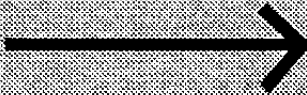


LOAN COPY ONLY

A GUIDE
to
SWIMMING SAFELY
off
SOUTH CAROLINA'S COAST



based on a pamphlet by
Gordon T. "Mike" Howes



Produced by the South Carolina Sea Grant Consortium
your key to the Coast!

CIRCULATING COPY
Sea Grant Depository

"Death off a bathing beach is almost always the result of ignorance, arrogance or over-confidence."

Peter Benchley, New York Times Magazine, 1975

South Carolina is widely known for its beautiful beaches, and each year more people visit our shores. Swimming in the ocean is very different from swimming in a pool or lake, and there is some basic information that should be available to everyone who swims or wades off our beaches. The South Carolina Sea Grant Consortium has produced this publication in an effort to provide the necessary facts which may ultimately help save lives.

This publication is based on a pamphlet by Gordon T. "Mike" Howes, a former lifeguard with more than 40 years of involvement in Red Cross training programs. According to Mike Howes, it is generally agreed that 90 per cent of those who drown are within 15 feet of safety. In most cases, people get involved in an unfamiliar situation and panic. Please read this pamphlet carefully — it could help you save a life.

Do You Really Know How to Swim?

It has been estimated that as many as two-thirds of drowning victims did not know how to swim. A beginning swimmer, according to Red Cross standards, should be able to swim for 15 yards, turn over and float on his or her back for 30 seconds, turn over again and return to the start. These standards are for pools; there are no established standards for ocean swimming. Under normal pool conditions, this swimmer should be safe. But in the ocean, these conditions do not exist.

Why Ocean Swimming is Different

Probably the most important thing to remember about the ocean is that it is in a constant state of motion and change. There are many factors which contribute to the conditions: tide, wind, currents, and waves. Some of the interactions between these factors produce predictable results, while others do not. Swimming safely in the ocean requires physical ability, common sense, and a basic understanding of how the ocean operates.

Look Before You Leap

Each time you or your children plan to enter the water, take a few minutes to observe wind, waves, and water. Watch for:

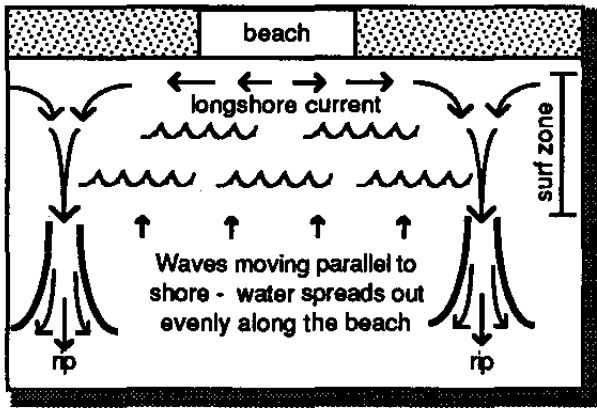
- Patches on the surface where waves are small and jumbled up
- Streaks of dark or dirty water
- Bits of foam or straw moving steadily seaward
- Steady wind from a single direction and strong enough to cause blowing sand
- Waves that strike the beach at an angle (see illustration)
- Sand bars close to shore

These observations are often associated with dangerous swimming conditions.

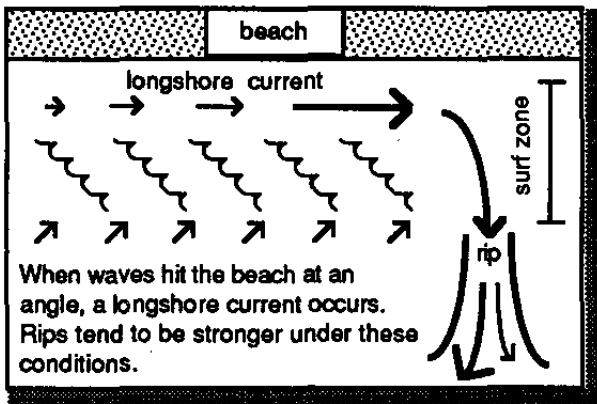
Here's why:

