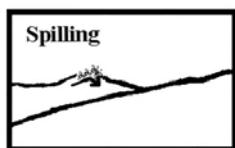


**The Education Program at the
New Jersey Sea Grant Consortium**
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UNDERSTANDING WAVES

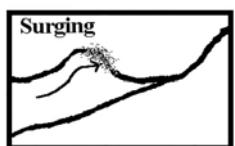
There are three types of waves in the surf zone known as breakers: spilling, plunging, and surging. The slope of the beach beneath the water and the types of waves approaching the surf zone determine which type of breaker is going to be the most common.



A **SPILLING** wave breaks gradually over a distance. White water forms at the crest and expands down the face of the breaker. Only the top portion of the wave curls over. This type of wave is normal for a flat bottom beach. It is the most commonly observed type of wave and may look like an advancing line of foam.



A **PLUNGING** wave peaks up until it is an advancing vertical wall of water. The crest advances faster than the base of the breaker, curls and then descends violently into the wave trough. This type of wave can sometimes cause an explosive sound as trapped air escapes behind the wave. It is usually found on a medium to steep sloping beach especially with an offshore wind. Surfers favor this type of breaker.



In a **SURGING** wave, the wave crest tends to advance faster than the base of the wave and then the wave advances faster than the crest. In this action the plunging is arrested and the breaker surges up the beach face as a flat covering of water, which may or may not be white water. These waves are usually found on beaches with a very steep slope.



Spilling Wave



Plunging Wave



Surging Wave

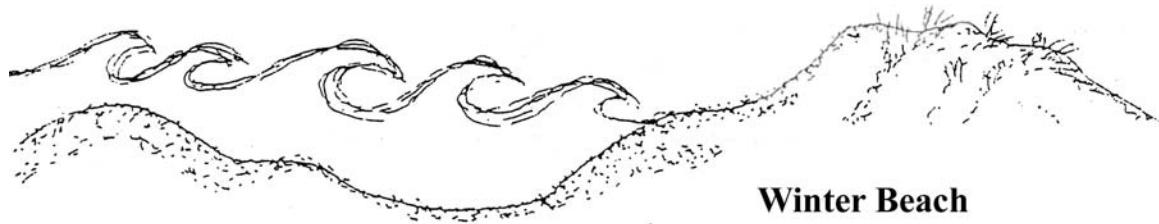
Make an observation of today's waves and record below. Include your name, today's date and time of observation.

TODAY'S BREAKERS

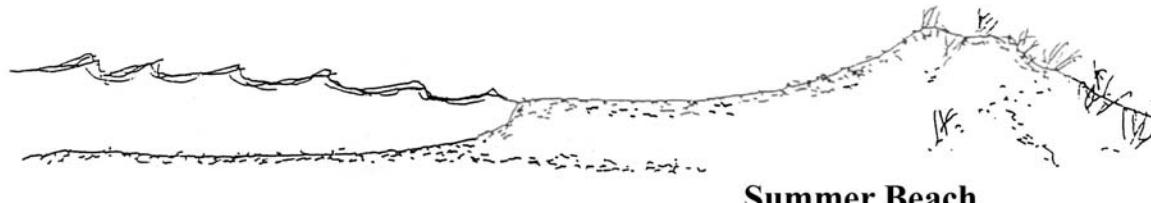
BEACH CHANGES

Seasonal change on Sandy Hook can be seen everywhere, including the surface of the beach. During the summer, waves tend to be long and smooth, creating wide, flat beaches. Winter brings waves that rise higher and are more frequent. These winter waves chop away at the beach, creating a sharp cliff that protects the dune area from the force of the ocean. In addition, winter waves remove sand from the shoreline, depositing it in offshore sand bars. In spring and summer, this sand will be returned by long, smooth and gentle wave action.

Use the following diagrams to identify the shape of today's beach. Make any changes that you feel make the diagram more accurate according to today's conditions.



Winter Beach



Summer Beach

OBSERVATIONS:

NAME(S): _____

WEATHER CONDITIONS: _____

TIDAL STAGE: _____ DATE: ____ / ____ / ____