

## CHARTING THE TIDES – WHEN ARE WE GOING TO SEINE?

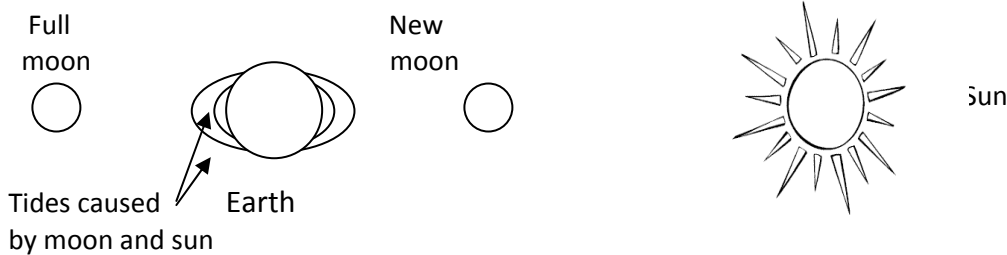
If you have ever spent time at the ocean or bay beach you have surely noticed the difference between high and low tide. This change in water level is created by the gravitational forces between the moon, sun and earth. On the east coast of North America, where we live, the tides reach its extremes about four times a day, or roughly every 6 hours and 12 minutes. From one high tide to the next high tide about 12 hours and 25 minutes elapse. The same time will also elapse from one low tide to the next. However, the changes of tides are not the same all over the world, the changes in tides may be different depending on latitude or the season. Some places in the world receive two tidal extremes per day, some only one tide per day.

At times, the sun and the moon line up, their gravitational pull adds together to make an extra high tide. These tides are called spring tides and occur about twice a month. If a storm is around and the wind is blowing with an incoming spring tide the potential for coastal damage is greatest.

Also occurring about twice a month are neap tides. When the sun and the moon are at a 90° angle from the earth, the gravitational pull from the moon and sun work against each other, and cause the least amount of change from high to low tide.

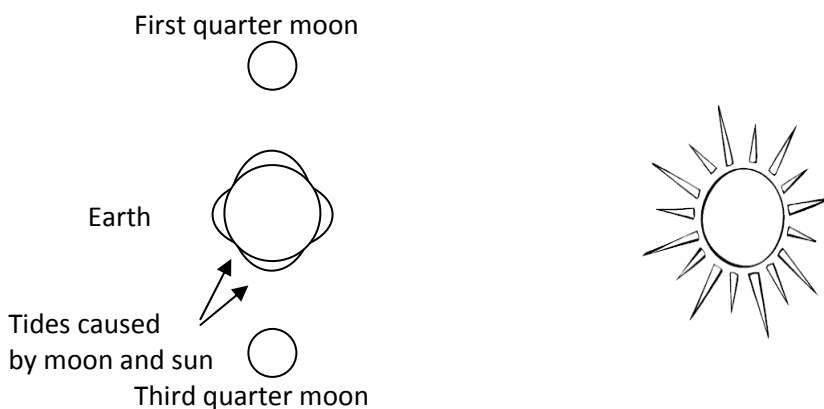
For example at Sandy Hook, NJ during a spring tide there may be a 6-foot difference between high and low tide, whereas during a neap tide there is only a 3-foot difference. Some places in the world there are differences in tide of over 20 feet.

