

The 'freak wave' myth

July 3 2019, by Peter Kamstra



Rock fishers casting off the rocky coasts near Sydney, Australia. Credit: Peter Kamstra

As a nation "girt by sea," Australians live with the joy and risks of the ocean.

We swim, we surf, we sail and we fish. And [rock](#) fishing is something

around 1.2 million Australians enjoy doing.

But over the past 13 years, Surf Life Saving Australia estimates that 158 rock [fishers](#) have died while fishing on Australia's rocky coasts.

Rock fishing has been identified as the third highest cause of coastal drowning, following swimming or wading, and boating.

Wanting to understand more about the risk perception of waves, we investigated and interviewed fishers in Randwick Council; a rock fishing drowning "black spot" in Sydney's east.

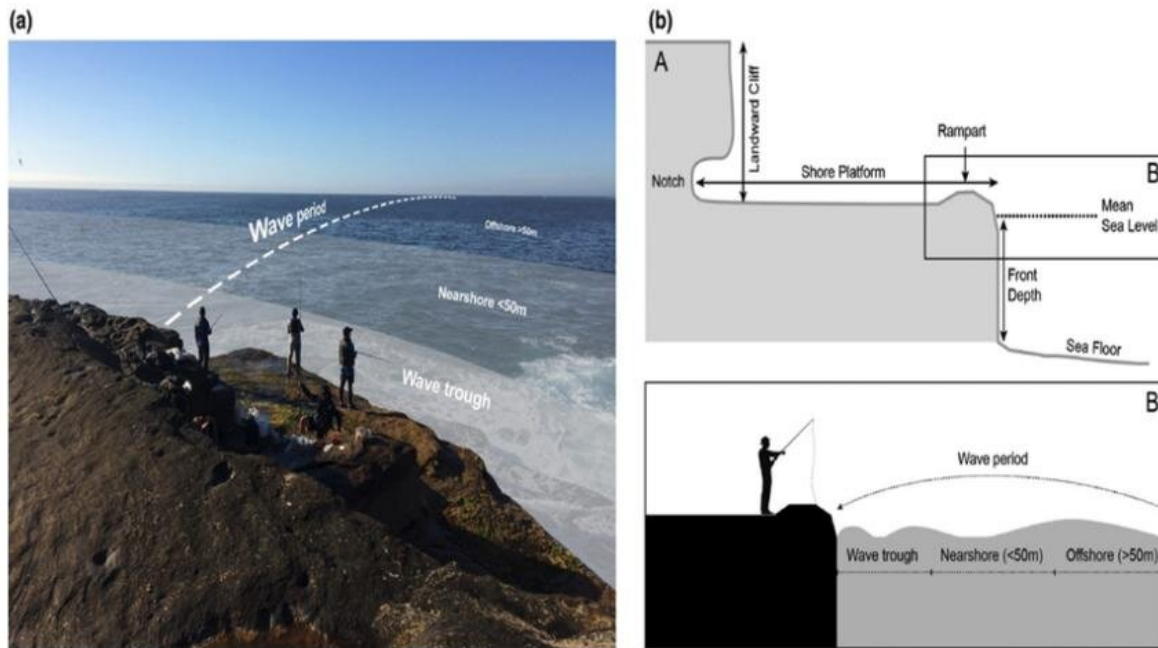
Our study, published in *Ocean and Coastal Management* that built on earlier research in *The Geographical Journal* and *The Professional Geographer*, found that although "freak or [rogue waves](#)" are often blamed for numerous rock fishing deaths by the public and the media—these are actually rare events.

In fact, our findings highlight an important mismatch between how the dangers of drowning while rock fishing are understood by scientists, government messaging and the media when that's compared to how it's experienced by the rock fishers themselves.

Anticipating large waves

Experienced fishers describe several "zones" when they scan the sea for any risks. The more experienced fishers tend to look further offshore when they're looking for hazardous waves.

The first zone is immediately in front of the rocks where water levels drop in the wave trough, the second is up to 50 metres offshore looking at wave heights and, finally, the third zone is up to 200 metres offshore watching for wave patterns or sets.



The image on the left shows rock fishers and the different spatial scales used to anticipate risk, while the images on the right show a cross-section of shore platform morphology (a) and the spatial scales used to anticipate risk (b). Credit: University of Melbourne

Our research suggests that the further offshore fishers looked, coupled with the experience to know what they were looking for, the safer they were.

This larger-scale perspective means that some fishers are able to anticipate larger waves before they strike the rocks, allowing them time to leave a risky location.

In contrast, inexperienced fishers are often unaware that there is a wave period. A wave period or interval is the time it takes for one complete

wave length to pass a fixed point, and it's given in seconds.

Shorter wave periods can be eight to 12 seconds apart, they tend to look peakier and closer together. While longer wave periods can be 10 to 20 seconds apart and carry much more energy.

