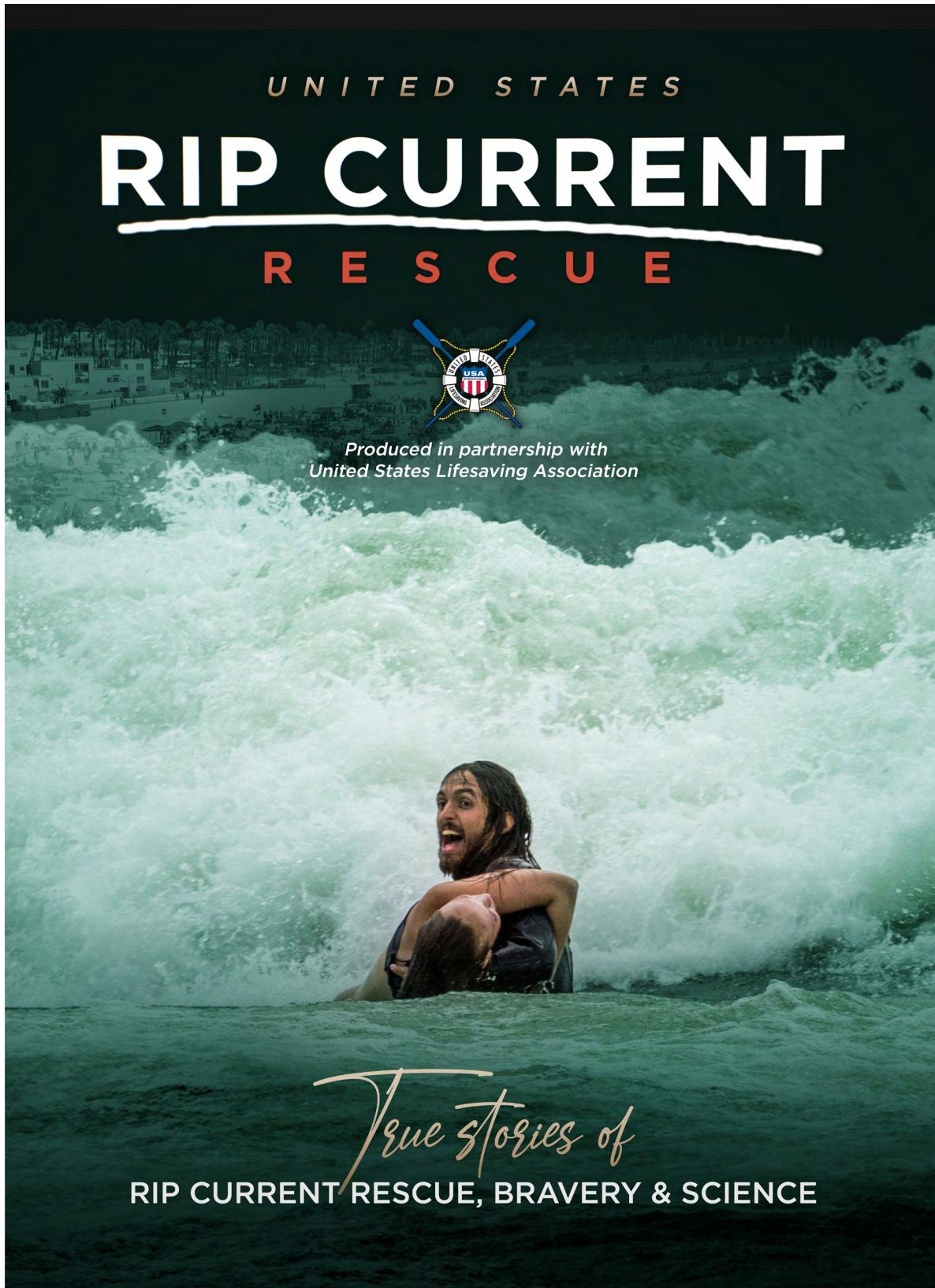


The greatest hazard on American beaches isn't sharks –
it's rip currents



America's first rip current documentary special with a dedicated study guide focusing on rip current science, safety and survival strategies.

