Rips & Holes

Rips and holes

Rip Currents

A rip current is a narrow body of water moving out to sea. It is caused by wave interaction with the environment. The mechanics of rip current development are complex and involve interactions between waves and currents, waves and water levels, waves and the shape of the near shore bottom (bathymetry), as well as wave-wave interaction.

Rip currents can occur along any coastline that features breaking waves. Scientific investigations of wave and current interactions along the coast have shown that rip currents occur on most beaches every day as a component of the complex pattern of near-shore circulation.

As waves travel from deep to shallow water, they eventually break near the shoreline. As waves break, they generate currents that flow in both the offshore (away from the coast) and the alongshore directions. The larger the surf, the stronger the rip current.

Rips often occur where there is a barrier to water movement along the beach, such as headlands and rocks, or man-made barriers, such as wharves and drainage pipes, as in the permanent rip photo 02 on page 3.

How to Identify a Rip Current

Identifying Features

- Calm patches in surf with waves breaking each side.
- Rippled or criss-crossed water.
- Discoloured water.
- Foamy water.
- Adjacent sand bars.

Escape from a Rip Current

A swimmer caught in a rip should not panic.

The swimmer should ride the current out from the beach until the current weakens, then swim parallel to the shore for 30-40 metres before returning to shore, swimming slowly.

If in trouble:

- Float on your back.
- Raise your hand.
- Wait until the rip stops moving before swimming.

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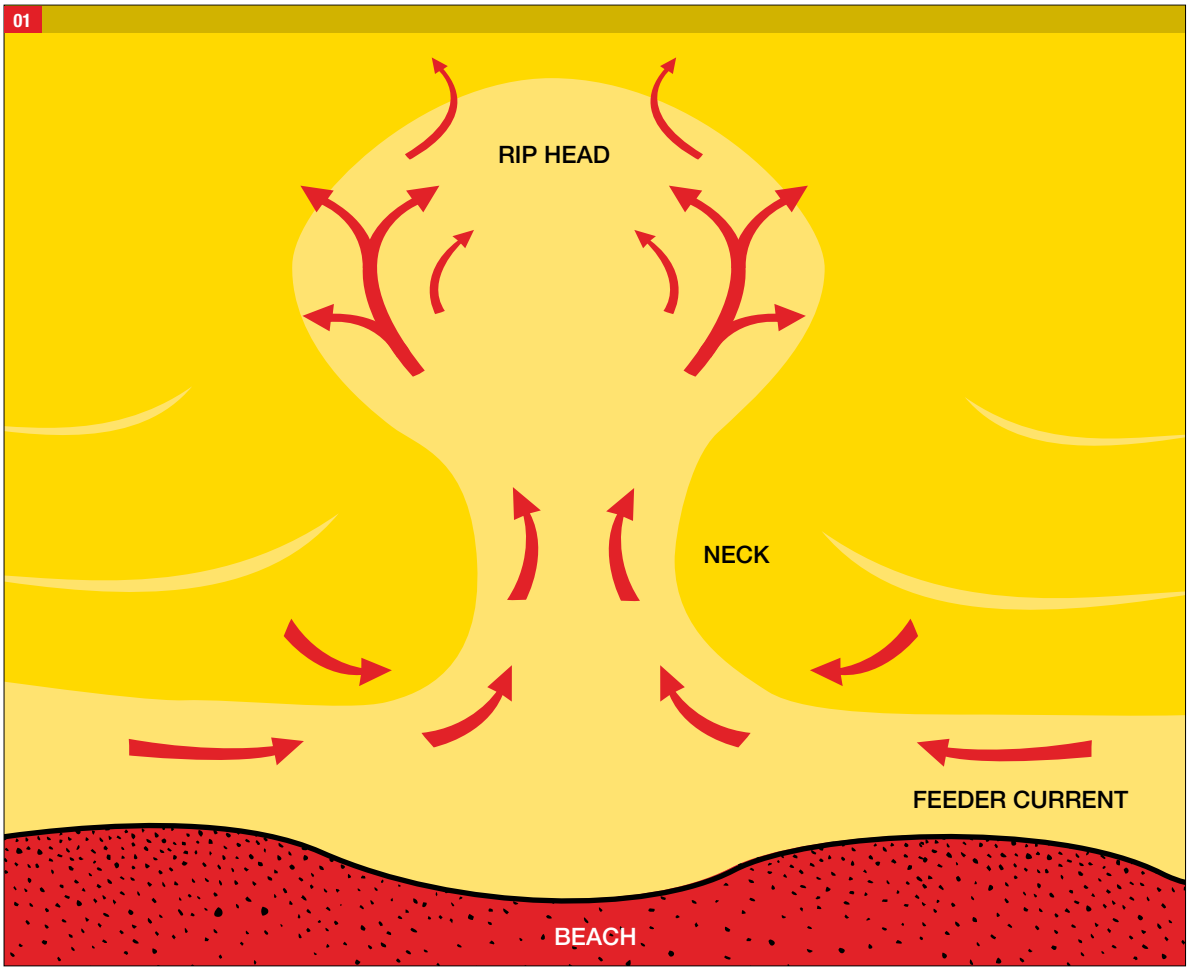

