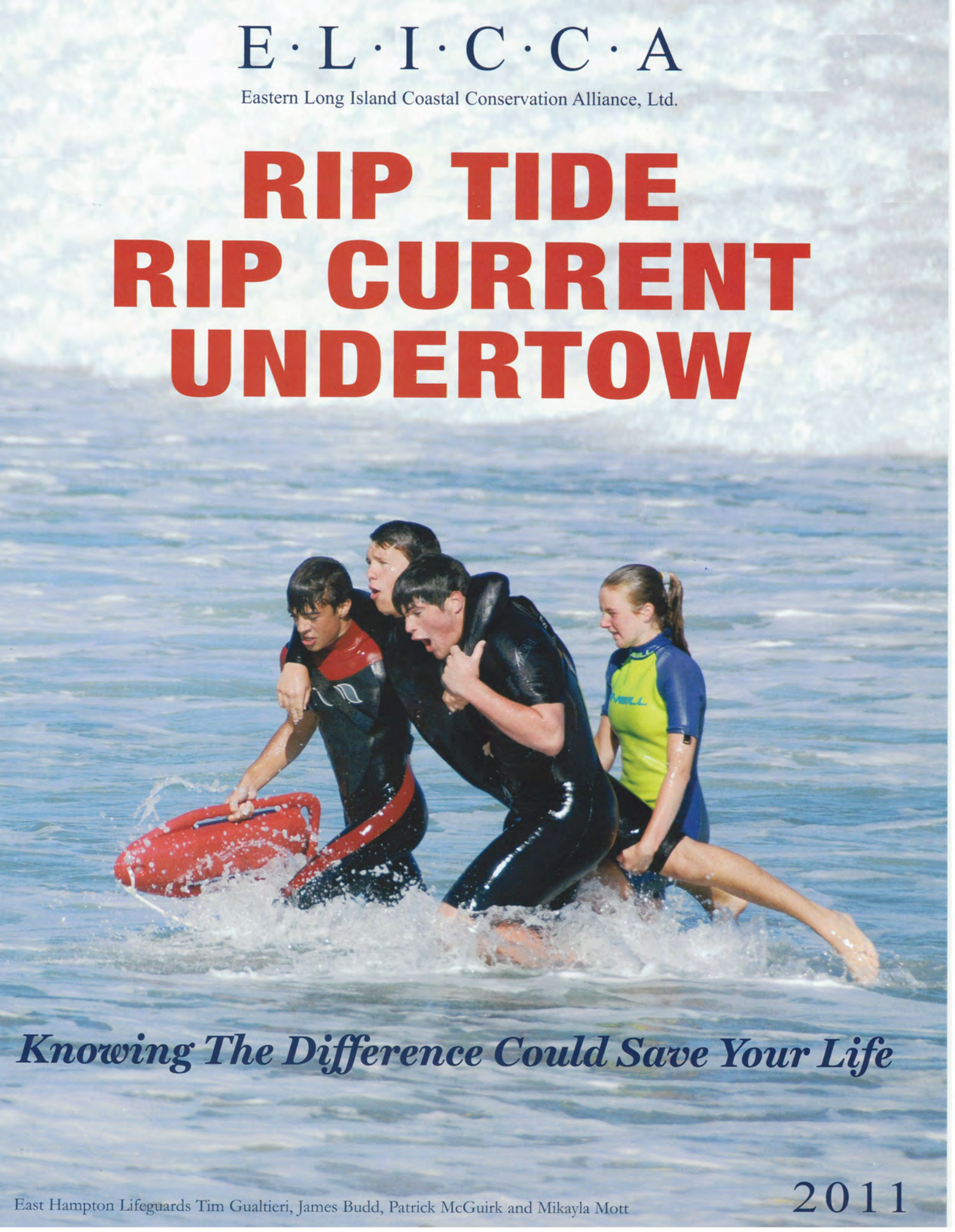
E·L·I·C·C·A

Eastern Long Island Coastal Conservation Alliance, Ltd.

# RIP TIDE
# RIP CURRENT
# UNDERTOW



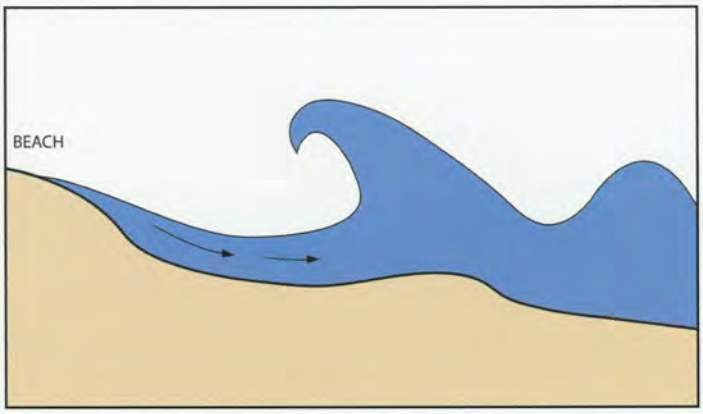
*Knowing The Difference Could Save Your Life*

East Hampton Lifeguards Tim Gualtieri, James Budd, Patrick McGuirk and Mikayla Mott

