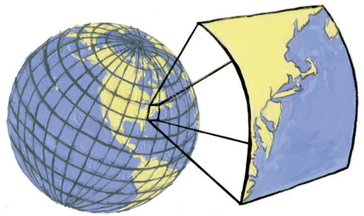
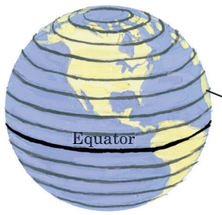
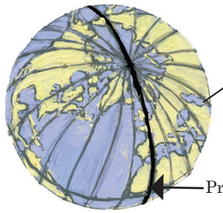


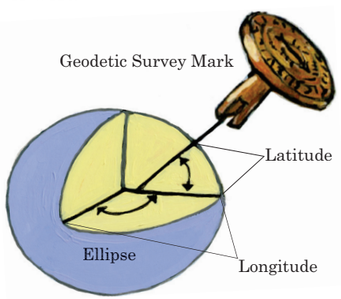
A nautical chart is flat, but it represents a round surface. Geodesy is the science of defining the earth's shape, which is a slightly squashed globe called an ellipse.



Cartographers or mapmakers split the earth into imaginary circles parallel to the equator, which get smaller as they get closer to the poles. These circles are called parallels. Latitude is the angular distance between the equator and a place, measured from 0˚ to 90˚ north or south.

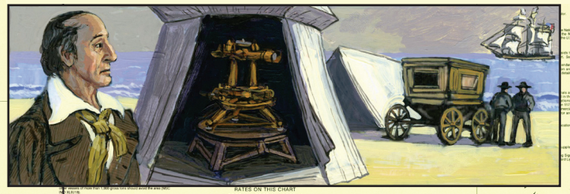


Cartographers also split the earth into imaginary lines circling the poles. These lines are called meridians. Longitude is the angular distance between the prime meridian in Greenwich, England, and a place, measured from 0˚ to 180˚ east or west.

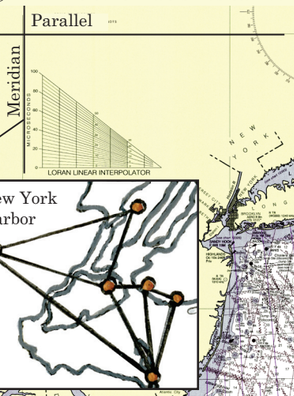


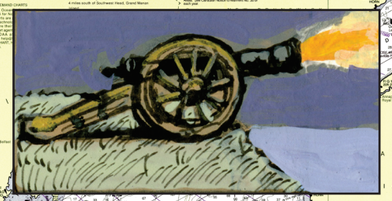
Meridians and parallels intersect at geographic coordinates. Accurate charts exist because NOAA surveyors have marked coordinates with extremely precise land measurements called geodetic surveys.

Nautical Chart of the Northeast Coast



In the early 1800s, Ferdinand Hassler conducted the first survey of the coast in Long Island, New York. His crew measured the distance between survey marks with large instruments using a process called triangulation Their survey drawing below shows the process. If the length of one side and two angles of a triangle are known, the lengths of the other two sides can be calculated.



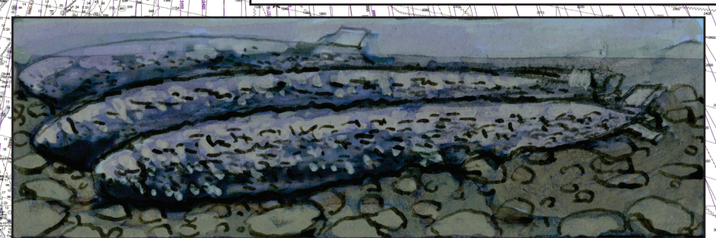


The 12-mile boundary of the U.S. territorial sea was originally three miles. It was based on how far a cannon could shoot offshore, known as the "cannon shot rule."