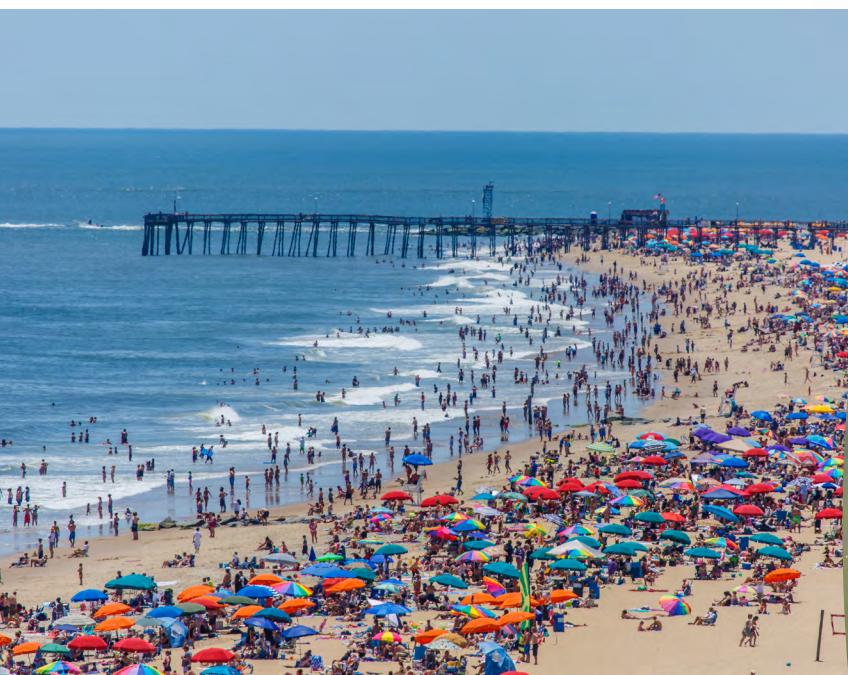
RIP CURRENT RESCUE

About the documentary

Produced in partnership with United States Lifesaving Association and input from the National Oceanic and Atmospheric Administration (NOAA), Rip Current Rescue is the story of the greatest safety issue on US beaches – responsible for over 80% of all rescues by lifeguards and an increasing number of tragic, but avoidable, drownings every summer.

Filmed across the nation's most popular beaches — from California and the Gulf Coast of Florida and Texas, to North Carolina, New England and the Great Lakes — Rip Current Rescue features dramatic real stories of distress and survival captured on camera.

Rip Current Rescue will take you beneath the water surface into the hearts of these currents — following leading scientist Professor Rob Brander (aka 'Dr Rip') as he unlocks the secrets of how rip currents operate.



RIP CURRENTS

KNOW YOUR OPTIONS

IF CAUGHT IN A RIP CURRENT

- Relax, rip currents don't pull you under.
- Don't swim against the current.
- Swim out of the current, then to shore.
- If you can't escape, float or tread water.
- If you need help, yell or wave for assistance.

CURRENT

RIP CURRENT

CURRENT

ESCAPE

ESCAPE

Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer away from shore. If at all possible, swim near a lifeguard.

Rip Current

The documentary demonstrates that new science supports the rip current safety message of the USLA and NOAA — explaining the critical survival strategies we should all understand if you find yourself caught in a rip.

Rip Current Rescue — a one hour documentary special, contains compelling stories to help the viewing public understand rip currents and the serious hazard they represent, learn how to spot them, and what they should do if they ever find themselves caught in the grip of a rip.

vimeo

Rent the 1 hour rip current rescue documentary for just \$3 US



Over 80,000 lifeguard rip current rescues per year

Most fatalities occur on unpatrolled beaches

THE GREATEST HAZARD ON US BEACHES

The United States has thousands of miles of coastline and some of the best beaches in the world. Summer beach attendance can exceed 375 million.

Yet despite our love for the sand and surf, most beachgoers know very little about the greatest danger that lurks along our beaches — it's called a Rip Current.

Did you know that the United States Lifesaving Association records show that every summer rip currents are responsible for over 80,000 lifeguard rescues and that a recent study suggests that over 100 people may drown in rips in a typical year? Most rip current fatalities occur on beaches that are not patrolled by lifeguards, or at times of day that lifeguards are not on duty, which is why it's so important to swim at a lifeguard protected beach.



ABOUT THIS GUIDE

This educational resource is the first of its kind in the United States to be devoted to educating people about rip currents and is guided by the content and footage presented in the documentary 'Rip Current Rescue' — a program which features dramatic rescue stories along with expert interviews to provide users with knowledge of:

- The science of rip currents: what they are, how they form and how they flow;
- The different types of rip currents and where they occur;
- Why it's important to swim at a lifeguard protected beach;
- How to spot rip currents;
- What to do if caught in a rip current;
- How to respond when someone else is caught in a rip current;
- Interesting facts about rip currents.



vimeo

Watch the dramatic rescue of Derrick Johns – a former marine – who got caught in a rip on Nantucket. Derrick attempted to swim against the flow of the rip. It was a decision that almost cost him his life.

Free to view





WHAT ARE RIP CURRENTS?

Rip currents are powerful and narrow flows of fast-moving water, often occupying deeper channels, that extend out from the shoreline into deeper water. They can occur on any beach that has breaking waves and are prevalent along the East, Gulf, and West coasts of the U.S., as well as along beaches of the Great Lakes.

Watch Dr Rob Brander (aka 'Dr Rip') explain the basics of how rips operate from the documentary *Rip Current Rescue*
Free to view

Rip Current Myths

There are many myths and misconceptions about rip currents. One misconception is that they are an 'undertow' that will pull you beneath the surface. This is not true, as rip currents do not pull you under the water — they take you offshore. Rip currents are also mistakenly referred to as 'riptides', which is an improper term because they are a current and not a tide. After all, rip currents occur on beaches in the Great Lakes, where there are no tides!

