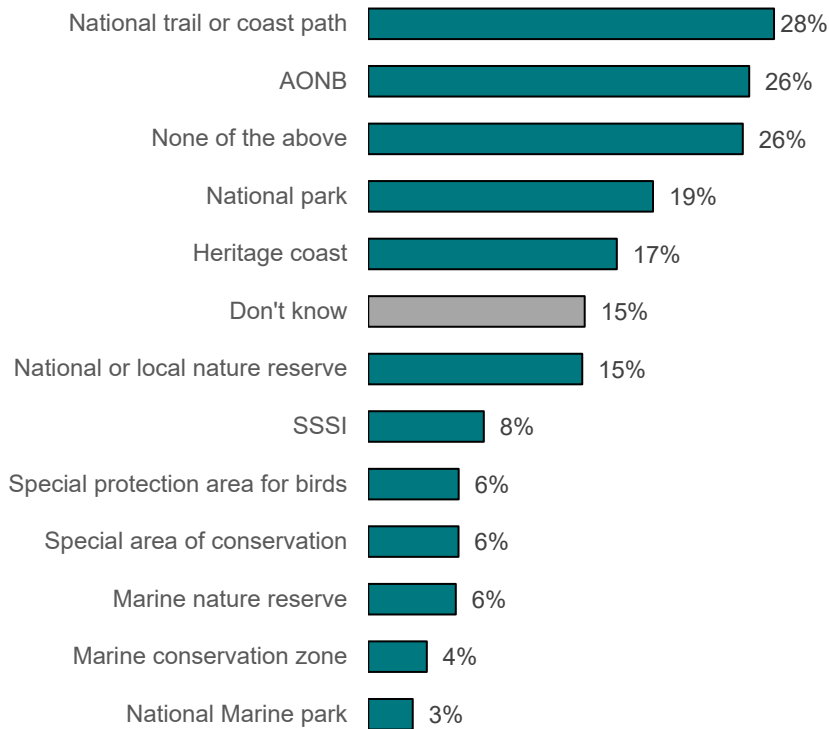


**Dimensions:**

- Access, experience, and proximity
- Behaviour

The most common type of site that respondents recalled visiting recently was a national trail or coast path (28%) (Figure 29). 26% remembered having visited an Area of Natural Beauty, although 26% also said they hadn't visited any designated or specific types of sites in the last 12 months. National Marine Parks (3%) and Marine Conservation Zones (4%) were the least visited sites.

**Figure 29: Designated/specific types of sites visited on most recent visit (weighted %)**



Q35: Thinking about the last 12 months, do you recall any visits to marine environments being to the following?

Unweighted base: 1,116

**Dimensions:**

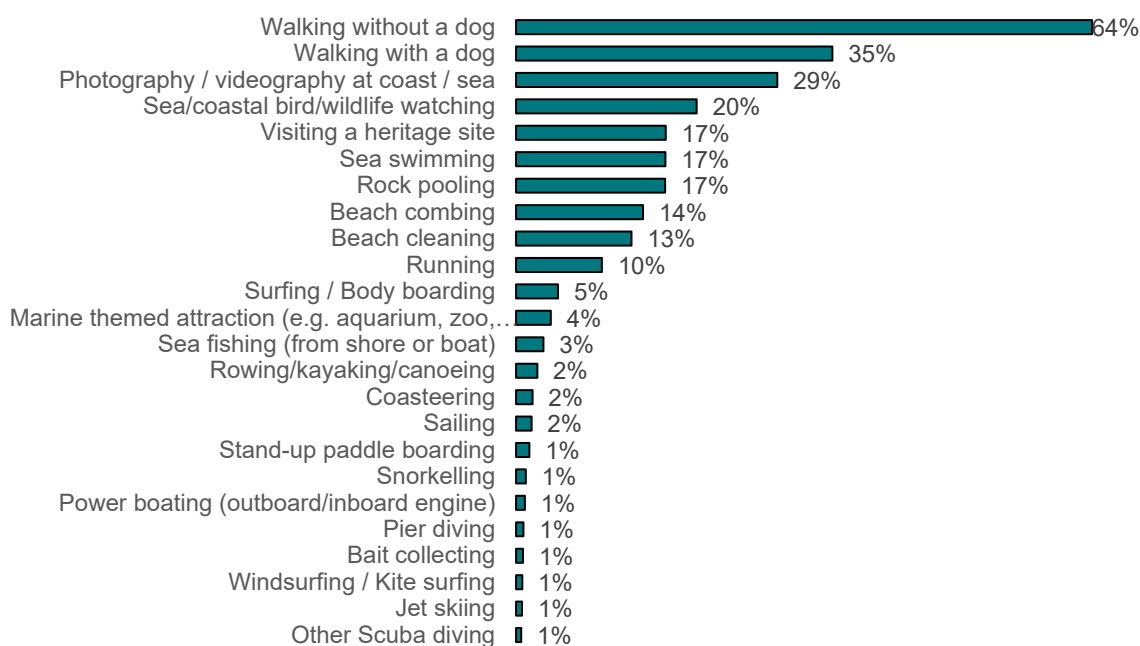
- Access, experience, and proximity
- Behaviour
- Knowledge
- Awareness

