

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

Supplementary Material 2: Themes & Search Terms used to establish Knowledge and Misconceptions Of the Tide

Table 1: Search terms used in search term analysis (STA) to determine what the British and Irish public know and misconceive about the tide that may result in tidal cut off. Search terms were derived from reflexive thematic analysis (TA) of open answers to a questionnaire exploring the public understanding of the tide. ¹ Research questions added after initial TA. * Answers checked manually for relation to research question, and irrelevant answers discounted from search.

Research Question / Subquestion	Survey Question(s)	Selection of data used to answer RQ.	Theme (TA) / Category (STA)	Search terms (STA, adapted codes from TA)
RQ2. What are common understandings and misconceptions about the tide?				
2.1: What are common understandings about the tide?	Q6. What are tides, what do you know about them?	All respondents	Theme 1: Understanding 1.1 Moons gravitational pull 1.2 Water movement 1.3 Sea level changes 1.4 High and low 1.5 Diurnal 1.6 Spring and neap cycle 1.7 Speed 1.8 Strength 1.9 Otherwise changeable	“moon”, “gravit” (gravity / gravitational) “forces of water”, “movement”, (of the sea / water/ tide) “motion”, “moving of the water”, “rhythm” “height”*, “sea level changes”, “water level”* “back and forth”, “in and out”, “rise”, “fall”, “rising and lowering”, “low or high”, “low and high”, “ebb and flow”, “recede”, “receed”, “go out”, “going out”, “come in”, “comes to”, “coming in”, “come and go”, “high tide and a low tide”, “it and out”, “incoming” “twice a day”, “2 a day”, “2 times”, “change throughout the day”, “different times”, “daily”, “12 hours” “spring”*, “neap”, “fast”, “quick”, “speed” “strength”, “strong”, “power”, “force” “alter throughout the year”, “changeable”
2.2 What are common misconceptions about the tide?	Q6. What are tides, what do you know about them?	All respondents for Q6	Theme 2: Misconception 2.1 Rip currents 2.2 Currents	“rip tide”, “ripe tide”, “riptide” “current”

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	<p>Q8a. In the same location, are the rises and falls of the tides the same every day? Please explain your answer.</p> <p>Q9a. On a given day, are the rises and falls of the tides of equal size in all parts of the country? Please explain your answer.</p>	<p>Q8a. Only analysed those who got Q8 incorrect (n=353)</p> <p>Q9a. Only analysed those who got Q9 incorrect (n=292)</p>	<p>2.3 Ripples and waves</p> <p>2.4 Consistent time of day</p> <p>2.5 Consistent size / distance . area</p> <p>Other</p>	<p>"ripple", " wave "**,</p> <p>"morning"*,"afternoon"*,"night"*,"dawn"*,"dusk"*,"same time"</p> <p>"same distance", "same level", "same area", "same everywhere"</p> <p>"storm", "water crashes together" (<i>rip tides?</i>), "surge", "back tide", "temperature difference", "slow"</p>
2.3 How often are people willing to admit that they do not understand?	Q6. What are tides, what do you know about them?	All respondents for Q6	Theme 3: Admit Minimal Understanding	"no idea", "not sure", "not syre", "not too sure", "not much", "nit much", "don't know", "don't really know" "nothing", "none", "not a lot", "dk ", "don't understand", "very little", "not too much", "not a lot", "don't have any idea", "no idea", "I don't know enough"
2.4 Did respondent deliberately answer incorrectly based on their preferred time of day or length of visit to visit beaches?!	Q16a. You would like to spend an afternoon at the beach when the tide is at the lowest. Read the EasyTide tide table and tell us which is the best afternoon to go.	Q16a. Only analysed those who got Q16 incorrect (n=785)	<p>Theme 4: Interpretation of Q16a</p> <p>4.1 Judged best time to be the longest period of available beach, rather than lowest tide in daylight</p>	<p>"longest"*,"more"*</p> <p>"lunch", "dinner", "weekend"*,"busy"*,"prefer", "balance", "people"*," suit", "convenient", "convinent", "compromise"*,"swim", "bath", "won't go", "best time"*</p>

