

Cut Off By The Tide: How Ocean Literacy Can Help Save Lives

Supplementary Material 1: Tidal literacy questionnaire

The data for the Cut Off By The Tide paper was collected via an online survey instrument that was programmed and disseminated by the Lucid Marketplace – Cint™ in February and March 2022. The benefit of using a commercial online research panel provider is that it reduces self-selection bias associated with advertising a survey that people may sign up to due to their pre-existing interests, and its dissemination methods support collecting data from a representative sample of the target population. Our survey achieved national representation by age, gender and region (county) across a sample of 1300 respondents from Britain and Northern Ireland, and 100 respondents from Éire (Republic of Ireland), reflecting its proportion of the population of the British Isles as a whole.

The survey questions are provided as they were presented to the survey respondents.

Citations are given for questions that were adapted from a specific previous survey, with references collated at the end of the document.

The tidal literacy survey instrument

Consent Statement:



The Royal National Lifeboat Institution (RNLI) works tirelessly to save lives at sea. In this survey, they want to know what you understand about the beach environment so they can improve their safety campaigns.

Researchers at Bangor University and The RNLI will be passed only the anonymised answers to the questions you answer here. The researchers will not be passed your name, any identifying feature (such as date of birth, email, or IP address), or any of the profiling questions you have answered previously for this survey company. We will store and publish your answers to these questions as anonymised data by county or region, for use in our research and publications.

When you signed up to this survey company, you agreed to their terms and conditions, and their privacy statement. Please refer to your survey company for details of what the survey company stores about you.

1. Please tick yes to agree that you are happy to continue these questions and for the researchers to be passed your anonymised data for their research as detailed above.

Y (Required)

Thank you for taking part. If you have any questions about the survey, you can contact the researcher on L.Morris-Webb@bangor.ac.uk

Which type of resident do you consider yourself? (Select one that applies)

- a. Rural Coastal (live in a village, small town or countryside, less than 5km from the coast);*
- b. Rural Inland (live in a village, small town or countryside, 5km or more from the coast);*
- c. Urban Coastal (live in a city or large town, that is less than 5km from the coast),*
- d. Urban Inland (live in a city or large town that is 5km or more from the coast).*

(DEFRA, 2022)

3. In the last 12 months, how often, on average have you spent free time outside at the beach / other coastline / sea? (Please select one answer)

- 8. Every day*
- 7. More than twice a week, but not every day*
- 6. Twice a week*
- 5. Once a week*
- 4. Once or twice a month*
- 3. Once every 2-3 months*
- 2. Less often*
- 1. Never*
- 99. Don't know*
- 88. Prefer not to say*

(NE, 2020)

4. Do you have any of the following hobbies or interests related to the sea, or regularly undertake any of them for work? (Select all that apply)

- Canoeing or Kayaking*
- Motor boating*
- Stand Up Paddleboarding*
- Sailing*
- Other boating or paddling*
- Fishing or Angling*
- Foraging*
- Scuba diving*
- Surfing*
- Swimming*
- Other water sports*
- Coastal walking*
- Spending leisure time at the beach*
- Other <<route to 4a>>*
- No specific sea-related activities (if selected, no other options can be selected)*

(adapted from NE, 2020 and Armario et al., 2022)

4.a You selected 'other' in the last question, please specify the other sea-related activities that you, or close family/household members undertake. [text]

5. When you spend a whole day on the coast, changes can be observed taking place around you. Are there any changes that could mean a risk to you as a visitor? If so, how? (open text)

6. What are tides, what do you know about them? (open text)

(adapted from Armario et al., 2022)

7. **How many times does the tide typically come in over a 24-hour period?**

- 0. 1
- 1. 2
- 0. 3
- 0. 4
- 0. Other
- 99. Don't know.

(adapted from pilot RNLI and Bangor University survey in 2021, unpublished)

8. **In the same location, are the rises and falls of the tides the same every day?**

- 0. Yes
- 1. No
- 99. Don't know.