## 5.19 Recreational activities

When asked about the activities they undertake around the coast, walking, both without (64%) and with a dog (35%) were the most popular activities undertaken during visits to the marine environment in the last 12 months (Figure 30).

Photography and videography were also commonly undertaken activities (29%) as were wildlife watching (20%), visiting a heritage site (17%), sea swimming (17%) and rock pooling (17%).

**Figure 30: Activities undertaken during visit to the marine environment in last 12 months (weighted %)**



Q34: What recreational activities did you undertake during your visit(s) to the marine environment in the last 12 months?

Unweighted base: 1,116

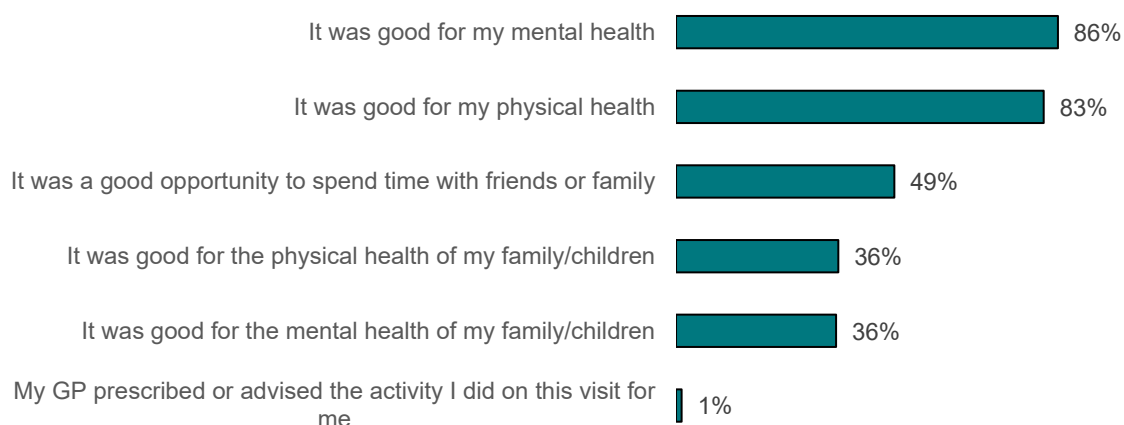
### Dimensions:

- Access, experience, and proximity
- Behaviour

## 5.20 Outcomes and motivation of visits

86% felt that spending time in the marine environment was good for their mental health, and 83% felt it was good for their physical health. Only 1% were prescribed or advised by their GP to undertake their activity (Figure 31).

**Figure 31: Outcomes associated with most recent visit to marine environment (weighted %)**



Q33: Which of the following statements about this time spent at a marine environment are true?