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	What made you decide on this answer?		4.2 Gave preferred time	
2.5 Were respondent able to see the image questions clearly? ¹	Q16a. You would like to spend an afternoon at the beach when the tide is at the lowest. Read the EasyTide tide table and tell us which is the best afternoon to go. What made you decide on this answer?	Q16a. Only analysed those who got Q16 incorrect (n=785)	Theme 5: Q16a Technical Problem	"zoom", "image", "see"*, "cant"*, "can't"*
2.6 Do the general public associate danger with the tide?	Q5. 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? Q6. What are tides, what do you know about them?	All respondents for Qs5 & 6	Theme 6: Danger 6.1 Tide as a risk 6.2 Specifically note danger	"tide", "coming in", "come in" "cut off", "cut you off", "danger", "unaware", "unexpected", "be alert", "kill"*, "viscious", "stranded", "careful", "stuck", "sweep you out", "pull you out", "deadly"

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RQ3. What lessons can we learn from people who have experienced tidal cut off?				
3.1 What type of geographical features define the types of cut off respondents have experienced?	Q10a. 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 where your thoughts?	Only respondents who answered Yes to Q10 'Have you ever been cut off by the tide, or nearly so?' (n= 207)	Theme 7: Type of tidal cut off 7.1 Embayment 7.2 Causeway 7.3 Sandbank 7.4 River	"bay", "cove", "around a corner", "headland", "head land", "cliff" "island", "causeway", "cause way", " road" "flat", "bank", "beach"*, "beech"* "river"
3.2 What are people doing when they are cut off by the tide?	Q10a. 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 where your thoughts?	Only respondents who answered Yes to Q10 'Have you ever been cut off by the tide, or nearly so?' (n= 207)	Theme 8: Activity when cut off 8.1 Walking / running 8.2 Collecting / foraging / digging / rock pooling / fossil hunting 8.3 Relaxing / Sunbathing 8.4 Playing 8.5 Picnic 8.6 Climbing 8.7 Paddling / Swimming 8.8 Fishing 8.9 Photography 8.10 Work	"walk" "picking"* (eg: <i>cockles</i>), "beachcomb", "mudlark", "rockpool", "rock pool", "looking"*, "search"*, "foraging", "dig", "collecting", "fossil" "chill", "sunbath", "sit"* / "sat"*, "sitting", "sleep" "playing" "picnic" "climb"* "paddling"*, "jump", "swim"* "fish"* "photo"

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			8.11 Driving / parking	"study", "work", "experiment" "driving", " car "*
3.3 What was the human error leading to incidence of cut off?	Q10a. 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 where your thoughts?	Only respondents who answered Yes to Q10 'Have you ever been cut off by the tide, or nearly so?' (n= 207)	Theme 9: Links to reasons for cut off 9.1 Distracted 9.2 Lost / cut off from access point 9.3 Somewhere unfamiliar 9.4 Human error on tide time 9.5 Returned to beach' 9.6 As child, or with children 9.7 With Dog	"didn't realise", "unexpected", "without me realising", "busy"*, "distract", "didn't notice", "lost track" "access", "steps", "block"*(eg. Blocking off the access), "path" "holiday", "unfamiliar", "explor", "abroad", "visit"* "got the timing wrong", "misjudge", "forgot", "late" "left something" "child"*, "kid"* "dog"
3.4 What misconceptions of tide lead to being cut off by the tide?	Q10a. 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 where your thoughts? Q10c. Has your awareness of the tide changed since	Only respondents who answered Yes to Q10 'Have you ever been cut off by the tide, or nearly so?' (n= 207)	Theme 10: Misconceptions leading to cut off <i>Included selected categories adapted from those revealed in Theme 1 (understanding) and Theme 2 (misunderstanding) that may have led to cut off.</i>	"rip tide", "ripe tide", "riptide" "current" "creek", "channel" "fast", "quick", "speed", "rapid" "sudden", "imminent", "approach", "filling a bath" "strength", "strong", "power", "force " "height", "high", "water level", "higher", "very high" (excl. high as too many irrelevant answers for category) "difficult to tell", "in or out"