01 Rip Current Components

Feeder Current

This current moves parallel to the shore and may be either fast-flowing, or almost indistinguishable.

In some situations, there is no danger associated with feeder currents, yet in other situations a swimmer can be swept along the beach and washed into a rip current.

Neck

This is the river of water moving away from the beach. The width of the neck can vary from many metres to only a couple. The majority of rescues and drowning occur in the neck, as this is where the rip current has its strongest effect.

Head

The head is where the offshore current ends, dispersing the outgoing water in a broad area. The power of the rip is exhausted once the water reaches the head and the water dissipates.

Rips & Holes

Types of Rips

There have been various international studies completed on rip classification. As yet, no study has been conducted in NZ. Completed international studies discuss four main types of rips. Each type is greatly affected by the characteristics of the beach:

02 Permanent rip currents (Karekare)

As the name suggests, these rips are stationary year round. As the intensity of surf conditions increases, so too does the intensity of the rip. The reason for their permanent nature is due to very little change in prevailing conditions and on the ocean floor. Permanent rips often occur where there is a barrier to water movement along the beach, such as headlands and rocks, or man-made barriers, such as wharves and drainage pipes. In many areas, permanent rips are given names relating to nearby landmarks or streets. Such identification can be invaluable when lifeguard teams answer emergency calls.

03 Fixed rip currents (North Piha)

Fixed rip currents are accompanied by a hole or gully on the ocean floor, with sand as its primary base. Once established, the fixed rip may last from several hours to many months. The length of time depends on the movement of sand. They are usually created when water from incoming surf increases between the shore and offshore sandbars. The water then returns to sea through the path of least resistance, the lowest point in the sandbar system.

The terminology and occurrence of the next two rip types can vary. It is important to note that these rips can occur swiftly and cause huge problems for beach-goers and lifeguards.

Flash rip currents

These are temporary rips generated by increased volumes of water brought on to the shore. These rips occur unexpectedly, without warning, and subside rapidly. The nature of these rips means swimmers can be pulled out to sea quickly from areas of water that were safe only moments earlier.

Travelling rip currents

Travelling rips move out to sea and along the beach. They are pushed by the prevailing direction of the waves and usually occur when the swell is moving strongly in one direction. Travelling rips moving along the beach can wreak havoc on swimmers, pulling large numbers offshore.

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Rips & Holes

Holes

Besides rip currents, the inshore hole is one of the major problems for the unsuspecting swimmer and, in particular, for small children. The formation of holes is related to surf conditions and rip currents. However, holes can still be present, once both surf and rips have gone. The inshore hole is commonly a trough that runs parallel to the shore, often with considerable variation in depth. Swimmers can be swept into an inshore hole by the backwash of water returning down the face of the beach. 04

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Rip Tide

Unlike rip currents that are formed by wave energy, rip tides are caused by tidal action. Rip tides typically occur as water rushes through estuary and inlet entrances during tidal changes.

In some cases Lifeguards will be asked to perform tasks away from the regular beach environment such as in:

- Rocky coastal areas. 05
- Coastal walkways.
- Waterway entrances.

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