Unweighted base: 1,183

When asked about general motivations for visiting marine environments, the most commonly reported reasons were feeling more healthy (37%) and clearing one’s head (37%) (Figure 32).

**Figure 32: General motivations for visiting the marine environment (weighted %)**



Q36: Thinking more generally about the marine environment, which three statements best describe your motivation to visit?

Unweighted base: 1,183

**Dimensions:**

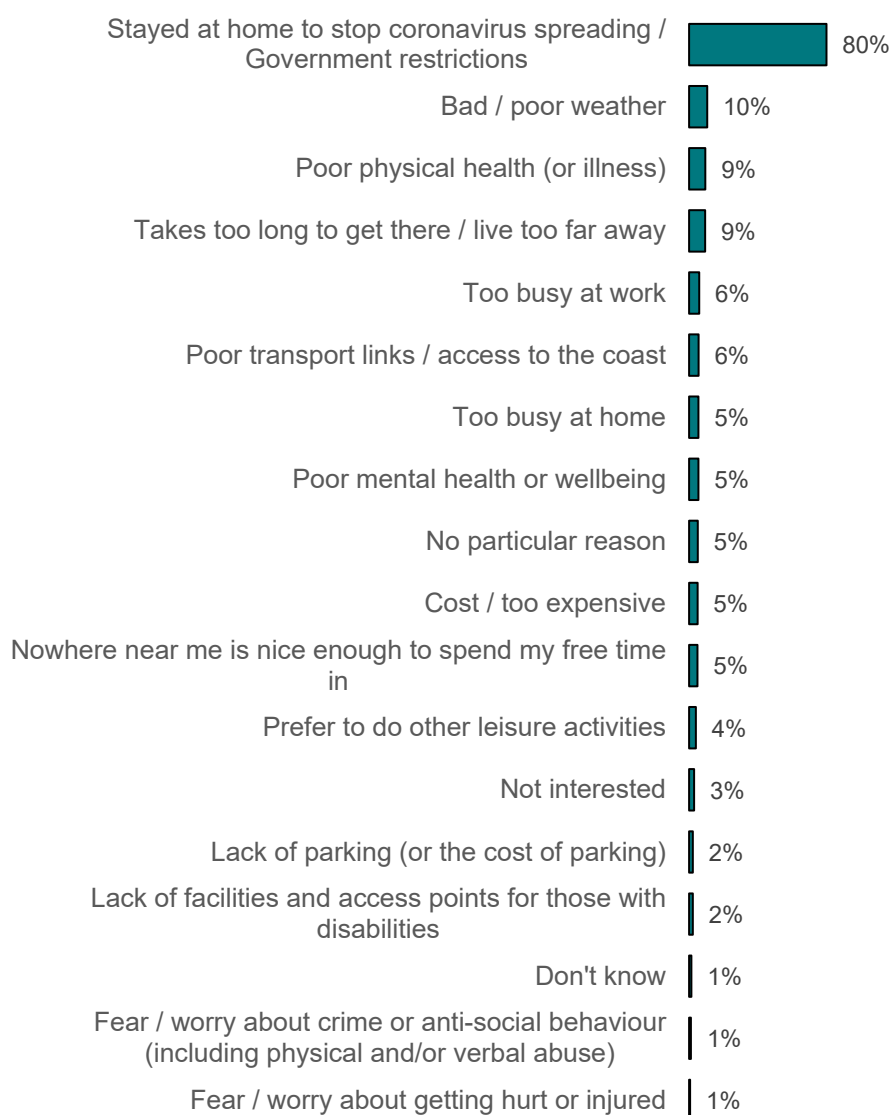
- Access, experience, and proximity
- Personal or emotional development
- Activism
- Behaviour
- Communication

- Attitude
- Knowledge
- Awareness

## 5.21 Barriers to visits

The main reason for not visiting a marine environment in the last 12 months was staying home due to the Coronavirus pandemic (80%) (Figure 33). Bad weather (10%), poor physical health (9%) and distance (9%) were the next most common reasons for not visiting.