Watch Dr Rob Brander explain rip myths and misconceptions
Free to view

vimeo

Rent *Rip Current Rescue* documentary for just \$3 US to learn more about rip currents

LEARN HOW RIP CURRENTS FORM

Rip currents are driven by the action of breaking waves, or more specifically, the alongshore variability in wave breaking. When waves break, the water level rises by about 10% of the breaking wave height — a phenomenon known as wave setup. Water levels will therefore be higher in regions where there are more waves **breaking** (higher setup) compared to where wave breaking is less (lower setup).

For example, wave breaking tends to occur more across shallow sandbars and less over the deeper channels between the sand bars and at the shoreline. This situation sets up the beginning of the first stages of rip flow because water will always flow 'downhill' from areas of higher water levels to areas of lower water levels. This can often create feeder currents that flow along the beach before converging and turning offshore into what is known as a rip neck — the main part of the rip current.

There can also be a lot of wave breaking occurring at the shoreline that causes large amounts of water to pile up — water that's eager to find its way back offshore.

To get back offshore this build-up of water moves away from the shoreline through the deeper channels into the rip neck — often at high speeds. It's the pathway of least resistance.

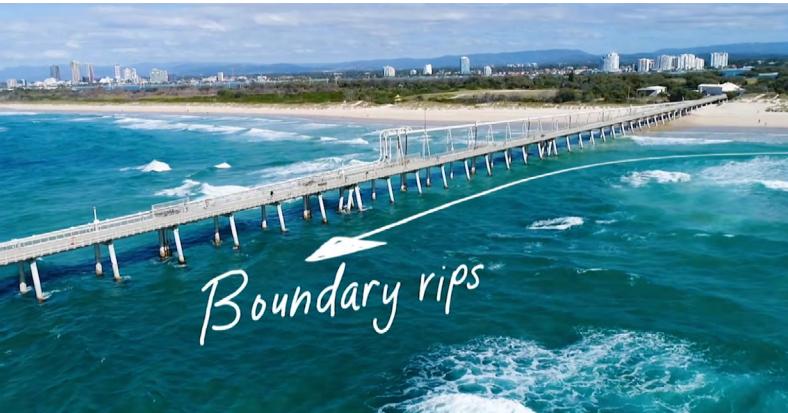
This movement of water is the rip current.

vimeo

Learn more about how rip currents form by watching *Rip Current Rescue*.
Rent on Vimeo for \$3 US



LEARN ABOUT THE MOST COMMON TYPES OF RIPS



There are many different kinds of rip currents that can occur on beaches depending on what factors cause the alongshore variability in wave breaking that drives rip current formation. However, there are three types of rip currents that are more common and they often have different visual clues to help you spot them.

Channelized Rips

The most common type is a channelized rip. These rip currents occupy deep channels between sandbars and they can stay in the same location for days, weeks and even months. These are the classic 'dark gap' rips that often appear as seemingly safer and calmer areas between areas of breaking waves and whitewater. These rips also erode a tell tale embayment along the shoreline.

Boundary Rips

Boundary rips, also known as structural rips, are found against natural headlands, rock platforms and structures such as piers, jetties and groynes that extend out from the shoreline. When waves approach the shoreline at an angle, they create an alongshore current that is deflected offshore by the physical boundary. These rips also tend to be channelized and can appear as darker areas of deeper water. On beaches where waves break almost continuously, boundary rip currents are almost permanent features and it is not uncommon for them to exist on both sides of the structure. Never swim near a headland or structure.

Flash Rips

One of the most dangerous and unpredictable rip currents is the flash rip. Flash rips can form quickly and without warning, often as a result of a few larger waves, or a group of larger waves breaking, causing water levels to suddenly build up. The result is a short-lived flash rip that can form and disappear at different locations along the beach. They are quite different from the other rips in appearance, being dominated by turbulent streaks of water and clouds of suspended sand. Flash rips can initiate from the shoreline, but can also flow off of sandbars.

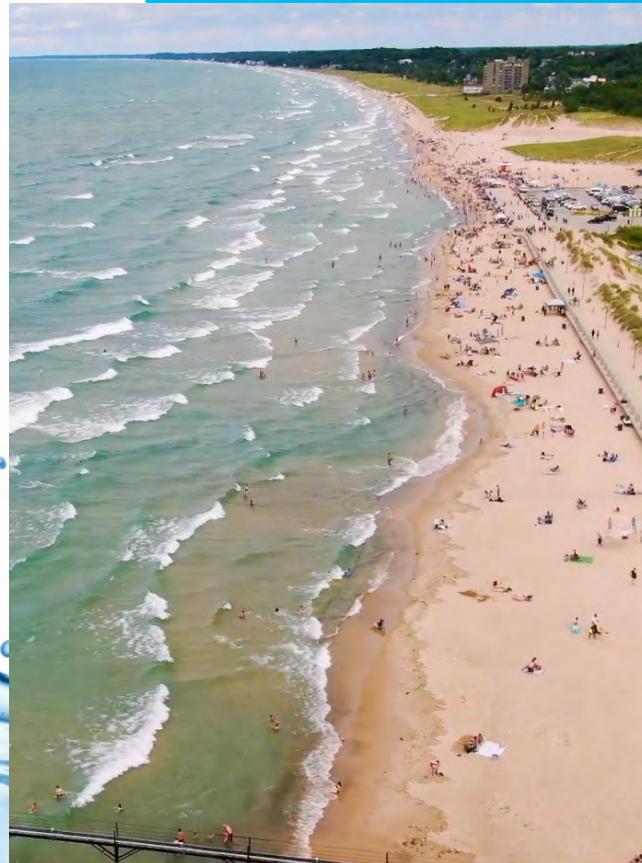
LEARN ABOUT RIP CURRENTS ON THE GREAT LAKES

