



# Aquatic Consulting Services

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## Boating Tip #10: Geographic Coordinates

Geographic coordinates are measured in degrees, minutes and tenths of a minute (or seconds). One degree is  $1/360^{\text{th}}$  of a circle, one minute is  $1/60^{\text{th}}$  of a degree, and one second is  $1/60^{\text{th}}$  of a minute. More commonly today,  $1/10^{\text{th}}$  of a minute is used instead of seconds in recording position.

Parallels of latitude run parallel to the equator and are measured north or south of the equator up to  $90^{\circ}$ . The equator is at  $0^{\circ}$  latitude. The poles are at  $90^{\circ}$  latitude (north or south). Parallels of latitude are equally spaced and 1 minute of latitude is equal to 1 nautical mile. Distance on the water is always expressed in nautical miles. One nautical mile equals 6,076 feet or 1.15 statute miles. One degree ( $1^{\circ}$ ) of latitude equals 60 nautical miles, and one minute ( $1'$ ) of latitude equals 1 nautical mile. Each minute of latitude can be broken into seconds ( $"$ ), or tenths of a minute.

Meridians of longitude run north and south. The prime meridian ( $0^{\circ}$  longitude) runs through Greenwich, England. Longitude is measured east and west of the prime meridian from  $0^{\circ}$  to  $180^{\circ}$ . The International Date Line is at  $180^{\circ}$ . At the equator, each  $1^{\circ}$  of longitude is about 60 nautical miles apart, but degrees get closer together until they meet at the poles.

Because a nautical mile is equal to 1 minute of latitude, distance between two points plotted on a chart can be easily measured. Set your dividers to a known distance and walk them along your course. Or, for short distances, extend the dividers, and without changing their spacing, move them to the nearest latitude scale and count the distance.

You can also determine your distance north or south of the equator by using latitude. Multiply degrees of latitude by 60 nautical miles. To that sum, add the minutes of latitude. For example, San Diego Bay is located at  $32^{\circ} 43'$  north latitude.  $32^{\circ} 43' \text{ N}$  is  $(32^{\circ} \times 60 \text{ nm}) + (43' \times 1 \text{ nm}) = 1,963$  nautical miles north of the equator.