**Figure 33: Reasons for not visiting the marine environment in the last 12 months (weighted %)**



Q27. What was the main reason/s for not visiting a marine environment in the last 12 months?

Unweighted basis: 1,140

### Dimensions:

- Access, experience, and proximity

- Personal or emotional connection
- Behaviour
- Attitudes



## Conclusions and recommendations

Improving Ocean Literacy is at the core of sustainably managing our coasts and seas. In order to improve Ocean Literacy, current levels must first be better understood. This survey provides a first wave of robust baseline data, which should form part of a long-term dataset.

### Key findings

- Welsh respondents valued the marine environment, particularly appreciating the physical and mental health benefits it gave them.
- The overriding emotional response to the marine environment was concern (followed by awe/wonder). Most felt that it is important to protect the marine environment.
- Marine litter / plastic pollution was perceived to be the pressure posing the biggest threat to Wales' marine environment. Pressures such as loss of species, sea level rise and construction at sea were thought to be less threatening.
- A large proportion of Welsh respondents wanted to make lifestyle changes, and this is the main way people take action to protect the marine environment. Other actions available to them, such as contacting elected representatives and volunteering are not well taken up. Of those who have not changed their lifestyle within the last 12 months, the main reason for not doing so was that they already feel they do as much as they can.
- Knowledge gaps existed for several marine terms; for example, 'carbon sequestration', 'ecosystem services' and 'nature-based solutions' are not well understood.
- People mostly got their information about the ocean from nature documentaries and the news. This could suggest that using these methods as oppose to formal education could be more effective in enhancing Ocean Literacy.
- The most popular destinations for visitors were sandy beaches and coastal towns.
- Walking was the most popular activity undertaken at the coast.

### Differences between combined findings and Welsh findings

A basic analysis was conducted into the differences between the England and Wales combined findings, and Welsh findings. A full quantitative analysis has not been undertaken, and the significance of this analysis is limited because it is the combined findings (i.e., England and Wales) being compared to the Welsh findings. Nevertheless, headline differences identified were:

- The proportion of Welsh respondents who rated the health of the Welsh marine environment as 'Good' was 10% higher than the same result in the combined findings.
- Tourism was rated as a much higher benefit of the marine environment among Welsh respondents (25%) than among English and Welsh respondents combined (11%). The marine environment as a place to support mental health and wellbeing was also slightly more recognised among Welsh respondents (18%) than among the combined respondents (12%). Transport and shipping however were rated as a higher benefit in the combined findings (13%, compared to 7% in the Welsh findings).
- The pressure of overfishing was perceived to be a greater threat to the marine environment by English and Welsh respondents combined together, than by Welsh respondents only (54% compared to 44%).
- Of those respondents who eat seafood, respondents in the combined results reported their seafood purchasing choices as being more influenced by information such as whether or not the fish is endangered or overfished than Welsh-only respondents (75% compared to 50%).
- A slightly higher proportion of Welsh respondents used a green energy supplier than English and Welsh respondents combined (48% compared to 43%).
- More of the Welsh respondents reported getting their information from government websites than English and Wales respondents combined (16% compared to 7%).
- More of the Welsh-only respondents had visited the marine environment in last 12 months compared to the English and Welsh respondents combined (48% compared to 40%).
- The most common distance travelled to coast was reported to be shorter in the Welsh findings than in the combined findings (3-10 miles compared to over 50).
- Welsh respondents reported shorter visits at the marine environment than the combined respondents. The most common time period spent at the marine environment in Wales was between 1 and 2 hours, whereas for combined respondents it was over 3 hours.
- More people reported staying overnight at the coast in the combined results (54%) compared to Welsh respondents (33%).
- The most commonly visited marine environment among Welsh respondents was sandy beaches (92% had visited this environment in last 12 months) whereas for combined respondents it was coastal towns (also 92% had visited these in last 12 months).
- The top three activities undertaken at the marine environment were the same in both sets of findings (walking with and without a dog, as well as

photography/videography) but visiting a heritage site was more common among Welsh-only respondents (23%) compared to English and Welsh respondents combined (17%).