### Spring Tide



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### Neap Tide



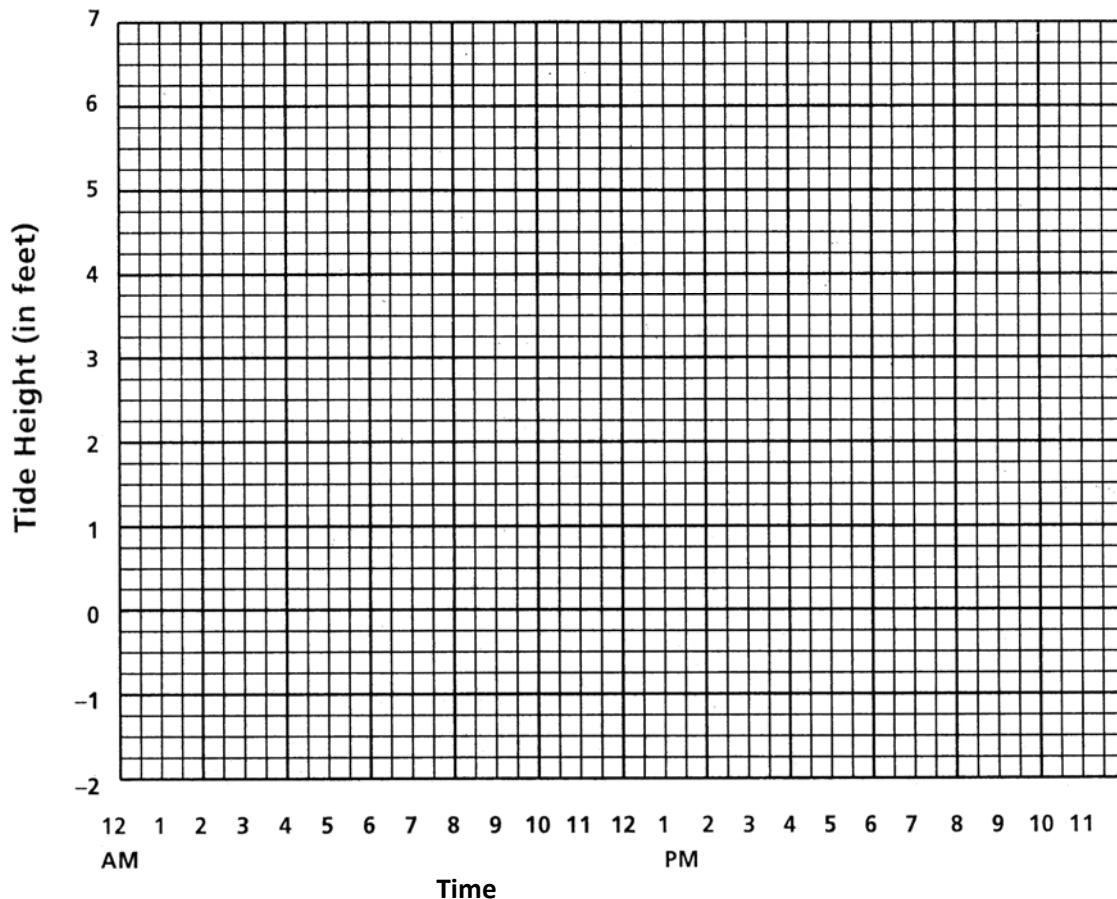
### WHEN ARE WE GOING TO SEINE?

Depending on what you would like to do on the shore it is wise to know when the tide extremes will be. If you were looking for creatures who burrowed in the mud the best time to go exploring would be at low tide when more of the beach is exposed. If you were going fishing, to keep your boat off the rocks high tide would be best time as there would be the most clearance between the bottom of the boat and any rocks.

Here at Sandy Hook, in Horseshoe Cove, the best time to seine is between low tide and high tide, closer to low tide, although not at dead low tide. During this time, all the marine life will be swimming about trying to get out of the marsh so they will not be stranded, this is the time the catch is most abundant in the seine net. Use the grid below to chart today's tide to determine the best times to seine today.

#### PROCEDURE:

1. Acquire a tide chart for the day, available in newspapers, or online at [www.njmssc.org](http://www.njmssc.org) the chart must contain times and tide height in feet.
2. Plot the data using a pencil; this will allow you to change any mistakes.
3. At the time of the day (x axis) plot a point at the tide height (y axis), do this for every hour of the day.
4. With a pencil and ruler connect the points in the order they were plotted.
5. Observe your graph, find the two high tides and two low tides.
6. On the next page state what you think will be the best times to seine.



Name of Scientist: \_\_\_\_\_ Date: \_\_\_\_\_

Moon Phase: (check one)  First Quarter Moon  Full Moon  Third Quarter Moon  New Moon

Best time to seine today: \_\_\_\_\_