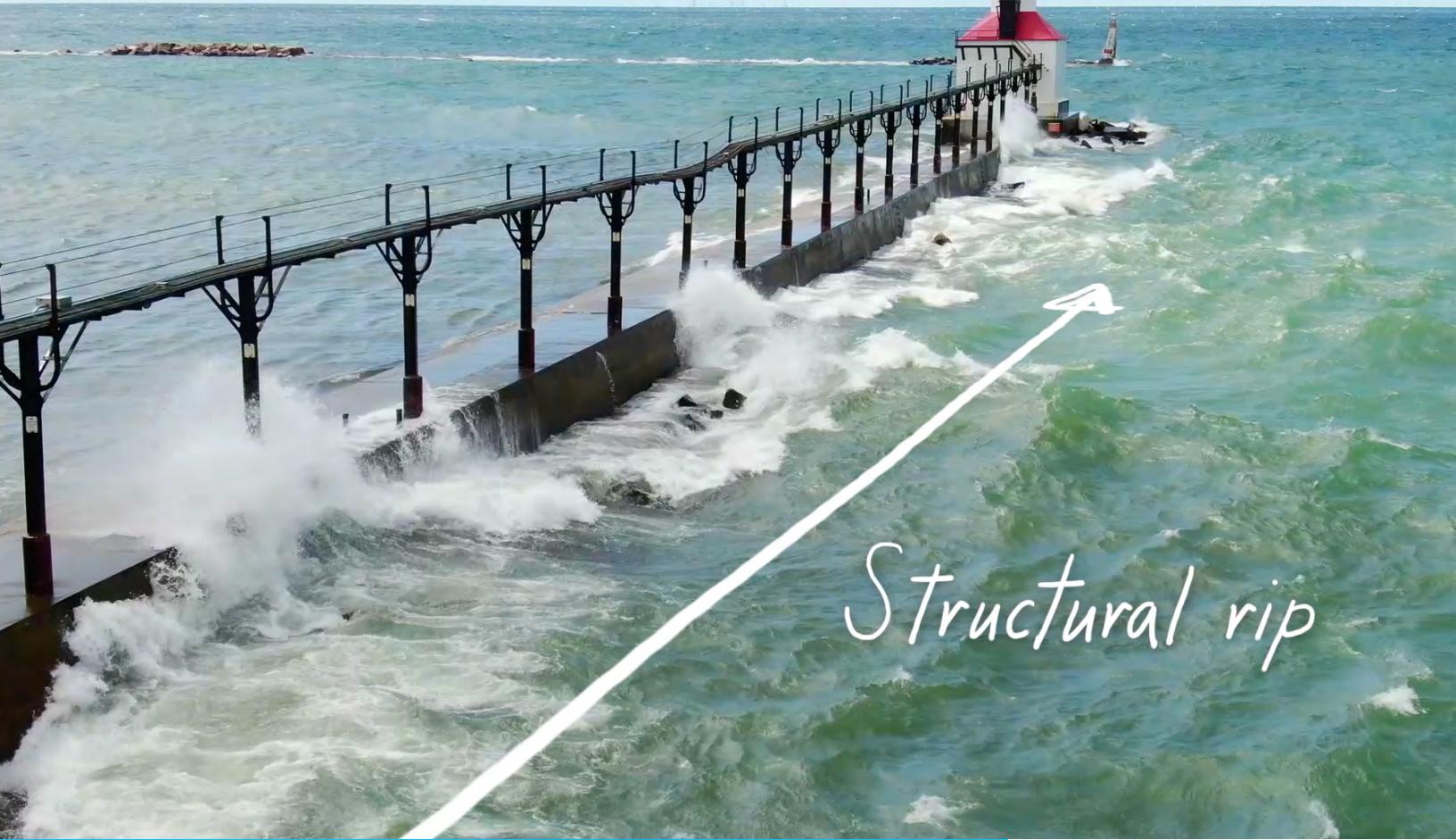
The United States has over eighty thousand miles of ocean coastline with countless beaches, including some of the most famous in the world. But there's one part of the country with many rip current drownings that's nowhere near an ocean — the Great Lakes.