- 'A good opportunity to spend time with friends and family' was considered a slightly more common outcome from visits to the marine environment in the combined findings than in the Welsh findings (56% compared to 49%).
- 'Distance and time taken to get to the coast' was considered to be a more common barrier to visiting the marine environment in the combined findings than in Welsh findings (18% compared to 9%).

## Recommendations for future Ocean Literacy work in Wales:

1. Resource should be invested into further evidence collection to build up a longitudinal dataset, enabling changes to be detected over time
2. Once datasets are built up, the data should be analysed further to draw out socio-demographic trends. Welsh findings should also be analysed against English and Scottish findings.
3. Ocean Literacy is an emerging area of research and learning should be shared throughout the UK and internationally.
4. As more insight into Ocean Literacy is gained, resources should be invested into increasing Ocean Literacy across all sectors of Welsh society. This will include:
  - Strengthening formal and informal ocean education.
  - Improving access to the coast and removing barriers to accessing and benefitting from blue spaces.
  - Resourcing interdisciplinary projects which incorporate social science and the arts.
  - Improving coordination, collaboration and understanding across policy areas with regards to marine and coastal issues.
  - Improving understanding and raising awareness of the link between wellbeing and blue spaces.
  - Empowering further community engagement in marine and coastal issues (e.g., coastal adaptation planning, citizen science).
  - Raising awareness of opportunities in the sustainable blue economy, whilst also ensuring that these opportunities enhance human-ocean connections.

- Increasing institutional capacity to operationalise Ocean Literacy.
5. At the core of this must be the continued appreciation that increasing ocean knowledge alone will not improve Ocean Literacy. Work is also needed to change:
- Attitudes.
  - Personal and emotional connection.
  - Access, experience, and proximity.
  - Awareness.
  - Communication.
  - Behaviour; and
  - Activism.

## References

Brennan, C., Ashley, M. & Molloy, O., 2019. A System Dynamics Approach to Increasing Ocean Literacy. *Front. Mar. Sci.* 6:360. doi: 10.3389/fmars.2019.00360

Defra, 2021. Ocean Literacy in England & Wales: Headline Findings Report. Defra project ME5239  
[http://randd.defra.gov.uk/Document.aspx?Document=15131\\_ME5239OceanLiteracyHeadlineReport\\_FINAL.pdf](http://randd.defra.gov.uk/Document.aspx?Document=15131_ME5239OceanLiteracyHeadlineReport_FINAL.pdf)

Defra 2021a. Ocean Literacy in England and Wales: Technical Report. Defra project ME5239  
[http://randd.defra.gov.uk/Document.aspx?Document=15130\\_ME5239OceanLiteracyTechnicalReportFINAL.pdf](http://randd.defra.gov.uk/Document.aspx?Document=15130_ME5239OceanLiteracyTechnicalReportFINAL.pdf)

McKinley, E. & Burdon, D., 2020. Understanding Ocean Literacy and ocean climate-related behaviour change in the UK: An Evidence Synthesis. Final report produced for the Ocean Conservation Trust and Defra. 13 October 2020. [Review-of-Ocean-Literacy.pdf \(oceanconservationtrust.org\)](#)

Stoll-Kleemann, S., 2019. Feasible options for behaviour change toward more effective ocean literacy: a systematic review. *Front. Mar. Sci.*, 6:273.

UNESCO, 2018. Ocean Literacy Portal. <https://oceanliteracy.unesco.org/>

UNESCO-IOC, 2021. Ocean Literacy Framework for the UN Decade of Ocean Science for Sustainable development 2021–2030. Paris, UNESCO. (IOC Ocean Decade Series, 22.) Framework 1st June - 18h28 ([oceandecade.org](https://oceandecade.org))