8.a Please explain your answer. (open text, optional)

9. **On a given day, are the rises and falls of the tides of equal size in all parts of the country?**

- 0. Yes
- 1. No
- 99. Don't know

(adapted from Armario et al., 2022)

9.a Please explain your answer. (open text, optional)

10. **Have you ever been cut off by the tide, or nearly so?**

- 1. Yes <route to 10a-e>
- 0. No <route to 11>

10.a Can you describe what you were doing at the time, what happened and why? When did you realise the tide was coming in, and what were your thoughts? (open text)

~~**10.b At what point did you realise that the tide was coming in? Can you remember your thoughts at that moment? (open text) REMOVED after soft launch as we had duplication in answers with other Q10 subquestions**~~

10.c Has your awareness of the tide changed since then? If so, what is different? (open text)

10.d Has your behaviour on the shore changed? If so, in what way? (open text)

10.e When you tell others about the experience, what is your main message to them? (open text)

11. **What do you think most people do not understand or realise about the tide? (open text)**

12. **Do you check the tide times before you visit the beach? (select one)**

- 1. Never

2. Rarely
3. Sometimes
4. Always

(adapted from pilot RNLI and Bangor University survey in 2021, unpublished)

13. Where do you access your tidal information? (select all that apply)

1. BBC website tide table
2. Beach signage
3. Your own previous experience of the beach
4. Word of mouth / advice from somebody else
5. Met Office website
6. Admiralty EasyTide website
7. Magicseaweed website
8. Other <route to Q13a>

13.a You selected other. Please specify where you access tidal information? (open)

14. How confident do you feel finding information on tide times? (select one)

1. Not at all confident
2. Slightly confident
3. Somewhat confident
4. Fairly confident
5. Completely confident

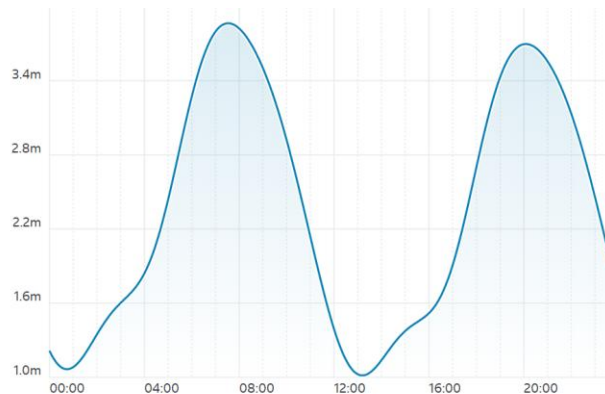
(adapted from pilot RNLI and Bangor University survey in 2021, unpublished)

15. Look at the BBC Tide Table for Chesil Cove on Christmas day displayed below. What time is low water?

(select all that apply)

1. 00:44
0. 07:32
1. 13:11
0. 20:05
0. Other
99. Don't know.

THU 22 DEC	FRI 23 DEC	SAT 24 DEC	SUN 25 DEC
			>
Time (GMT)	Height (metres)		
00:44	1.1		
07:32	3.9		
13:11	1.0		
20:05	3.7		



16. You would like to spend an afternoon at the beach when the tide is at the lowest. Read the EasyTide tide table below and tell us which is the best afternoon to go. (select one)

- 0. Today <route to 16a>
- 0. Thurs 16 Feb <route to 16.a>
- 0. Fri 17 Feb <route to 16.a>
- 0. Sat 18 Feb <route to 16.a>
- 0. Sun 19 Feb <route to 16.a>
- 1. Mon 20 Feb <route to 17>
- 99. Don't know. <route to 16.a>

	High Water	Low Water	High Water	Low Water	High Water
Today	02:23 3.6m	10:09 1.9m	15:02 3.7m	23:09 1.8m	-
Thurs 16 Feb	03:58 3.7m	11:40 1.7m	16:42 3.8m	-	-
Fri 17 Feb	-	00:17 1.6m	05:24 4.0m	12:46 1.3m	17:59 4.1m
Sat 18 Feb	-	01:17 1.3m	06:28 4.5m	13:50 1.0m	18:59 4.5m
Sun 19 Feb	-	02:18 1.0m	07:23 4.9m	14:54 0.7m	19:51 4.8m
Mon 20 Feb	-	03:16 0.8m	08:13 5.2m	15:49 0.5m	20:38 5.1m