The five Great Lakes of North America make up the largest body of freshwater on earth, spanning 95,000 square miles — larger than the State of Texas.

With few lifeguards and strong rip currents, rip current deaths on the Great Lakes are consistently high every summer. A large percentage of these fatalities occur on Lake Michigan.

Lake Michigan consistently records the highest number of rip current drownings





Piers, jetties and lighthouses are common on the Great Lakes — and they inevitably attract swimmers and tourists, but they're also magnets for rip currents.

With the right combination of wave direction and activity these structures can quickly create a powerful current flowing directly into deeper water offshore — what coastal scientists refer to as a boundary or structural rip.

These rips can become even more dangerous for swimmers when alongshore currents are added to the mix. Longshore currents are caused by breaking waves approaching the shoreline at an angle creating a strong current flowing parallel to the beach that until it encounters a structure where it is deflected offshore as a rip. Longshore currents can also be formed by strong wind blowing along the shore, or by a combination of both.



vimeo

Watch Rip Current Rescue on Vimeo to view heroic Great Lakes rescues along with fascinating science from Canadian Coastal Geomorphologist Dr Chris Houser.

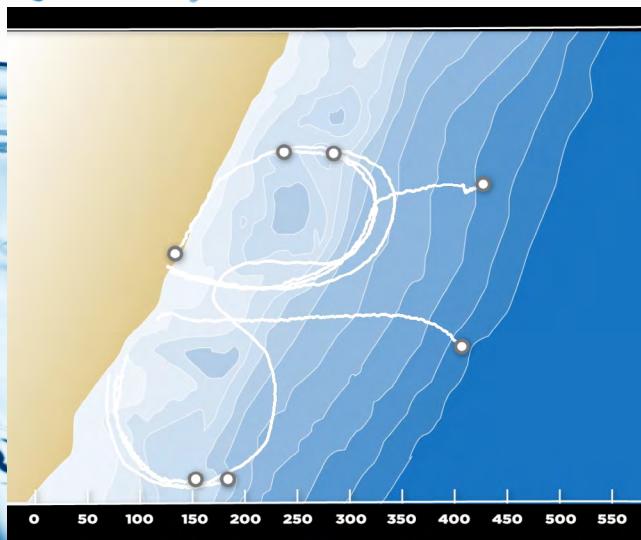
Rent on Vimeo for \$3 US

LEARN WHY RIP CURRENTS ARE SO DANGEROUS AND WHY PANICKING IN A RIP CURRENT DRAMATICALLY INCREASES YOUR RISK OF DROWNING

Scientists estimate that at any given moment there may be tens of thousands of rip currents present at U.S. beaches. These powerful currents can be difficult to spot to the untrained eye — often camouflaging themselves in seemingly gentle waters — and in certain conditions rips can appear without warning, turning an idyllic beach setting into scenes of panic, only to quickly subside before appearing in an entirely different section of the beach.

Rip currents can also flow very quickly offshore, easily carrying unsuspecting swimmers of all abilities into deeper water — which can be a terrifying experience.

While rips typically flow at speeds between 1 and 3 feet per second, which is faster than many people can swim, they can also suddenly pulse, or quickly accelerate in speed, in response to larger breaking waves, which causes them to flow as fast as 8 feet per second — which is Olympic swimming speed.





Rip currents don't drown people — people drown in rips.

But the main problem isn't the action of the rip current, it's how a swimmer responds.

