Reading a Salinity Refractometer

Background

Black mangrove seedlings need to be "**hardened**" before planting them in a restoration area. This means that they need to be exposed to conditions more like what they will be growing in, which in the case of black mangrove means that they need to be growing in a salt water solution. In order to regulate the salinity of the water that will be used to harden the mangrove seedlings, you need to use a tool called a **salinity refractometer**. This instrument is used to measure salinity.

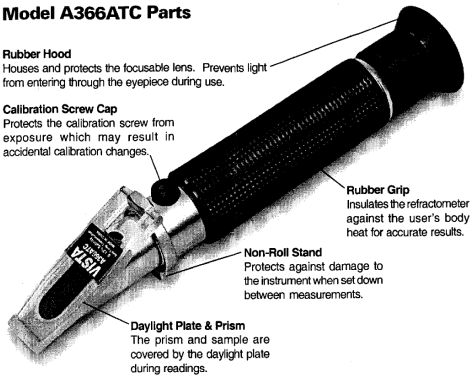

Figure from VISTA Operation Manual

Materials needed

- Salinity refractometer
- Water dropper
- Water sample to be measured

Precautions

The salinity refractometer is an optical tool –

- do not drop it or handle it roughly.
- do not use a rough or abrasive material to clean the prism.
- do not hold the refractometer under a stream of water or splash it with water.

How to use the refractometer

1. Open the daylight plate and apply one or two drops of the sample solution to the surface of the prism. Hold the prism at an angle close to parallel with the floor so the sample will not run off.
2. Gently close the daylight plate. The sample solution should make a thin film over the ENTIRE surface of the prism. If the sample solution does not cover the entire prism, reapply the solution. Inaccurate readings will result if the prism is not completely covered or has bubbles on it (FIGURE 1).
3. Look through the eyepiece. Focus the scale until it is sharp to your eyes by gently turning the eyepiece either clockwise or counterclockwise.
4. The upper field of view appears blue and the lower field will be white. The reading is taken at the line where the blue and white fields meet (FIGURE 2).
5. For salinity, read the scale on the right side. It is marked as a "o/oo". This is read "parts per thousand".
6. After taking a salinity reading, gently wipe the prism with a tissue paper and water.
7. NOTE: You will need to calibrate your refractometer periodically. To calibrate it, take a reading using distilled water inside the lab (if possible – the temperature needs to be about 68° F). With distilled water on the prism, urn the calibration screw with the included screwdriver while looking through the eyepiece until the boundary line falls on "0".

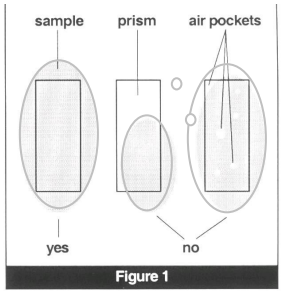

Figure 1

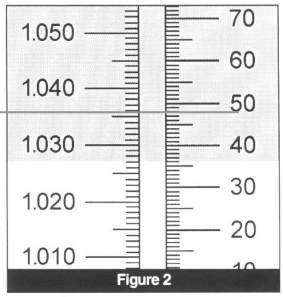

Figure 2

Figure from VISTA Operation Manual

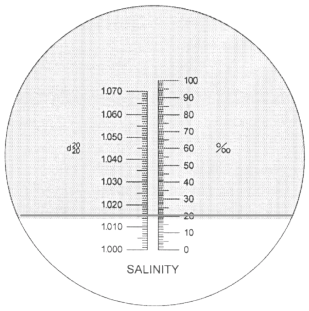

Figure from VISTA Operation Manual

A little practice in reading a refractometer

1. On the refractometer scale in Figure 2, what is the salinity, in parts per thousand, of the solution?
2. On the refractometer scale in the figure to the left, what is the salinity, in parts per thousand, of the solution?

Check Your READability:

1. Salinity = 37 ppt (parts per thousand)
2. Salinity = 20 ppt (parts per thousand)