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	<p>then? If so, what is different? - not sure this will work.</p> <p>Q11. What do you think most people do not understand or realise about the tide?</p>		<p>10.1 Rip current</p> <p>10.2 Current</p> <p>10.3 Creek</p> <p>10.4 Speed leads to sudden inundation</p> <p>10.5 Strength</p> <p>10.6 Can be much higher than expected</p> <p>10.7 Difficult to tell if tide is coming in or out</p> <p>10.8 The tide is different to expected</p> <p>10.9 Direction of incoming tide can be different to expected</p> <p>10.10 Tide times are unpredictable, or can be any time</p> <p>10.11 Can change with weather</p> <p>10.12 Dangerous</p>	<p>“different”*, “deceptive”</p> <p>“around a corner”, “angle”, “behind”, “around”, “direction”, “surround”</p> <p>“unpredictable”, “any time”</p> <p>“storm”, “weather”,</p> <p>“cut off”, “cut you off”, “danger”, “unaware”, “unexpected”, “be alert”, “kill”*, “viscious”, “stranded”, “careful”, “stuck”, “sweep you out”, “pull you out”, “deadly”</p>
3.5 How have people cut off from the tide changed their behaviour, and what	Q10c. Has your awareness of the tide changed since then? If so, what is	Only respondents who answered Yes to Q10 ‘Have you ever been cut off by the tide, or nearly so?’ (n= 207)	Theme 11: How has cut off influenced behaviour or messaging to others	“know”, “research”, “study”, “check”*, “time”, “tide table”, “timetable”, “timings”, “ahead of”, “read up”, “tide patterns”,

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messages do they give to others?	<p>different? - not sure this will work.</p> <p>Q10d. Has your behaviour on the shore changed? If so, in what way?</p> <p>Q10e. When you tell others about the experience, what is your main message to them?</p>		<p>11.1 Know before you go (tide and site)</p> <p>11.2 Know when the tide begins to come in, or go before low</p> <p>11.3 Check signage</p> <p>11.4 Stay close to exit point and away from known danger points</p> <p>11.5 Stay alert, monitor and take care, incl. watch your escape / exit route and areas filling around you.</p> <p>11.6 Be aware of creeks filling</p> <p>11.7 Know it comes in fast and strong</p> <p>11.8 Don't be complacent!</p> <p>11.9 Don't fall asleep!</p> <p>11.10 Respect the tide and be sensible / don't take risks</p> <p>11.11 Take safety precautions</p> <p>11.12 Use lifeguarded beaches</p> <p>11.13 Don't go!</p>	<p>"incoming tide time", "when the tide"*, "what time the tide"*, "only go"*, "tide is not coming in", "never go further on the beach when the tide is lowered"</p> <p>"flag", "sign", "notices", "warning"*</p> <p>"stay back", "stay away", "route"*, "exit", "safe spot", "don't stray", "don't walk too close", "avoid"*</p> <p>"care", "watch", "aware", "alert", "conscious", "vigilant", "attention", "monitor", "close eye", "keep an eye", "on guard", "lookout", "observant", "notice"</p> <p>"depth of creek"</p> <p>"speed", "quickly", "strong", "strength", "fast", "rapid"</p> <p>"complacent"</p> <p>"sleep"</p> <p>"sensible", "respect", "cautious", "risk", "beware"</p> <p>"safety precautions", "what to bring"</p> <p>"lifeguard"</p>

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			11.14 It is seriously dangerous!	“no longer go”, “rarely go”, “don’t go”, “don’t really go”, “won’t park”, “don’t come”, “I avoid”, “serious”, “cut off”, “cut you off”, “danger”, “unaware”, “unexpected”, “be alert”, “kill”*, “viscious”, “stranded”, “careful”, “stuck”, “sweep you out”, “pull you out”, “deadly”