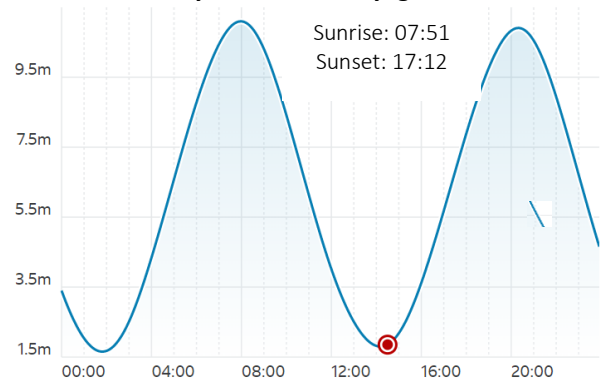
16.a What made you decide on this answer? (open text, only if incorrect or don't know)

16. How easy or difficult did you find it to interpret the tide table? (select one)

- 1. Very difficult
- 2. Quite difficult
- 3. Neither easy nor difficult
- 4. Quite easy
- 5. Very easy

17. You are walking to an island that gets cut off mid tide on the incoming tide. Read the ~~two~~ tide tables below. What is the latest time you need to come off the island on each day to return in daylight?

	TODAY 7 FEB	WED 8 FEB	THU 9 FEB	FRI 10 FEB	SAT 11 FEB
			Time (GMT)		Height (metres)
Low			01:48		1.7
High			07:58		11.1
Low			14:11		1.8
High			20:19		10.9



18.a Today we must return before: *(select one)*

0. 07:51

0. 14:11

1. 17:12

0. 20:19

99. Don't know

18. What is the language you feel most comfortable speaking? *(select one)*

English

Welsh / Cymraeg

Scots / Gaelic

Irish / Gaeilge

Other <route to 19.a>

19.a Which language are you most comfortable speaking? *(open text)*

19. Do you speak any other languages? *(select one)*

Yes <route to 20.a>

No

20.a Which other languages do you speak? *(open text)*

20. What was your age last birthday?

16-99 *(open integer)*

88. Prefer not to say

99. Don't know

21. What is your gender? *(select one)*

Male

Female

I identify as neither

88. Prefer not to say

22. What is the highest level of education you have completed? *(select one)*

Lower secondary school

Upper Secondary school

Vocational/Technical college

University

Post-graduate

88. Prefer not to say

23. What is your region of residence? *(select one)*

England: North East

England: North West

England: Yorkshire and the Humber

England: East Midlands

England: West Midlands
England: East, London
England: South East
England: South West
Wales
Scotland
Northern Ireland
Republic of Ireland

Thank you for participating

The RNLI responded to 1587 people from tidal cut off in the 5 years between Nov-2017 and Oct-2022, and sadly some of those people did not survive their ordeal.

The UK and Ireland have some of the biggest tidal ranges in the world.

To avoid getting cut off by the tide:

Before you head out, make sure it's safe. Check the tide tables.

While you're out, be aware of your surroundings and the tide's direction.

A beach can seem like a vast playground but the tide can come in surprisingly quickly.

As the tide moves up and down the beach, the depth of the water changes throughout the day, sometimes by as much as 10 metres.

As the tide comes in, simply walking further up the beach and away to safety might not be an option.

If you've walked round to another cove at low tide, or walked around an outcrop of rocks, the water can soon block your way back as the tide turns. If the cove you're in doesn't have steps or access of its own, you could be in trouble.

Remember:

1. Check the tide times
2. Always carry a means of calling for help (phone or radio)
3. Dial 999 if cut off

Learn more about beach safety and the RNLI here <https://rnli.org/safety/know-the-risks/tides>



End survey

References for adapted questions:

Armario, M., Oliva, J. M., & Jiménez-Tenorio, N. (2022). Spanish preservice primary school teachers' understanding of the tides phenomenon. *International Journal of Science and Mathematics Education, 20*(7), 1361-1386. <https://doi.org/10.1007/s10763-021-10209-7>

Department for Environment Food and Rural Affairs, DEFRA (2022). *Survey on Ocean Literacy - Technical report*. Defra project ME5239. <https://randd.defra.gov.uk/ProjectDetails?ProjectID=20644>

Natural England, NE (2020). The Adults' People and Nature Survey for England: Questionnaire for the period April 2020 – Ongoing. Project PANS004. <https://publications.naturalengland.org.uk/file/6223631265562624>