Water carried to shore by waves must eventually return to the sea. When waves break against the shore, water first moves along the shore, and then runs back out. The force of additional incoming waves will tend to trap the water against the shore, but eventually enough will

accumulate to overcome this force and run back to sea. The sideways movement of water along the shore is called a *longshore current*, while the seaward flow is called a *rip current*. (see illustration)



As waves increase in size, the strength of these currents also increases. If waves are parallel to the beach, water is pushed more or less evenly to both sides, and the forces of longshore currents set up by one wave will tend to be balanced by the force of other waves on either side. But if the



waves strike the beach at an angle, the longshore current is steady and may reach speeds of 5.5 miles per hour (it is quite difficult to swim

against a current of only 1 mile per hour). Eventually, the water carried by these currents must return to the sea. The rip current associated with steady longshore currents can be strong as well; as much as 3 miles per hour. The position of rip currents is unpredictable because it depends on the slope of the beach and the underwater topography. Longshore currents are generally stronger nearest the shore. These currents can easily carry a strong adult into an obstruction, unprotected area, or offshore.

Sand bars tend to restrict the flow of water. Just as putting your thumb partially over the end of a garden hose will increase the velocity of water coming out, restricted water movement caused by sand bars can intensify longshore and rip currents. A very strong current often occurs at the down-current end of a sand bar or may break through a weak point in the bar causing a sudden runoff.

If You Are Caught in a Current...

Don't try to swim against it. Swim at an angle across the current in the direction of safety. Panic and exhaustion are a swimmer's greatest enemies. Swimming against a current will quickly tire even a strong swimmer. You may end up quite far down the beach, but you will be alive to grumble all the way back to your blanket.

Swimming in Waves

Waves generally come in sets or groups caused by one wave train over-taking another. The last wave of the set is the biggest with a lull before the next set. Watch them for a while before you go in so you know what to expect. Never turn your back on the waves; you may get knocked over.

- ***Rolling waves:*** Swim up and over the

rolling waves. If they are very steep, duck through the top.

• **Breaking waves:** Duck under the water and swim just below the foaming white water where it will be relatively calm.

If you get caught in the turbulence of a large wave, relax in a curled or fetal position, hold your breath, and wait until the wave pushes you to the surface. Initially, there may be so much air mixed with the water that it will not support you. Once it has bubbled out past you, you will rise to the surface. Don't panic.

When swimming in the surf, always keep a reference point on the shore and do not let the current carry you away from it. If you are caught in any type of current, don't try to swim against it. Swim across it or with it to safety.

Undertow

Undertow is the return flow of the water that has been thrown up on the beach by the waves. If the beach is short and steep, the undertow will be very strong. Sometimes a step-off or hole six to eighteen inches deep will occur just off shore, increasing the strength of the undertow.

Undertow is intermittent; absent when the wave is running up the beach, and strongest just after the wave breaks and flows back to sea. It often digs the sand out from under your feet. An undertow will not pull you down, but it may pull you toward deeper water. Undertow is only present in the six to eighteen-inch layer of water on the bottom.

To get out of an undertow, keep your feet well-balanced, use your hands as paddles and work your way toward shore with help from the incoming waves. Or simply lift your feet out of the undertow and swim to shore with the incoming waves.

Tides

Tides in South Carolina average from 4 to 7 feet between high and low. Tide changes occur approximately every six hours. With the change in tides, there is often a radical change in surf and beach conditions. Shifts in wind speed or direction will also cause changes:

- A sand bar may appear, disappear or change.
- Runouts or rips may start, stop, or change their strength or positions.
- The longshore current may change in strength.
- Waves may change in size, strength, or direction.

All of this may happen within a few minutes. While on the beach or in the surf, keep your eyes open, and be aware of what is going on around you. Your vigilance may save a life.