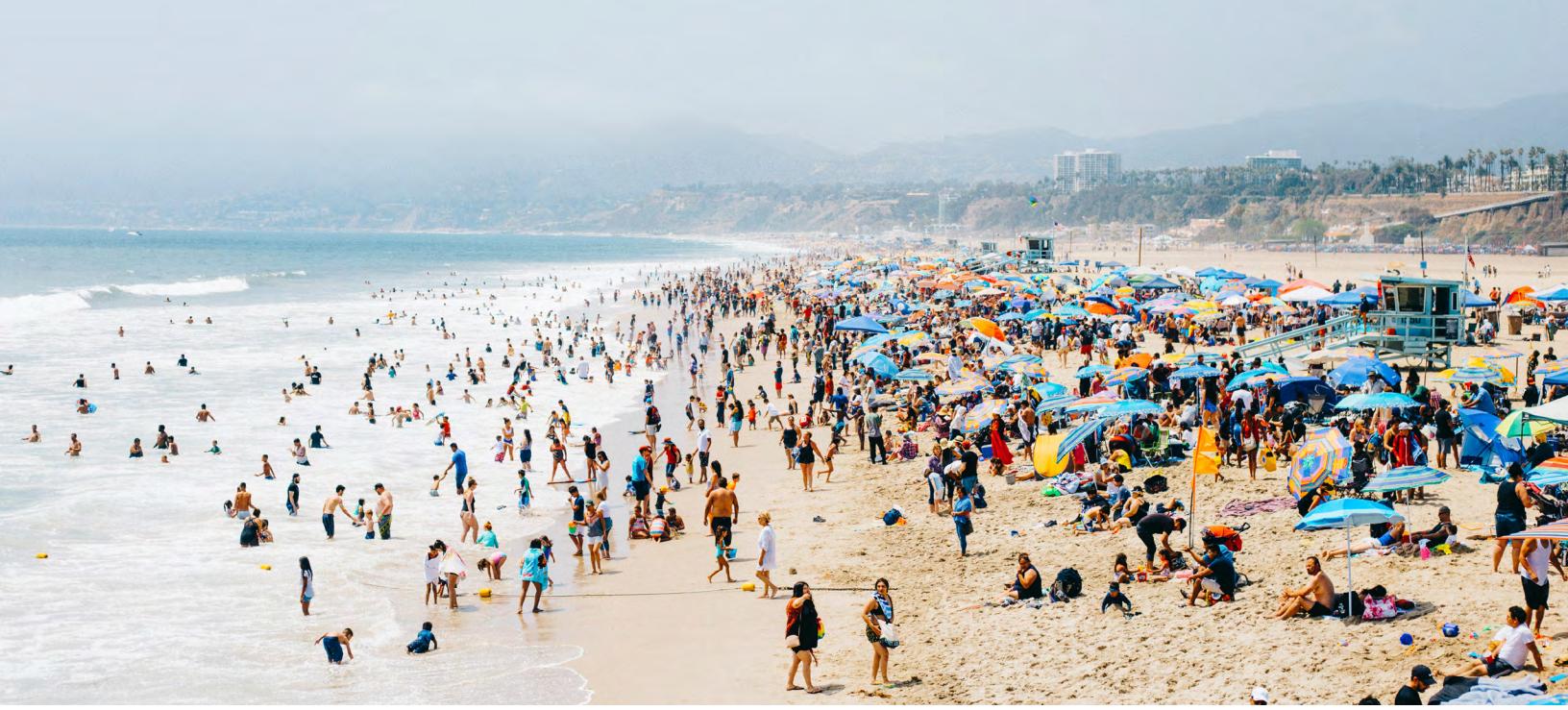
Panic, along with trying to swim back to the beach against the flow of the rip, is the biggest killer when it comes to rip currents, and people panic because they find themselves being pulled quickly offshore, seemingly helpless.

Panic and a desperate attempt to swim straight back to shore can quickly lead to exhaustion. Even a good swimmer can drown in as little as two minutes.

Rip currents don't drown people — people drown in rips.

vimeo

Watch the dramatic rescue on Mexico's Cancun beach - which illustrates the importance of not panicking when caught in a rip, and hear USLA President Peter Davis talk about the drowning risk.
Rent on Vimeo for \$3 US



LEARN WHAT TO DO IF YOU GET CAUGHT IN A RIP CURRENT

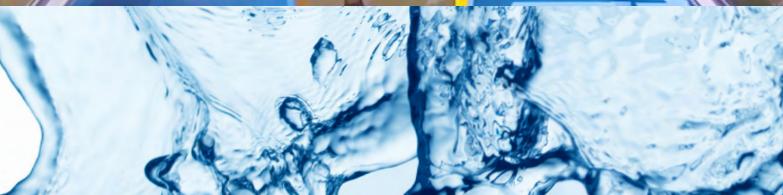
Every year tens of thousands of beachgoers are caught in rip currents on American beaches, and while many are able to escape by themselves, many others require rescue. Tragically, far too many drown.

The best way to stay safe at a beach is to only swim on beaches patrolled by lifeguards and to always swim near a lifeguard. However, not all beaches have lifeguards and even on beaches that do, lifeguards cannot always be everywhere, all of the time.

The unfortunate reality is that anyone can be caught in a rip and in these situations you need to be aware of the safest strategies on how to react and potentially escape, particularly if no lifeguards are nearby.

The best advice to remember if you find yourself caught in a rip current you should **RELAX** and **STAY CALM**.

Remember that rip currents are just taking you for a ride — they won't pull you under the water and they won't take you to the other side of the ocean or lake. At ocean beaches, many people worry that the rip will take them into deeper water — shark territory! But it's extremely rare to be bitten by a shark. On average the US records just one fatal shark bite per year — so don't worry about sharks!



You need to know your options — options which are based on underlying science

If you feel you need help getting back to shore, then you should stay afloat and signal for help to lifeguards, or even nearby surfers, by waving or shouting out for assistance.

If you want to try and actually escape the rip current yourself, you need to know your options — options which are based on underlying science.

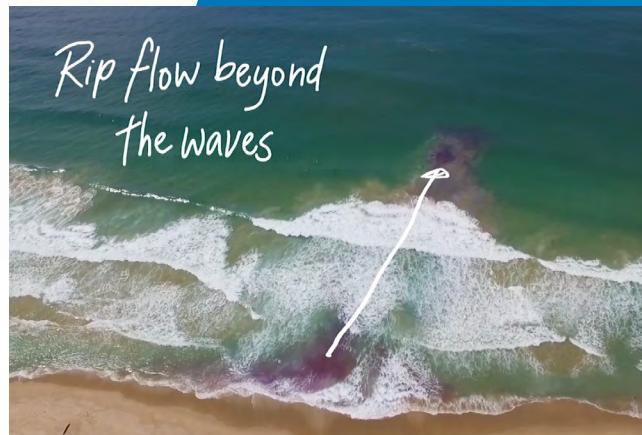
Rigorous research by coastal scientists has revealed just how complex rip current flow can be, and rip current flow behavior has a major impact on how you can try and survive a rip current.



