

ottergeospatial

Tweaking Scale Bar Divisions and Units

Modify the scale bar design suggested by the software

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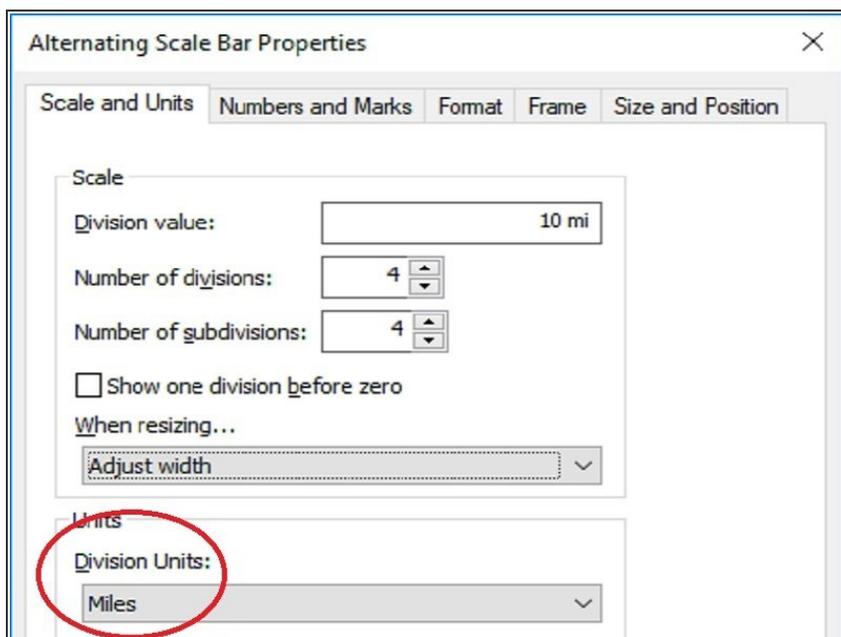
INTRODUCTION

Sometimes the scale bar design proposed by ArcMap needs to be modified.

- The map's audience may have specific requirements that are not met if the Division Units and Division Value are left up to ArcMap. For example, the audience for a navigation chart would probably want distances to be measured in Nautical miles.
- The software may have done a poor job of choosing the Division Units and Division Value settings. The author of the map needs to catch and fix the goofy Division Value settings that ArcMap sometimes comes up with.

The guide lists the steps one would follow for altering any finalized map layout, then shows how each step is applied to the example that we've been using. Let's say that we've followed the ***Adding a Simple Scale Bar*** guide and have determined that the audience won't like it because they prefer to see distances expressed in yards.

Step 1 — Adjust the "Division Units:" setting located on the Scale & Units tab



- Modify the Division Units setting to conform to standard practice and the needs of the audience
- To continue our example, we need to set Division Units to yards

Step 2 — Make a note of the map's east-west extent



- Generally the map extents are calculated earlier in the map composition process. If the map extents are unknown, use the measurement tool in ArcMap. Be sure to set the tool to read in the same units being used for the scale bar.
- The east-west map extent in our example is about 170,000 yards.

Step 3 — Adjust the "Division value:" setting located on the Scale and Units Tab



- Set the division value to one-tenth of the map extent.
- Huh? What has one-tenth of the map extent got to do with anything? Trust us, the one-tenth rule works pretty well for finding a preliminary value that is in the right neighborhood.
- Continuing with our example, we've set the division value to 17000 yd

Step 4 — Refine the Division Value Setting



- The ten-percent rule invariably produces an odd-ball number for division value that renders the scale bar uninformative. That initial value needs to be rounded up or down.
- Continuing with our example, we obviously don't want to measure distance in 17,000 yard increments. The division value needs to be rounded up to 20,000 or down to 10,000. Setting the division value to 10,000 shortens the scale bar to the point that it doesn't function very well as a ruler. 20,000 appears to be the better choice.

Step 5 — Adjust the "Number of subdivisions: setting located on the Scale and Units Tab



- The setting for function of the Number of subdivisions setting is to help users of the map estimate shorter distances.
- In our example, each division spans 20,000 yards. Setting the Underlined textsubdivision value to "4" allows the ruler to measure shorter distances in 5,000 yard increments.

Step 6 — Verify that the "best guess" scale bar passes the ruler test



- Test how well the scale bar works as a ruler for estimating both long and short distances on the map. If the scale bar design passes the ruler test, it is because the software has done a good job of choosing its mathematical properties (division units, division value and number of subdivisions).
- The best guess mathematical properties of our sample are very informative and would be left as-is for the great majority of applications.
- For the sake of learning let's say that the units selected by the program (miles) don't work for the map's audience. They want to use the scale bar to estimate distances in yards.