When a larger set of waves comes through during a longer wave period, an inexperienced fisher often thinks of these as 'freak waves' instead of normal occurrences.

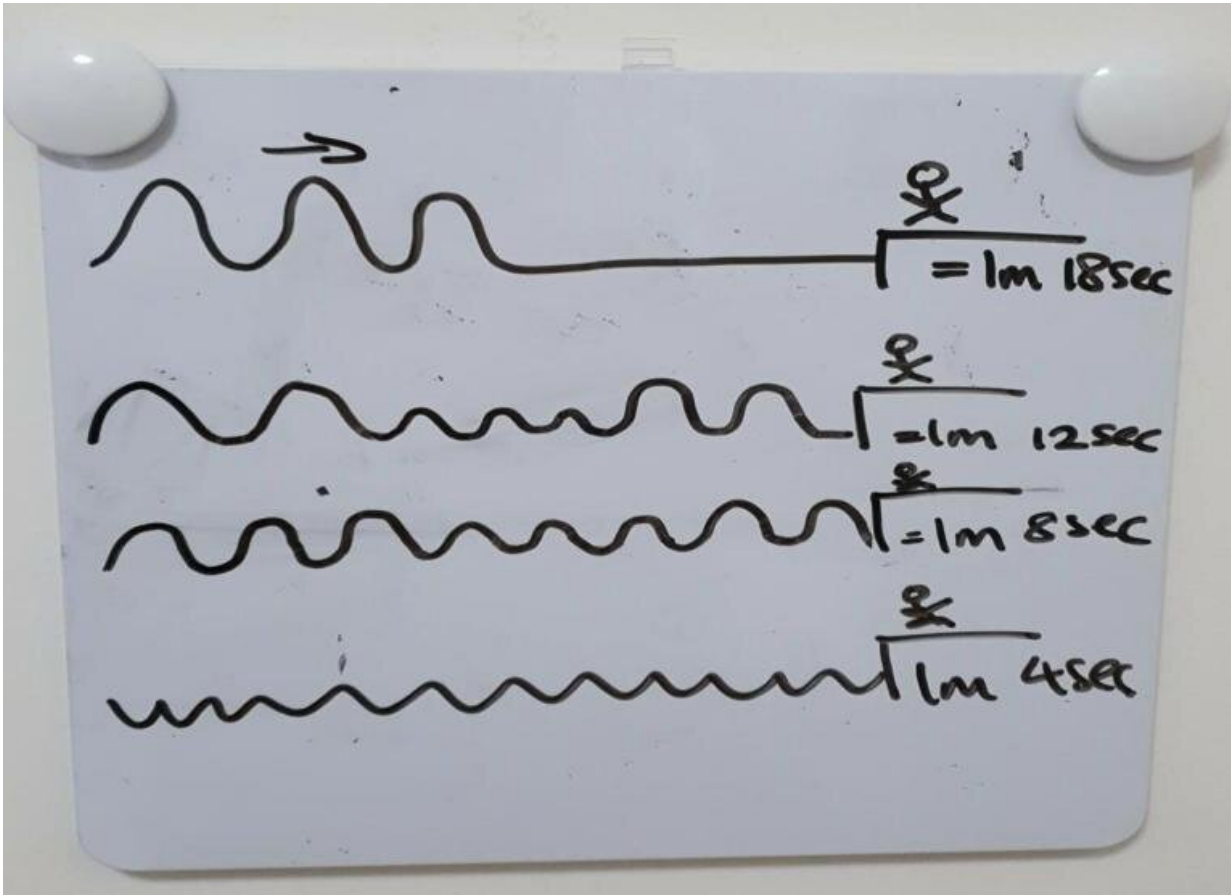
Calm, but deceptive seas

For those looking for hazardous waves immediately in front of the platform they're on, only seconds remains for them to respond. These people tend to be the least experienced fishers.

This lack of perspective is potentially catastrophic when we think about the behaviour of fishers; they are often distracted retrieving a snared line or reeling in a big catch.

The result, in some cases, can be that a large wave is already upon a fisher when they first notice it.

This expert perception is possibly best described by a keen rock fisher we spoke to in 2018 in Sydney's East with seven years of fishing experience:



An example of how the risk of longer wave periods affects the appearance of risk sketched by an expert fisher. Credit: University of Melbourne

"Large overtopping waves will come, but at different times. I think, inexperienced rock fishers come down here and say 'oh, it's glassy (or calm) so it must be safe.' In some cases they are right. But with a wave period over ten seconds, they get lulled into a false sense of security and if they don't get away from that one big wave every 30 to 40 minutes, they get knocked over, hit their head and get carried out in the water."

Experienced fishers explain that "calm" seas can present both high and low risk, depending on whether the fisher understands that an absence of

visible wave heights can represent a high risk.

Counter-intuitively, apparently calm conditions during long wave periods is actually hazardous to inexperienced fishers.

Do freak waves exist?