- Not all rip currents flow straight offshore and rip current circulation patterns can vary quickly

Some rip currents flow straight offshore, and at times, considerable distances offshore beyond where the waves are breaking. As rip currents are relatively narrow (typically 20 – 150 ft wide) the traditional advice of swimming parallel to the beach, or towards breaking waves, to escape the rip can be a quick and successful escape strategy in these situations. The idea is to swim out of the rip by swimming towards the side of the rip to where you are no longer being taken away from shore, or it's shallow enough where you can stand up safely and then make your way back to shore.

However, not all rip currents flow straight offshore and rip current circulation patterns can vary quickly, which can make swimming out of a rip problematic, particularly for those who are not good swimmers. In this case floating may be a better escape option as it conserves energy and many rip currents have also been shown to re-circulate in the surf zone, meaning that if you stay afloat, you may eventually be brought back into shallow water where you are able to stand.



RIP CURRENTS

KNOW YOUR OPTIONS

The diagram illustrates a rip current flowing away from a beach. A person is shown caught in the current. Two arrows labeled 'ESCAPE' indicate paths to safety: one to the left (swim parallel to the shore) and one to the right (swim perpendicular to the current). The word 'RIP CURRENT' is written in the water between the arrows. A box on the left contains the following text:

IF CAUGHT IN A RIP CURRENT

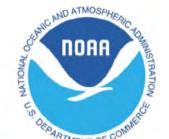
- Relax, rip currents don't pull you under.
- Don't swim against the current.
- Swim out of the current, then to shore.
- If you can't escape, float or tread water.
- If you need help, yell or wave for assistance.

Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer away from shore. If at all possible, swim near a lifeguard.

Unfortunately rip current flow is highly complex and research has shown that while both swimming out of the rip and floating can both be successful, they can also be unsuccessful, so it is important that you **KNOW YOUR OPTIONS**.

If one option doesn't work, calmly try another and remember that most good swimmers can float or tread water for a long time, but anyone can become quickly exhausted by fighting a rip current. If what you are trying is not working, then you should signal for help by waving or shouting to alert lifeguards, or even nearby surfers, and then relax, float and wait for help.

All of these options are supported by science and are promoted nationally in the United States by the United States Lifesaving Association (USLA) and the National Oceanic and Atmospheric Administration (NOAA) through the 'Break the Grip of the Rip' public rip current education campaign.



www.weather.gov/safety/ripcurrent

www.usla.org/page/rip-current-safety-toolkit

www.usla.org/page/ripcurrents



LEARN ABOUT THE DANGERS OF BYSTANDER RESCUES - WHAT SHOULD YOU DO IF YOU SEE SOMEONE CAUGHT IN A RIP CURRENT

An important theme in **Rip Current Rescue** is the issue of bystander rescuers — those people, often complete strangers, who enter the water to help others. In some instances bystander rescues save lives, but attempting an untrained rescue can be very dangerous. Each year there are reports of bystanders attempting a rescue who tragically die in the effort, while those they were trying to save eventually escape the rip on their own or are rescued by lifeguards.

There are some important **do's** and **don'ts** when it comes to being a potential bystander rescuer.

Don't rush in — even if it's your child, a relative, or a friend who is in trouble, take a few moments to think about what you should do.

Get help from a lifeguard — or tell someone to get help. If there are no lifeguards, call 9-1-1. If there are surfers with surfboards nearby, alert them to the situation.

Find a flotation device — look for something that floats such as a boogie board, cooler or even a beach ball and try and throw it to the person in trouble.

Never enter the water to perform a rescue yourself without bringing a flotation device with you.

Never attempt to form a human chain to rescue someone. This only puts people at the end of the chain at great risk and people have drowned while trying this technique.

vimeo

USLA President Peter Davis talks about bystander rescues and the safest steps to take if you see someone caught in a rip

Free to view

LEARN HOW TO SPOT RIP CURRENTS

If you don't get in a rip current, you won't be caught in one. Prevention is always the best medicine and always swimming near lifeguards will help you stay safe, but learning some of the visual clues that will help you spot rip currents is also a valuable skill.

Unfortunately, beach safety research has revealed that up to 70% of American beachgoers don't know how to spot a rip current so here are some tips to get you started.

Look for dark gaps

One of the best ways to spot a rip current is to look for dark gaps between the breaking waves – almost like a path going through the whitewater. This is particularly true of channelized and boundary/structural currents that occupy deeper channels. Deeper water is generally darker and waves don't break as much in deeper water.

