Nautical Charts: How to Read Them, Prepare Them, and Use Them

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Introductory Comments

Mercator projection (main significance for kayaker is that longitude is not equal to distance except near the equator).

Small scale charts (cover a large area): use to plan out the overall route. Contain MUCH LESS detail than large scale charts.

Large scale charts (cover a small area): use for detail in each section of the trip.

Reading a Chart

Seven key Items:

1) Date (Want current charts – especially for tricky areas, and at night. Shoals move, islands appear and disappear, buoys are changed, variation changes, etc.)
2) Latitude and Longitude (in minutes/degrees/decimal, or minutes/degrees/seconds?; if are not aware of this could get up to about ½ mile error)
3) Distance (use distance scale or latitude scale)
4) Depth (feet, meters or fathoms?)
5) North/Variation (where is north on the chart?, what is the variation?)
6) Key ATONS and Landmarks
7) Sufficient Coverage

Preparing a Chart

The small deck space of a kayak means that you either have to fold the chart, or copy a small section of it. In either case, you will lose information.

You may need to add this information back, as well as add additional useful information.

Important Items which may need to add:

- Lat/Lon
- Distance Scale
- Compass Rose
- Track Lines (course/distance)
- Key Distances and angles
- Tides/Currents
- Objects which may not be on the chart due to scale (e.g., ATONs, hazards, etc.)
- Weather
- Etc.

Laminate - with a machine

Using a Chart

The chart gives you a birds eye view. You need to mentally convert this to a water level view.

Perspective - the angle which you see things from changes appearance

Distance – enormous impact: may only see the top, go below the horizon entirely, get smaller, lose color discrimination

Other factors impacting appearance: state of the tides, time of day, visual acuity, alertness level, wishful thinking, etc.

You may see things that are NOT on the chart
ex) Panama Canal Bridge

You may not always see what's on the chart
ex) Photo of CANT see water tank (show picture of tank-vehicle on VA grounds!)
ex) Photo of broken Nav Aid
ex) Three Rooker Bar has a new cut (very common for sandbars to shift)
ex) Buoys knocked out of position, "PA"

Correlating with GPS/Plotter:

- Is Lat/Long in decimals or minutes
- Raster vs. Vector appearance
- Scale may remove items
- Scale – dense buoyage on electronic chart vs. real life appearance (can get same illusion on paper charts – but due to small size of plotters, issue seems more pronounced)
- Small image size makes GPS/Plotters difficult to use, if not dangerous, for overall planning (need a small scale chart for this)

Using the wrong chart (e.g., small scale instead of large scale for a specific area) can lead to catastrophic consequences

Use the correct instruments (e.g., fingers vs. dividers)

Chart holders +/- ... make darn sure are waterproof if the chart is not-laminated

Check off (with grease pencil) or, even better, note time as pass objects

Look at the big picture - e.g., channel doesn't show ships ... but sure suggests they will be there

Use the chart to anticipate hazards (e.g., headlands, lee shores), and helpers (e.g., safe landing sites, countercurrents).

Don't get fixated on the chart - photo of boat split in half

Final Notes
Do NOT rely on just electronics

Multiple inputs

Practice correlating chart vs. actual appearance

References
How to Read a Nautical Chart (Nigel Calder)

Fundamentals of Kayak Navigation (David Burch)

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