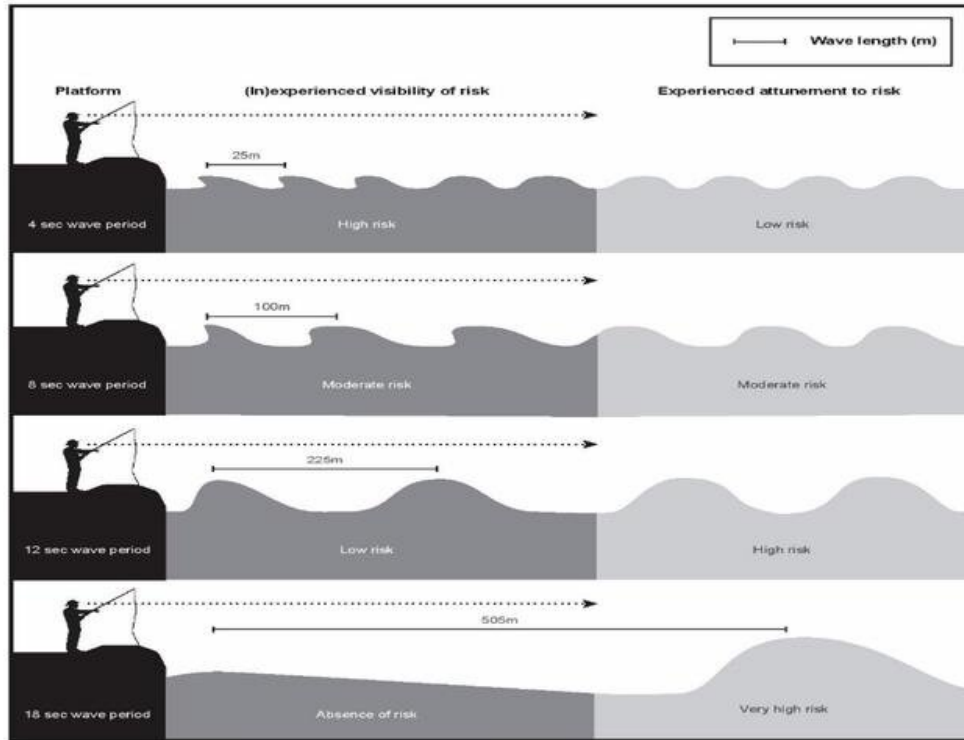
Unlike the sensationalised stories of freak waves sweeping fishers to their deaths, we investigated whether this idea is really just a function of the longer wave periods that are described by expert fishers.

Speaking with other experienced rock fishers about the definition of freak waves, many say that "they aren't freak waves if you know they are coming."

Some went further saying the idea of a freak wave was only for fishers who didn't actually see the massive wave until it was on top of them.

An example of how the risk of longer wave periods affects the appearance of risk can be seen in the form of a sketched image drawn by an expert fisher.

By using statistical testing, my co-author Dr. Sarah McSweeney and I looked at the relationship between 12 rock fishing-related drownings in Randwick Council with the mean daily wave height, direction and wave.



When the wave period is four to 12 seconds, you can see the wave heights that are dangerous more easily. Credit: University of Melbourne

The aim is to explore whether "expert" perceptions of drowning risk aligns with those longer wave periods.

The increase in wave period at the times when fishers drowned suggests an accuracy in the expert testimonies which claim that inexperienced fishers are at risk due to an inability to perceive an absence of visible waves as high risk during longer wave periods.

Communicating risk

The critical message of our research is that current risk management practices can perpetuate the myth of freak waves. Many [warning signs](#) use freak wave imagery and the media stories often feature sensationalised stories of freak waves in their reporting of drownings.

Attempting to scare fishers into behaving differently through these kind of tools is not a reflection of how expert fishers' understand risk and they are unlikely to change behaviour.

It also has to potential to discredit those people and organisations trying to improve safety if they rely on these kind of narratives.

Instead, experienced fishers should be encouraged to share their skills with novice fishers.

This should be done in tandem with risk managers improving communication about longer period swells which can help an inexperienced fishers' ability to understand conditions that are safer to fish.

More information: Peter Kamstra et al. Re-casting experience and risk along rocky coasts: A relational analysis using qualitative GIS, *The Geographical Journal* (2018). [DOI: 10.1111/geoj.12277](https://doi.org/10.1111/geoj.12277)

Peter Kamstra et al. Qualitative GIS to Relate Perceptions with Behaviors among Fishers on Risky, Rocky Coasts, *The Professional Geographer* (2019). [DOI: 10.1080/00330124.2018.1559656](https://doi.org/10.1080/00330124.2018.1559656)

Peter Kamstra et al. Expert perceptions of the 'freak' wave myth on Australia's rocky coasts, *Ocean & Coastal Management* (2019). [DOI: 10.1016/j.ocecoaman.2019.02.015](https://doi.org/10.1016/j.ocecoaman.2019.02.015)

Provided by University of Melbourne

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