When it comes to spotting these rip currents, think 'White is Nice, Green is Mean' because areas of whitewater mean that waves are breaking over a shallow area whereas dark green gaps mean deeper water, which could be a rip current.



Look for choppy, turbulent and sandy water

Not all rip currents appear as dark gaps between areas of whitewater. Many rips flow fast enough to carry sand beyond the surf zone where they slow down and appear as clouds of suspended sand.

Rips also move water offshore while waves bring water onshore – when the water comes together, the interaction can lead to a choppy water surface compared to surrounding areas.

Flash rips also appear as areas of churning, streaky turbulent water and suspended sand.

How to be a rip spotter

It takes practice learning how to spot rips. Always take some time when you go to the beach before going in the water to think about rip currents and see if you can recognize any telltale signs. Ask a lifeguard if there are any rip currents and if so, to point out where they are.





It also helps to check the water from an elevated position, such as from a headland, lookout, or walkway at the back of the beach. Sunglasses with polarized lenses also help spot the 'dark gap' rip currents.

Finally, rip currents and waves are dynamic features that are constantly in motion. Don't just look at the beach once. Spend a few minutes watching the surf and look for the visual clues that rips give you.

Can you spot the rip current in these images?

vimeo

Learn more about how to spot rip currents with Dr Rob Brander in
Rip Current Rescue.
Rent on Vimeo for \$3US



LEARN MORE ABOUT RIP CURRENT SCIENCE WITH PROFESSOR ROB BRANDER

vimeo

Watch Rip Current Rescue on Vimeo
to learn more about the science of
Rip Currents

Rent on Vimeo for \$3 US

Professor Rob Brander is a coastal geomorphologist based at the University of New South Wales in Sydney, Australia and has been studying rip currents on beaches throughout the world for several decades. His research, undertaken in collaboration with many of the world's leading rip current scientists, has helped unlock the secrets of how rip currents operate.

To get inside the heart of rips Dr. Brander and other scientists use mobile devices called drifters that are fitted with GPS trackers. These drifters helped Rob study the flow direction and flow speed of rip currents.

The data from these drifters has revealed an enormous variability in how rips flow and circulate. Typically rips are about 20 to 150 feet wide and can flow anywhere from 150 to 300 feet offshore. But not always. Rob has measured some rip currents that have flowed more than a quarter of a mile offshore.

Drifter research has also revealed that sometimes rips flow well beyond the surf zone out into deeper water and other times they recirculate within the surf zone as rotating eddies. What makes rip currents even more dangerous is that their behavior can quickly change from one flow direction to another.

Rip currents are extremely complex — their flow patterns and behavior can vary between different types of rips, between rips on the same beach and even within the same rip over minutes.

It is important to understand, be aware of, and think about rip currents every time you visit a beach with breaking waves.

It's even more important to only swim where there are lifeguards.

FACTS AND FIGURES ABOUT RIP CURRENTS

Rip currents don't pull people under the water – they carry them away from shore



- Rip currents don't pull people under the water — they carry them away from shore
- Rip current flow speeds vary. Typical speeds are 1-2 feet per second, but they can reach speeds of 8 feet per second – faster than an Olympic swimmer!
- Rip currents typically can vary in width from 20 to 150 feet wide
- Rip current flow sometimes ends just beyond the line of breaking waves, sometimes it can continue over a hundred yards further offshore, sometimes it can recirculate back towards the shore
- Rip currents have a tendency to pulse — a sudden acceleration in flow speed that may last less than a minute. These typically occur after a group of larger waves has broken
- On beaches with tide ranges less than 6 feet, most rip currents flow fastest 1.5 hours either side of low tide
- The majority of fatal rip current drownings take place on beautiful sunny days and what appear to be perfect beach conditions. These conditions can be deceptive. Rip currents still flow when waves are small and strong rips can be caused by large waves generated by storms, such as hurricanes, that are hundreds, or even thousands of miles away
- Rip currents are sometimes referred to as 'undertow' or 'riptides', but these terms are not correct. Only the term 'rip current' is technically correct
- Rip currents don't drown people, people drown in rip currents
- Your chances of a safe day at the beach are greatly increased if you swim near a lifeguard, obey warning signs and flags, avoid swimming near structures, and understand the basics of rip current science

RIP CURRENTS

KNOW YOUR OPTIONS

IF CAUGHT IN A RIP CURRENT

- Relax, rip currents don't pull you under.
- Don't swim against the current.
- Swim out of the current, then to shore.
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CURRENT

RIP CURRENT

CURRENT

ESCAPE

ESCAPE

Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer away from shore. If at all possible, swim near a lifeguard.

MORE INFORMATION ABOUT RIP CURRENTS

Aside from this educational guide and watching Rip Current Rescue, you can find more information about rip currents at:

www.usla.org/page/rip-current-safety-toolkit
www.weather.gov/safety/ripcurrent
www.ripcurrentsafety.com
www.scienceofthesurf.com



The Rip Current Rescue documentary and this supporting study guide have been produced with the generous financial support of Steve and Erin Kudzus and Pinnacle Scientific Australia.