2011

# BEACH SAFETY:
## UNDERTOW, RIP CURRENTS AND RIPTIDES

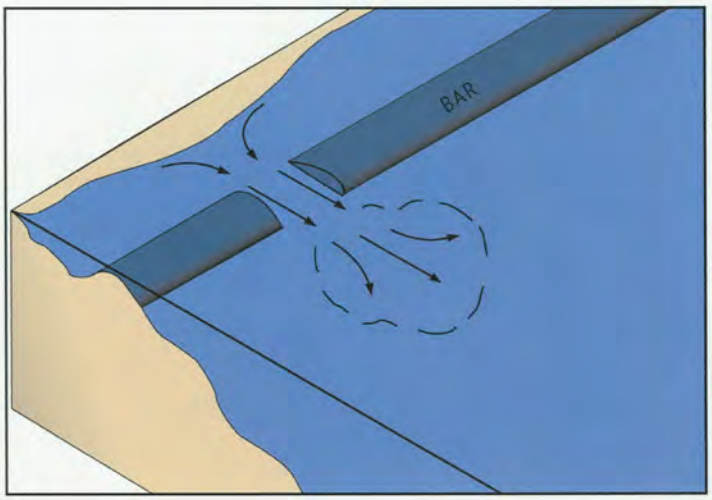
**Undertow, rip currents and riptides are common terms used to describe a variety of dangerous currents, all of which have very different characteristics. However, much of the general public, news media and even dictionary definitions confuse and misidentify these ocean hazards. Many beachgoers use the terms interchangeably, when in fact they are distinct dangers. Furthermore, undertow, rip currents and riptides occur for different reasons at different locations along the beach. Avoiding each of them, or getting out of their grip, takes different strategies for those in the water and on the beach.**




### UNDERTOW

Every day some 6,000 waves break on an average beach. The broken wave pushes water up the beach face, and gravity pulls the water back down the beach as backwash. Big waves breaking on the beach generate a large uprush and backwash of water and sand; this seaward-flowing water/sand mixture is pulled strongly into the next breaking wave. Waders feel like they are being sucked under the water when the wave breaks over their head—this is undertow. While bathers can be tumbled around roughly, this return flow only goes a short distance—just to the next breaking wave; it does not pull you offshore into deep water.

Undertow is typically only dangerous for small children who cannot walk up the beach face against the strong backwash flow. In any case, children should always be supervised at the beach, and only experienced swimmers and surfers should enter the water on big wave days.




### RIP CURRENTS

Breaking waves push water up the beach face. This piled-up water must escape back out to the sea as water seeks it own level. Normally the return flow (e.g., backwash) is fairly uniform along the beach so rip currents are not present. If there is an area where the water can flow back out to sea more easily, such as a break in the sand bar, then a rip current can form. Rip currents are generally only tens of feet in width, but there can be several present at the same time spaced widely along the shore.

Rip currents are often detected in about knee to waist-high water (e.g., 2 feet); they can be difficult to escape by walking back toward shore against the current once you are in chest-deep water. These strong, offshore-directed currents pull the water (and any unlucky person) at all water depths through the surf zone. The current only dissipates offshore of the breaking waves where the water can be quite deep—certainly over your head. Moderate waves (e.g., 2 to 3 feet high) on sunny days are very appealing to bathers and swimmers, but can sometimes generate strong rip currents.

Along the South Shore of Long Island, rip currents tend to be intermittent--the flow is nonexistent or weak but then can become fairly strong. These flash rip currents are strongest after a series of large waves break onshore. Rip current speeds are typically 2 to 3 feet per second and extend about 200 feet offshore.

## RIPTIDES

A riptide (or rip tide) is a powerful current caused by the tide pulling water through an inlet along a barrier beach. When there is a falling or ebbing tide, the water is flowing strongly through an inlet toward the ocean, especially one stabilized by jetties. During slack tide, the water is not moving for a short period of time until the flooding or rising tide starts pushing the sea water landward through the inlet. Fishermen are well aware of these tidal flows and make their plans accordingly. Riptides also occur in constricted areas in bays and lagoons where there are no waves.

These powerful, reversing currents, which are also termed tidal jets by coastal engineers because they carry large quantities of sand that form sand bars in the ocean and bay opposite the inlet channel, can be very strong and life threatening. The ebbing tide at Shinnecock Inlet can extend more than a thousand feet offshore so that even good swimmers caught in this current will likely not be able to swim back to shore. Obviously inlets are not a place for bathers and swimmers, and even sailboats can have a difficult time negotiating these waters during certain tidal and wind conditions.

## THREE TYPES OF SEAWARD-FLOWING CURRENTS AT SANDY BEACHES

| | UNDERTOW | RIP CURRENTS | RIPTIDES |
|---|---|---|---|
| **Description** | Strong backwash off beach | Strong offshore flow at certain locations | Strong offshore current at inlets |
| **Cause** | Big waves breaking on beach face | Concentrated flow through breakers | Constriction of tidal flow though barrier beaches |
| **Where** | Extending 10s of feet from shore | Extending 100s of feet offshore along South Shore of Long Island | Extending 1,000s of feet offshore at Shinnecock Inlet |
| **Water Depth** | Inches to several feet | 2-10 feet (sometimes deeper) | 10s of feet |
| **Danger** | Knocked around by waves on beach face; generally not life threatening except for small children | Pulled offshore into water over your head | Pulled far offshore by ebbing (falling) tide |
| **How to Escape** | Time your escape between breaking waves; walk or crawl up beach | Don't fight the current; swim parallel to beach or let current take you beyond the breakers while floating and then swim diagonally back to shore | Wave for help to attract attention of fishermen or boaters |

FIU Laboratory for Coastal Research
FLORIDA INTERNATIONAL UNIVERSITY

SoMAS School of Marine and Atmospheric Sciences

STONY BROOK UNIVERSITY

*Sam Swint, who passed away last year, was the founder and president of the Eastern Long Island Coastal Conservation Alliance, Ltd. Sam loved his home in Southampton and wanted to give back to the community, which is the reason he founded ELICCA and worked for other worthy causes such as Marine Sciences at Stony Brook-Southampton, East End Hospice and Southampton Hospital. ELICCA continues to produce informative brochures about coastal environmental issues along the South Shore of Long Island, New York.*

Image Courtesy of First Coastal