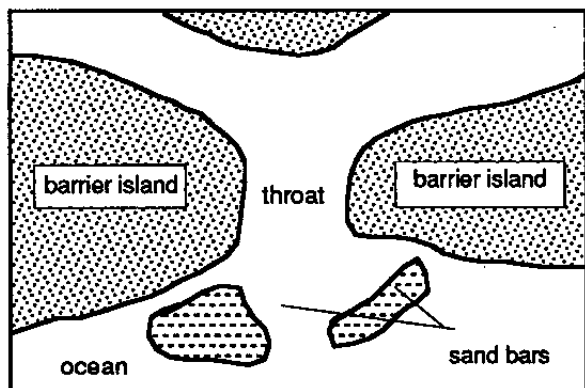
Very often at low tide you can wade out to a sand bar, or perhaps a very short swim will get you there. When the tide comes in, the water between you and the shore will become deeper and you may have a long swim back to shore, especially if there is a longshore current. Non-swimmers and weak swimmers are often caught this way and get into trouble.

Danger Lurks in Tidal Inlets

If warning signs are posted, you should not swim or wade in a tidal inlet. While some are far more dangerous than others, *extreme caution should be exercised if you plan to swim or wade in any tidal inlet.* If you are not familiar with an inlet area, you should not go into the water.

Tidal Inlets

One of the distinctive characteristics of the South Carolina coastline is the number of tidal inlets -- about 30. Tidal inlets are natural or man-made channels connecting two bodies of water. The tide going in and out creates swift currents at the narrowest part, or throat, of the inlet. The force of a tidal current varies from 1 to 5 knots according to the width and depth of the inlet, the tidal range, and the volume of water passing through the inlet.



Tidal Inlet

While swimming or wading in a tidal inlet is **not advisable**, in the event that you do consider venturing into one, timing is **critical**. Slack water (about 15 minutes either side of full high or dead low tide) is the only possible time to wade in an inlet, while the most dangerous time is at maximum ebb flow (from when the tide is about half-way out until it is all the way out).

Tidal inlets have a deceptive appearance: the smooth surface looks inviting, but underneath run very swift currents. The smooth surface may look inviting to those who are fearful of the surf, but the bottoms of inlets often are filled with holes or drop-offs which cannot be seen from the surface: a wader could be in ankle-deep water one minute, and the next over his head and caught in a swift current heading out to sea.

If you find yourself in a current being swept away, relax and do not struggle against the current. The best thing to do is to swim across the current moving towards a shoal or shore. The strength of the current will subside once it leaves the inlet.

Groins and Obstructions

Obstructions include jetties, wrecks, old pilings, rocks, or anything that doesn't naturally occur in an area. Stay away — most obstructions are covered with barnacles, oysters or mussels, whose sharp shells can cause serious lacerations. In many cases, there are strong currents moving around obstructions. Groins are found along many of South Carolina's beaches and should be avoided by swimmers for the same reasons. Because there are many underwater obstructions and shifting sandbars, **never** dive in headfirst until you have scoped out the situation.

If you find yourself being pushed against an obstruction, relax your body as much as possible and use your hands and feet to protect your head, face, and body. Work yourself off with the next surge of the water.

Attention All Parents...

- **Keep a watchful eye on your children.**
- **Teach them to have a healthy respect for the ocean.**
- **Teach your children to swim.**

For more information, contact the
S.C. Sea Grant Consortium
287 Meeting Street, Charleston, S.C. 29401
Phone: 803/727-2078

1988

S.C. Sea Grant Consortium
287 Meeting Street
Charleston, S.C. 29401

NATIONAL SEA GRANT DEPOSITORY
PELL LIBRARY BUILDING
URI, NARRAGANSETT BAY CAMPUS
NARRAGANSETT, RI 02882

RECEIVED
NATIONAL SEA GRANT DEPOSITORY
DATE: JUN. 14 1989