NORTH ATLANTIC RIGHT WHALE CRITICAL HABITAT

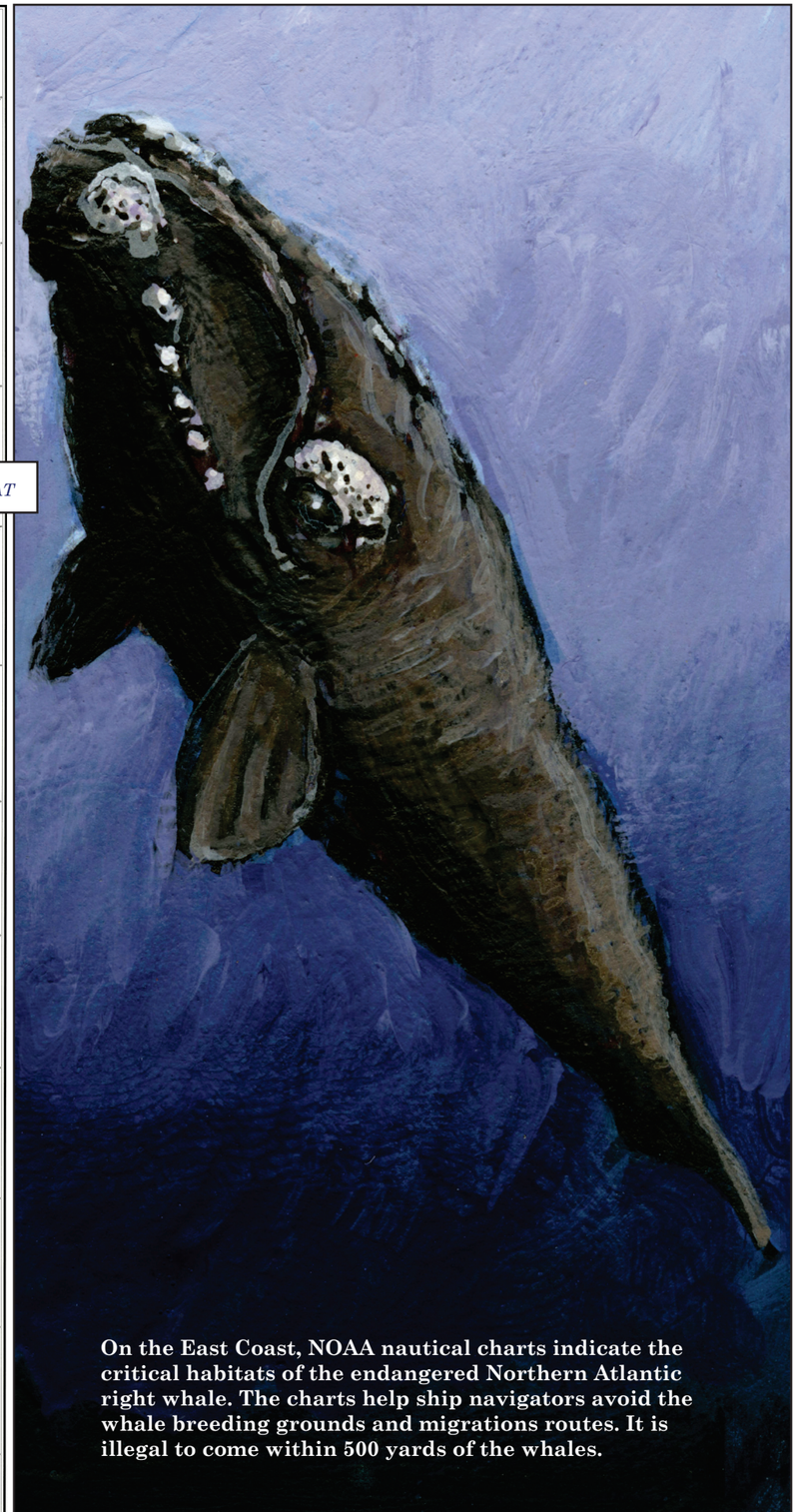
Ships can get grounded on pale blue areas labeled "shoals" that are dangerously shallow.

NOAA charts describe if the seafloor is mud, sand, or rock. This information helps mariners find natural resources in the water, like scallops along the East Coast, and good places to anchor.



Bombs and mines called unexploded ordnances are marked so mariners can avoid anchoring or bottom-fishing in those areas.

Learn more about nautical charts at http://www.nauticalcharts.noaa.gov. Produced by NOAA's Office of Coast Survey



On the East Coast, NOAA nautical charts indicate the critical habitats of the endangered Northern Atlantic right whale. The charts help ship navigators avoid the whale breeding grounds and migrations routes. It is illegal to come within 500 yards of the whales.